```
:h1 id=db2hold.HOLD DATA for PTFs incorporated in the product tapes
:xmp keep=6.
------ COVER LETTER FOR PTF UK56083 ------------

PROBLEM DESCRIPTION(S):
  PM07481 -
    ****************************************************************
    * USERS AFFECTED: For DB2 for z/OS users who use star join.    *
    ****************************************************************
    * PROBLEM DESCRIPTION: A star join query may get an            *
    *                      inefficient access path when two or     *
    *                      more dimension tables join to the same  *
    *                      fact table column, and those dimension  *
    *                      tables also join to other different     *
    *                      fact table columns.  These dimension    *
    *                      tables are always bundled into one      *
    *                      snowflake group, so it results in less  *
    *                      flexibility for DB2 when choosing an     *
    *                      access path.                            *
    *                                                              *
    *                      For example:                            *
    *                      SELECT ...                              *
    *                        FROM F, D1, D2, ...                   *
    *                       WHERE F.C1 = D1.C1 AND                 *
    *                             F.C1 = D2.C1 AND                 *
    *                             F.C2 = D1.C2 AND                 *
    *                             F.C3 = D2.C2 ...                 *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    A star join query can get an inefficient access path when two or
    more dimension tables join to the same fact table column,
    and the dimension tables also join to other different
    fact table columns.

    Additional Keywords:
    SQLSTARJOIN SQLACCESSPATH PERFM
    The logic to separate the described dimension tables from one
    snowflake group is added by PM07481. With this logic, DB2 has
    a better chance to choose an efficient access path for the star
    join query.
  PM11588 -
    ****************************************************************
    * USERS AFFECTED: DB2 for z/OS users with tables defined with  *
    *                 the VOLATILE keyword.                        *
    ****************************************************************
    * PROBLEM DESCRIPTION: DB2 may choose an inefficient access    *
    *                      path for a single table query block     *
    *                      containing a VOLATILE table when        *
    *                      matching index access is possible       *
    *                      on an IN subquery.                      *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    DB2 may select an inefficient access path for a query block
    that contains both
```

1

1. A single table defined as VOLATILE.
         2. An IN subquery that could be selected with matching
            index access.

      In this scenario, DB2 may ignore the matching index access
      preference requested by the VOLATILE keyword.
      DB2 has been modified to correctly preference index matching
      access paths for the above scenario where possible.

      Additional keywords:
      SQLPERFORMANCE SQLACCESSPATH SQLINSUBQ SQLSUBQUERY SQLIN
      SQLVOLATILE
    PM13159 -
      ****
      * USERS AFFECTED: For all DB2 z/os star join users.   *
      ****
      * PROBLEM DESCRIPTION: AE PM07481 FIX COMPLETION   *
      ****
      * RECOMMENDATION: *
      ****
      AE PM07481 FIX COMPLETION
      AE PM07481 FIX COMPLETION
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM07481,PM11588,PM13159
SPECIAL CONDITIONS:
    COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
    DB2BIND:
      ***Action for PM11588:

      See PM11588 APAR/PTF text for additional information about
      why a REBIND is necessary.

      PM11588 corrects a problem of an inefficient access path being
      chosen by DB2 for queries with a VOLATILE table and an
      IN subquery.

      To make this fix effective for a static application, it must be
      rebound after application of this PTF. Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
    DB2BIND:
      See PM07481 APAR/PTF text in the PTF cover letter for
      additional information about why a REBIND is necessary.

      PM07481 corrects a problem where a less efficient access path
      is chosen for a star join query when two or more dimension
      tables join to the same fact table column.

      To make this fix effective for a static application, it must be
      rebound after application of this PTF. Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.

    LISTEND
  .

```
------ COVER LETTER FOR PTF UK56520 ------------

PROBLEM DESCRIPTION(S):
  PK90346 -
    ****************************************************************
    * USERS AFFECTED: All users of DB2 Version 9.1 for z/OS who   *
    *                 wish to enable Common Criteria environment   *
    *                 for DB2 are affected by this change.         *
    ****************************************************************
    * PROBLEM DESCRIPTION: This APAR provides a function in the    *
    *                      Common Criteria environment to limit    *
    *                      the number of concurrent sessions for a *
    *                      primary authorization ID.               *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    Common Criteria is an international standard that helps
    to ensure the security of computer systems in a networked
    environment.  A Common Criteria-compliant environment is very
    restrictive and is not intended for use by most DB2 customers.
    This APAR provides support that allows an administrator to
    restrict the maximum number of concurrent sessions for a primary
    authorization ID.
    DB2 has been updated to provide support for limiting the
    number of concurrent sessions in the Common Criteria
    environment.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PK90346
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    The following new messages and codes are introduced by this
    APAR.

    DSNE138I
      The maximum number of sessions has been reached.  You will
      not be connected to DB2.

    Explanation:
      The authorization ID has exceeded the maximum number of
      concurrent sessions allowed.

    System action:
      The connection request is not processed.

    User response:
      Contact the system administrator to increase the number of
      concurrent sessions allowed or Close/End some of the
      existing connections and re-try.


    00F300B0
```

3

Explanation:
  The requestor's authorization ID has exceeded the maximum
  number of concurrent sessions allowed.

System action:
  The connection request is not processed.

System programmer response:
  Check the value of the USER.CSDATA.DSNMUCTL defined for
  the primary authorization ID in RACF and determine if that
  value needs to be updated.

Programmer response:
  Close/End some of the existing connections and retry the
  request.

Problem determination:
  DB2 V9 for z/OS in Common Criteria environment
  (DSN6SPRM COMCRIT=YES), restricts the number of concurrent
  threads for a primary authorization ID based upon the
  customer field USER.CSDATA.DSNMUCTL.

00C12231

Explanation:
  The DB2 RRSAF attachment facility failed because the
  requestor's authorization ID has exceeded the maximum
  number of concurrent sessions allowed.

System action:
  The connection request is not processed.

System programmer response:
  Check the value of the USER.CSDATA.DSNMUCTL defined for
  the primary authorization ID in RACF and determine if that
  value needs to be updated.

Programmer response:
  Close/End some of the existing connections and retry the
  request.

Problem determination:
  DB2 V9 for z/OS in Common Criteria environment
  (DSN6SPRM COMCRIT=YES), restricts the number of concurrent
  threads for a primary authorization ID based upon the
  customer field USER.CSDATA.DSNMUCTL.

00C10211

Explanation:
  The call attachment facility (CAF) failed because the
  requestor's authorization ID has exceeded the maximum
  number of concurrent sessions allowed.

```
System action:
  The connection request is not processed.

System programmer response:
  Check the value of the USER.CSDATA.DSNMUCTL defined for
  the primary authorization ID in RACF and determine if that
  value needs to be updated.

Programmer response:
  Close/End some of the existing connections and retry the
  request.

Problem determination:
  DB2 V9 for z/OS in Common Criteria environment
  (DSN6SPRM COMCRIT=YES), restricts the number of concurrent
  threads for a primary authorization ID based upon the
  customer field USER.CSDATA.DSNMUCTL.

  LISTEND
.


------ COVER LETTER FOR PTF UK56627 ------------

PROBLEM DESCRIPTION(S):
  PM10972 -
    ****************************************************************
    * USERS AFFECTED: All Users of the DB2 Universal JDBC Driver  *
    *                 or the CLI Driver provided with DB2 for     *
    *                 Linux Unix and Windows Version 8 and above  *
    *                 that connects to DB2 Version 9.1 for z/OS   *
    ****************************************************************
    * PROBLEM DESCRIPTION: This APAR addresses the following      *
    *                 problems:                                   *
    *                                                             *
    *                 1. When the JDBC Driver or CLI Driver       *
    *                    calls the SYSIBM.SQLTABLES stored        *
    *                    procedure to return a list of           *
    *                    tables, it does not include new         *
    *                    table types like clone tables in the *
    *                    result set if a list of table types     *
    *                    was explicitly specified by the         *
    *                    caller.                                  *
    *                 2. When the JDBC Driver or CLI Driver       *
    *                    calls the SYSIBM.SQLPROCEDURECOLS        *
    *                    stored procedure to return a list of *
    *                    procedure columns, it can return        *
    *                    duplicate columns if multiple           *
    *                    versions of a native SQL procedure      *
    *                    exist.                                   *
    ****************************************************************
    * RECOMMENDATION: Apply PTF.                                  *
    ****************************************************************
    The stored procedure SYSIBM.SQLTABLES does not recognized new
    V9 table types like clone table (TYPE='C') and implicit table
    created for XML columns (TYPE='P'). As a result, if the type
```

5

'TABLE' was explicitly specified in the list of table types to
be returned, then the new tables types are not included in the
result set.

Finally, the stored procedure SYSIBM.SQLPROCEDURECOLS does
not handle multiple versions of native SQL procedures correctly.
As a result, duplicate columns can be returned if multiple
versions of a native SQL procedure exist.
The SYSIBM.SQLTABLES stored procedure was updated to also
recognized the new V9 table types.

Finally, the stored procedure SYSIBM.SQLPROCEDURECOLS was fixed
such that only the columns of an active version of the
native SQL procedure are returned.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM10972
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
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  ACTION:
    This PTF modifies stored procedures SYSIBM.SQLTABLES and
    SYSIBM.SQLPROCEDURECOLS. If you have already installed or
    migrated to DB2 V9, you need to take the following actions
    after applying this PTF:

    (1) Run the BIND statement for the DSNAPCO8 and DSNATBL8 DBRM
    (2) Refresh the WLM environment

    Procedures for these actions are given below.
    ----

    (1) Run the BIND statement for the DSNAPCO8 and DSNATBL8 DBRM:
        ****
        * All V9 customers who use the Database Metadata methods
        * must submit a job to bind the affected stored procedure.
        * It should contain the following BIND statement:
        ****
        (a) Add a step to BIND the following DBRM file.

            BIND PACKAGE(DSNASPCC) MEMBER(DSNAPCO8) -
                 ACTION(REPLACE) ISOLATION(UR) QUALIFIER(SYSIBM) -
                 RELEASE(COMMIT) ENCODING(EBCDIC) -
                 LIBRARY('<prefix>.SDSNDBRM')

            BIND PACKAGE(DSNASPCC) MEMBER(DSNATBL8) -
                 ACTION(REPLACE) ISOLATION(UR) QUALIFIER(SYSIBM) -
                 RELEASE(COMMIT) ENCODING(EBCDIC) -
                 LIBRARY('<prefix>.SDSNDBRM')

            where <prefix> is the high-level qualifier for the
            target DB2 subsystem.

        (b) Submit the job.

    (2) Refresh the WLM environment

Issue the following VARY MVS command from the console to
        refresh the WLM application environment

            VARY WLM,APPLENV=<wlmenv>,REFRESH

        where <wlmenv> is the name of the WLM application
        environment for running the Database Metadata stored
        procedures.
   LISTEND
.

------ COVER LETTER FOR PTF UK56700 ------------

PROBLEM DESCRIPTION(S):
  PM11933 -
     ****
     * USERS AFFECTED: All DB2 9 users who define more than 256   *
     *   key expressions in the indexes and   *
     *   reference more than 256 expressions in   *
     *   the query and there are more than 256   *
     *   key expressions in the indexes match to   *
     *   expressions in the query   *
     ****
     * PROBLEM DESCRIPTION: ABEND04E RC00E70005 DSNXOLTI M630   *
     *   may occur during index on expression   *
     *   exploitation if the following   *
     *   conditions are met: *
     *   *
     *   1. a base table has more than 256 key   *
     *   expressions in indexes   *
     *   2. a query that references the base   *
     *   table has more than 256 expressions *
     *   3. there are more than 256 expression   *
     *   matches between key expressions in   *
     *   indexes and expressions in the query *
     *   *
     *   The problem investigation shows the   *
     *   symptom is unpredictable because the   *
     *   cause is a storage overlay.   *
     ****
     * RECOMMENDATION: *
     ****
     ABEND04E RC00E70005 at DSNXOLTI M630 or other symptoms such
     as ABEND0C4 at various modules or even incorrect output may
     occur if the following conditions are met:

     1. a base table has more than 256 key expressions in indexes
     2. a query that references the base table has more than 256
        expressions
     3. there are more than 256 expression matches between key
        expressions in indexes and expressions in the query

     During index on expression exploitation, a storage overlay
     occurs. Depending on which data structures are overlaid the
     problem symptoms vary from abends to incorrect output.

DB2 has been modified to ensure the storage overlay problem
        described above no longer occurs.

        Additional keywords: ABEND04E ABEND0C4 INCORROUT
                             SMCOVERLAY SQLINDEXONEXP
                             SQLKEYEXP
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM11933
SPECIAL CONDITIONS:
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  DB2BIND:
     ***Action for PM11933:

     See PM11933 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM11933 corrects a problem of storage overlay that the query
     may recevie ABEND04E RC00E70005 at DSNXOLTI M630 or other
     symptoms such as ABEND0C4 at various modules or even incorrect
     output if the following conditions are met:

     1. a base table has more than 256 key expressions in indexes
     2. a query that references the base table has more than 256
        expressions
     3. there are more than 256 expression matches between key
        expressions in indexes and expressions in the query

     To make this fix effective for a static application, it must be
     rebound after application of this PTF. Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
   LISTEND
.

------ COVER LETTER FOR PTF UK56709 ------------

PROBLEM DESCRIPTION(S):
  PM06744 -
     ****
     * USERS AFFECTED: All DB2 users of RANK, DENSE_RANK or   *
     *   ROW_NUMBER functions.   *
     ****
     * PROBLEM DESCRIPTION: Abend or incorrect output may be   *
     *   returned for queries containing both: *
     *   (RANK, DENSE_RANK or ROW_NUMBER)   *
     *   and   *
     *   (GROUP BY or ORDER BY)   *
     *   *
     *   Additional symptoms: *
     *   ABEND04E RC00C90101 DSNIBNRF ERQUAL5003 *
     *   ABEND04E RC00E70005 DSNXOWIN P020   *
     *   *
     *   Additional keywords: SQLRANK,   *
     *   SQLDENSERANK, SQLROWNUMBER, SQLINCORR, *
                                  8

```
*                        SQLINCORROUT, INCORROUT, SQLGROUPBY,   *
*                        SQLORDERBY, ROWNUMBER                  *
****************************************************************
* RECOMMENDATION:                                             *
****************************************************************
```
Abend or incorrect output may be returned for queries
containing both:
(RANK, DENSE_RANK or ROW_NUMBER)
and
(GROUP BY or ORDER BY)

For example:

```
SELECT L_ORDERKEY,L_RETURNFLAG
        ,RANK() OVER (ORDER BY L_ORDERKEY DESC) AS RANK
 FROM TPCD2PCT.LINEITEM
WHERE
     L_ORDERKEY IN (102,133,4960,10080)  AND
     L_SHIPDATE > '1993-06-01' AND
     L_SUPPKEY  >2000
  GROUP BY L_ORDERKEY, L_RETURNFLAG
  ORDER BY L_ORDERKEY DESC, L_RETURNFLAG DESC;
```
When a RANK, DENSE_RANK or ROW_NUMBER function contains an
ORDER BY specification that matches the GROUP BY specification
or the ORDER BY clause, then an abend or incorrect output may
be returned due to the GROUP BY or ORDER BY not being processed
correctly.

Code is changed to correctly process the GROUP BY or ORDER BY
when a RANK, DENSE_RANK or ROW_NUMBER function are also present
in the query.

There is a chance that an extra sort may be added to queries
with RANK, DENSE_RANK, or ROW_NUMBER plus GROUP BY or ORDER BY
applying this fix. The extra sort is required to ensure that
the result is returned in the correct order.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM06744
SPECIAL CONDITIONS:
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             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM06744:

    See PM06744 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM06744 corrects a problem of abend or incorrect output returned
    for a query involving RANK or ROW_NUMBER functions, when the
    query also contains GROUP BY or ORDER BY.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
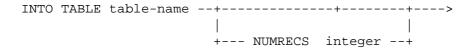 DB2BIND:

See PM03298 APAR/PTF text in the PTF cover letter for
additional information about why a REBIND is necessary.

PM03298 corrects an incorrect output problem when a query with
OUTER JOIN contains GROUP BY, and the GROUP BY items are from a
NULL-padded table.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
  DB2BIND:
    See PK99198 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PK99198 corrects a bug related to access path costing for
    queries that contain multiple select DISTINCTs, and that require
    a final sort. This bug could result in a poor performing
    access path.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PK97913:

    See PK97913 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PK97913 corrects a problem of incorrect output returned for a
    query involving RANK, DENSERANK or ROWNUMBER functions.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.

  LISTEND
.

------ COVER LETTER FOR PTF UK56739 ------------

PROBLEM DESCRIPTION(S):
  PK88970 -
    ****
    * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS users *
    *   of utility LOAD.   *
    ****
    * PROBLEM DESCRIPTION: When loading data into tables in a   *
    *   single table space the index sorts   *
    *   may fail with MSGICE046A SORT CAPACITY   *
    *   EXCEEDED for some subtasks if the rows   *
    *   being loaded are not distributed evenly *
    *   among the tables.   *

10

```
***************************************************************
* RECOMMENDATION: Apply PTF when available.                   *
***************************************************************
```

The LOAD Utility has been enhanced to allow the specification
of an estimated number of records being loaded into each of the
tables of a multi-table space instead of only being able to
specify the total number of keys being sorted in the SORTKEYS
parameter. This will allow a more precise estimation of keys
being sorted for each index.

New Syntax for LOAD statement (INTO TABLE-spec):

```
    INTO TABLE table-name --+-------------+--------+---->
                            |                      |
                            +--- NUMRECS  integer --+
```

NUMRECS
Indicates the number of input records that are to be loaded into
the specified table.

integer
Specifies a positive integer to provide an estimate of the
number of complete input records that are to be loaded into the
specified table. If CONTINUEIF is used then the specified value
refers to the number of fully assembled input records.
It is recommended to use the NUMRECS keyword for multi-table
table spaces to indicate how many of the input records will be
loaded into each of the tables. This will improve the sort work
space estimate when indexes are built in parallel. For single-
table table spaces NUMRECS can also be used when the input
data set is located on tape, or only a fraction of the input
records will be loaded.

The NUMRECS keyword, specified at the table level, and the
SORTKEYS keyword, specified at the table space level, are
mutually exclusive. If multiple tables are loaded at the same
time, NUMRECS needs to be specified either for all tables or for
none of the tables in the same LOAD statement.

New error message MSGDSNU127I is introduced by this enhancement
as follows:

DSNU127I csect-name REQUIRED KEYWORD NUMRECS MISSING FOR TABLE
table-name

Explanation:
An attempt was made to use the LOAD utility to load data into
multiple tables. If the NUMRECS keyword is specified for any
table that is to be loaded then the NUMRECS keyword has to be
specified for all tables in the LOAD operation.

table-name
      The name of the table that is missing the NUMRECS keyword.

```
     System action:
     Utility operation is terminated with return code 8. The tables
     are not loaded.

     Severity:
     8



     The UNLOAD utility will be enhanced to generate the NUMRECS
     parameter instead of SORTKEYS in separate APAR PK88974.
     The LOAD utility has been enhanced to allow specification of
     the number of input records for each table with the NUMRECS
     parameter for improved sort work estimation in parallel index
     sorting.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PK88970
SPECIAL CONDITIONS:
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  DOCUMENTATION:
     The following changes will be documented in the next refresh
     of the DB2 publications.

     DB2 Utility Guide and Reference manual (SC18-9855):
     Chapter LOAD, Syntax diagram update and option descriptions.

     New Syntax for LOAD statement (INTO TABLE-spec):


         INTO TABLE table-name --+--------------+--------+---->
                                 |              |        |
                                 +--- NUMRECS  integer --+


     NUMRECS
     Indicates the number of input records that are to be loaded into
     the specified table.

     integer
     Specifies a positive integer to provide an estimate of the
     number of complete input records that are to be loaded into the
     specified table. If CONTINUEIF is used then the specified value
     refers to the number of fully assembled input records.
     It is recommended to use the NUMRECS keyword for multi-table
     table spaces to indicate how many of the input records will be
     loaded into each of the tables. This will improve the sort work
     space estimate when indexes are built in parallel. For single-
     table table spaces NUMRECS may also be used when the input
     data set is located on tape, or only a fraction of the input
     records will be loaded.

     The NUMRECS keyword, specified at the table level, and the
     SORTKEYS keyword, specified at the table space level, are
     mutually exclusive. If multiple tables are loaded at the same
     time, NUMRECS needs to be specified either for all tables or for
```

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none of the tables in the same LOAD statement.

DB2 Messages and Codes (GC18-9849):
New error message DSNU127I is introduced for this enhancement as
follows:

DSNU127I csect-name REQUIRED KEYWORD NUMRECS MISSING FOR TABLE
table-name

Explanation:
An attempt was made to use the LOAD utility to load data into
multiple tables. If the NUMRECS keyword is specified for any
table that is to be loaded then the NUMRECS keyword has to be
specified for all tables in the LOAD operation.

table-name
        The name of the table that is missing the NUMRECS keyword.

System action:
Utility operation is terminated with return code 8. The tables
are not loaded.

Severity:
8
ACTION:
  Action 1
  The PTF for APAR PK88970 is a companion fix and requires the
  PTF for APAR PK88972 for FMID JDB991K to be applied.

  The PTFS for both APARS must be installed to support the new
  function provided.

  Action 2
  The PTF for APAR PK88970 has modified CSECTs in both the
  DSNUT910 and DSNUTILA load modules, affecting the utility batch
  and DB2 DBM1 address spaces. After the PTF has been applied, it
  will become active in the utility batch address space
  immediately upon job submission, while it will not take effect
  in the DB2 DBM1 address space until DB2 is stopped and started.

  The PTF does not have to be applied to all members in a data
  sharing environment simultaneously, and may be staged across
  each member. However, until the fix is active in both the
  utility batch and DB2 DBM1 address space, the enhancement
  provided by this maintenance will not be enabled.
ACTION:
  This apar, PK82220, makes a change to allow a decimal scale
  of zero (0) to be honored when specified for UNLOAD. Prior
  to this apar, if a scale of zero (0) was specified on the
  field specification for a DECIMAL column, the scale that
  was unloaded was dependent on the scale that was defined for
  that column. For example, if a column was defined as DEC(6,3)
  but unloaded as DEC(7,0), unload would use the scale of the
  column definition (3). Now, that scale of zero (0) would be
  honored.

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Note: Whenever the scale is 'lost' (scale of 3 unloaded with a
scale of 2, 1, or 0), rounding can occur.
ACTION:
The PTF for APAR PK82220 has modified CSECTs in both the
DSNUT910 and DSNUTILA load modules, affecting the
utility batch and DB2 DBM1 address spaces. After the PTF has
been applied, it will become active in the utility batch address
space immediately upon job submission, while it will not take
effect in the DB2 DBM1 address space until DB2 is stopped and
started.

The PTF does not have to be applied to all members in a data
sharing environment simultaneously, and may be staged across
each member. However, until the fix is active in both the
utility batch and DB2 DBM1 address spaces, the problem the PTF
addresses will not be resolved.
ACTION:
With the application of the PTF for this APAR, PK73850, LOAD
DELIMITED will now function in much the same way as the
non-delimited LOAD. The column definition will be used when a
field specification contains a column name but not the type
of the input. If the CCSID keyword is supplied on the LOAD
statement, it must contain valid CCSIDs.

   LISTEND
.

------ COVER LETTER FOR PTF UK56775 ------------

PROBLEM DESCRIPTION(S):
  PK94122 -
    ****
    * USERS AFFECTED: All DB2 users using   *
    *   Segmented or Universal Table Space.   *
    ****
    * PROBLEM DESCRIPTION: DB2 was forcing log writes when   *
    *   inserting into a newly   *
    *   formatted/allocated page on a GBP   *
    *   Dependent Segmented or Universal Table *
    *   Space. This caused I/O elapsed time to *
    *   increase.   *
    ****
    * RECOMMENDATION: *
    ****
    DB2 was performing forced log writes after inserting into a
    newly formatted/allocated page on a GBP Dependent Segmented or
    Universal Table Space(UTS). This led to increased I/O elapsed
    times and performance degradation for insert operations.
    The code has been changed so that once this APAR is applied,
    after the pre-conditioning APAR (PK83735) has been applied to
    all data sharing members, forced log writes are no longer
    done when inserting into a newly formatted/allocated page for
    a GBP Dependent Segmented or Universal Table Space.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PK94122

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   MULTSYS:
     ***Action for PK94122:

     See PK94122 APAR/PTF text for additional information.

     PK94122 is an APAR that includes changes to support a
     functional code change that will be enabled once this APAR
     is applied. Earlier, a pre-conditioning APAR PK83735 was
     delivered. In a data sharing group, this pre-conditioning APAR
     should be applied to all members before applying this enabling
     APAR to any member. The code change is enabled once this
     enabling APAR is applied.

     The enabling APAR will improve I/O elapsed time by removing
     force log writes for each new formatted/allocated page on a GBP
     Dependent Segmented or Universal Table Space.

   LISTEND
.

------ COVER LETTER FOR PTF UK56782 ------------

PROBLEM DESCRIPTION(S):
  PM07839 -
     ****
     * USERS AFFECTED: All DB2 users in a data sharing environment *
     *   when DROP DATABASE for a workfile database.   *
     ****
     * PROBLEM DESCRIPTION: DROP workfile DB can take long time   *
     *   on one member while there is timeout   *
     *   DSNT501 (Resource Unavailable) on the   *
     *   other member.   *
     *   *
     *   STOP DB2 MODE(FORCE) failed with   *
     *   ABEND0C4 RC00000010   *
     *   DSNIDM.DSNIMSAR+0266.   *
     ****
     * RECOMMENDATION: *
     ****
     This APAR fixes two problems:
     1. DROP workfile DATABASE could cause a deadlock.
     2. DROP workfile DATABASE on one member while STOP DB2 on
     another member could cause the ABEND0C4.
     The reported problems were corrected as follows:
     1.In data sharing environment, when member A is dropping a
     workfile database, this can deadlock with another member of the
     group. This APAR will prevent the deadlock when applied to all
     other members.

     2. When STOP DB2 MODE(FORCE) is running on member A, and DROP
     DATABASE for member A's workfile is executing on another member,
     an ABEND0C4 can occur on member A.

```
     DB2 code has been changed, the problems are fixed.

     ++hold:
     DROP workfile DATABASE could take a long time on member A.
     To fix this problem, put this apar on the other
     members in the data sharing environment.
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APARS FIXED: PM07839
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  ACTION:
    DROP workfile DATABASE could take a long time on member A.
    To fix this problem, put this apar on the other
    members in the data sharing environment.

  LISTEND
.


------ COVER LETTER FOR PTF UK56845 ------------

PROBLEM DESCRIPTION(S):
  PM08798 -
    ****************************************************************
    * USERS AFFECTED: All DB2 V9 users of queries                 *
    *                 referencing a view that contains            *
    *                 multiple table expressions which            *
    *                 contain UNION ALL.                          *
    *                                                             *
    ****************************************************************
    * PROBLEM DESCRIPTION: ABEND0C4 RC00000038 DSNXGRM1+0964      *
    *                      OR DSNXGRM1 M360 could occur for       *
    *                      a query satisfying the following       *
    *                      conditions:                            *
    *                      1. The query references a view         *
    *                         which contains multiple table       *
    *                         expressions.                        *
    *                      2. The table expression contains       *
    *                         UNION ALL.                          *
    *                      3. At least one of the table           *
    *                         expression is materialized.         *
    *                                                             *
    *                      Incorrect output could occur for       *
    *                      a query satisfying the following       *
    *                      conditions:                            *
    *                      1. The query references a view         *
    *                         which contains UNION ALL            *
    *                         and CTE.                            *
    *                      2. The select list in CTE              *
    *                         contains COUNT function.            *
    *                      3. CTE contains table expression       *
    *                         with UNION ALL.                     *
    *                                                             *
    ****************************************************************
```

```
* RECOMMENDATION:                                                *
****************************************************************
Scenario 1:

ABEND0C4 RC00000038 DSNXGRM1+0964
OR DSNXGRM1 M360 could occur for
a query satisfying the following
conditions:
1. The query references a view
   which contains multiple table
   expressions.
2. The table expression contains
   UNION ALL.
3. At least one of the table
   expression is materialized.

CREATE TABLE T1 ( C1 INT NOT NULL, C2 CHAR(2));
CREATE TABLE T2 ( C1 INT NOT NULL, C2 CHAR(2));
CREATE TABLE T3 ( C1 INT NOT NULL, C2 CHAR(2));
CREATE TABLE T4 ( C1 INT NOT NULL, C2 CHAR(2));

Example 1:

CREATE VIEW V1(C1, C2, C3) AS
  SELECT H.C1, H.CONTA, 1
  FROM
       ( SELECT  Y.C1, Y.CONTA
         FROM (SELECT C1,  COUNT(*) AS CONTA
               FROM (SELECT  C1 FROM T1 A
                     UNION ALL
                     SELECT  C1 FROM T2 A) AS X
               GROUP BY C1
              ) AS Y,
              (SELECT C1 FROM T3 WHERE T3.C1 = 1
               UNION ALL
               SELECT C1 FROM T4 WHERE T4.C1 = 1
              ) AS Z
       ) AS H(C1, CONTA);

The view was created incorrectly during union all query
transformation for the above example.

SELECT * FROM V1;

During view reference time, intentional abend could be issued.


Scenario 2:

Incorrect output could occur for a query satisfying
the following conditions:
1. The query references a view which contains
   UNION ALL and CTE.
2. The select list in CTE contains COUNT/COUNT_BIG function.
3. CTE contains table expression with UNION ALL.
```

```
       EXAMPLE 2:


       CREATE VIEW V4(C1, CONTA, C3) AS
       WITH Y(C1, CONTA) AS
                     (SELECT C1,  COUNT(*) AS CONTA
                      FROM (SELECT  C1 FROM T1 A
                             UNION ALL
                             SELECT  C1 FROM T2 A) AS X
                      GROUP BY C1
                     )
          SELECT H.C1, H.CONTA, 1
          FROM
               ( SELECT  Y.C1, Y.CONTA
                 FROM  Y,
                       (SELECT C1 FROM T3 WHERE T3.C1 = 1
                        UNION ALL
                        SELECT C1 FROM T4 WHERE T4.C1 = 1
                       ) AS Z
               ) AS H(C1, CONTA);
```

During create view time, COUNT function can be transformed to
the combination of SUM and COUNT function.

SELECT * FROM V4;

During view reference time, SUM function data type is not set
correctly.

DB2 is modified to perform union all transformation correctly.

Additional Keywords: SQLUNIONALL SQLVIEW SQLINCORR INCORROUT
                     SQLTABLEEXPR SQLCOUNT

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APARS FIXED: PM08798
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  DB2BIND:
    ***Action for PM08798:

    See PM08798 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM08798 corrects a problem of ABEND0C4 RC00000038 DSNXGRM1+0964
    OR DSNXGRM1 M360 for a query satisfying the following
    conditions:
    1. The query references a view which contains multiple
       table expressions.
    2. The table expression contains UNION ALL.
    3. At least one of the table expression is materialized.

    PM08798 corrects a problem of incorrect output for a
    query satisfying the following conditions:
    1. The query references a view which contains UNION ALL

and CTE.
     2. The select list in CTE contains COUNT/COUNT_BIG function.
     3. CTE contains table expression with UNION ALL.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF. Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
   ACTION:
     ***Action for PM08798:

     See PM08798 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM08798 corrects a problem of ABEND0C4 RC00000038 DSNXGRM1+0964
     OR DSNXGRM1 M360 for a query satisfying the following
     conditions:
     1. The query references a view which contains multiple
        table expressions.
     2. The table expression contains UNION ALL.
     3. At least one of the table expression is materialized.

     PM08798 corrects a problem of incorrect output for a
     query satisfying the following conditions:
     1. The query references a view which contains UNION ALL
        and CTE.
     2. The select list in CTE contains COUNT/COUNT_BIG function.
     3. CTE contains table expression with UNION ALL.

     To make this fix effective for any view that contain the pattern
     described above, the view must be dropped and recreated
     after application of this PTF.

     If the DSNTIAUL sample program is used correctly to generate a
     LOAD utility control statement, then after application of this
     PTF, the new control statement generated may not match the data
     length of the built-in scalar functions from the previous
     control statement. Proper action should be taken if such
     mismatch is observed.
   LISTEND
.

------ COVER LETTER FOR PTF UK56881 ------------

PROBLEM DESCRIPTION(S):
  PM05717 -
    ****
    * USERS AFFECTED: All DB2 for z/OS 8 and DB2 9 for z/OS   *
    *   I/O parallelism users.   *
    ****
    * PROBLEM DESCRIPTION: An INCORRECT OUTPUT may occur when a   *
    *   query contains a subquery predicate   *
    *   running on I/O parallelism.   *
    ****

```
* RECOMMENDATION:                                                    *
    ****************************************************************
    An INCORRECT OUTPUT may occur when a query contains a subquery
    predicate running on I/O parallelism. It is because the subquery
    predicate evaluation timing is not set correctly.

    Following is an example of such failing query:
    SELECT ...
      FROM T1, T2, T3, ....
     WHERE ...
       AND T1.WID IN (
             SELECT DISTINCT T07.ID
               FROM T07
              WHERE ...   )
        AND T2.CITY IN (
             SELECT DISTINCT T08.CITY
               FROM T08
              WHERE ...   )
        AND ...
       ORDER BY T1.WID, T2.DID, T3.IID;


    DB2 is modified to set the subquery predicate of I/O
    parallelism evaluation timing correctly.

    Additional Keywords: PARALLELISM SQLIOP SQLSUBQUERY
                         SQLNONCORRSUBQ SQLCORRSUBQ SQLINSUBQ
                         INCORROUT SQLINCORR
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APARS FIXED: PM05717
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  DB2BIND:
    ***Action for PM07850:

    See PM07850 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM07850 corrects a problem of ABND0C7 at DSNXRTIM +5400 may
    occur when a query contains duplicate SETFUNCTION in the
    selection list running in parallel.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM05717:

    See PM05717 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM05717 corrects a problem of INCORRECT OUTPUT may occur when a
    query contains a subquery predicate running on I/O parallelism.
```

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM03834:

  See PM03834 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM03834 corrects a problem of incorrectout for query with
  correlation on subquery select list runs in parallel.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PM00229:

  See PM00229 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM00229 corrects a problem of incorrect output may occur when
  a query selection list contains a SETFUNCTION and the source
  column has FIELDPROC declared on it running in parallel.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PK97872:

  See PK97872 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK97872 corrects a problem of incorrout when query contains
  RANK/DENSE_RANK/ROW_NUMBER and group by expression(s).

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PK97013:

  See PK97013 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK97013 corrects a problem of incorrect output when a UNION
  query its selection list contains only LIT constant and
  AGGREGATE FUNCTION running in parallel.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover

letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PK89663:

  See PK89663 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK89663 corrects a problem of ABEND0C4 RC00000038 AT DSNXGOU2
  +0662 when query contains RANK, DENSE_RANK, ROW_NUMBER and
  indexable IN Subquery predicate.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PK86638:

  See PK86638 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK86638 corrects a problem of ABEND04E RC00E70005 at
  DSNXORLI M999 or DSNXOCON M909 may occur when a query contains
  extremely large record length in the selection list or an
  OUTER JOIN query contains ONLY LIT constant in the selection
  list running in parallel.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PK83922:

  See PK83922 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK83922 corrects a problem of incorrectout or various abends
  for example ABEND04E RC00C90101 DSNIBNRF ERQUAL5007 OR
  ERQUAL5003 WHEN QUERY CONTAINS OUTER JOIN AND RANKING FUNCTIONS.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PK68572:

  See PK69572 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK69572 corrects a problem of ABEND0C7 RC00000000 DSNXVCDF+02E4
  or ABEND04E RC00E70005 DSNXGRDS.DSNXGDTS M111 when a query
  contains ranking functions and set functions with group by.

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To make this fix effective for a static application, it must be
      rebound after application of this PTF. Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
   DB2BIND:
      ***Action for PK67288:

      See PK67288 APAR/PTF text in the PTF cover letter for
      additional information about why a REBIND is necessary.

      PK67288 corrects a problem of incorrectout for query containing
      non-parallel UDF predicate or other non-parallel predicate
      runs in parallel.

      To make this fix effective for a static application, it must be
      rebound after application of this PTF. Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
   DB2BIND:
      ***Action for PK62650:

      See PK62560 APAR/PTF text in the PTF cover letter for
      additional information about why a REBIND is necessary.

      PK62650 corrects a problem of ABEND0C4 RC004 DSNXRSOR +0180
      when a query contains NOT IN subquery predicate under a
      parallel sort group.

      To make this fix effective for a static application, it must be
      rebound after application of this PTF. Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
   DB2BIND:
      See PK57861 APAR/PTF text in the PTF cover letter for
      additional information about why a REBIND is necessary.

      APAR PK57861 corrects a problem that can cause an incorrect
      data in DSN_FILTER_TABLE.

      To make this fix effective for a static application, it must be
      rebound after application of this PTF. Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.

   LISTEND
.

------ COVER LETTER FOR PTF UK56919 ------------

PROBLEM DESCRIPTION(S):
   PM08085 -
      ****
      * USERS AFFECTED: All DB2 9 for z/OS users of the DECFLOAT   *
      *   data type.   *
      ****

```
* PROBLEM DESCRIPTION: An ABEND04E rc00E70005 can occur at      *
*                      location DSNXGDT2 M205 when executing a *
*                      query that satisfies both of the        *
*                      following conditions:                   *
*                                                              *
*                      1. It contains a Table Expression that  *
*                         uses a DECFLOAT data type as an      *
*                         output column.                       *
*                                                              *
*                      2. The DECFLOAT output column is used   *
*                         in an arithmetic expression in the   *
*                         query.                               *
***************************************************************
* RECOMMENDATION:                                              *
***************************************************************
  An ABEND04E rc00E70005 can occur at location DSNXGDT2 M205 when
  executing a query that contains a Table Expression that uses a
  DECFLOAT data type as an output column and the DECFLOAT column
  is part of an arithmetic expression in the query.

  The following example illustrates a simple failing case.

     SELECT SAL + 1
     FROM (SELECT DECFLOAT(10) AS SAL
           FROM SYSIBM.SYSDUMMY1) AS TEMP;

  DB2 is modified to properly process a DECFLOAT data type in a
  table expression and a DECFLOAT result in an arithmetic
  statement to prevent the abend.

  Additional keywords: SQLTABLEEXPR
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM08085
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  DB2BIND:
    ***Action for PM01395:

    See PM01395 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM01395 corrects a problem of SQLCODE404 in DSNXRBND for
    the query using the application encoding CCSID which is
    different from DECP CCSID.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  LISTEND
.


------ COVER LETTER FOR PTF UK56924 ------------
```

```
PROBLEM DESCRIPTION(S):
  PM12479 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS users who run queries    *
    *                 with the FETCH FIRST N ROW ONLY clause where *
    *                 N is larger than 32767.                      *
    ****************************************************************
    * PROBLEM DESCRIPTION: An incorrect result set (fewer rows)    *
    *                 can be returned for a query that             *
    *                 contains the "FETCH FIRST N ROWS ONLY"       *
    *                 clause when N is larger than 32767.          *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    An incorrect result set (fewer rows) can be returned for a query
    that contains the "FETCH FIRST N ROWS ONLY" clause when N is
    larger than 32767.

    The following query represents a failing case.

       SELECT * FROM T1
       ORDER BY 1
       FETCH FIRST 66000 ROWS ONLY;

    The bindtime code in DB2 is modified to correct the condition
    which leads to the incorrect result.

    Additional Keywords: SQLINCORR SQLORDERBY SQLDISTINCT
                         SQLFFNR
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM12479
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  DB2BIND:
    See PM12479 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PM12479 corrects a problem that can cause fewer rows to be
    returned for a query that contains the "FETCH FIRST N ROWS ONLY"
    clause when N is greater then 32767.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  LISTEND
.


------ COVER LETTER FOR PTF UK56992 ------------

PROBLEM DESCRIPTION(S):
  PM07308 -
    ****************************************************************
    * USERS AFFECTED: DB2 9 for z/OS users                        *
```

```
    ****************************************************************
    * PROBLEM DESCRIPTION: Package invalidated due to revoke of    *
    *                      explicitly granted update privilege     *
    *                      from the table owner.                   *
    *                                                              *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    The table owner has been explicitly granted UPDATE privilege
    on the table. Revoke of this explicit grant also revoked the
    implicit UPDATE privilege from the table owner. This resulted
    in packages involving update of the table to be invalidated.

    An internal field to access the catalog was not set up
    correctly, which resulted in the problem.

    This problem can also occur for REFERENCES privilege.

    Code is changed to not revoke the UPDATE and REFERENCES
    privileges that are implicitly granted to the table owner,
    in the above scenario.

    Note:
    The sample query may be used to identify if any table ownership
    grant record is affected because of the problem described in
    PM07308. If found, then the revoked UPDATE and REFERENCES
    privileges need to be explicitly granted with grant option
    to the table owner.

    Note that the sample query is provided "AS IS" for reference
    purposes only. It has not been tested in all environments.

    SAMPLE QUERY:
    SELECT DISTINCT A.GRANTEE, B.CREATOR, B.NAME
      FROM SYSIBM.SYSTABAUTH A, SYSIBM.SYSTABLES B
      WHERE A.GRANTOR = A.GRANTEE AND
            A.GRANTORTYPE = A.GRANTEETYPE AND
            A.TTNAME = B.NAME AND
            B.TYPE = 'T' AND
            (A.UPDATEAUTH = ' ' OR
             A.REFERENCESAUTH = ' ');

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APARS FIXED: PM07308
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  ACTION:
    ***Action for PM07308

    This PTF addresses incorrect revoke of explicitly granted
    UPDATE and REFERENCES privileges from the table owner.
    See PM07308 APAR/PTF text in the PTF cover letter for
    additional information.

  LISTEND
```

.

------ COVER LETTER FOR PTF UK57013 ------------

PROBLEM DESCRIPTION(S):
  PM12074 -
    ****
    * USERS AFFECTED: All users of DB2 who have a host variable   *
    *   or parameter marker in a predicate   *
    *   on a partitioning key column in a query.   *
    ****
    * PROBLEM DESCRIPTION: Incorrect output is possible for a   *
    *   query that has a host variable or   *
    *   parameter marker: *
    *   1. on a predicate that is on a   *
    *   partitioning key column; and   *
    *   2. that predicate is in a leg of   *
    *   an OR predicate, or the host   *
    *   variable/parameter marker is   *
    *   in an IN-list   *
    ****
    * RECOMMENDATION: *
    ****
    Incorrect output is possible for a query containing a host
    variable or parameter marker:
    1. in a predicate on a partitioning key column; and
    2. that predicate is in a leg of an OR predicate that can
       be transformed into a IN-LIST, or the host variable or
       parameter marker is in an IN-list.
    Page range screening is chosen, but the wrong partitions
    can be qualified, leading to incorrect output.

    For example:

      Assume table space is partitioned on (C1, C2, C3).

      SELECT C3 FROM T1
      WHERE C4 = 'AAAA'
      AND (C3 = ? OR C3 =' ');

      SELECT C3 FROM T1
      WHERE C4 = 'BBBB'
      AND C3 IN ('X', ?);

      Both of the queries above could encounter this problem.

    Additional Keywords:
    SQLINCORR INCORROUT SQLIN SQLOR SQLHOSTVAR
    PARAMETERMARKER SQLPMK SQLPMARKER PAGERANGE
    Page range screening is disabled for the specific host
    variable / parameter marker case mentioned above.
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APARS FIXED: PM12074
SPECIAL CONDITIONS:
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DB2BIND:
  ***Action for PM12074:

  See PM12074 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM12074 corrects a problem of possible incorrect output when
  host variables or parameter markers are used in a situation
  where the following are true:
  1. A predicate with a host variable/parameter marker is on
     a partitioning key column; and
  2. That predicate is in a leg of an OR predicate that can
     be transformed to an IN-list, or the host variable/parameter
     marker is in an IN-list.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PK77559:

  See PK77559 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK77559 corrects a problem of incorrect output when executing
  a query that contains a predicate comparison between a
  variable-length string column (VARCHAR, VARGRAPHIC, etc.) and
  a literal value.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PK76364 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  PK76364 corrects an incorrect output problem that may occur
  for queries containing BETWEEN predicates and a descending
  index defined on a partitioned table space.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.

  LISTEND
.

------ COVER LETTER FOR PTF UK57022 ------------

PROBLEM DESCRIPTION(S):
  PM06100 –

```
****************************************************************
* USERS AFFECTED: All DB2 9 for z/OS users of NEXT VALUE and   *
*                 PREVIOUS VALUE sequence references           *
****************************************************************
* PROBLEM DESCRIPTION: A CICS-DB2 thread that uses NEXTVAL or  *
*                      PREVAL sequence references is not       *
*                      released at SYNCPOINT / COMMIT , but is *
*                      instead held and no DB2 transaction     *
*                      accounting record is later generated    *
*                      following the SYNCPOINT / COMMIT         *
****************************************************************
* RECOMMENDATION:                                              *
****************************************************************
```

A CICS-DB2 thread that uses SQL sequence references NEXT VALUE
(NEXTVAL) or PREVIOUS VALUE (PREVAL) is not released at
SYNCPOINT (COMMIT) , but is instead held and no DB2 transaction
accounting record is later generated following SYNCPOINT/COMMIT.
                                                              .

This is expected and designed behavior for DB2 threads using
NEXTVAL and PREVAL sequence references, because DB2 considered
NEXTVAL and PREVAL references similar to an OPEN WITH HOLD
cursor. That is, in order to ensure that a transaction's
NEXTVAL and PREVAL reference values persist past a SYNCPOINT/
COMMIT as in the following example, the CICS-DB2 thread is held
(Trans1 is CICS transaction):
                                                              .

  Trans1: EXEC SQL statement with NEXTVAL sequence reference
                                                              .

  Trans1: EXEC CICS SYNCPOINT (COMMIT)
  (DB2 thread is not released, so no DB2 trans accounting rec
   is later generated)
                                                              .

  Trans1: EXEC SQL statement with PREVAL seq reference succeeds
                                                              .

  Trans1: EXEC CICS SYNCPOINT (COMMIT)
  (DB2 thread is not released, so no DB2 trans accounting rec
   is later generated)
                                                              .

  Trans1: EXEC SQL statement with PREVAL seq reference succeeds
                                                              .

Therefore, each PREVAL reference in the scenario above uses
the sequence value established by the NEXTVAL reference that is
specified prior to the SYNCPOINT/COMMIT, and as expected
for CICS-DB2 held threads, no DB2 transaction accounting rec is
later generated following SYNCPOINT/COMMIT. This behavior is
what is meant by the statement
  "The value is unaffected by COMMIT or ROLLBACK statements
   for local applications."
in the DB2 SQL Reference discussion of "Sequence reference"
under sub-topic "Scope of PREVIOUS VALUE".
                                                              .

However, after receiving customer feedback that their usage of
NEXTVAL and PREVAL does not require value persistence across
a SYNCPOINT/COMMIT (i.e. the scenario described above is not
typical usage of NEXTVAL + PREVAL), and that both DB2 thread
release and DB2 transaction accounting records later generated

following SYNCPOINT/COMMIT are the preferred behavior,
IBM DB2 Development has decided to change the default scope
behavior of NEXTVAL and PREVAL and "not" consider usage of these
references similar to an OPEN WITH HOLD cursor. So with this
APAR applied, usage of NEXTVAL and PREVAL will no longer prevent
the release of the DB2 thread. As a result, DB2 transaction
accounting records will now be later generated following
SYNCPOINT/COMMIT for such CICS-DB2 transactions, and NEXTVAL and
PREVAL reference values will no longer persist across SYNCPOINT
or COMMIT if a re-signon occurs for that CICS-DB2 thread.
Existing SQLCODE -845 may now be received on a PREVAL reference
that follows the SYNCPOINT/COMMIT, if a thread re-signon occurs
as in the following example (Trans1 is CICS transaction):
                                                             .
  Trans1: EXEC SQL statement with NEXTVAL seq reference
                                                             .
  Trans1: EXEC CICS SYNCPOINT (COMMIT)
    - The CICS-DB2 thread is released, so DB2 transaction
      accounting record is later generated
                                                             .
  (A re-signon for this CICS-DB2 thread occurs here)
                                                             .
  Trans1: EXEC SQL statement with PREVAL seq reference FAILS
   >> SQLCODE -845 occurs for this PREVAL reference in Trans1
      because either this CICS-DB2 thread was re-initialized on
      re-signon or Trans1 is now on a different CICS-DB2 thread
      than before SYNCPOINT. Trans1 assumes the same thread or
      same state is used and also that the NEXTVAL sequence
      value persists. However, there is no longer a previous
      NEXTVAL sequence reference, so this PREVAL reference
      receives SQLCODE -845

                                                             .
Note that both the DB2 thread hold behavior for NEXTVAL /
PREVAL usage and the changes described for this APAR are also
applicable to RRSAF-DB2 transactions. However, in the RRSAF
case the existing behavior resulted in a failed RRSAF re-signon
attempt after COMMIT so that the RRSAF-DB2 thread is held,
allowing the RRSAF transaction's NEXTVAL and PREVAL references
to persist across COMMIT (Trans2 is RRSAF-DB2 transaction):
                                                             .
  Trans2: EXEC SQL statement with NEXTVAL sequence reference
                                                             .
  Trans2: COMMIT
                                                             .
  (RRSAF re-signon attempt for this DB2 thread occurs and fails,
   and Trans2 continues on this same DB2 thread)
                                                             .
  Trans2: EXEC SQL statement with PREVAL seq reference succeeds
                                                             .
  Trans2: COMMIT
                                                             .
  (RRSAF re-signon attempt for this DB2 thread occurs and fails,
   and Trans2 continues on this same DB2 thread)
                                                             .
  Trans2: EXEC SQL statement with PREVAL seq reference succeeds

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The new behavior for this RRSAF-DB2 transcation scenario will be
as follows, where the RRSAF re-signon attempt succeeds but
the PREVAL sequence reference now fails with SQLCODE -845:

.

  Trans2: EXEC SQL statement with NEXTVAL sequence reference

.

  Trans2: COMMIT

.

  (RRSAF re-signon for this DB2 thread occurs here and SUCCEEDS)

.

  Trans2: EXEC SQL statement with PREVAL seq reference FAILS
   >> SQLCODE -845 occurs for this PREVAL reference in Trans2
      because either this RRSAF-DB2 thread was re-initialized on
      re-signon or Trans2 is now on a different RRSAF-DB2 thread
      than before COMMIT. Trans1 assumes the same thread or same
      state is used and also that the NEXTVAL sequence value
      persists, however, there is no longer a previous NEXTVAL
      sequence reference, so this PREVAL reference receives
      SQLCODE -845

.

However, as described below under 'DB2 SQL Reference update',
there are application changes that can prevent release of
these DB2 threads that use NEXTVAL and PREVAL, so that
the sequence reference values persist across the SYNCPOINT or
COMMIT. In addition, this apar also provides a new DB2 system
parameter, PREVALKEEP, that can be used to keep the previous
behavior whereby these DB2 threads are held.
Note that the new system parameter / zparm will no longer be
supported in future DB2 versions after DB2 9, and that
the application-level changes described below would then be
required to maintain that "hold thread" behavior for DB2
threads that use NEXTVAL and PREVAL references. Details of
the new system parameter PREVALKEEP are provided later below
after the 'DB2 SQL Reference update' description.

.

Additional search keywords: SQLCODE845 RRSAF RRS RESIGNON

.

Note:
Why does this APAR contain a V8 change?
Please note that although this is a DB2 V9 APAR, it does include
a small change to DB2 V8.
This APAR updates DSNADMIZ, the external module for the stored
procedure SYSPROC.ADMIN_INFO_SYSPARM in both DB2 V8 and V9,
so that it can report the setting for the new PREVALKEEP
parameter. In DB2 data sharing, a SYSPROC.ADMIN_INFO_SYSPARM
connection on any member of the group can query the subsystem,
DECP, and certain IRLM parameter settings of any other member
of that group. In order to support V9 data sharing coexistence
mode, the V8 SYSPROC.ADMIN_INFO_SYSPARM must recognize the new
subsystem parameter PREVALKEEP.

.

==

DB2 9 SQL Reference update for topic "Sequence reference"
                                                                   .
The following is the modified discussion of subtopic
"Scope of PREVIOUS VALUE" under "Sequence reference" --
                                                                   .
  Scope of NEXT VALUE and PREVIOUS VALUE: The value of PREVIOUS
  VALUE cannot be directly set and is a result of executing
  the NEXT VALUE expression for the sequence. The value of
  PREVIOUS VALUE persists until the next value is generated for
  the sequence in the current session, the sequence is dropped
  or altered, or the application session ends.
                                                                   .
  The value for the sequence cannot persist across a COMMIT or
  ROLLBACK for a local or remote application if, after
  the COMMIT or ROLLBACK, the DB2 application thread or server
  thread is either assigned to another user or DB2 connection
  or is re-initialized because some form of thread reuse,
  re-signon, or connection pooling is in effect.
  For example, this can occur for DB2-CICS or RRSAF applications
  and for client applications or middleware products that save
  the state of a session and then restore that state of
  the session for subsequent processing, because they are not
  able to restore the NEXT or PREVIOUS VALUES for a sequence.
  In these situations, the availability of the value for
  a sequence should only be relied on until the end of
  the transaction. Examples of where this type of situation can
  occur include applications that do the following:
   - issue an EXEC CICS SYNCPOINT
   - use XA protocols
   - use connection pooling
   - use the connection concentrator
   - use Sysplex workload balancing
   - connect to a z/OS server that uses DDF inactive threads
                                                                   .
  When there is a need to preserve the value that is associated
  with NEXT VALUE or PREVIOUS VALUE expressions across
  transaction boundaries for local or distributed applications
  that are subject to thread reuse, re-signon, or connection
  pooling, take one of the following actions to prevent the
  local or server thread from re-signon, being reused by
  a different user, or from being pooled:
   - Define at least one cursor as WITH HOLD and leave it
     as OPEN.
   - Specify the bind option KEEPDYNAMIC(YES).
   - For users of local DB2 threads, set the DB2 system
     parameter PREVALKEEP=YES (the default value is NO).
     Note that the system parameter PREVALKEEP is deprecated
     and will not be supported in a DB2 version after DB2 9,
     and only the previous two application alternatives will
     be available.
                                                                   .
==
Documentation for new DB2 system parameter PREVALKEEP
                                                                   .
Note: Customers who receive return code 8 and message "ASMA939U
      Unable to load external function module - DSNTIXL" when

                              32

applying this PTF need to refer to Info APAR II13979.
                                                                        .
This PTF adds a new DB2 9 subsystem parameter, PREVALKEEP, that
specifies whether for DB2-CICS or RRSAF transactions that use
SQL sequence references NEXT VALUE (NEXTVAL) or PREVIOUS VALUE
(PREVAL), the DB2 thread should not be released after SYNCPOINT
or COMMIT has occurred following usage of a NEXTVAL or PREVAL
reference. If the DB2 thread is not released, then the CICS or
RRSAF transaction's NEXTVAL or PREVAL reference can persist past
the SYNCPOINT or COMMIT.
                                                                        .
Valid settings for new parameter PREVALKEEP are:
 - YES: The DB2 thread should not be released after a SYNCPOINT
        or COMMIT when a transaction has used the SQL sequence
        references NEXTVAL or PREVAL.
        The transaction's previous NEXTVAL or PREVAL references
        will persist past the SYNCPOINT or COMMIT.
 - NO: The DB2 thread should be released after a SYNCPOINT or
        COMMIT when a transaction has used the SQL sequence
        references NEXTVAL or PREVAL.
        If a re-signon occurs, any NEXTVAL or PREVAL reference
        previously used by the transaction will not persist
        past the SYNCPOINT or COMMIT.
The default PREVALKEEP setting is NO.
                                                                        .
Given the default PREVALKEEP setting is NO, after application
of this PTF a CICS or RRSAF transaction using NEXTVAL or PREVAL
references that are expected to persist past SYNCPOINT or COMMIT
may now receive
                *** SQLCODE -845 ***
for a PREVAL reference, if thread re-signon occurs after
the SYNCPOINT/COMMIT and the transaction uses a PREVAL reference
following that SYNCPOINT/COMMIT. To avoid the SQLCODE -845 for
that PREVAL reference, either follow the instructions below to
change subsystem parameter PREVALKEEP to YES, or see the DB2 SQL
Reference updates above for application-level alternatives.
Note that parameter PREVALKEEP is considered deprecated and
will not be supported by future DB2 versions after DB2 9 , and
then only application-level alternatives such as those described
above in the DB2 SQL Reference may be used.
                                                                        .
If you have already installed or migrated to DB2 9, you need
to take the following actions after applying this PTF:
(1) Update your DB2 subsystem parameter (DSNZPxxx) modules:
    -> This action is optional if you use the default setting
    -> of PREVALKEEP=NO -- in that case re-assemble and
    -> re-linkedit of the subsystem parameter / zparm module is
    -> not necessary
    * Add the keyword parameter
        PREVALKEEP=<n>,
      where <n> is either NO or YES to the
      invocation of the DSN6SPRM macro in your customized
      version of the installation job DSNTIJUZ. Make sure to
      add a continuation character in column 72 if needed.
      If you omit adding PREVALKEEP here, the value will be
      set to the default of NO when you assemble the DSNZPxxx

```
            * Run the first two steps of the DSNTIJUZ job you modified,
            * After the job completes, you must either use the SET
              SYSPARM command or stop and start DB2 for the change to
              take effect.
      (2) This PTF adds an entry for PREVALKEEP=NO to the CLIST
          default input member, DSNTIDXA, in the SDSNSAMP target
          library.  You need to add this entry to all private copies
          of your CLIST output (DSNTIDxx) member.  In each such copy,
          add the following line:
                                                                    .
  PREVALKEEP CHAR  M  NO           YES            NO
                                                                    .
      Change the second occurrence of NO to YES if you specified
      PREVALKEEP=YES in step (1), above.

      (3) Update customized copies of DB2 installation CLIST member
          DSNTINST:
          This PTF modifies CLIST member DSNTINST in the SDSNCLST
          target library only.  You need to redo any record format
          changes and reapply any tailoring you have done to your
          copies of this CLIST.  You may also want to move it to the
          prefix.NEW.SDSNCLST data set, where the CLISTs processed by
          job DSNTIJVC reside.
                                                                    .
                                                                    .
      Apply PTF and review APAR/PTF closing text to see if additional
      action is required for your applications that use SQL sequence
      references NEXT VALUE and PREVIOUS VALUE .
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM06100
SPECIAL CONDITIONS:
   COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
   ACTION:
    ***Action for PM06100:
                                                                    .
    Note: Customers who receive return code 8 and message "ASMA939U
          Unable to load external function module - DSNTIXL" when
          applying this PTF need to refer to Info APAR II13979.
                                                                    .
    This PTF adds a new DB2 9 subsystem parameter, PREVALKEEP, that
    specifies whether for DB2-CICS or RRSAF transactions that use
    SQL sequence references NEXT VALUE (NEXTVAL) or PREVIOUS VALUE
    (PREVAL), the DB2 thread should not be released after SYNCPOINT
    or COMMIT has occurred following usage of a NEXTVAL or PREVAL
    reference. If the DB2 thread is not released, then the CICS or
    RRSAF transaction's NEXTVAL or PREVAL reference can persist past
    the SYNCPOINT or COMMIT.
                                                                    .
    Valid settings for new parameter PREVALKEEP are:
     - YES: The DB2 thread should not be released after a SYNCPOINT
            or COMMIT when a transaction has used the SQL sequence
            references NEXTVAL or PREVAL.
            The transaction's previous NEXTVAL or PREVAL references
            will persist past the SYNCPOINT or COMMIT.
     - NO:  The DB2 thread should be released after a SYNCPOINT or
```

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COMMIT when a transaction has used the SQL sequence
                    references NEXTVAL or PREVAL.
                    If a re-signon occurs, any NEXTVAL or PREVAL reference
                    previously used by the transaction will not persist
                    past the SYNCPOINT or COMMIT.
The default PREVALKEEP setting is NO.
                                                                        .

Given the default PREVALKEEP setting is NO, after application
of this PTF a CICS or RRSAF transaction using NEXTVAL or PREVAL
references that are expected to persist past SYNCPOINT or COMMIT
may now receive
                    *** SQLCODE -845 ***
for a PREVAL reference, if thread re-signon occurs after
the SYNCPOINT/COMMIT and the transaction uses a PREVAL reference
following that SYNCPOINT/COMMIT. To avoid the SQLCODE -845 for
that PREVAL reference, either follow the instructions below to
change subsystem parameter PREVALKEEP to YES, or see the DB2 SQL
Reference updates above for application-level alternatives.
Note that parameter PREVALKEEP is considered deprecated and
will not be supported by future DB2 versions after DB2 9 , and
then only application-level alternatives such as those described
in the APAR/PTF closing text may be used.
Please see the APAR/PTF closing text for more details.
                                                                        .

If you have already installed or migrated to DB2 9, you need
to take the following actions after applying this PTF:
(1) Update your DB2 subsystem parameter (DSNZPxxx) modules:
    -> This action is optional if you use the default setting
    -> of PREVALKEEP=NO -- in that case re-assemble and
    -> re-linkedit of the subsystem parameter / zparm module is
    -> not necessary
    * Add the keyword parameter
        PREVALKEEP=<n>,
      where <n> is either NO or YES to the
      invocation of the DSN6SPRM macro in your customized
      version of the installation job DSNTIJUZ. Make sure to
      add a continuation character in column 72 if needed.
      If you omit adding PREVALKEEP here, the value will be
      set to the default of NO when you assemble the DSNZPxxx
    * Run the first two steps of the DSNTIJUZ job you modified,
    * After the job completes, you must either use the SET
      SYSPARM command or stop and start DB2 for the change to
      take effect.
(2) This PTF adds an entry for PREVALKEEP=NO to the CLIST
    default input member, DSNTIDXA, in the SDSNSAMP target
    library. You need to add this entry to all private copies
    of your CLIST output (DSNTIDxx) member. In each such copy,
    add the following line:
                                                                        .

PREVALKEEP CHAR M NO   YES   NO
                                                                        .

    Change the second occurrence of NO to YES if you specified
    PREVALKEEP=YES in step (1), above.
                                                                        .

(3) Update customized copies of DB2 installation CLIST member
    DSNTINST:

This PTF modifies CLIST member DSNTINST in the SDSNCLST
target library only. You need to redo any record format
changes and reapply any tailoring you have done to your
copies of this CLIST. You may also want to move it to the
prefix.NEW.SDSNCLST data set, where the CLISTs processed by
job DSNTIJVC reside.

.

    LISTEND

.

------ COVER LETTER FOR PTF UK57221 ------------

PROBLEM DESCRIPTION(S):
  PM10823 -
      ****
      * USERS AFFECTED: All DB2 z/OS users whose SQL contains   *
      *   an UPDATE or DELETE statement.   *
      ****
      * PROBLEM DESCRIPTION: The cost of non-clustering data I/O   *
      *   of an index can be overestimated for   *
      *   the UPDATE or DELETE statement, which   *
      *   may result in an inefficient access   *
      *   path.   *
      ****
      * RECOMMENDATION: *
      ****
      The non-clustering data I/O cost of an index can be
      overestimated for UPDATE or DELETE statements, and such
      inaccurate I/O cost may result in an inefficient access path.

      Additional Keywords:
      SQLUPDATE SQLDELETE SQLACCESSPATH SQLPERFORMANCE
      Code is changed to correct the I/O cost estimation
      for the situation described above. DB2 will have a better
      chance to choose more efficient access paths for these
      types of queries. As with any change to DB2 query
      optimization that can drive a different access path,
      there is some risk of query performance regression.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM10823
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM10823:

    See PM10823 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM10823 corrects a problem of overestimated non-clustering
    data I/O cost for an UPDATE or DELETE statement that may result
    in an inefficient access path.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover

letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM07281:

  See PM07281 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM07281 corrects a problem where an undesirable list prefetch
  access path may be chosen.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PM06395 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  PM06395 corrects a problem where incorrect output can happen
  when a star join query uses a DPSI on the fact table, and the
  fact table is in a partitioned table space with only one
  partition.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PK89206 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  PK89206 encourages List Prefetch for a poorly clustered index
  that could provide efficient access using a limited partition
  scan (or Page Range access).

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PK82783 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK82783 corrects a problem where list prefetch cost is
  overestimated when an index access is very selective. This APAR
  helps DB2 to pick the desirable list prefetch plan.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.

  LISTEND
  .

```
------ COVER LETTER FOR PTF UK57222 ------------

PROBLEM DESCRIPTION(S):
  PM11611 -
    ****************************************************************
    * USERS AFFECTED: DB2 users who use foreign key constraints   *
    *                 for a table and have index on expression    *
    *                 on the table.                               *
    ****************************************************************
    * PROBLEM DESCRIPTION: Incorrout in DML that involves         *
    *                      foriegn key constraints.              *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    An index on expression can be incorrectly used as an index on
    a foreign key. Therefore, for any delete RI operation from a
    parent to a child table, the operation can be carried
    out incorrectly.

    For example:
    1. In parent table, CUSTOMER_ID is a primary key and parent key.

    2. In child table, ORDER_CUSTOMER_ID is a foreign key
       reference(CUSTOMER_ID).

    3. Creat an extended index on child table with the following:
       CREATE INDEX IX_ORDERLINE ON TB_ORDERLINE
       (ORDER_CUSTOMER_ID - ORDER_CUSTOMER_ID/100);

    4. Now index IX_ORDERLINE would be incorrectly used
       as the index on child table and matches the foreign key.

    The code error is corrected and now an index on expression
    cannot be used for a foreign key index.

    Applying this PTF will not fix extended indexes that are
    already incorrectly used for a foreign key constraint.

    After applying this PTF, drop and recreate all the foreign
    keys on all tables that have extended indexes to make sure
    that no extended index is used for a foreign key
    constraint.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM11611
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    This APAR changes DB2 so that index on expression will not be
    used as an index on a foreign key.

    Applying this PTF will not fix extended indexes that are
    already incorrectly used for a foreign key constraint.

    After applying this PTF, drop and recreate all the foreign
```

```
      keys on all tables that have extended indexes to make sure
      that no extended index is used for a foreign key
      constraint.
    LISTEND
.
```

------ COVER LETTER FOR PTF UK57323 ------------

PROBLEM DESCRIPTION(S):
  PM05664 -
```
    ****************************************************************
    * USERS AFFECTED: DB2 9 users that use the XMLTABLE           *
    *                 function.                                   *
    ****************************************************************
    * PROBLEM DESCRIPTION: (1) The performance of joining         *
    *                      the XMLTABLE function with             *
    *                      another table needs to be              *
    *                      improved.                              *
    *                      (2) If a query refers to the           *
    *                      output column of an XMLTABLE           *
    *                      function in a subquery, it could       *
    *                      return incorrect output.               *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
```
    The first problem is illustrated in the following example.
    Assume that there is a unique index on T1.C1 and a
    unique index on T1.C2 also. The following two queries are
    almost the same except the last predicate.
    Also assume that the input XML has many b elements under
    element a and the values of c are distinct within the
    document. The second query runs much faster than the first
    one. The reason is that DB2 generates X.C=10 via
    transitive closure for the second query and pushes it into
     the XMLTABLE function and filters b elements earlier.
    But DB2 is not able to generate a local predicate for
    the XMLTABLE function in the first query; hence no
    predicate is pushed into the XMLTABLE function because
    DB2 did not support join predicate push down for this
    case.

```
    (1) SELECT *
        FROM T1, XMLTABLE('/a/b' passing :xmlhv
              COLUMNS c   int path 'c',
                      d   varchar(10) path 'd',
                      e   varchar(20) path 'g/e') X
        WHERE T1.C1 = X.C
        AND   T1.C2 = 10;

    (2) SELECT *
        FROM T1, XMLTABLE('/a/b' passing :xmlhv
              COLUMNS c   int path 'c',
                      d   varchar(10) path 'd',
                      e   varchar(20) path 'g/e') X
        WHERE T1.C1 = X.C
```

```
      AND   T1.C1 = 10;
```

The second problem is that a query could return an incorrect
result if it satisfies the following conditions:
 (a) it has a subquery under an OR predicate or NOT predicate
 (b) the subquery has a predicate that refers to the
      output column of an XMLTABLE function in the parent of
      the subquery but not to columns from the subquery.
The following is an example query that could return an
incorrect result.

```
    SELECT *
    FROM XMLTABLE('/a/b' passing :xmlhv
          COLUMNS c   int path 'c',
                  d   varchar(10) path 'd',
                  e   varchar(20) path 'g/e') X
    WHERE NOT EXISTS
          ( SELECT 1
            FROM T1
            WHERE T1.C1 = 1
              AND X.C = 2);
```

DB2 is enhanced to push join predicates into the XMLTABLE
function under the following conditions:
(1) DB2 chooses nested loop join between XMLTABLE and the
other table and XMLTABLE is the inner table;
(2) The join predicate satisfies all the conditions
documented in the Performance Monitoring and Tuning Guide for
local predicates; and
(3) This APAR also adds a new system parameter XMLTABJPD.
 For this enhancement, users need to explicitly set it
to YES to enable the enhancement.

DB2 is changed so it will not push predicates from a subquery
to an XMLTABLE function outside of the subquery.

The code change in DB2 V8 has no effect.

Additional keywords: SQLXMLTABLE SQLPUSHDOWN SQLSUBQUERY
        XMLINCORR
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM05664
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM11955:

    See PM11955 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM11955 corrects a problem of possible incorrect output when
    concurrent threads are using the same table, and at least one
    thread involves an INSTEAD OF trigger.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be

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affected by this change.
DB2BIND:
   See PM05664 APAR/PTF text for additional information about
   why a REBIND is necessary.

   PM05664 improves the performance of queries that join the
   XMLTABLE function with other tables, and also fixes a
   problem of incorrect output when a query has the XMLTABLE
   function whose column is referenced in a subquery.

   To make the performance enhancement effective for a static
   application, it must be rebound after application of this
   PTF and set the new zparm to YES. The zparm has no impact
   on the fix of the incorrect output. To make this fix of
   incorrect output effective for a static application, it
   just needs to be rebound after application of this PTF.
ACTION:
   ***Action for PM05664:
   PM05664 improves the performance of queries that join
   the XMLTABLE function with other tables by pushing join
   predicates into the XMLTABLE function.
   To enable this enhancement, the system parameter
   (or ZPARM) XMLTABJPD needs to be set to YES.
LISTEND
.

------ COVER LETTER FOR PTF UK57388 ------------

PROBLEM DESCRIPTION(S):
   PK90032 -
      ****
      * USERS AFFECTED: DB2 R910 Users of DSN_XMLVALIDATE.   *
      ****
      * PROBLEM DESCRIPTION: Current DB2 9 for z/OS user-defined   *
      *   function DSN_XMLVALIDATE cannot   *
      *   validate an XML document larger than *
      *   50M bytes. Currently, the XML parser *
      *   process invoked through XML validation *
      *   does not take advantage of IBM   *
      *   Specialty Engines (zIIP or zAAP).   *
      ****
      * RECOMMENDATION: *
      ****
      The current DSN_XMLVALIDATE user-defined function is
      implemented as a C stored procedure executing in the WLM
      address space. This limits the size of the XML document to be
      validated to 50M bytes. Also, the XML parser process invoked
      through XML validation does not take advantage of IBM
      Specialty Engines (zIIP or zAAP).

      To support validation of XML documents larger than 50M bytes
      and take advantage of IBM Specialty Engines (zIIP or zAAP),
      the validation function needs to be enhanced.

      DB2 is modified to add a new SQL scalar function,

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```
      SYSIBM.DSN_XMLVALIDATE using z/OS XMLSS
      which can validate up to a maximum length of 2G-1
      bytes, depending on system resources,
      and at the same time take advantage of IBM
      Specialty Engines (zIIP or zAAP).
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APARS FIXED: PK90032
SPECIAL CONDITIONS:
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  DB2BIND:
    See PK98479 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PK98479 corrects the problem of allowing insertion of NULL
    into the DB2_GENERATED_DOCID_FOR_XML column.

    To make this fix effective for a static application, it must be
    rebound on V9 after application of this PTF.  Review the PTF
    cover letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PK86766:

    See PK86766 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PK86766 corrects a problem of incorrect nullability for some
    built-in scalar functions when they are used in a query with
    outer joins.
    The functions are:
    GETHINT
    ENCRYPT
    ENCRYPT_TDES
    DECRYPT_CHAR
    DECRYPT_DB
    DECRYPT_BIT
    DECRYPT_BINARY
    BIGINT
    BINARY
    VARBINARY
    DECFLOAT
    NORMALIZE_DECFLOAT
    DECFLOAT_SORTKEY
    TOTALORDERNARY
    QUANTIZE
    COMPARE_DECFLOAT

    An example of a problem query:
    SELECT T2X.C2X
    FROM  T1 LEFT OUTER JOIN
          (SELECT C1,BIGINT(C2) AS C2X FROM T2) T2X
    ON T2X.C1 = T1.C1
    when T2.C2 is defined as NOT NULL.

    T2X.C2X based on the expression 'BIGINT(C2)' should be
```

nullable after left outer join operation but DB2
miscalculated its nullability to NOT NULL.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
MULTSYS:
  PK90032 is a pre-conditioning APAR that includes changes to
  support validation of an XML document larger than 50M bytes.
  A new SQL scalar function, DSN_XMLVALIDATE will be added.
  The new function can validate up to a maximum length of
  2G-1 bytes of XML data, depending on system resources.

  PK90040 is the enabling APAR.

  At this time, all of the changes are transparent to the user.
  In a data sharing group, this pre-conditioning APAR should be
  applied to all members before the enabling APAR PK90040
  is applied to any member. The new SQL scalar function,
  DSN_XMLVALIDATE as aforementioned is not enabled until
  the enabling APAR PK90040 is applied.
ACTION:
  ***Action for PK86766:

  See PK86766 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK86766 corrects a problem of incorrect nullability for some
  built-in scalar functions when they are used in a query with
  outer joins.
  The functions are:
  GETHINT
  ENCRYPT
  ENCRYPT_TDES
  DECRYPT_CHAR
  DECRYPT_DB
  DECRYPT_BIT
  DECRYPT_BINARY
  BIGINT
  BINARY
  VARBINARY
  DECFLOAT
  NORMALIZE_DECFLOAT
  DECFLOAT_SORTKEY
  TOTALORDERNARY
  QUANTIZE
  COMPARE_DECFLOAT

  An example of a problem query:
  SELECT T2X.C2X
  FROM T1 LEFT OUTER JOIN
        (SELECT C1,BIGINT(C2) AS C2X FROM T2) T2X
  ON T2X.C1 = T1.C1
  when T2.C2 is defined as NOT NULL.

T2X.C2X based on the expression 'BIGINT(C2)' should be
         nullable after left outer join operation but DB2
         miscalculated its nullability to NOT NULL.

         To make the fix effective for a native SQL PL, ALTER PROCEDURE
         REGENERATE statement can be used to regenerate the SQL PL.

         If the DSNTIAUL sample program is used correctly to generate a
         LOAD utility control statement, then after application of this
         PTF, the new control statement generated may not match the
         nullability of the column based on the functions from the
         previous control statement. Proper action should be taken if
         such mismatch is observed.

         This PTF may affect the nullability of a column based on the
         built-in scalar functions returned by dynamic SQL processing
         programs, such as SPUFI, DSNTEP2, and DSNTEP4. Proper actions
         should be taken if such change is observed.
      LISTEND
.

      ------ COVER LETTER FOR PTF UK57464 ------------

PROBLEM DESCRIPTION(S):
  PK87280 -
      ****
      * USERS AFFECTED: All DB2 users.   *
      ****
      * PROBLEM DESCRIPTION: Existing version 8 and 9 early code   *
      *   is not compatible with version 10   *
      *   base code. Toleration code needs to be *
      *   added to ensure version 8 and version *
      *   9 early code can be run with a   *
      *   version 10 DB2 subsystem.   *
      *   *
      *   Without this apar applied, an   *
      *   ABEND0C4 in CSECT DSNWSDWA may   *
      *   be encountered when record services   *
      *   are invoked from CSECT DSNAPRHX.   *
      ****
      * RECOMMENDATION: *
      ****
      Compatibility code needs to be added to version 8 and 9 early
      code to function properly with DB2 version 10 subsystems.
      Version 10 compatibility code is contained in this APAR.
COMPONENT: 5740-XYR01-HIZ9910
APARS FIXED: PK87280
SPECIAL CONDITIONS:
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  ACTION:
      If DB2 version 10 is running with version 9 early code, APAR
      PK87280 must be installed.

      The on-line "early" code installation procedure does not

```
      require an MVS IPL. If however an MVS IPL is done for other
      reasons, then this procedure is unnecessary. After applying
      this PTF, enter these commands on an MVS console:

          MODIFY LLA,REFRESH
          -STOP DB2   ... (only if the DB2 subsystem is started)
          -REFRESH DB2,EARLY
          -START DB2,PARM=...
   ACTION:
     In order for this PTF to be fully effective, an IPL or
     REFRESH DB2,EARLY is required.  The DB2 member should be
     stopped before issuing the REFRESH DB2, EARLY command.
   ACTION:
     In order for this PTF to be fully effective, an IPL or
     REFRESH DB2,EARLY is required.  The DB2 member should be
     stopped before issuing the REFRESH DB2, EARLY command.
   ACTION:
     In order for this PTF to be fully effective, an IPL or
     REFRESH DB2,EARLY is required.  The DB2 member should be
     stopped before issuing the REFRESH DB2, EARLY command.
   ACTION:
     This APAR updates module DSN3RRSX in the DB2 V9 ERLY code.
     If you are using the ERLY code from DB2 V9 then you must
     either re-IPL z/OS after installing this fix, or use the
     DB2 REFRESH command.  However, if you are using the ERLY
     code from DB2 V8 then there is no need to re-IPL z/OS or
     use the REFRESH command after installing this fix.

     The procedure to use the REFRESH command is:

         -STOP DB2
         -REFRESH DB2,EARLY
         -START DB2,...

     Note that you must use the correct subsystem recognition
     character, a "-" in this example.  Additionally, you must
     use this procedure for each DB2 subsystem that uses the
     DB2 V9 ERLY code.
   LISTEND
.


------ COVER LETTER FOR PTF UK57515 ------------

PROBLEM DESCRIPTION(S):
  PM08112 -
     *****************************************************************
     * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS       *
     *                 utility users of LOAD FORMAT DELIMITED       *
     *****************************************************************
     * PROBLEM DESCRIPTION: LOAD FORMAT DELIMITED of a NOT NULL     *
     *                      column with valid x'FF' data results    *
     *                      in MSGDSNU334I and the row is           *
     *                      discarded                               *
     *****************************************************************
     * RECOMMENDATION: Apply corrective PTF when available          *
```

```
      ****************************************************************
      LOAD FORMAT DELIMITED attempted to load a valid value of x'FF'
      into a column defined as NOT NULL.  LOAD code interpreted this
      value as a NULL value and, as such, issued MSGDSNU334I - INPUT
      FIELD column_name INVALID FOR creator.tablename, ERROR CODE 26
      - NULL VALUE SUPPLIED FOR NOT NULL and discarded the row.

      As x'FF' can be a valid column data value, LOAD FORMAT
      DELIMITED needs to allow this.
      LOAD FORMAT DELIMITED code has been changed to differentiate
      between a NULL value and a value of x'FF' being loaded.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM08112
SPECIAL CONDITIONS:
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  ACTION:
    The PTF for APAR PM08112 has modified CSECTs in both the
    DSNUT910 and DSNUTILA load modules, affecting the
    utility batch and DB2 DBM1 address spaces.  After the PTF has
    been applied, it will become active in the utility batch address
    space immediately upon job submission, while it will not take
    effect in the DB2 DBM1 address space until DB2 is stopped and
    started.

    The PTF does not have to be applied to all members in a data
    sharing environment simultaneously, and may be staged across
    each member.  However, until the fix is active in both the
    utility batch and DB2 DBM1 address spaces, the problem the PTF
    addresses will not be resolved.
  LISTEND
.


------ COVER LETTER FOR PTF UK57530 ------------

PROBLEM DESCRIPTION(S):
  PM07620 -
    ****************************************************************
    * USERS AFFECTED: All DB2 R910 users who use                  *
    *                 outer join and a view that contains         *
    *                 UNION  ALL                                  *
    ****************************************************************
    * PROBLEM DESCRIPTION: This apar fixed the following          *
    *                 problems:                                   *
    *                 1. Incorrect output or                      *
    *                    ABEND RC00C90101 DSNIZMOS 5016           *
    *                    may occur for an SQL statement           *
    *                    that contains left outer join           *
    *                    and a view which contains               *
    *                    UNION ALL                               *
    *                                                            *
    *                 2. ABND0C7 DSNXROHB+26E4 may occur          *
    *                    for an SQL statement that contains       *
    *                    full outer join and a view which        *
    *                    contains UNION ALL                      *
```

```
*                                                              *
*                                                              *
****************************************************************
* RECOMMENDATION:                                              *
****************************************************************
This apar fixed the following problems:
1. Incorrect output or ABEND RC00C90101 DSNIZMOS 5016
may occur for an SQL statement that contains left outer join
and views. The view has to satisfy the following conditions:
2. ABND0C7 DSNXROHB+26E4 may occur for an SQL statement that
contains full outer join and views.

The view has to satisfy the following conditions:
a. The view contains UNION/UNION ALL
b. The select list of one leg of the UNION/UNION ALL is
nullable and the other is not null.
c. The leg of the UNION/UNION ALL that contains a nullable
select list is pruned.

For Example,
  CREATE TABLE T1 (C1 INT NOT NULL);
  CREATE TABLE T2 (C1 INT);
  CREATE TABLE T3 (C1 INT);

  CREATE VIEW V1 AS SELECT C1 FROM T1 WHERE C1 = 1
                    UNION ALL
                    SELECT C1 FROM T2 WHERE C1 = 2;

  SELECT  * FROM V1 WHERE V1.C1 = 1 LEFT OUTER JOIN T3 ON
                                        V1.C1 = T3.C1;

The incorrect output or abend may occur because second leg of
the UNION  ALL is removed but the nullability is not adjusted
correctly.


DB2 was fixed to adjust the nullability correctly when one of
UNION ALL's leg is pruned.

Additional KeyWords: SQLVIEW SQLUNIONALL SQLPRUNING
                     SQLINCORR SQLINCORROUT
```

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM07620
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM07620:

    See PM07620 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM07620 corrects the following problems:
    1. Incorrect output or ABEND RC00C90101 DSNIZMOS 5016
    may occur for an SQL statement that contains left outer join

```
     and view which contains UNION ALL
     2. ABND0C7 DSNXROHB+26E4 may occur for an SQL statement that
     contains full outer join and view which contains UNION ALL


     To make this fix effective for a static application, it must be
     rebound after application of this PTF.  Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
   DB2BIND:
     ***Action for PK93305:

     See PK93305 APAR/PTF text for additional information about
     why a REBIND is necessary.

     With the fix of PK93305, DB2 will have a better
     chance to choose more efficient access paths for
     the queries that reference a view which contains UNION ALL.
     As with any change to DB2 query optimization that
     can drive a different access path, there is some
     risk of regression.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF.  Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
   LISTEND
.


     ------ COVER LETTER FOR PTF UK57590 ------------

PROBLEM DESCRIPTION(S):
  PM13930 -
     ****************************************************************
     * USERS AFFECTED: All DB2 users who use FOR BIT DATA          *
     *                 columns in a set operation such as          *
     *                 UNION or in a comparison                    *
     ****************************************************************
     * PROBLEM DESCRIPTION: When a query references a set          *
     *                      operation such as UNION and the        *
     *                      result table of the set operation      *
     *                      contains a FOR BIT DATA column,        *
     *                      the following symptoms may occur:      *
     *                                                             *
     *                      1. SQLSTATE01517 (substitution         *
     *                         character warning) may be           *
     *                         incorrectly issued when a FOR BIT   *
     *                         DATA column is in the result table  *
     *                         of a set operation.                 *
     *                                                             *
     *                      2. Wrong number of rows may be returned *
     *                         when a FOR BIT DATA column is in the *
     *                         result table of a set operation and  *
     *                         the subselects in the set operation  *
     *                         references at least one EBCDIC table *
```

```
*                          and one non-EBCDIC table.          *
*                                                             *
*                       When a query references comparisons   *
*                       with FOR BIT DATA operands, the       *
*                       transitive closure predicate might not *
*                       have been generated by DB2 to improve *
*                       performance.                          *
***************************************************************
* RECOMMENDATION:                                             *
***************************************************************
```

When a query references a set operation such as UNION and the
result table of the set operation contains a FOR BIT DATA
columns the following symptoms may occur:

1. SQLSTATE01517 (substitution character warning) may be
   incorrectly issued when a FOR BIT DATA column is in the
   result table of a set operation.

   For example:

     CREATE TABLE T1(C1 CHAR(2) FOR SBCS DATA) CCSID EBCDIC;
     CREATE TABLE T2(C1 CHAR(3) FOR BIT DATA) CCSID EBCDIC;

     SELECT C1 FROM T1
       UNION
     SELECT C1 FROM T2;

   DB2 fails to apply the FOR BIT DATA attribute to C1 in the
   first subselect. As the consequence, a CCSID conversion
   may occur when the data from C1 is outputed to the user and
   CCSID conversion errors such as the substitution character
   may occur.

2. Wrong number of rows may be returned when a FOR BIT DATA
   column is in the result table of a set operation and the
   subselects in the set operation references at least one
   EBCDIC table and one non-EBCDIC table.

   For example:

     CREATE TABLE T1(C1 CHAR(2) FOR SBCS DATA) CCSID EBCDIC;
     CREATE TABLE T2(C1 CHAR(3) FOR BIT DATA) CCSID UNICODE;

     SELECT C1 FROM T1
       UNION
     SELECT C1 FROM T2;

   DB2 fails to pad C1 in the first subselect with padding
   character '20'X. Instead, it pads C1 with '40'x. As the
   consequence, the sort to eliminate duplicates may return
   a wrong result.

When a query references comparisons with FOR BIT DATA operands,
the transitive closure predicate might not have been generated
by DB2 to improve performance.

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For example:

```
      CREATE TABLE T1(C1 CHAR(2) FOR SBCS DATA) CCSID EBCDIC;
      CREATE TABLE T2(C1 CHAR(3) FOR BIT  DATA) CCSID EBCDIC;

      SELECT 1 FROM T1. T2
        WHERE T1.C1 = T2.C1 AND
              T1.C1 = 'AB';
```

DB2 fails to generate the transitive closure predicate:

```
      T2.C1 = 'AB'
```

The transitive closure predicate can be generated in this case
because it's an EQ predicate.
DB2 has been modified to handle the above examples
correctly.

When padding a shorter operand is needed, the following
rule is used to pad a FOR BIT DATA column in the result
table of a set operation:

1. If both operands are EBCDIC, the shorter operand is
   padded with '40'X.
2. Otherwise, the shorter operand is padded with '20'X.
   This includes one operand is EBCDIC and the other
   operand is not EBCDIC, for example, ASCII or Unicode,
   or both operands are ASCII, etc.

The sort to eliminate duplicates uses the same padding rule.

Additional keywords: INCORRECTOUT INCORROUT SUBSTITUTION
                     FORBITDATA SQLFORBITDATA SQLUNION
                     SQLINTERSECT SQLEXCEPT SQLTRANSITIVE
                     SQLCLOSURE SQLWARNING
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APARS FIXED: PM13930
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM13930:

    See PM13930 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM13930 corrects the problems:

    1. SQLSTATE01517 (substitution character warning) may be
       incorrectly issued when a FOR BIT DATA column is in the
       result table of a set operation such as UNION.

    2. Wrong number of rows may be returned when a FOR BIT DATA
       column is in the result table of a set operation such as
       UNION and the subselects in the set operation references at

least one EBCDIC table and one non-EBCDIC table.

   3. Transitive closure predicate might not be generated by
      DB2 to improve performance if the operand in a predicate
      is FOR BIT DATA.

   To make this fix effective for a static application, it must be
   rebound after application of this PTF. Review the PTF cover
   letter to determine which, if any, applications could be
   affected by this change.
DB2BIND:
   ***Action for PM09319:

   See PM09319 APAR/PTF text for additional information about
   why a REBIND is necessary.

   PM09319 corrects a problem of ABND04E RC00C90101 in
   DSNIDM .DSNIONXP:5374 or ABND04E RC00E70005 in
   DSNXGRDS.DSNXORLI when a query references XML datatype
   column and outer join and a parallelism plan is chosen.

   To make this fix effective for a static application, it must be
   rebound after application of this PTF. Review the PTF cover
   letter to determine which, if any, applications could be
   affected by this change.
ACTION:
   This PTF fixes the following symptoms in V9:

   1. SQLSTATE01517 (substitution character warning) may be
      incorrectly issued when a FOR BIT DATA column is in the
      result set of a set operation such as UNION.

   2. Wrong number of rows may be returned when a FOR BIT DATA
      column is in the result set of a set operation such as UNION
      and the subselects in the set operation references at least
      one EBCDIC table and one non-EBCDIC table.

   3. Transitive closure predicate might not be generated by
      DB2 to improve performance if the operand in a predicate
      is FOR BIT DATA.

   To make the PTF effective, if the following objects contains
   the set operation described above, actions are required:

   1. Views created in V9

      Regenerate views using the ALTER VIEW REGENERATE statement

   2. Materialized query tables (MQT) created in V9

      Drop and recreate the MQTs

   3. SQL PL stored procedures created in V9 NFM

      Regenerate procedures using the ALTER PROCEDURE REGENERATE
      statement

.

------ COVER LETTER FOR PTF UK57665 ------------

PROBLEM DESCRIPTION(S):
  PM12089 -
    ****
    * USERS AFFECTED: All users of the DB2 Universal JDBC Driver   *
    *   or the CLI Driver provided with DB2 for   *
    *   Linux Unix and Windows Version 8 and higher *
    *   that connects to DB2 UDB for z/OS Version 8   *
    *   and DB2 Version 9.1 for z/OS.   *
    ****
    * PROBLEM DESCRIPTION: When the JDBC Driver or CLI Driver   *
    *   calls one of the following stored   *
    *   procedures: *
    *   *
    *   SYSIBM.SQLCOLUMNS   *
    *   SYSIBM.SQLCOLPRIVILEGES   *
    *   SYSIBM.SQLFOREIGNKEYS   *
    *   SYSIBM.SQLPRIMARYKEYS   *
    *   SYSIBM.SQLSPECIALCOLUMNS   *
    *   SYSIBM.SQLSTATISTICS   *
    *   SYSIBM.SQLTABLEPRIVILEGES   *
    *   *
    *   one of the following errors can result   *
    *   when importing remote aliases: *
    *   *
    *   DSNT408I SQLCODE = -443, ERROR: *
    *   ROUTINE routine-name (SPECIFIC NAME   *
    *   specific-name) HAS RETURNED AN   *
    *   ERROR SQLSTATE WITH DIAGNOSTIC TEXT   *
    *   msg-text   *
    *   *
    *   DSNT408I SQLCODE = -440, ERROR: *
    *   NO PROCEDURE BY THE NAME name   *
    *   HAVING COMPATIBLE ARGUMENTS WAS   *
    *   FOUND IN THE CURRENT PATH   *
    ****
    * RECOMMENDATION: Apply PTF.   *
    ****
    The DB2-supplied Database Metadata stored procedures are invoked
    by the DB2 Universal JDBC Driver and the CLI Driver provided
    with DB2 Connect Version 8 and higher.

    The following stored procedures use the location name
    when retrieving information of an alias for a remote object.

       SYSIBM.SQLCOLUMNS (DSNACOL8)
       SYSIBM.SQLCOLPRIVILEGES (DSNACPR8)
       SYSIBM.SQLFOREIGNKEYS (DSNAFNK8)
       SYSIBM.SQLPRIMARYKEYS (DSNAPRK8)
       SYSIBM.SQLSPECIALCOLUMNS (DSNASPC8)
       SYSIBM.SQLSTATISTICS (DSNASTA8)
       SYSIBM.SQLTABLEPRIVILEGES (DSNATBP8)

They do not consider the case when the location name of the
remote alias has embedded spaces. As a result, calling these
stored procedures can result in one of the following errors
when an alias for a remote object is specified in the call
and the location name (SYSIBM.LOCATIONS) has embedded spaces:

```
DSNT408I SQLCODE = -443, ERROR: ROUTINE routine-name
         (SPECIFIC NAME specific-name) HAS RETURNED AN
         ERROR SQLSTATE WITH DIAGNOSTIC TEXT msg-text

DSNT408I SQLCODE = -440, ERROR: NO PROCEDURE BY THE
         NAME name HAVING COMPATIBLE ARGUMENTS WAS
         FOUND IN THE CURRENT PATH
```

The following stored procedures were updated to remove embedded
spaces in the location name when they are used to access a
remote alias:

```
SYSIBM.SQLCOLUMNS (DSNACOL8)
SYSIBM.SQLCOLPRIVILEGES (DSNACPR8)
SYSIBM.SQLFOREIGNKEYS (DSNAFNK8)
SYSIBM.SQLPRIMARYKEYS (DSNAPRK8)
SYSIBM.SQLSPECIALCOLUMNS (DSNASPC8)
SYSIBM.SQLSTATISTICS (DSNASTA8)
SYSIBM.SQLTABLEPRIVILEGES (DSNATBP8)
```

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM12089
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    This PTF modifies the following Database Metadata stored
    procedures to fix a problem when these stored procedures are
    called with a remote alias and the location name of the remote
    alias contains embedded spaces:

```
SYSIBM.SQLCOLPRIVILEGES (DSNACPR8)
SYSIBM.SQLCOLUMNS (DSNACOL8)
SYSIBM.SQLFOREIGNKEYS (DSNAFNK8)
SYSIBM.SQLPRIMARYKEYS (DSNAPRK8)
SYSIBM.SQLSPECIALCOLUMNS (DSNASPC8)
SYSIBM.SQLSTATISTICS (DSNASTA8)
SYSIBM.SQLTABLEPRIVILEGES (DSNATBP8)
```

    If you have already installed or migrated to DB2 V9, you need to
    take one or more of the following actions after applying this
    PTF:

    (1) Run the BIND statements for the following DBRMS:
        DSNACOL8, DSNACPR8, DSNAFNK8, DSNAPRK8, DSNASPC8,
        DSNASTA8, and DSNATBP8
    (2) Refresh the WLM environment

    Procedures for these actions are given below.
    ----

(1) Run the BIND statements for the following DBRMS:
    DSNACOL8, DSNACPR8, DSNAFNK8, DSNAPRK8, DSNASPC8, DSNASTA8,
    and DSNATBP8
    ****
    * All V9 customers who use the Database Metadata methods
    * must submit a job to bind the affected stored procedures.
    * It should contain the following BIND statements:
    ****
    (a) Add a step to BIND the following DBRM files.

        BIND PACKAGE(DSNASPCC) MEMBER(DSNACOL8) -
            ACTION(REPLACE) ISOLATION(UR) QUALIFIER(SYSIBM) -
            RELEASE(COMMIT) ENCODING(EBCDIC) -
            LIBRARY('<prefix>.SDSNDBRM')

        BIND PACKAGE(DSNASPCC) MEMBER(DSNACPR8) -
            ACTION(REPLACE) ISOLATION(UR) QUALIFIER(SYSIBM) -
            RELEASE(COMMIT) ENCODING(EBCDIC) -
            LIBRARY('<prefix>.SDSNDBRM')

        BIND PACKAGE(DSNASPCC) MEMBER(DSNAFNK8) -
            ACTION(REPLACE) ISOLATION(UR) QUALIFIER(SYSIBM) -
            RELEASE(COMMIT) ENCODING(EBCDIC) -
            LIBRARY('<prefix>.SDSNDBRM')

        BIND PACKAGE(DSNASPCC) MEMBER(DSNAPRK8) -
            ACTION(REPLACE) ISOLATION(UR) QUALIFIER(SYSIBM) -
            RELEASE(COMMIT) ENCODING(EBCDIC) -
            LIBRARY('<prefix>.SDSNDBRM')

        BIND PACKAGE(DSNASPCC) MEMBER(DSNASPC8) -
            ACTION(REPLACE) ISOLATION(UR) QUALIFIER(SYSIBM) -
            RELEASE(COMMIT) ENCODING(EBCDIC) -
            LIBRARY('<prefix>.SDSNDBRM')

        BIND PACKAGE(DSNASPCC) MEMBER(DSNASTA8) -
            ACTION(REPLACE) ISOLATION(UR) QUALIFIER(SYSIBM) -
            RELEASE(COMMIT) ENCODING(EBCDIC) -
            LIBRARY('<prefix>.SDSNDBRM')

        BIND PACKAGE(DSNASPCC) MEMBER(DSNATBP8) -
            ACTION(REPLACE) ISOLATION(UR) QUALIFIER(SYSIBM) -
            RELEASE(COMMIT) ENCODING(EBCDIC) -
            LIBRARY('<prefix>.SDSNDBRM')

        where <prefix> is the high-level qualifier for the
        target DB2 subsystem.

    (b) Submit the job.

(2) Refresh the WLM environment

    Issue the following VARY MVS command from the console to
    refresh the WLM application environment

        VARY WLM,APPLENV=<wlmenv>,REFRESH

```
        where <wlmenv> is the name of the WLM application
        environment for running the Database Metadata stored
        procedures.
    LISTEND
.


------ COVER LETTER FOR PTF UK57680 ------------

PROBLEM DESCRIPTION(S):
  PM01144 -
     ******************************************************************
     * USERS AFFECTED: All HIR2220 (IRLM220) users.                 *
     ******************************************************************
     * PROBLEM DESCRIPTION: The command F irlmproc,STATUS,STOR      *
     *                      does not show the current private       *
     *                      storage usage.                          *
     ******************************************************************
     * RECOMMENDATION: INSTALL CORRECTIVE SERVICE FOR APAR/PTF      *
     ******************************************************************
     The IRLM message DXR100I does not explicitly show the current
     private storage usage.
     GEN:
     KEYWORDS:

     *** END IMS KEYWORDS ***
        A new line is added to the IRLM message DXR100I to show the
     current private storage usage.

     . Output of message DXR100I before the fix applied:

     F PRIR22A1,STATUS,STOR
     DXR100I IRLM001 STOR STATS 031
     PC: YES  LTEW:n/a LTE:       M RLE:          RLEUSE:
     BB PVT:  1500M  AB PVT (MEMLIMIT):  16383P
     CSA USE: ACNT:      0K  AHWM:      0K  CUR:   309K  HWM:   309K
             ABOVE 16M:   16    309K      BELOW 16M:     0      0K
     CLASS    TYPE  SEGS      MEM    TYPE  SEGS      MEM    TYPE  SEGS ...
     ACCNT    T-1     2    4096K     T-2     1   1024K     T-3     1 ...
     PROC     WRK     4      20K     SRB     1     1K      OTH     1 ...
     MISC     VAR     8    4310K     N-V    12    323K     FIX     1 ...
         DXR100I End of display

     . Output of message DXR100I after applying the fix:

     F PRIR22A1,STATUS,STOR
     DXR100I IRLM001 STOR STATS 416
     PC: YES  LTEW:n/a LTE:       M RLE:          RLEUSE:
     BB PVT:  1500M  AB PVT (MEMLIMIT):  16383P
     CSA USE: ACNT:      0K  AHWM:      0K  CUR:   309K  HWM:   309K
             ABOVE 16M:   16    309K      BELOW 16M:     0      0K
     PVT USE:   BB CUR:  4377K        AB CUR:     5M
     CLASS    TYPE  SEGS      MEM    TYPE  SEGS      MEM    TYPE  SEGS ...
     ACCNT    T-1     2      4M     T-2     1     1M      T-3     1 ...
     PROC     WRK     4      20K     SRB     1     1K      OTH     1 ...
```

```
      MISC      VAR     8   4310K    N-V    12    323K    FIX     1 ...
          DXR100I End of display


      This APAR also fixes the right alignment problem on certain
      columns of the message.


         This APAR changes message DXR100I in Chapter 1, DXR Messages,
      of "IRLM Messages and Codes for IMS and DB2 for z/OS"
      (GC19-2666-01).

      1. Add a new line for current above/below the bar private
         storage usage:

         DXR100I irlmx STOR STATS
         PC: pc LTEWL ltew LTE: lte RLE: rle RLEUSE: rleuse
         BB PVT: bbpvt AB PVT: abpvt
         CSA USE: ACNT: acnt AHWM: ahwm CUR: cur HWM: hwm
                 ABOVE 16M: segabove storabove BELOW 16M: segbelow ...
      |  PVT USE:   BB CUR: bbpvtc        AB CUR: abpvtc
         ...

      2. Add two new variable values bbpvc and abpvtc in the
         Explanation section:

      |  bbpvtc - Is the current below the BAR private usage.
      |           Its value is specified as either xxxxK for
      |           kilobytes or xxxxM for megabytes.

      |  abpvtc - Is the current above the BAR private usage.
      |           Its value is specified as either xxxxM for
      |           megabytes or xxxxG for gigabytes.

      3. Also, change the description for variable mem from:

         mem - The storage specified as either xxxK for kilobytes
               or xxxM for megabytes.


         to:

      |  mem - The storage specified as xxxxK for kilobytes, xxxxM
      |        for megabytes, or xxxxG for gigabytes.

COMPONENT:  5695-16401-HIR2220
APARS FIXED: PM01144
SPECIAL CONDITIONS:
  COPYRIGHT: 5695-16401 COPYRIGHT IBM CORP. 1974 2003
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    DOCUMENTATION CHANGE FOR APAR PM01144
    THIS MAINTENANCE IS BEING HELD SO YOU WILL BE
    AWARE OF DOCUMENTATION CHANGE TO MANUAL(S):
    GC19266601
    -
    THE FOLLOWING TEXT DESCRIBES THE DOC CHANGE:
    -
```

This APAR changes message DXR100I in Chapter 1, DXR Messages,
of "IRLM Messages and Codes for IMS and DB2 for z/OS"
(GC19-2666-01) .

   1. Add a new line for current above/below the bar private
      storage usage:

      DXR100I irlmx STOR STATS
      PC: pc LTEWL ltew LTE: lte RLE: rle RLEUSE: rleuse
      BB PVT: bbpvt AB PVT: abpvt
      CSA USE: ACNT: acnt AHWM: ahwm CUR: cur HWM: hwm
              ABOVE 16M: segabove storabove BELOW 16M: segbelow ...
    | PVT USE: BB CUR: bbpvtc   AB CUR: abpvtc
      ...

   2. Add two new variable values bbpvtc and abpvtc in the
      Explanation section:

    | bbpvtc - Is the current below the BAR private usage.
    | Its value is specified as either xxxxK for
    | kilobytes or xxxxM for megabytes.

    | abpvtc - Is the current above the BAR private usage.
    | Its value is specified as either xxxxM for
    | megabytes or xxxxG for gigabytes.

   3. Also, change the description for variable mem from:

      mem - The storage specified as either xxxK for kilobytes
            or xxxM for megabytes.

      to:

    | mem - The storage specified as xxxxK for kilobytes, xxxxM
    | for megabytes, or xxxxG for gigabytes.
   LISTEND
.

------ COVER LETTER FOR PTF UK57861 ------------

PROBLEM DESCRIPTION(S):
  PM09148 -
    ****
    * USERS AFFECTED: All Users of DB2 for z/OS preparing for new *
    *   release 810 910   *
    ****
    * PROBLEM DESCRIPTION: DB2 for z/OS change to support future   *
    *   functions   *
    ****
    * RECOMMENDATION: *
    ****
    This APAR does not address or fix any problem in DB2 for z/OS.
    It contains changes in support of future function.

This APAR also adds the following external change in DB2 for
z/OS V8 and V9.

During the precompile step or the compile step (using the
DB2 coprocessor), in addition to the NEWFUN(YES) and NEWFUN(NO)
SQL processing options, the following are added:

In the V8 DB2 precompiler and DB2 coprocessor,
NEWFUN(V8) is added and is treated the same as NEWFUN(YES).

In the V9 DB2 precompiler and DB2 coprocessor,
NEWFUN(V8) is added and is treated the same as NEWFUN(NO).
NEWFUN(V9) is added and is treated the same as NEWFUN(YES).

Additional keywords: db2precompiler db2coprocessor
                     sqlexternasqlpl

SOLUTION:
Code is added to support a future new function.
Existing applications will continue to work using NEWFUN(YES)
or NEWFUN(NO). Using NEWFUN(V8) or NEWFUN(V9) is recommended
for new applications.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM09148
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    ***Action for PM09148
    .
    This PTF updates the DB2I program preparation CLIST DSNH.
    .
    If you have already installed or migrated to
    DB2 Version 9.1 for z/OS then you need to take the
    following actions after applying this PTF in order to update
    your customized copy(s) of DSNH. These actions describe how to
    update the prefix.NEW.SDSNCLST library, where the CLISTs process
    by install job DSNTIJVC reside.
          (a) Run the installation CLIST in INSTALL mode.
          (b) For the INPUT MEMBER NAME field on panel DSNTIPA1,
              use the name of the defaults file in which the
              defaults for your existing DB2 are stored. (This is
              probably the name you entered in the OUTPUT MEMBER
              NAME field on panel DSNTIPA1 when you originally
              installed or migrated this DB2.)
          (c) On panel DSNTIPT, change the data set names in fields
              1, 2, and 3 (TEMP CLIST LIBRARY, SAMPLE LIBRARY, and
              CLIST LIBRARY) to "work" names in order to prevent the
              prefix.NEW.SDSNTEMP, prefix.NEW.SDSNSAMP, and
              prefix.NEW.SDSNCLST data sets for your original
              installation from being overwritten.
          (d) Keep the default values for all the rest of the
              panels.
          (e) When this run of the installation CLIST completes, the
              updated, recustomized DSNH CLIST will be in
              the data set you specified for TEMP CLIST LIBRARY in

step (c) above. You need to redo any record format
                changes and reapply any local tailoring for DSNH and
                DSNHC, then copy them to the prefix.NEW.SDSNCLST
                library, where the CLISTs processed by Install job
                DSNTIJVC reside.
           (f) When finished, you can erase the data sets you
                specified in step (c) above.

      This PTF updates the DB2 SQL procedure processor DSNTPSMP.
      Promote SDSNCLST(DSNTPSMP) as needed to any private libraries.
   LISTEND
.

------ COVER LETTER FOR PTF UK57862 ------------

PROBLEM DESCRIPTION(S):
  PM12896 -
    ****
    * USERS AFFECTED: DB2 for z/OS users whose queries utilize   *
    *   a GROUP BY clause.   *
    ****
    * PROBLEM DESCRIPTION: The cardinality of GROUP BY columns can *
    *   be better estimated by utilizing multi- *
    *   column statistics (MCARD); however, the *
    *   sequence to evaluate MCARDs may impact *
    *   the cardinality estimation. I.e., it   *
    *   can be inaccurately estimated if a less *
    *   matched MCARD is evaluated ahead of a   *
    *   better matched MCARD, which may result *
    *   in an inefficient access path.   *
    ****
    * RECOMMENDATION: *
    ****
    When multi-column cardinality statistics (MCARD) exist, the
    cardinality of GROUP BY columns can be inaccurately estimated
    if a less matched MCARD is evaluated ahead of a better matched
    MCARD, and it may result in an inefficient access path.

    Additional Keywords:
    SQLSTATS SQLACCESSPATH SQLPERFORMANCE SQLGROUPBY
    Code is changed to correct the cardinality estimation
    for the situation described above. DB2 will have a better
    chance to choose more efficient access paths for these
    types of queries. As with any change to DB2 query
    optimization that can drive a different access path,
    there is some risk of query performance regression.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM12896
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM12896:

    See PM12896 APAR/PTF text for additional information about

                              59

why a REBIND is necessary.

       PM12896 corrects a problem of inaccurately estimated
       cardinality of GROUP BY columns that may result in an
       inefficient access path.

       To make this fix effective for a static application, it must be
       rebound after application of this PTF. Review the PTF cover
       letter to determine which, if any, applications could be
       affected by this change.
     LISTEND
.

------ COVER LETTER FOR PTF UK57919 ------------

PROBLEM DESCRIPTION(S):
  PM11482 -
     ****
     * USERS AFFECTED: DB2 R910 users who use XMLTABLE, XMLQUERY, *
     *   or XMLEXISTS.   *
     ****
     * PROBLEM DESCRIPTION: A new XPath scan algorithm was   *
     *   implemented in PK80732 and PK80735   *
     *   for better query performance.   *
     *   However, only simple XPath in the   *
     *   XMLQUERY or XMLEXISTS function may use *
     *   the new scan algorithm. The XPath in   *
     *   the XMLTABLE function will not be able *
     *   to use the new improved algorithm,   *
     *   and hence affect SQL/XML query   *
     *   performance.   *
     ****
     * RECOMMENDATION: *
     ****
     For XPath expressions in the XMLTABLE function, the query
     performance could be improved if the XPath in the function
     could use the new improved scan algorithm.
     DB2 is modified to make XPaths in the XMLTABLE function and
     more XPaths in the XMLQUERY and XMLEXISTS function to be
     eligible to use the new improved scan algorithm.

     For example, the performance to evaluate the following XMLTABLE
     function will be improved, since the XPaths in the function will
     use the new scan algorithm.

     SELECT X.*
     FROM T1,
       XMLTABLE('/a/b'
            Passing T1.XMLCOL
         Columns C1 VARCHAR(10) path 'c',
                 C2 VARCHAR(20) path 'd',
                 C3 VARCHAR(10) path 'e') X;
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM11482
SPECIAL CONDITIONS:

   DB2BIND:
     ***Action for PM11482:

     See PM11482 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM11482 enables DB2 9 for z/OS to use a new improved algorithm
     to scan XPaths in XMLTABLE, XMLQUERY, or XMLEXISTS. With
     PM11482, the performance of queries using XMLTABLE, XMLQUERY
     or XMLEXISTS may be improved.

     To make this fix effective for a static application, it must
     be rebound after application of this PTF. Review the PTF
     cover letter to determine which, if any, applications could be
     affected by this change.
.

------ COVER LETTER FOR PTF UK58025 ------------

PROBLEM DESCRIPTION(S):
  PK88974 -
     ****
     * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS users *
     *   of utility UNLOAD.   *
     ****
     * PROBLEM DESCRIPTION: LOAD NUMRECS (PK88970) support for the *
     *   UNLOAD utility.   *
     ****
     * RECOMMENDATION: Apply PTF when available.   *
     ****
     This APAR adds the support needed to the UNLOAD utility for
     the LOAD utility enhancement LOAD NUMRECS introduced by APAR
     PK88970. The LOAD utility has been changed to allow a more
     precise estimation of keys being sorted for each index.
     This has been achieved by allowing the specification
     of an estimated number of records being loaded into each of the
     tables of a multi-table table space instead of being limited
     to the total number of keys being sorted using the SORTKEYS
     parameter.

     The LOAD control statement generated by the UNLOAD utility
     and written to the PUNCHDDN data set, has been modified to
     support LOAD NUMRECS.

     New syntax for LOAD statement (INTO TABLE-spec) for reference:
         INTO TABLE table-name --+-------------+--------+---->
                                 | |
                                 +--- NUMRECS integer --+

     (Please see APAR PK88970 for additional information)

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PK88974

SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    This APAR PK88974 adds the support needed to the UNLOAD utility
    for the LOAD utility enhancement LOAD NUMRECS introduced
    by APAR PK88970. The LOAD control statement generated by the
    UNLOAD utility and written to the PUNCHDDN data set, has been
    modified to support LOAD NUMRECS.
    Users porting generated LOAD statements to another DB2 system
    need to be aware that installation of PK88970 is mandatory for
    successful execution of the generated LOAD control statements.
    Please see PK88970 and PK88974 for additional information.
.

      ------ COVER LETTER FOR PTF UK58061 ------------

PROBLEM DESCRIPTION(S):
  PM13963 -
      ****
      * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS   *
      *   utility users.   *
      ****
      * PROBLEM DESCRIPTION: ABENDDC2 in DSNUGNMB if DFSORT MOSIZE *
      *   installation option is greater than 0. *
      ****
      * RECOMMENDATION: Apply corrective PTF when available.   *
      ****
      If DFSORT's MOSIZE installation option is greater than zero, and
      the total size of the data that a DB2 utility asks DFSORT to
      sort is slightly smaller than the job's MEMLIMIT, then it is
      possible that DFSORT will obtain all available memory above the
      bar. In this case the utility might fail with ABENDSDC2 when it
      tries to obtain memory above the bar.
      DB2 utilities have been changed to avoid the ABENDDC2.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM13963
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    The PTF for APAR PM13963 has modified CSECTs in both the
    DSNUT910 and DSNUTILA load modules, affecting the utility batch
    and DB2 DBM1 address spaces. After the PTF has been applied, it
    will become active in the utility batch address space
    immediately upon job submission, while it will not take effect
    in the DB2 DBM1 address space until DB2 is stopped and started.

    The PTF does not have to be applied to all members in a data
    sharing environment simultaneously, and may be staged across
    each member. However, until the fix is active in both the
    utility batch and DB2 DBM1 address spaces, the problem the PTF
    addresses will not be resolved.
.

------ COVER LETTER FOR PTF UK58066 ------------

PROBLEM DESCRIPTION(S):
  PM08733 -
      ****
      * USERS AFFECTED: All DB2 users that have index compression   *
      *   turned on for any UNIQUE WHERE NOT NULL   *
      *   index.   *
      ****
      * PROBLEM DESCRIPTION: This is an enabling APAR that will   *
      *   stop compressing RIDs in UNIQUE WHERE   *
      *   NOT NULL compressed indexes.   *
      *   *
      *   Index compression on UNIQUE WHERE NOT   *
      *   NULL indexes was compressing the RIDs   *
      *   for the non-unique entries. This   *
      *   behavior was not consistent with that   *
      *   of strictly unique indexes. The RIDs   *
      *   must be left uncompressed, so that   *
      *   accounting of index page space can   *
      *   be done correctly.   *
      ****
      * RECOMMENDATION: In addition to the text below, please read *
      *   the ++HOLD information in the PTF for   *
      *   further installation requirements.   *
      ****
      This is an enabling APAR that will stop compressing RIDs in
      UNIQUE WHERE NOT NULL compressed indexes.

      Index compression on UNIQUE WHERE NOT NULL indexes was
      compressing the RIDs for the non-unique entries. This
      behavior was not consistent with strictly unique indexes.
      The RIDs must be left uncompressed, so that accounting of
      index page space can be done correctly.
      Code has been added to modules DSNIFOI and DSNKFRMT to ensure
      that RIDs for UNIQUE WHERE NOT NULL indexes on leaf pages are
      not to be compressed.

      Please refer to the ++HOLD information in the PTF for further
      installation requirements.

      USERS ARE ADVISED OF THE FOLLOWING:

      PTFs for APARs PK77513(UK49498) and PK94401(UK54754)
      must be applied to all members of a DB2 V9 data sharing
      group and all active members must be restarted before applying
      the PTF for PM08733 to any member. The enabling PTF may be
      applied to each member individually. Once the enabling PTF is
      applied, there is no need to restart all members at the same
      time.

```
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM08733
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  MULTSYS:
    PM08733 is an APAR that includes changes to support a functional
    code change that will be enabled once this APAR is applied.
    Earlier, pre-conditioning APARs PK77513 (PTF UK49498) and
    PK94401 (PTF UK54754) were delivered.  In a data sharing group,
    these pre-conditioning APARs should be applied to all members
    before applying this enabling APAR to any member.  The code
    change is enabled once this enabling APAR is applied.

    The functional code change enabled by APAR PM08733 is to no
    longer compress RIDs of a UNIQUE WHERE NOT NULL where index
    compression is enabled.  This makes the behavior of UNIQUE
    WHERE NOT NULL compressed indexes follow that of strictly
    UNIQUE compressed indexes where RIDs are not compressed.
.


------ COVER LETTER FOR PTF UK58205 ------------

PROBLEM DESCRIPTION(S):
  PM00068 -
    ****************************************************************
    * USERS AFFECTED: All DB2 users.                              *
    ****************************************************************
    * PROBLEM DESCRIPTION: Support up to 100000 open data sets in *
    *                      the DB2 DBM1 address space.            *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    ZPARM DSMAX allows up to 100000 concurrently open data sets for
    a DB2 subsystem.  However the default maximum of ENQs set by GRS
    for authorized users is 250000 which accommodates about 60000
    data sets.  GRS error MSGISG368E may appear on the console when
    approaching the ENQ limit.

      ISG368E THE CONCURRENT AUTHORIZED REQUEST COUNT FOR ASID xxxx
      HAS EXCEEDED THE 80 PERCENT THRESHOLD OF THE SYSTEM-WIDE
      MAXIMUM, 250000.

    System ABEND538 may occur when a requested ENQ would have
    exceeded the ENQ limit.

    This APAR uses GRS APIs to raise the GRS ENQ maximum when needed
    to support 100000 open data sets in a DB2 DBM1 address space.

    Attention:
    (1) Open/close of data sets may take longer when there are a
```

large number of open data sets in the system. DB2 shutdown
may also take longer. Performance benefit has been observed
in running with z/OS 1.10 vs 1.9 due to the improvement in
various z/OS components such as CATALOG and ALLOCATION. IBM
recommends running with the latest z/OS (1.11 and later)
wherever possible.

(2) The DSMAX setting is for each DB2 member. If there are more
than four DB2 members in an LPAR, the recommendation is to
keep the total of DSMAX numbers under 400000.

A new message DSNB235A, and codes 00C2030B and 00C2030C are
introduced by this APAR and are described as follows:

Message DSNB235A

DSNB235A csect-name- GRS RESOURCE SHORTAGE DETECTED BY DB2

Explanation: This message indicates that a z/OS Global Resource
Serialization (GRS) resource shortage was detected when DB2
opened or closed a data set. GRS message ISG353E might also be
displayed. ISG353E indicates the specific storage area that has
a shortage.

System Action: To relieve the GRS resource shortage, DB2 might
close data sets that have not been used recently. Message
DSNB235A remains highlighted until DB2 detects that the GRS
resource shortage has been relieved. If message ISG354I is
displayed following message ISG353E, the resource shortage has
been relieved.

System Programmer Response: Work with your DB2 administrator to
reduce the DB2 workload, or reduce the number of open data sets.

Code 00C2030B

Explanation: When DB2 opened or closed a data set, z/OS Global
Resource Serialization (GRS) service ISGQUERY or ISGADMIN
reported an error.

System action: The requesting execution unit is abended.

Operator response: Notify the system programmer, print the
SYS1.LOGREC, and request an SVC dump.

User response: Notify the system programmer.

System programmer response: Refer to Diagnosis Guide and
Reference for information on reporting the problem.

Problem determination: Check the console log for GRS ISGnnnn
messages.

Collect the following diagnostic items:
  - Console output from the system on which the job was run, and
    a listing of the SYSLOG data set for the period of time
    spanning the failure.
  - Dynamic dump, taken to SYS1.DUMPxx data set, by DB2 (04E
    abends).
  - Listing of SYS1.LOGREC data set, obtained by executing
    IFCEREP1.

Code 00C2030C

Explanation: DB2 could not open a data set because of a z/OS
Global Resource Serialization (GRS) resource shortage.

System action: SQLCODE -904 is returned to the user, and the
data set is not opened. Reason code 00C2030C and the data set
name are recorded in the SQLCA. An SVC dump is not generated,
and no information is recorded in SYS1.LOGREC.

User response: Notify the system programmer.

System programmer response: Work with your DB2 administrator to
reduce the DB2 workload, or reduce the number of open data sets.

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APARS FIXED: PM00068
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    ***Action for PM00068:

    See PM00068 APAR/PTF text for additional information.

    A new DB2 message DSNB235A, and new reason codes 00C2030B and
    00C2030C have been added by this APAR/PTF. The change will be
    documented in the DB2 Messages and DB2 Codes manuals
    respectively, and in the Information Management Software for
    z/OS Solutions Information Center.

    The texts for the new message and codes are:

Message DSNB235A

DSNB235A csect-name- GRS RESOURCE SHORTAGE DETECTED BY DB2

Explanation: This message indicates that a z/OS Global Resource
Serialization (GRS) resource shortage was detected when DB2
opened or closed a data set. GRS message ISG353E might also be
displayed. ISG353E indicates the specific storage area that has
a shortage.

System Action: To relieve the GRS resource shortage, DB2 might

66

close data sets that have not been used recently. Message
DSNB235A remains highlighted until DB2 detects that the GRS
resource shortage has been relieved. If message ISG354I is
displayed following message ISG353E, the resource shortage has
been relieved.

System Programmer Response: Work with your DB2 administrator to
reduce the DB2 workload, or reduce the number of open data sets.

Code 00C2030B

Explanation: When DB2 opened or closed a data set, z/OS Global
Resource Serialization (GRS) service ISGQUERY or ISGADMIN
reported an error.

System action: The requesting execution unit is abended.

Operator response: Notify the system programmer, print the
SYS1.LOGREC, and request an SVC dump.

User response: Notify the system programmer.

System programmer response: Refer to Diagnosis Guide and
Reference for information on reporting the problem.

Problem determination: Check the console log for GRS ISGnnnn
messages.
Collect the following diagnostic items:
 - Console output from the system on which the job was run, and
   a listing of the SYSLOG data set for the period of time
   spanning the failure.
 - Dynamic dump, taken to SYS1.DUMPxx data set, by DB2 (04E
   abends).
 - Listing of SYS1.LOGREC data set, obtained by executing
   IFCEREP1.

Code 00C2030C

Explanation: DB2 could not open a data set because of a z/OS
Global Resource Serialization (GRS) resource shortage.

System action: SQLCODE -904 is returned to the user, and the
data set is not opened. Reason code 00C2030C and the data set
name are recorded in the SQLCA. An SVC dump is not generated,
and no information is recorded in SYS1.LOGREC.

User response: Notify the system programmer.

System programmer response: Work with your DB2 administrator to
reduce the DB2 workload, or reduce the number of open data sets.
.

```
------ COVER LETTER FOR PTF UK58254 ------------

PROBLEM DESCRIPTION(S):
  PM08920 -
    ******************************************************************
    * USERS AFFECTED: All DB2 users.                                *
    ******************************************************************
    * PROBLEM DESCRIPTION: A DB2 distributed or allied application *
    *                      hang may occur if an address space      *
    *                      holding latches is swapped out because  *
    *                      of LPAR CPU constraints due to LPAR     *
    *                      CPU capping.  This problem could also   *
    *                      occur on a very busy processor complex  *
    *                      without LPAR CPU capping.               *
    ******************************************************************
    * RECOMMENDATION:                                               *
    ******************************************************************
    The DB2 distributed workload hang occurred because a z/OS RRS
    exit was being processed by DB2 and the associated address
    space was swapped out.
    DB2 module DSN3RRSX has been changed to set the allied address
    space non-swappable while DB2 is processing a z/OS RRS exit for
    the address space.
COMPONENT:  5740-XYR01-HIZ9910
APARS FIXED: PM08920
SPECIAL CONDITIONS:
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  ACTION:
    In order for this PTF to be fully effective, an IPL with CLPA or
    REFRESH DB2,EARLY is required.  The DB2 member should be
    stopped before issuing the REFRESH DB2, EARLY command.
.


------ COVER LETTER FOR PTF UK58366 ------------

PROBLEM DESCRIPTION(S):
  PM13950 -
    ******************************************************************
    * USERS AFFECTED: All DB2 users who use REBIND PLAN with        *
    *                 the COLLID option.                            *
    ******************************************************************
    * PROBLEM DESCRIPTION: "SYSIBM, SYSFUN, SYSPROC and package     *
    *                      qualifier" are being populated into      *
    *                      PATHSCHEMAS column of SYSPACKAGE even     *
    *                      though PATH option is not specified      *
    *                      on REBIND PLAN with COLLID where         *
    *                      DBRMs are being converted into           *
    *                      packages.                                *
    ******************************************************************
    * RECOMMENDATION:                                               *
    ******************************************************************
    According to the DB2 SQL Reference, the PATHSCHEMAS column of
    SYSIBM.SYSPACKAGE should not contain any value if the default
```

path value is in effect. However, during DBRM-to-package
conversion, DB2 populates the PATHSCEHMAS column with SYSIBM,
SYSFUN, SYSPROC and package qualifier, even though no
path value is specified.
DB2 has been corrected to not populate the default path value
into the PATHSCHEMAS column if PATH is not specified.
Note that the packages which already have the default path value
in the PATHSCHEMAS column do not cause any problems during
execution because those are the actual paths DB2 internally
uses to resolve unqualified data.

Additional Keywords:
REBIND PLAN   COLLID   PATHSCHEMAS   PATH
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM13950
SPECIAL CONDITIONS:
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             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    See PM06782 APAR/PTF text in the PTF cover letter for
    additional information about why FREE PLAN, then BIND/REBIND
    PLAN with COLLID option are necessary.

    PM06782 corrects an invalid value in the PDSNAME column of
    a package record which is bound with a plan.

    To make this fix effective for plans already created,
    the plans need to be freed first, then BIND with DBRM(s), and
    then REBIND with the COLLID option after application of this
    PTF. Review the PTF cover letter to determine which, if any,
    plans could be affected by this change.
  ACTION:
    The following steps are necessary to make the fix effective
    after application of the PTF:
     1. FREE plans which were bound with packages containing
        an invalid PDSNAME.
     2. BIND those plans again with the original DBRM(s) first.
     3. Then, REBIND those same plans with the COLLID option.

    Alternatively, the following steps can be used to fix the
    problem with or without the application of the PTF:
     1. FREE plans which were bound with packages containing
        an invalid PDSNAME.
     2. BIND packages with the DBRM(s) originally bound with plans.
     3. BIND plan with PACKAGE LIST created in step 2.
.

------ COVER LETTER FOR PTF UK58408 ------------

PROBLEM DESCRIPTION(S):
  PK90040 -
    ****
    * USERS AFFECTED: DB2 R910 Users of DSN_XMLVALIDATE.   *
    ****
    * PROBLEM DESCRIPTION: Current DB2 9 for z/OS user-defined   *

```
*                        function DSN_XMLVALIDATE cannot          *
*                        validate an XML document larger than     *
*                        50M bytes. Currently, the XML parser      *
*                        process invoked through XML validation    *
*                        does not take advantage of IBM            *
*                        Specialty Engines (zIIP or zAAP).         *
******************************************************************
* RECOMMENDATION:                                                 *
******************************************************************
```

The current DSN_XMLVALIDATE user-defined function is
implemented as a C stored procedure executing in the WLM
address space. This limits the size of the XML document to be
validated to 50M bytes. Also, the XML parser process invoked
through XML validation does not take advantage of IBM
Specialty Engines (zIIP or zAAP).

To support validation of an XML document larger than
50M bytes and take advantage of IBM Specialty Engines
(zIIP or zAAP), a new SQL scalar function, DSN_XMLVALIDATE,
will be added. The new function can validate up to a maximum
length of 2G-1 bytes of XML data, depending on system
resources.

To use this new scalar function, users need to
1. ensure the z/OS OS level is R1.9 with PTF OA25903 or R1.10.
   If you try to use this new function without this z/OS
   level, DB2 will issue SQLCODE904: reason-code 00D50005,
   resource-type 00003000, resource-name z/OS 1.9 or 1.10 XML
   System Services.

2. run the following command after each ipl
   SETPROG LPA,ADD,MODNAME=(GXLIMODV),DSNAME=SYS1.SIEALNKE
   Otherwise, SYSIBM.DSN_XMLVALIDATE will fail with SQLCODE904
   with RC00D50005.

3. qualify DSN_XMLVALIDATE explicitly with
   SYSIBM. When DSN_XMLVALIDATE is unqualified
   or qualified with SYSFUN, the UDF version of
   DSN_XMLVALIDATE is invoked.

The DSN_XMLVALIDATE function returns an XML value that is
the result of applying XML schema validation to the first
argument of the function. DSN_XMLVALIDATE can validate XML
data up to a maximum length of 2 GB - 1 bytes, depending on
system resources.

```
>>-DSN_XMLVALIDATE(string-expression, --------------------->>
>>-+ schema-name-string-------------------------------+)-><
   '-target-namespace-uri-string,-schema-location-string-'
```

The schema is SYSIBM.

string-expression
 An expression that returns a built-in character, graphic,
 or binary string. The value must be a well-formed XML document
 that conforms to the XML Version 1.0 standard.

schema-name-string
 An expression that returns a built-in varying length character
 string that is not a CLOB. The value specifies the name of
 the XML schema object that is used for validation. The value
 must not be an empty string or the null value, and the actual
 length must be less than or equal to 257. If the XML schema
 name is qualified, the qualifier must be SYSXSR (SYSXSR is
 the default qualifier). The value must identify a registered
 XML schema in the DB2 XML schema repository.

target-namespace-uri-string
 An expression that returns a built-in varying length character
 string that is not a CLOB, with a length attribute that is
 not greater than 1000. The value specifies the target namespace
 name or universal resource identifier (URI) of the XML schema
 that is to be used for validation. If the value is an empty
 string of the null value, no namespace is used to locate the
 XML schema.

schema-location-string
 An expression that returns a built-in varying length character
 string that is not a CLOB, with a length attribute that is
 not greater than 1000. The value specifies the XML schema
 location hint URI of the XML schema that is to be used for
 validation. If the value is an empty string of the null value,
 no schema location is used to locate the XML schema.

If target-namespace-uri-string and schema-location-string are
specified, the combination must identify a registered XML
schema in the DB2 XML schema repository, and there must be
only one such registered XML schema.

A schema must be registered successfully in the DB2 XML schema
repository before it can be used for DSN_XMLVALIDATE. If the
validation fails, DB2 returns an error.

To use the version of DSN_XMLVALIDATE described here, you need
to explicitly qualify DSN_XMLVALIDATE with SYSIBM. When
DSN_XMLVALIDATE is unqualified or is qualified with SYSFUN,
the version of the DSN_XMLVALIDATE function that is used as
input to the DSN_XMLPARSE function is invoked.

The result of the function is an XML value. The result can be
null; if the first argument is null, the result is the null
value.

Example 1: The following example shows how the DSN_XMLVALIDATE
function validates the XML data that is contained in the
value_host_var host variable. The XML schema,
SYSXSR.ORDERSCHEMA, was registered prior to this statement:
 INSERT INTO T1(C1) VALUES(
 SYSIBM.DSN_XMLVALIDATE(:value_host_var, 'SYSXSR.MYXMLSCHEMA'));

Example 2: The following example is similar to the previous
example but references the namespace and schema location:

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```
       INSERT INTO T1(C1) VALUES(
       SYSIBM.DSN_XMLVALIDATE(:value_host_var,
                         'http://www.n1.com',
                         'http://www.n1.com/report.xsd'));
       DB2 is modified to add a new SQL scalar function,
       SYSIBM.DSN_XMLVALIDATE using z/OS XMLSS
       which can validate up to a maximum length of 2G-1
       bytes, depending on system resources
       and at the same time take advantage of IBM
       Specialty Engines (zIIP or zAAP).
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PK90040
SPECIAL CONDITIONS:
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  MULTSYS:
    PK90040 is an enabling APAR that includes changes to support
    the new scalar function, SYSIBM.DSN_XMLValidate. The new
    function can validate up to a maximum length of 2G-1 bytes of
    XML data and take advantage of IBM Specialty Engines (zIIP or
    zAAP).

    A pre-conditioning APAR PK90032 that was delivered will
    be needed. In a data sharing group, the pre-conditioning APAR
    PK90032 should be applied to all members before applying this
    ENABLING APAR PK90040 to any member. The support for new
    scalar function DSN_XMLValidate will be enabled once this
    ENABLING APAR is applied.
  DOCUMENTATION:
    The following NEW reason code is added by this APAR:
    00D50005

    Explanation
     The SQL statement could not be executed because z/OS® XML
     System Services is not available for schema validation.

    System action
     The SQL statement is rejected with SQLCODE-904 and this reason
     code.

    System programmer response
     Install z/OS XML System Services. z/OS V1R9 or later is
     required. If you are installing on z/OS V1R9, install z/OS XML
     System Services PTF OA25903.
     Execute the following command to load the required z/OS
     XML System Services module:
     SETPROG LPA,ADD,MODNAME=(GXLIMODV),DSNAME=SYS1.SIEALNKE


    Information about these changes will be included in the
    Information Management Software for z/OS Solutions
    Information Center at a later date.
.


------ COVER LETTER FOR PTF UK58656 ------------
```

```
PROBLEM DESCRIPTION(S):
  PM08223 -
    ****************************************************************
    * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS      *
    *                 users of utilities.                         *
    ****************************************************************
    * PROBLEM DESCRIPTION: Timeouts on SYSUTILX data page locks   *
    *                      and the UTSERIAL lock when multiple    *
    *                      LOAD utility jobs are executed at      *
    *                      the same time.                         *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    Timeouts on a DSNDB01.SYSUTILX data page and on the UTSERIAL
    lock when multiple utility jobs are executed at the same
    time.
    ..
    Additional keywords:  MSGDSNT376I MSGDSNT500I RC00C9008E
    TYPE302 ABEND04E RC00E40085
    To help alleviate timeout conditions on SYSUTILX data page
    locks and on the UTSERIAL lock when multiple utility jobs
    are running, this APAR changes the MAXROWS attribute for
    SYSUTILX to 1.
    ..
    It is possible for the size of sysutilx to increase
    after enabling the MAXROWS change.  If your SYSUTILX is
    close to the maximum size, you should consider changing
    the data set space allocation to avoid running out of space.
    ..
    In order for MAXROWS of 1 to be honored, the PTF for PM08223
    should first be applied, then SYSUTILX must be re-initialized.
    ..
    For a data sharing group, the PTF should be applied to all
    members, before re-initializing SYSUTILX.  Note that the PTF
    does not need to be applied to all members at the same time.
    ..
    No action is needed if you do not want or need the MAXROWS
    change to be honored.  Note that no harm will be done if you
    need to re-initialize SYSUTILX and the fix has not been
    applied to all members.
    ..
    Procedure:
    1. For non data sharing, apply the PTF.  For data sharing,
       apply the PTF to each member of the data sharing group,
       as your schedule permits, this can be staged.
    2. When there is a window where there are no active or stopped
       utilities (verify with -DIS UTIL(*)):
       A. Issue -STOP DB(DSNDB01) SP(SYSUTILX), -STOP DB(DSNDB01)
          SP(DSNLUX01), -STOP DB(DSNDB01) SP(DSNLUX02).
          Ensure that these objects are in a stopped
          (STOP) status by issuing -DIS DB(DSNDB01) commands.
       B. Execute the steps in DSNTIJDE to delete the clusters only
          for SYSUTILX, DSNLUX01, DSNLUX02.
       C. Execute the steps in DSNTIJIN to define the clusters only
          for SYSUTILX, DSNLUX01, DSNLUX02.
```

D. Execute the steps in DSNTIJID to intialize the clusters
           only for for SYSUTILX, DSNLUX01, DSNLUX02.
        E. Issue -START DB(DSNDB01) SP(SYSUTILX), -START DB(DSNDB01)
           SP(DSNLUX01), -START DB(DSNDB01) SP(DSNLUX02).
        Optionally, instead of re-initializing index DSNLUX01 and
        index DSNLUX02, you may choose to use REBUILD INDEX after
        Step 2E.
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APARS FIXED: PM08223
SPECIAL CONDITIONS:
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  ACTION:
    The PTF for APAR PM08223 changes the MAXROWS attribute for
    DSNDB01.SYSUTILX to 1. In order for this change to be honored,
    the PTF for PM08223 should first be applied, then SYSUTILX
    must be re-initialized.
    ..
    It is possible for the size of SYSUTILX to increase
    after enabling the MAXROWS change. If your SYSUTILX is
    close to the maximum size, you should consider changing
    the data set space allocation to avoid running out of space.
    ..
    For a data sharing group, the PTF should be applied to all
    members, before re-initializing SYSUTILX. The PTF does not
    need to be applied to all members at the same time.
    ..
    No action is needed if you do not want or need the MAXROWS
    change to be honored. Note that no harm will be done if you
    need to re-initialize SYSUTILX and the fix has not been
    applied to all members.
    ..
    Procedure:
    1. For non data sharing, apply the PTF. For data sharing,
       apply the PTF to each member of the data sharing group,
       as your schedule permits, this can be staged.
    2. When there is a window where there are no active or stopped
       utilities (verify with -DIS UTIL(*)):
       A. Issue -STOP DB(DSNDB01) SP(SYSUTILX), -STOP DB(DSNDB01)
          SP(DSNLUX01), -STOP DB(DSNDB01) SP(DSNLUX02).
          Ensure that these objects are in a stopped
          (STOP) status by issuing -DIS DB(DSNDB01) commands.
       B. Execute the steps in DSNTIJDE to delete the clusters only
          for SYSUTILX, DSNLUX01, DSNLUX02.
       C. Execute the steps in DSNTIJIN to define the clusters only
          for SYSUTILX, DSNLUX01, DSNLUX02.
       D. Execute the steps in DSNTIJID to intialize the clusters
          only for for SYSUTILX, DSNLUX01, DSNLUX02.
       E. Issue -START DB(DSNDB01) SP(SYSUTILX), -START DB(DSNDB01)
          SP(DSNLUX01), -START DB(DSNDB01) SP(DSNLUX02).
       Optionally, instead of re-initializing index DSNLUX01 and
       index DSNLUX02, you may choose to use REBUILD INDEX after
       Step 2E.

.

```
------ COVER LETTER FOR PTF UK58680 ------------

PROBLEM DESCRIPTION(S):
  PM08962 -
    ****************************************************************
    * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS     *
    *                 utility users of LOAD KEEPDICTIONARY with   *
    *                 SORTKEYS with COMPRESS NO objects and       *
    *                 DB2 9 for z/OS utility users of LOAD        *
    *                 COPYDICTIONARY with SORTKEYS with           *
    *                 COMPRESS NO objects.                        *
    ****************************************************************
    * PROBLEM DESCRIPTION: LOAD KEEPDICTIONARY SORTKEYS on a      *
    *                 COMPRESS NO object issues MSGDSNU232I        *
    *                 but ends with RC0.                          *
    ****************************************************************
    * RECOMMENDATION: Apply corrective PTF when available         *
    ****************************************************************
    A LOAD KEEPDICTIONARY SORTKEYS was run on a non-compressed
    table.  MSGDSNU232I - KEEPDICTIONARY REQUESTED BUT COMPRESS
    ATTRIBUTE NOT DEFINED FOR TABLE SPACE tablespace_name
    was issued, but the LOAD ended with RETURN CODE=0.

    For partitioned table spaces, MSGDSNU242I - KEEPDICTIONARY
    REQUESTED BUT COMPRESS ATTRIBUTE NOT DEFINED FOR TABLE SPACE
    tablespace_name PARTITION n was issued, but the LOAD ended
    with RETURN CODE=0.

    A similar problem exists in V9 with the COPYDICTIONARY
    parameter for both partitioned and non-partitioned objects.

    When LOAD identified KEEPDICTIONARY specified for a non-
    compressed object, MSGDSNU232I or MSGDSNU242I was issued
    and a return code 4 was set.  However, subsequent processing
    reset the return code.

    If DSNU232I or DSNU242I is issued, LOAD should end with RC4.
    LOAD code has been modified to preserve the RC4 set when
    MSGDSNU232I or MSGDSNU242I is issued.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM08962
SPECIAL CONDITIONS:
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  ACTION:
    The PTF for APAR PM08962 has modified CSECTs in both the
    DSNUT910 and DSNUTILA load modules, affecting the
    utility batch and DB2 DBM1 address spaces.  After the PTF has
    been applied, it will become active in the utility batch address
    space immediately upon job submission, while it will not take
    effect in the DB2 DBM1 address space until DB2 is stopped and
    started.

    The PTF does not have to be applied to all members in a data
    sharing environment simultaneously, and may be staged across
    each member.  However, until the fix is active in both the
```

utility batch and DB2 DBM1 address spaces, the problem the PTF
addresses will not be resolved.
.

------ COVER LETTER FOR PTF UK58709 ------------

PROBLEM DESCRIPTION(S):
  PM10980 -
     ****
     * USERS AFFECTED: All users of DB2 9 for z/OS who will be   *
     *   using Query Accelerator support enabled   *
     *   by APAR PM10993.   *
     ****
     * PROBLEM DESCRIPTION: Query Accelerator support is being   *
     *   added by the following set of APARs: *
     *   PM10978, PM10979, PM10980, PM10981,   *
     *   PM10985, PM01987, PM01988, PM10989,   *
     *   and PM10991.   *
     ****
     * RECOMMENDATION: *
     ****
     Query Accelerator support is being added by the following set
     of APARs: PM10978, PM10979, PM10980, PM10981, PM10985, PM01987,
     PM01988, PM10989, and PM10991. This set of APARs provides
     code in preparation for the new function that will be made
     available by PM10993.
     See the text of APAR PM10993 for more information
     about the Query Accelerator support.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM10980
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
     ***Action for PM09194:

     See PM09194 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM09194 could reduce EDM pool storage needed for packages
     containing a SET host-variable assignment with many CONCAT or
     || operators under the following conditions.
     1. The data type for operands of CONCAT must not be a LOB.
     2. The CONCAT must appear in the top level of the SET statement,
        i.e. CONCAT is not in any scalar fullselect.

     The pattern for the statement is:
      SET SQLVAR = SQLVAR1 || SQLVAR2 || SQLVAR3.........

     To make this fix effective for a static application, it must be
     rebound after application of this PTF. Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.

     To make the fix effective for a native SQL PL, ALTER PROCEDURE

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REGENERATE statement can be used to regenerate the SQL PL.
DB2BIND:
  ***Action for PM06060:

  See PM06060 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM06060 corrects a problem of SQL code -303 with
  SQLERRD1 = -311 when a query satisfies the following conditions:
  1. The statement contains a duplicate COUNT or COUNT_BIG
     function with a specific column as a parameter.
  2. The column contains a DBCS.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:

  See PK74212 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK74212 corrects a problem of updating a CLOB type table column
  within a self-referencing UPDATE statement where INCORROUT may
  occur.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PK71700:

  See PK71700 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK71700 corrects a problem of possible ABEND0C7 in DSNXRSGB when
  an argument of aggregate function inside ORDER BY references an
  AS name in SELECT and the source expression of AS contains an
  aggregate function.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PK70678:

  See PK70678 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK70678 corrects a problem of incorrect output for a query
  satisfying the following conditions:
  1. The query contains subquery predicate.
  2. UNION ALL in the subquery predicate.
  3. The parent of UNION ALL contains distinct

or group by.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PK64572:

    See PK64572 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PK64572 corrects a problem of ABEND0C4 in DSNXRBND + 'D3A0'X.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PK51523 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PK51523 corrects a problem of rows that may be returned in the
    wrong order when the query contains an ORDER BY referencing
    a set function.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

    ------ COVER LETTER FOR PTF UK58711 ------------

PROBLEM DESCRIPTION(S):
  PM10985 -
    ****
    * USERS AFFECTED: All users of DB2 9 for z/OS who will be   *
    *   using Query Accelerator support enabled   *
    *   by APAR PM10993.   *
    ****
    * PROBLEM DESCRIPTION: Query Accelerator support is being   *
    *   added by the following set of APARs: *
    *   PM10978, PM10979, PM10980, PM10981,   *
    *   PM10985, PM01987, PM01988, PM10989,   *
    *   and PM10991.   *
    ****
    * RECOMMENDATION: *
    ****
    Query Accelerator support is being added by the following set
    of APARs: PM10978, PM10979, PM10980, PM10981, PM10985, PM01987,
    PM01988, PM10989, and PM10991. This set of APARs provides
    code in preparation for the new function that will be made
    available by PM10993.
    See the text of APAR PM10993 for more information

about the Query Accelerator support.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM10985
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM10333 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM10333 fixes a performance problem in which a poor access
    path can be chosen when parallelism is enabled. Tablespace
    scan on the inner table of a nested loop join can occur
    with parallelism when a more efficient access path exists.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM10284:

    See PM10284 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM10284 corrects a problem of an inferior access path plan
    selection which leads to SQL code -243 being issued when
    another plan that does not result in -243 is available.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM07409:

    See PM07409 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM07409 allows index only access for updatable cursors if all
    updatable columns are covered by equal predicates.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK58714 ------------

PROBLEM DESCRIPTION(S):
  PM10989 -
    ****
    * USERS AFFECTED: All users of DB2 9 for z/OS who will be   *
    *   using Query Accelerator support enabled   *

```
     *                       by APAR PM10993.                         *
     ****************************************************************
     * PROBLEM DESCRIPTION: Query Accelerator support is being      *
     *                      added by the following set of APARs:    *
     *                      PM10978, PM10979, PM10980, PM10981,      *
     *                      PM10985, PM01987, PM01988, PM10989,      *
     *                      and PM10991.                            *
     ****************************************************************
     * RECOMMENDATION:                                              *
     ****************************************************************
     Query Accelerator support is being added by the following set
     of APARs: PM10978, PM10979, PM10980, PM10981, PM10985, PM01987,
     PM01988, PM10989, and PM10991.  This set of APARs provides
     code in preparation for the new function that will be made
     available by PM10993.
     See the text of APAR PM10993 for more information
     about the Query Accelerator support.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM10989
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    New fields QW0148CLS2_BegNTela and QW0148CLS2_BegNTcp are
    added to IFCID148. These fields represent the time of day
    clock and the CP time at the most recent entry to DB2 for a
    nested SQL statement.  These fields are only valid if
    QW148AFG is non-zero.

    No existing offsets are changed in the record. These
    fields may be exploited by monitor applications.
.



------ COVER LETTER FOR PTF UK58717 ------------

PROBLEM DESCRIPTION(S):
  PM10993 -
     ****************************************************************
     * USERS AFFECTED: All users of DB2 9 for z/OS who will         *
     *                 be using Query Accelerator support are       *
     *                 affected.  However, the HOLD actions         *
     *                 are applicable even if you do not plan        *
     *                 to use the Query Accelerator.                *
     ****************************************************************
     * PROBLEM DESCRIPTION: Query Accelerator support is being      *
     *                      added by the following set of APARs:    *
     *                      PM10978, PM10979, PM10980, PM10981,      *
     *                      PM10985, PM01987, PM01988, PM10989,      *
     *                      and PM10991;                            *
     *                      and support can be enabled using        *
     *                      this APAR.                              *
     ****************************************************************
     * RECOMMENDATION:                                              *
     ****************************************************************
     Query Accelerator support is being added by the following set
```

of APARs: PM10978, PM10979, PM10980, PM10981, PM10985, PM01987,
PM01988, PM10989, and PM10991. This set of APARs provides
code in preparation for the new function that will be made
available through this APAR. This APAR adds the new ACCEL
subsystem parameter.

Why does this APAR contain a V8 change?

Please note that although this is a V9 APAR, it does include a
small V8 change. The APAR updates DSNADMIZ, the external module
for the SYSPROC.ADMIN_INFO_SYSPARM stored procedure in DB2 V8
and V9, so that it can report the setting for the new ACCEL
subsystem parameter. In DB2 data sharing, a
SYSPROC.ADMIN_INFO_SYSPARM connection on any member of the group
can query the subsystem, DECP and certain IRLM parameter
settings of any other member of that group. In order to support
V9 data sharing coexistence mode, the V8
SYSPROC.ADMIN_INFO_SYSPARM must recognize the new ACCEL
subsystem parameter.
When the corresponding Query Accelerator functionality is
available, additional information about enabling the
subsystem parameter and further instructions will be
made available in info APAR II14577.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM10993
SPECIAL CONDITIONS:
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  ACTION:
    If you have already installed or migrated to DB2, you need to
    take the following actions after applying this PTF, regardless
    of whether you plan to exercise any Query Accelerator function:

    (1) Update customized copies of DB2 installation CLIST members
    (2) Update private copies of the DSNTIDxx CLIST input member

    Detailed guidance for these actions follows:

    ----
    (1) Update customized copies of DB2 installation CLIST members
    ----
    ==> This action is required for all customers

        This PTF modifies CLIST members DSNTINST in the SDSNCLST
        target library only. You need to redo any record format
        changes and reapply any tailoring you have done to your
        copies of this CLIST. You may also want to move it to the
        prefix.NEW.SDSNCLST data set, where the CLISTs processed by
        job DSNTIJVC reside.

    ----
    (2) Update private copies of the DSNTIDxx CLIST input member
    ----
    ==> This action is required for all customers

        This PTF adds an entry for the ACCEL subsystem parameter

to the CLIST default input members, DSNTIDXA and DSNTIDXB,
in the SDSNSAMP target library. You need to add this
entry to all private copies of your CLIST output
(DSNTIDxx) member. In each such copy, add the following
line:

```
ACCEL     CHARR M  AU          NOZZZZZ         NO
```

Please refer to info APAR II14577 for more details on how
to enable your system to use the new functionality, once it
becomes available. The info APAR will be updated with details
at that time.

==

For a data sharing group in V8/V9 coexistence, you may need
to take additional action. Specifically, you need to take
action if your system meets the following conditions:

(1) You have a data sharing group consisting of V8 and
    V9 members in coexistence;
(2) At least one V9 member has this set of PTFs applied
    to support Query Accelerator (PTFs for APARs PM10978,
    PM10979, PM10980, PM10981, PM10985, PM10987, PM10988,
    PM10989, PM10991, PM10993); and
(3) You want to run SYSPROC.ADMIN_INFO_SYSPARM on a V8
    member that does not have the V8 PTF for PM10993
    applied.

If your system meets these conditions, then apply the
V8 PTF for PM10993 on your V8 member before running
SYSPROC.ADMIN_INFO_SYSPARM on that member.
.

------ COVER LETTER FOR PTF UK58738 ------------

PROBLEM DESCRIPTION(S):
  PM06743 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS users of UNION ALL and   *
    *   all DB2 for z/OS V8 and DB2 9 for z/OS users *
    *   of field procedures.   *
    ****
    * PROBLEM DESCRIPTION: This apar addresses three problems.   *
    *   *
    *   ONE. An incorrect result set (more   *
    *   rows than expected) can occur when a   *
    *   Union All subquery returning 0 rows is *
    *   used as a boolean term predicate on a *
    *   NOT NULL column.   *
    *   *
    *   TWO. An infinite loop can occur in   *
    *   module DSNXGVCM when a Union All   *
    *   correlated subquery is used in a   *

```
*                      DISTINCT predicate.                    *
*                                                             *
*                      THREE.  Incorrect data with a leading  *
*                      '00'x byte can be inserted when source *
*                      data is cast as a VARCHAR and is then  *
*                      inserted into a nullable CHAR column    *
*                      defined with a field procedure.        *
*                                                             *
***************************************************************
* RECOMMENDATION:                                             *
***************************************************************
```

This apar addresses a UNION ALL problem that can result in an
incorrect result set (more rows than expected) being returned
when a UNION ALL subquery returning 0 rows is used as a boolean
term predicate on a NOT NULL column.

In addition, the following two problems are being addressed.

When a UNION ALL correlated subquery is used in a DISTINCT
predicate, an infinite loop can occur in module DSNXGVCM.

Secondly, incorrect data with a leading '00'x byte can be
inserted when source data is cast as a VARCHAR and is then
inserted into a nullable CHAR column defined with a FIELD
PROCEDURE or fieldproc.

The following example helps to illustrate the three problems.

Step 1. Create and populate a TEST Table.

```
  CREATE TABLE TEST(COL1  CHAR(8) FIELDPROC FPCVD4,
                    COL2 CHAR(1) NOT NULL);

  INSERT INTO TEST VALUES(VARCHAR('12345678'),'Y');
```

Step 2. In the following query, 0 rows are expected to be
        returned since the Union All subquery returns no data.
        Instead, 1 row is incorrectly returned.

```
  SELECT 1 FROM TEST
  WHERE COL2 >=
  (SELECT '' FROM TEST WHERE COL2='N'
   UNION ALL
   SELECT '' FROM TEST WHERE COL2='N'
  );
            +----------------+
            |                |
            +----------------+
         1_|              1 |
            +----------------+
```


Step 3. A UNION ALL correlated subquery in a DISTINCT
        predicate can result in an infinite loop. SQLCODE
```

```
                     -811 was expected.

         SELECT A.COL1
         FROM    TEST A
         WHERE   A.COL2 IS NOT DISTINCT
         FROM
                       (SELECT B.COL2
                        FROM    TEST B
                        WHERE    A.COL1 = B.COL1

                        UNION ALL

                        SELECT C.COL2
                        FROM    TEST C
                        )
            ;



     Step 4. Select from the column defined with a field procedure.
             A value of '12345678' is expected but an incorrect value
             was inserted.

         SELECT COL1 FROM TEST;

               +----------+
               |   COL1   |
               +----------+
            1_|  .1234567 |
               +----------+
```

For the first problem, DB2 incorrectly marked a boolean term
predicate as true when comparing Union All subqueries.

For the second problem, DB2 was incorrectly chaining runtime
structures.

For the third problem, DB2 was incorrectly moving a NULL value
resulting in an improper value getting inserted into a column
containing a field procedure.
The code in DB2 has been modified to correct the three problems.

Boolean term predicates containing Union All subqueries will
be marked false when the Union All subquery returns 0 rows.

Evaluation of DISTINCT predicates containing a Union All
subquery will be completed without looping.

DB2 code has been modified to move a NULL value correctly into
columns containing field procedures.

Additional Keywords: SQLUNIONALL SQLFIELDPROC SQLCAST SQLINSERT
                     SQLSUBQUERY SQLINCORR LOOPDSNXGVCM
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM06743

SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM06743:

    See PM06743 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM06743 corrects a problem of incorrect insert of data cast as
    VARCHAR into nullable CHAR column defined with a field procedure
    PM06743 also corrects a problem of incorrect output when a UNION
    All subquery returning 0 rows is used as a boolean term
    predicate on a NOT NULL column.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------- COVER LETTER FOR PTF UK58766 ------------

PROBLEM DESCRIPTION(S):
  PM09225 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS users that need to apply *
    *   apar PM09226, enhancement for the   *
    *   TIMESTAMP_FORMAT (TO_DATE) and   *
    *   VARCHAR_FORMAT (TO_CHAR) scalar functions.   *
    ****
    * PROBLEM DESCRIPTION: This apar provides the toleration code *
    *   that will be needed for APAR PM09226,   *
    *   enhancement for the TIMESTAMP_FORMAT   *
    *   (TO_DATE) and VARCHAR_FORMAT (TO_CHAR)   *
    *   scalar functions.   *
    ****
    * RECOMMENDATION: *
    ****
    This APAR provides the toleration or pre-conditioning code which
    is needed for the new features to be provided by a later apar,
    PM09226. Apar PM09226 will add new features for the
    TIMESTAMP_FORMAT and VARCHAR_FORMAT scalar functions.
    This apar provides the pre-conditioning or toleration code which
    will be needed for a later apar PM09226 which will add new
    features for the TIMESTAMP_FORMAT and VARCHAR_FORMAT scalar
    functions.

    Additional Keywords: SQLTIMESTAMP
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM09225
SPECIAL CONDITIONS:
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  DB2BIND:

```
***Action for PK98715:

See PK98715 APAR/PTF text for additional information about
why a REBIND is necessary.

PK98715 corrects an ABEND04E rc00E70005 at location
DSNXGDT2 M100 problem that can occur for an INSERT with a
subselect statement that contains a special register when
processing an INSTEAD OF TRIGGER that gets invoked for the
statement.

To make this fix effective for a static application, it must be
rebound after application of this PTF.  Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
MULTSYS:
***Action for PM09225:

See PM09225 APAR/PTF text for additional information.

PM09225 is a pre-conditioning APAR that includes changes to
enhance existing functions that will be enabled via another
APAR at a later date.  At this time, all of the changes are
transparent to the user.  In a data sharing group, this
pre-conditioning APAR should be applied to all members
before the later enabling APAR is applied to any member.
The new features for existing functions are not enabled
until the enabling APAR is applied.
DOCUMENTATION:
Please note that the following publication changes are being
made on behalf of apar PK85197.

The following changes are being made to the DB2 Version 9.1 for
z/OS SQL Reference (SC18-9854) publication, Chapter 3, Section 2
for the LPAD and RPAD function descriptions.

Section 3.2.70 LPAD,

The introductory description of the function,

----------------------------------------------------------------
The LPAD function returns a string that is padded on the left
with blanks or a specified string.

The schema is SYSIBM.

The LPAD function returns a string composed of string-expression
that is padded on the left, with pad or blanks.  The LPAD
function treats leading or trailing blanks in string-expression
as significant.  Padding will only occur if the actual length of
string-expression is less than integer.
----------------------------------------------------------------

is changed to the following.

----------------------------------------------------------------
```

The LPAD function returns a string composed of string-expression
that is padded on the left, with pad or blanks. The LPAD
function treats leading or trailing blanks in string-expression
as significant. Padding will only occur if the actual length of
string-expression is less than integer, and pad is not an empty
string.

The actual result length description,

The actual length of the result is determined from integer.
If integer is 0, the actual length is 0, and the result is the
empty result string. If integer is greater than 0, the length
attribute of the result is integer. If integer is 0, the length
attribute of the result is 1.
----

is changed to the following.

The length attribute of the result depends on integer. If
integer is greater than 0, the length attribute of the result is
integer. If integer is 0, the length attribute of the result is
1.

The actual length of the result is determined from integer. If
integer is 0, the actual length is 0, and the result is the
empty result string. If integer is less than the actual length
of string-expression, the actual length is integer and the
result is truncated.

Also there is a minor wording change for the 'pad' argument to
the function.

An expression that specifies the string that is used to pad
string-expression. The expression must return a value that is a
built-in string data type that is not a LOB. If pad is not
specified, the pad character is determined as follows:

. SBCS blank character if string-expression is a character
  string.

. DBCS blank character if string-expression is a graphic string.

. Hexadecimal zero (X'00'), if string-expression is a binary
  string.
----

is changed to the following.

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An expression that specifies the string with which to pad. The
expression must return a value that is a built-in string data
type that is not a LOB. If pad is not specified, the pad
character is determined as follows:

. SBCS blank character if string-expression is a character
  string.

. DBCS blank character if string-expression is a graphic string.

. Hexadecimal zero (X'00'), if string-expression is a binary
  string.

Please note that the same publication change also applies to
section 3.2.116 for the RPAD function.
DOCUMENTATION:
The following changes are being made to the DB2 Version 9.1 for
z/OS SQL Reference (SC18-9854) publication, Chapter 3
(Functions), Section 2 (Scalar functions) for the TIMESTAMPADD
function description.

In summary, the following updates should be made to the SQL
Reference for the TIMESTAMPADD function:

-Remove the table under "number" titled "Valid values for
 number".
-Remove reference to TIMESTAMPDIFF function (i.e., replace this
 reference with new reference to datetime arithmetic).
-Add reference to datetime arithmetic information
-Add information to cover weeks and quarters.
-Add examples to show what we would do for weeks and quarters.

The description of number is changed to the following:
----
number
An expression that returns a value of a built-in SMALLINT or
INTEGER data type.

The following paragraph describing how to determine the result:

See the "TIMESTAMPDIFF" on page 513 function for a complete
description for a list of assumptions that are used in
calculating the result. These assumptions are used when adding
the number of intervals to the timestamp.

Should be changed as follows:

The result is determined using the normal rules for datetime
arithmetic. See "Datetime arithmetic in SQL" on page 181 of the

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SQL Reference. When the interval to add is expressed as weeks,
the result is calculated as if number x 7 days had been
specified. When the interval to add is expressed as quarters,
the result is calculated as if number x 3 months had been
specified.

The following example should be added to show how do add weeks:

Example 4: The following example will add 18 weeks (18 x 7 days)
to the specified timestamp. An interval of 32 designates weeks,
while 18 specifies the number of intervals to add. The following
statement returns the value '2007-05-26-08.08.00.000000'.

SELECT TIMESTAMPADD(32,18,TIMESTAMP('2007-01-20-08.08.00'))
FROM SYSIBM.SYSDUMMY1;

In the Example 3, the following sentence:

Example 3: The following example will subtract 16 quarters
(4 years) from the specified timestamp.

Should be modified as follows (to clarify how quarters are
added)

Example 3: The following example will subtract 16 quarters
(16 x 3 months) from the specified timestamp.
.

------ COVER LETTER FOR PTF UK58768 ------------

PROBLEM DESCRIPTION(S):
  PM10274 -
     ****
     * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS users *
     *   of a SELECT statement that has more than   *
     *   32000 IN list elements (or entries) that are *
     *   all literals.   *
     ****
     * PROBLEM DESCRIPTION: An ABEND04E RC00E20001 can occur at   *
     *   DSNXGXTB DSNSVBK +1286 for a SELECT   *
     *   statement that has more than 32000   *
     *   entries combined in all IN list   *
     *   elements. All IN list elements are   *
     *   literals.   *
     ****
     * RECOMMENDATION: *
     ****
     An ABEND04E RC00E20001 can occur at DSNXGXTB DSNSVBK +1286 when
     a SELECT statement has more than 32000 entries combined in all
     IN list elements. All IN list elements are literals.

The abend is caused by the overflow of a DB2 internal counter.

The following example helps to illustrate a failing case.

1. Create table, index, and view.

   CREATE TABLE T3(C1 VARCHAR(8));

   CREATE INDEX IX3 ON T3(C1);

   CREATE VIEW V3 AS (
   SELECT C1 FROM T3 UNION ALL
   SELECT C1 FROM T3 UNION ALL
   SELECT C1 FROM T3 UNION ALL
   SELECT C1 FROM T3 UNION ALL
   SELECT C1 FROM T3 UNION ALL
   SELECT C1 FROM T3 UNION ALL
   SELECT C1 FROM T3
   );

2. SELECT from V3 to select from T3.

   SELECT * FROM V3 WHERE C1 IN (
   '19199863','86771728','42116823','80171104',
   .....
   '4805914612','8003439612', '51266649','47573348');

If the above SELECT statement has 5000 IN list elements,
with the V3's UNION ALL above, there will be more than
32000 entries combined in all IN list elements. All the
IN list elements are literals. This query could result
in the ABEND.

The bindtime code in DB2 is modified to correct the failing
condition.

Additional keyword: SQLINLIST SQLSTORAGE
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM10274
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM10274:

    See PM10274 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM10274 corrects a problem of ABEND04E RC00E20001 at
    DSNXGXTB.DSNSVBK +1286 when the SELECT statement has a huge
    IN-LIST with literals.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover

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letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK58871 ------------

PROBLEM DESCRIPTION(S):
  PM06953 -
    ****
    * USERS AFFECTED: All DB2 9 users of CP query parallelism.   *
    ****
    * PROBLEM DESCRIPTION: When a parallel query is offloaded to *
    *   the zIIP engines, each parallel task   *
    *   is scheduled in its own enclave and   *
    *   managed by Work Load Manager as such.   *
    *   *
    *   As a result, there is no way for a   *
    *   user to consistently define periods   *
    *   to distinguish between, for example,   *
    *   individual enclaves of a   *
    *   high-consumption query from a   *
    *   single enclave of a low-consumption   *
    *   query. This limits a user's ability   *
    *   to utilize WLM to favor   *
    *   low-consumption workloads.   *
    ****
    * RECOMMENDATION: *
    ****
    Because z/OS did not initially provide a TIMEUSED support to
    include a time-on-CP function vs. time-on-zIIP for multiple
    SRBs in an enclave, each parallel task needed to be scheduled
    in its own enclave in order to extract the correct the
    accounting information.

    However, that created a problem where WLM could not make the
    distinction between one of many enclaves belonging to a
    high-consumption query from a single enclave belonging to a
    low-consumption query. As such, a user cannot define periods
    that consistently favor low-consumption queries.
    DB2 code has been modified to create only one enclave for all
    parallel tasks under a query. This allows WLM to manage each
    query as a whole, and properly distinguish between
    high-consumption queries and low-consumption queries so that
    users can define periods to consistently favor one set or
    the other.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM06953
SPECIAL CONDITIONS:
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             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:

    ***Action for PM06953:
    Please note that with the application of PM06953's PTF, queries
    will no longer be offloaded to zIIP engines unless the PTFs

```
        for the 2 z/OS APARs are applied as well:


                    OA26104      OA20758
        z/OS Release PTF          PTF
        R8           UA47535      UA37903
        R9           UA47536      UA37904
        R10          UA47646      <included in base release>


        See PM06953 APAR/PTF text for additional information.
.



------ COVER LETTER FOR PTF UK58906 ------------

PROBLEM DESCRIPTION(S):
  PM13552 -
     ****************************************************************
     * USERS AFFECTED: All DB2 9 for z/OS users who have a         *
     *                 descending ORDER BY clause in a table       *
     *                 expression or view in a query.              *
     ****************************************************************
     * PROBLEM DESCRIPTION: When there is a descending ORDER BY    *
     *                      clause in the table expression or      *
     *                      or view, incorrect output might occur. *
     ****************************************************************
     * RECOMMENDATION:                                             *
     ****************************************************************
     When there is a descending ORDER BY clause in the
     table expression or view, DB2 might choose an
     access path which mistakenly takes advantage of this
     descending order for query optimization, and leads to
     incorrect output.

     Additional Keywords:
     SQLINCORR INCORROUT SQLINCORROUT SQLORDERBY SQLTABLEEXPR
     SQLVIEW DESC
     When there is a descending ORDER BY clause in the
     table expression or view, DB2 will now do extra analysis
     to make sure the descending order is being recognized to
     avoid an access path which mistakenly believes the
     order is ascending.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM13552
SPECIAL CONDITIONS:
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             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
     See PM13552 APAR/PTF text in the PTF cover letter for
     additional information about why a REBIND is necessary.

     PM13552 fixs an incorrect output problem by correcting access
     path selection when there is a descending ORDER BY clause in the
     table expression or view.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF.  Review the PTF cover
```

letter to determine which, if any, applications could be
affected by this change.
  DB2BIND:
    See PM08745 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM08745 fixes a possible incorrect output problem when there is
    a GROUP BY expression in the query.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

    ------ COVER LETTER FOR PTF UK58916 ------------

PROBLEM DESCRIPTION(S):
  PM17044 -
    ****
    * USERS AFFECTED: All users of DB2 9 for z/OS who are   *
    *   using the DB2 stored procedure   *
    *   SYSPROC.ADMIN_DS_BROWSE   *
    ****
    * PROBLEM DESCRIPTION: If a library has users accessing it,   *
    *   SYSPROC.ADMIN_DS_BROWSE will fail when *
    *   it attempts to browse a member in this *
    *   library, returning: *
    *   RETURN_CODE: 12   *
    *   MSG: DSNA620I DSNADMAL ERROR   *
    *   ALLOCATING DATA SET   *
    *   DSNAME=dsname, RETURN CODE=4,   *
    *   ERROR REASON CODE='0210'X,   *
    *   INFO REASON CODE='0000'X   *
    *   IKJ56225I DATA SET dsname   *
    *   ALREADY IN USE, TRY LATER+   *
    *   IKJ56225I DATA SET IS ALLOCATED *
    *   TO ANOTHER JOB OR USER   *
    *   where dsname is the library name.   *
    ****
    * RECOMMENDATION: Apply PTF   *
    ****
    SYSPROC.ADMIN_DS_BROWSE allocates a library first with
    disposition OLD, KEEP, KEEP before opening it for input.
    Allocating it with disposition OLD, instead of SHR, causes the
    library to be opened in exclusive mode and therefore causes the
    allocation to fail when the library is already in use by another
    user.
    ADMIN_DS_BROWSE is modified to allow a user to specify how
    to allocate a PDS/E - exclusive or non-exclusive. For exclusive
    allocation, ADMIN_DS_BROWSE allocates a library whose member
    will be browsed with disposition OLD, KEEP, KEEP (no change).
    For non-exclusive allocation, ADMIN_DS_BROWSE allocates
    the library with SHR, KEEP, KEEP. Once the library is allocated
    with SHR, KEEP, KEEP, ADMIN_DS_BROWSE can now browse the

member requested, even if the member is currently being browsed
        or edited by another user.

        To minimize the impact to existing users, ADMIN_DS_BROWSE
        extends the use of the existing DATA_TYPE input parameter to
        specify the library allocation disposition as described below:
              data-type
                 Specifies the type of data to be browsed and how the
                 data set is accessed. Possible values are:
                    1   Text data with exclusive access
                    2   Binary data with exclusive access
                    3   Text data with shared access. This value is valid
                         only if browsing a library member.
                    4   Binary data with shared access. This value is valid
                         only if browsing a library member.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM17044
SPECIAL CONDITIONS:
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              LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
     This PTF allows the DB2 stored procedure
     SYSPROC.ADMIN_DS_BROWSE to browse a library member even
     though the library is currently being accessed by another
     user.

        ****
        Actions for customers who are already using DB2 V9:
        ****
        After applying this PTF, you need to take the following
        action:
        (1) Bind the DBRM for the stored procedure
            SYSPROC.ADMIN_DS_BROWSE.

        Procedure for this action is given below.
        ----
        (1) Bind the DBRM for the stored procedure
            SYSPROC.ADMIN_DS_BROWSE.
            ****
            * All V9 customers who want to use the stored procedure
            * SYSPROC.ADMIN_DS_BROWSE need to perform this step.
            ****
            Use the following procedure to avoid disrupting your
            existing DB2-supplied stored procedures and databases:
            (a) Create and edit a copy of your customized DSNTIJSG job
            (b) Remove all job steps except DSNTIAE
            (c) In job step DSNTIAE:
                - remove all BIND PACKAGE statements under the SYSTSIN
                  DD, except for the following:
                     BIND PACKAGE(DSNADM) MEMBER(DSNADMDB) - ...
                - remove all CREATE statements under the SYSIN DD
            (d) Run the job to bind the DBRM for the stored
                procedure SYSPROC.ADMIN_DS_BROWSE

.

```
------ COVER LETTER FOR PTF UK58944 ------------

PROBLEM DESCRIPTION(S):
  PK92783 -
    ******************************************************************
    * USERS AFFECTED: All DB2 users who use XMLEXISTS with          *
    *                 DECFLOAT(16).                                  *
    ******************************************************************
    * PROBLEM DESCRIPTION: An ABEND04E at DSNNXML.DSNNQXCA M188     *
    *                      could occur if one argument of an        *
    *                      XMLEXISTS predicate in a query is of     *
    *                      DECFLOAT(16) type.                       *
    ******************************************************************
    * RECOMMENDATION:                                               *
    ******************************************************************
    An ABEND04E at DSNNXML.DSNNQXCA M188 could occur if one
    argument of an XMLEXISTS predicate in a query is of
    DECFLOAT(16) type.

    The following is an example of the failed query:
      SELECT C1
      FROM T
      WHERE XMLEXISTS('/a[b=$x]' PASSING XMLCOL,
                      CAST(? AS DECFLOAT(16)) as "x");
    DB2 is changed to issue SQLCODE -171 when an argument of
    XMLEXISTS is of DECFLOAT(16) type.

    Additional keywords: SQLXMLEXISTS  SQLDECFLOAT
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PK92783
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PK92873:

    See PK92873 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PK92873 corrects a problem of an ABEND04E at DSNNQXCA M188
    when one argument of an XMLEXISTS predicate in a query is of
    DECFLOAT(16) type.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
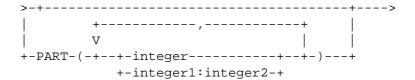    affected by this change.
.


------ COVER LETTER FOR PTF UK59067 ------------

PROBLEM DESCRIPTION(S):
  PM10230 -
    ******************************************************************
```

```
       * USERS AFFECTED: All DB2 V9 users of views or table       *
       *                 expressions and one of the two conditions *
       *                 are met:  1. materialized view or         *
       *                 materialized table expression and an IN   *
       *                 predicate or 2.  RIGHT JOIN with a        *
       *                 nested table expression that specifies a   *
       *                 SELECT *                                   *
       *************************************************************
       * PROBLEM DESCRIPTION: INCORROUT on a SELECT with a         *
       *                      materialized view or table expression *
       *                      and an IN predicate in which some of  *
       *                      elements are casted down to make the  *
       *                      IN predicate be a stage 1 predicate.  *
       *                      INCORROUT on a SELECT with a RIGHT    *
       *                      JOIN and a nested table expression    *
       *                      that specifies a SELECT *.            *
       *************************************************************
       * RECOMMENDATION:                                           *
       *************************************************************
       INCORROUT on a SELECT with a materialized table expression or
       view and an IN predicate contains elements that have casts to
       make the predicate to be a stage 1 predicate.

       Example:
       SELECT integer1 FROM
          (SELECT integer1, RND() FROM tab1) X
          WHERE X.integer1 IN (123, 145.00,134.0);


       INCORROUT on a SELECT with a RIGHT JOIN and a nested table
       expression that does a SELECT *.

       Example:
       SELECT col1 FROM tab1 RIGHT JOIN (SELECT * FROM tab2) X
          ON tab1.col1 = X.col1;
       DB2 has been fixed to handle table expression and views with
       either IN list predicates or RIGHT JOIN with SELECT * in the
       table expression.

       Additional Keywords:  SQLINCORROUT SQLRIGHTJOIN SQLVIEWS
       SQLTABLEEXPR SQLINCORR
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM10230
SPECIAL CONDITIONS:
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   DB2BIND:
     ***Action for PM10230:


     See PM10230 APAR/PTF text for additional information about
     why a REBIND is necessary.


     PM10230 corrects a problem of INCORROUT on a SELECT with
     outer join.


     To make this fix effective for a static application, it must be
     rebound after application of this PTF.  Review the PTF cover
```

letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK59095 ------------

PROBLEM DESCRIPTION(S):
  PK87762 -
     ****
     * USERS AFFECTED: All DB2 9 for z/OS users of REORG TABLESPACE *
     *   and LISTDEF utility.   *
     ****
     * PROBLEM DESCRIPTION: New function for REORG TABLESPACE and   *
     *   LISTDEF utility.   *
     ****
     * RECOMMENDATION: Apply PTF when available.   *
     ****
     New function for REORG TABLESPACE and LISTDEF utility.
     The Utility Guide and Reference is updated with the following:

     _____

     The REORG TABLESPACE utility has extended syntax specification
     for the PART keyword:

     >-+-------------------------------------+---->
      | +-----------,------------+ |
      | V | |
      +-PART-(-+--+-integer-----------+--+-)---+
               +-integer1:integer2-+

     | The PART specification is extended to allow for multiple parts
     | or part ranges. This applies to all SHRLEVEL of REORG
     | TABLESPACE. REORG will eliminate duplicate and/or overlapping
     | partition range specifications. Existing program logic will
     | issue MSGDSNU256I on invalid partition number specified and
     | terminate with return code 8.

     | Example: REORG TABLESPACE PART (1, 3:5, 254:257)

     _____

     The LISTDEF utility is changed so that it will invoke a single
     REORG TABLESPACE to process all the adjacently specified data
     partitions, instead of invoking a separate REORG on each
     specified partition.

     For example: LISTDEF X INCLUDE TABLESPACE dbb.tss PARTLEVEL 3
                             INCLUDE TABLESPACE dbb.tss PARTLEVEL 5
                   REORG TABLESPACE LIST X

     Prior to PK87762, LISTDEF would invoke one REORG to process
     partition 3, follows serially by another REORG to process
     partition 5 in the above example. After applying the PTF of
     PK87762, LISTDEF will invoke a single REORG to process partition

97

3 and 5 in a single REORG job, as if REORG TABLESPACE PART(3,5)
is specified.

_____

Code has been modified to provide the aforementioned new utility
function.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PK87762
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    The PTF for APAR PK87762 provides the following new
    functionality and behavioral changes for DB2 Utilities.

    The Utility Guide and Reference is updated with the following:

_____

    The REORG TABLESPACE utility has extended syntax specification
    for the PART keyword:

```
>-+------------------------------------+---->
  |        +-----------,-----------+    |
  |        V                       |    |
  +-PART-(-+--+-integer-----------+--+-)---+
             +-integer1:integer2-+
```

    | The PART specification is extended to allow for multiple parts
    | or part ranges. This applies to all SHRLEVEL of REORG
    | TABLESPACE. REORG will eliminate duplicate and/or overlapping
    | partition range specifications. Existing program logic will
    | issue MSGDSNU256I on invalid partition number specified and
    | terminate with return code 8.

    | Example: REORG TABLESPACE PART (1, 3:5, 254:257)

_____

    The LISTDEF utility is changed so that it will invoke a single
    REORG TABLESPACE to process all the adjacently specified data
    partitions, instead of invoking a separate REORG on each
    specified partition.

    For example: LISTDEF X INCLUDE TABLESPACE dbb.tss PARTLEVEL 3
                            INCLUDE TABLESPACE dbb.tss PARTLEVEL 5
                  REORG TABLESPACE LIST X

    Prior to PK87762, LISTDEF would invoke one REORG to process
    partition 3, follows serially by another REORG to process
    partition 5 in the above example. After applying the PTF of
    PK87762, LISTDEF will invoke a single REORG to process partition
    3 and 5 in a single REORG job, as if REORG TABLESPACE PART(3,5)
    is specified.

_____

  ACTION:

```
     *** Action for PK87762:


     The PTF for APAR PK87762 has modified CSECTs in both the
     DSNUT910 and DSNUTILA load modules, affecting the utility batch
     and DB2 DBM1 address spaces.  After the PTF has been applied,
     it will become active in the utility batch address space
     immediately upon job submission, while it will not take effect
     in the DB2 DBM1 address space until DB2 is stopped and
     started.

     The PTF does not have to be applied to all members in a data
     sharing environment simultaneously, and may be staged across
     each member.  However, until the fix is active in both the
     utility batch and DB2 DBM1 address spaces, the new function
     provided by this PTF would not function properly.


     ----------------------------------------------------------------
     See PK87762 APAR/PTF for additional information.

     The PTF for APAR PK87762 is a companion fix and requires the
     PTF for APAR PM13259 for FMID JDB991K to be applied.


     ----------------------------------------------------------------


     The PTF for APAR PK87762 has modified the LISTDEF utility
     behavior when invoked for the REORG TABLESPACE utility.  After
     applying this PTF, all partitions of the same table space
     specified under the LISTDEF PARTLEVEL keyword will be processed
     by a single REORG TABLESPACE execution, as opposed to
     reorganizing one partition at a time before the PTF is applied.
     This might result in an increase of required DASD requirement
     for shadow data sets and sort work data sets allocation as more
     data partitions are being reorganized at once.
.



     ------ COVER LETTER FOR PTF UK59101 ------------


PROBLEM DESCRIPTION(S):
  PM12819 -
     ****************************************************************
     * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS      *
     *                 utility users who wish to use              *
     *                 DB2 Sort for z/OS                          *
     ****************************************************************
     * PROBLEM DESCRIPTION: Enable use of DB2 Sort for z/OS for    *
     *                 DB2 utilities sort processing.             *
     ****************************************************************
     * RECOMMENDATION: Apply PTF when available                   *
     ****************************************************************
     DB2 Sort for z/OS is a new offering that provides high speed
     utility sort processing for data stored in DB2 for z/OS.
     DB2 Sort for z/OS improves sort performance while optimizing
     overall system efficiency by exploiting the advanced facilities
     of the z/OS operating system and System z.
```

This PTF enables DB2 Utilities to invoke DB2 Sort for z/OS when
it is installed on the system and the new subsystem parameter
DB2SORT is set to ENABLE. The default setting for parameter
DB2SORT is DISABLE. If parameter DB2SORT is set to DISABLE or
if DB2 Sort for z/OS can not be found by the utilities, then
sort processing will continue to use DFSORT.

Refer to the relevant DB2 Sort for z/OS publication for further
details regarding the implementation and exploitation of
DB2 Sort for z/OS.
DB2 Utilities have been changed to invoke DB2 Sort for z/OS when
it is installed and enabled by the DB2SORT subsystem parameter.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM12819
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    A new DB2 9 subsystem parameter, DB2SORT, has been added by the
    PTF for APAR PM12819.

    The new DB2 9 subsystem parameter is:

    DB2SORT in macro DSN6SPRM
       Specifies whether to use DB2 Sort for z/OS for utility sort
       processing when DB2 Sort is installed on the system. Valid
       settings are ENABLE and DISABLE. The default setting is
       DISABLE, which means that utilities will use DFSORT for sort
       processing, even if DB2 Sort is installed.

    Information about this new function will be included in the
    Information Management Software for z/OS Solutions Information
    Center at a later date.
  DOCUMENTATION:
    ***Action for PK78829:

    See PK78829 APAR/PTF text for additional information.

    This APAR/PTF modifies the DB2 Utilities Guide and Reference.
    The change will be documented in the DB2 Utilities Guide and
    Reference and in the Information Management Software for z/OS
    Solutions Information Center.

    The change is as follows.

    The table "Data sets that RUNSTATS uses" is changed to add
    footnote (6) to the table entry for the STPRIN01 data set:

    Data sets that RUNSTATS uses

    Data set   Description   Required?

  | STPRIN01   A data set that contains   Yes(1,2,4,6)
                    messages from DFSORT (usually
                    SYSOUT or DUMMY). This data
                    set is used when frequency

```
                          statistics are collected on
                          DPSI's or when TABLESPACE
                          TABLE COLGROUP FREQVAL is
                          specified.
         -------------------------------------------------------------
      Note:
       1. Required when collecting distribution statistics for
          column groups.
       2. Required when collecting statistics on at least one
          data-partitioned secondary index.
       3. If the DYNALLOC parm of the SORT program is not
          turned on, you need to allocate the data set.
          Otherwise, DFSORT dynamically allocates the
          temporary data set.
       4. Required when COLGROUP with FREQVAL options are
          specified.
       5. It is recommended that you use dynamic allocation by
          specifying SORTDEVT in the utility statement because
          dynamic allocation reduces the maintenance required
          of the utility job JCL.
     |  6. Can be dynamically allocated by the utility if UTPRINT
     |     is allocated to SYSOUT.
         -------------------------------------------------------------


      The same footnote is added to the STPRIN01 entry in each of
      the following tables:

      - Data sets that LOAD uses
      - Data sets that REORG TABLESPACE uses
      - Data sets that REORG INDEX uses
      - Data sets that REBUILD INDEX uses
ACTION:
   The PTF for APAR PM12819 adds a new DB2 9 subsystem parameter,
   DB2SORT, that specifies whether to use DB2 Sort for z/OS for
   utility sort processing when DB2 Sort is installed. Valid
   settings for the new parameter, DB2SORT, are DISABLE and ENABLE.
   The default is DISABLE, which means that utilities will use
   DFSORT for sort processing, even if DB2 Sort is installed.
                                                               .

   If you have already installed or migrated to DB2 9, you need
   to take the following actions after applying this PTF:
   (1) Update your DB2 subsystem parameter (DSNZPxxx) modules:
        -> This action is optional if you use the default setting
        -> of DB2SORT=DISABLE -- in that case re-assemble and
        -> re-linkedit of the subsystem parameter / zparm module is
        -> not necessary
       * Add the following keyword parameter to the invocation
         of the DSN6SPRM macro in your customized version of the
         DSNTIJUZ installation job, where <n> is either DISABLE
         or ENABLE:
             DB2SORT=<n>,
         Ensure that you add a continuation character in column 72
         if needed. If you omit adding DB2SORT here, the value will
         be set to the default of DISABLE when you assemble the
         DSNZPxxx
        * Run the first two steps of the DSNTIJUZ job you modified,
```

* After the job completes, you must either use the SET
                SYSPARM command or stop and start DB2 for the change to
                take effect.
         (2) This PTF adds an entry for DB2SORT=DISABLE to the CLIST
             default input member, DSNTIDXA, in the SDSNSAMP target
             library. You need to add this entry to all private copies
             of your CLIST output (DSNTIDxx) member. In each such copy,
             add the following line:
                                                                        .
     DB2SORT CHAR M DISABLE   ENABLE   DISABLE
                                                                        .
             Change the second occurrence of DISABLE to ENABLE if you
             specified DB2SORT=ENABLE in step (1), above.
                                                                        .
         (3) Update customized copies of DB2 installation CLIST member
             DSNTINST:
             This PTF modifies CLIST member DSNTINST in the SDSNCLST
             target library only. You need to redo any record format
             changes and reapply any tailoring you have done to your
             copies of this CLIST. You may also want to move it to the
             prefix.NEW.SDSNCLST data set, where the CLISTs processed by
             job DSNTIJVC reside.
                                                                        .
      Refer to the relevant DB2 Sort for z/OS publication for further
      details regarding the implementation and exploitation of
      DB2 Sort for z/OS.
    ACTION:
      This APAR PK92248 will override the TMAXLIM installation option
      of DFSORT when invoked from DB2. In that case DB2 will pass the
      assigned memory limit in DFSORT option DSA which is determined
      from available memory and limited by current DFSORT installation
      options SIZE, DSA, or TMAXLIM. In order to achieve a more
      dynamic allocation of memory by DFSORT according to the amount
      of data being sorted, DB2 will limit the TMAXLIM value to the
      DFSORT default value of 6 MB if it is set to a larger value.
      Smaller TMAXLIM installation options are passed unchanged.

      This invocation will limit the memory use to the same amount
      as when DB2 chose to invoke DFSORT with a MAINSIZE value
      specified. However the new invocation will cause DFSORT to
      allocate less memory if that is already sufficient.
    ACTION:
      This APAR PK85889 enables additional zIIP offload of DB2
      Utilities sort workloads. The DFSORT support for this additional
      offload is provided by APAR PK85856. The ability to offload sort
      processing to zIIP will only exist if both DB2 and DFSORT APARs
      are installed. If either one is missing then the new function
      will not be available. Both APARs can be installed independently
      of each other.
  .

  ------ COVER LETTER FOR PTF UK59106 ------------

PROBLEM DESCRIPTION(S):
  PM10726 -

```
****************************************************************
* USERS AFFECTED: All users of the DB2 installation CLIST in   *
*                 DB2 UDB for z/OS Version 8 and DB2 Version    *
*                 9.1 for z/OS are affected by this change.     *
****************************************************************
* PROBLEM DESCRIPTION: This APAR provides a tool that can be    *
*                      used to update a CLIST defaults input    *
*                      member (DSNTIDXA) with the current       *
*                      ZPARM and buffer pool settings that are  *
*                      defined in the specified DB2 subsystem.  *
*                                                               *
*                      The following are also addressed in      *
*                      this APAR:                               *
*                      1. The DEALLOC PERIOD field in the       *
*                         DSNTIPA panel does not currently      *
*                         accept values with a format of        *
*                         minutes,seconds if the minutes is     *
*                         set to 0.                             *
*                      2. The following opaque ZPARMs are       *
*                         recognized by the CLIST defaults      *
*                         input member update tool but is not   *
*                         currently supported by the install    *
*                         CLIST:                                *
*                           - OPTIXIO                           *
*                           - PTASKROL                          *
*                           - RPITWC (V9 only)                  *
*                           - PTCDIO                            *
*                           - SJMISSKY                          *
*                           - SQLINTRP                          *
*                           - UNION_COLNAME_7                   *
****************************************************************
* RECOMMENDATION: Apply PTF.                                    *
****************************************************************
```

When using the installation CLIST to install or migrate to a new
version of DB2, one can save the configuration options into an
output member often referred to as DSNTIDxx member. The saved
DSNTIDxx member can subsequently be used as input to the CLIST
when migrating to a new version. Although the CLIST provides an
update function for maintaining the settings in the DSNTIDxx
member, often times, this is not used and the ZPARM settings are
manually updated in the DSNTIJUZ job. In the process, the values
in the current DSNTIDxx member are outdated which makes the
subsequent migration process time consuming, error-prone and
cumbersome.

The DEALLOC PERIOD field in panel DSNTIPA does not currently
allow users to specify 0 for minutes when one specifies a value
in the minutes,seconds format. As a result, when one specifies
a valid value of 0,30 for DEALLOC PERIOD, the 'Value out of
range' error message is returned.

Finally, the install CLIST does not currently recognize
certain opaque ZPARMs. If the following opaque ZPARMs are
added to the CLIST input member (DSNTIDXA) and the install
CLIST is used to customized the install and migration jobs,
then these opaque ZPARMs will not be included in the generated

```
DSNTIJUZ job:
 - OPTIXIO
 - PTASKROL
 - RPITWC (V9 only)
 - PTCDIO
 - SJMISSKY
 - SQLINTRP
 - UNION_COLNAME_7
```

This APAR adds a job called DSNTIJXZ in SDSNSAMP that executes a batch program called DSNTXAZP. This job can be used to update the CLIST defaults input member to use the ZPARM and buffer pool settings that are currently defined in the specified DB2 subsystem.

The DSNTIPA panel was updated to accept values specified in the minutes,seconds format in the following range:

```
  minutes - 0 to 1440
  seconds - 0 to 59
```

The install CLIST was updated to support the following opaque ZPARM parameters:
```
 - OPTIXIO
 - PTASKROL
 - RPITWC (V9 only)
 - PTCDIO
 - SJMISSKY
 - SQLINTRP
 - UNION_COLNAME_7
```

```
======================
Additional Information
======================
```

The user ID specified to run job DSNTIJXZ requires DB2 MONITOR1 privilege.

The DSNTXAZP batch program expects the following arguments:

```
  //DSNTIXZ  EXEC PGM=DSNTXAZP,PARM='ssid action'
```

where:

```
  ssid
   - The first argument is the DB2 subsystem ID

  action
   - The second argument is the type of action to be performed
     which can be one of the following values:

     UPDATE_ALL   - This action will create a new CLIST defaults
                    input member and update it using the current
                    ZPARM and buffer pool settings.
     UPDATE_BPOOL - This action will create a new CLIST defaults
                    input member and update it using the current
                    buffer pool settings only (no ZPARM)
```

```
        UPDATE_ZPARM - This action will create a new CLIST defaults
                       input member and update it using the current
                       ZPARM settings only (no buffer pool)

    The following DD statements are required by DSNTXAZP:

       XAINPUT  : This is used as input to the DSNTXAZP program. It
                  contains the current CLIST defaults input member
                  which will be used as the source for creating a new
                  CLIST defaults input member. The version of the
                  input member should match the version of the
                  current selected DB2 subsystem.

       XAOUTPUT : This is used as output by the DSNTXAZP program. It
                  contains the generated CLIST defaults input member
                  with updated ZPARM and buffer pool settings. This
                  should be a member of a PDS defined with RECFM=FB
                  and LRECL=80.

       SYSPRINT : This is used as output by the DSNTXAZP program for
                  informational and error messages. It also includes
                  a report on the parameters that were processed and
                  modified. Refer to the SAMPLE GENERATED REPORT
                  section for details on the report.

=======================
SAMPLE GENERATED REPORT
=======================

CLIST INPUT MEMBER GENERATION REPORT ** 2010-06-15 09:25:35  Ý1¨
----------------------------------------------------------

CLIST PARAMETER REPORT:  Ý2¨

0001 PARAMETER NAME            = ABEXP
     ZPARM/BUFFERPOOL PARAMETER = ABEXP
     PARAMETER TYPE            = CHAR
     DATA SHARING SCOPE        = M
     MINIMUM VALUE             = NO
     MAXIMUM VALUE             = YES
     CURRENT CLIST VALUE       = YES
     CURRENT INSTALLED VALUE   = YES
     STATUS                    = RETAINED

0002 PARAMETER NAME            = ABIND
     ZPARM/BUFFERPOOL PARAMETER = ABIND
     PARAMETER TYPE            = CHAR
     DATA SHARING SCOPE        = M
     MINIMUM VALUE             = NONE
     MAXIMUM VALUE             = NONE
     CURRENT CLIST VALUE       = YES
     CURRENT INSTALLED VALUE   = NO
     STATUS                    = UPDATED
  :
nnnn PARAMETER NAME            = DB2REL
     ZPARM/BUFFERPOOL PARAMETER = N/A
```

```
            PARAMETER TYPE               = CHAR
            DATA SHARING SCOPE           = M
            MINIMUM VALUE                = NONE
            MAXIMUM VALUE                = NONE
            CURRENT CLIST VALUE          = 910
            CURRENT INSTALLED VALUE      = N/A
            STATUS                       = RETAINED
        :


    CHANGE SUMMARY REPORT:   Ý3¨


      CLIST PARAMETER        ZPARM/BUFFERPOOL PARAMETER      VALUE
      ----------------------------------------------------------------
      ABEXP                  -SAME-                          YES
    * ABIND        Ý4¨       -SAME-             Ý8¨          NO (YES)  Ý5¨
        :
    * BUFMAX00               BP0 VPSIZE         Ý6¨          10000 (20000)
        :
      DB2REL                 -NONE-             Ý7¨          910
        :
    * NUMCONCR     Ý4¨       CTHREAD            Ý8¨          220 (200)
      OVDSMAX                DSMAX                           20000
        :

      ----------------------------------------------------------------
      SOURCE MEMBER        : DSN910.SDSNSAMP(DSNTIDXA)       Ý9¨
      CREATED MEMBER       : DB2.CLIST.MEMBER(DSNTIDX0)      Ý10¨
      PARAMETERS PROCESSED : n                               Ý11¨
      PARAMETERS MODIFIED  : m                               Ý12¨
      ----------------------------------------------------------------
```

** For this example, the width of the CHANGE SUMMARY REPORT was
   shortened to fit this page but the actual width is longer.

NOTES:
 1. The date and time on when the CLIST defaults input member
    was created is provided in the report.
 2. The first part of the report is the CLIST PARAMETER REPORT
    which provides details for each parameter that was written
    out to the generated CLIST input member.
 3. The second part of the report is the CHANGE SUMMARY REPORT
    which provides a quick view of the parameters that were
    updated and parameters that have different ZPARM names or
    buffer pool related parameters.
 4. Modified parameters can easily be identified since they are
    prefixed with '*' in the first column.
 5. Modified values have two sets of values displayed. The first
    one is the new value and the second value enclosed in
    parenthesis ( ) is the old value.
 6. For CLIST input member parameters that map to a buffer pool
    setting, the corresponding buffer pool parameter is
    displayed.
 7. For CLIST defaults input member parameters used only by the
    install CLIST, that do not map to any ZPARM or buffer pool
    parameter, the value '-NONE-' is displayed on the second
    column.
 8. ZPARM parameters who have the same names as the CLIST

input member parameter have the value '-SAME-' displayed on
                    the second column while ZPARM parameters whose names are
                    different from the CLIST input member parameter have the
                    actual ZPARM name displayed on the second column.
             9. The name of the source CLIST defaults input member.
            10. The name of the CLIST defaults input member created.
            11. The total number of CLIST defaults input member parameters
                    processed.
            12. The total number of CLIST defaults input member parameters
                    modified.
        PM19862 -
           ****
           * USERS AFFECTED: All users of the DB2 installation CLIST in   *
           *   DB2 UDB for z/OS Version 8 and DB2 Version   *
           *   9.1 for z/OS are affected by this change.   *
           ****
           * PROBLEM DESCRIPTION: This is an AE APAR on APAR PM10726   *
           ****
           * RECOMMENDATION: *
           ****
           Refer to the closing text for PM10726.
           Refer to the closing text for PM10726.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM10726,PM19862
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
               LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
     The following messages are added to the DB2 Messages & Codes
     manual and has the following description:

     DSNT012I program-name rrsaf-function REQUEST FAILED. DSNRLI
              RETURN CODE = dsnrli-return, RRSAF RETURN CODE =
              rrsaf-return, RRSAF REASON CODE = rrsaf-reason

     Explanation:
     The program encountered an error when it attempted to establish
     a connection to the DB2 subsystem.

     rrsaf-function
        The DB2 Recoverable Resource Services Attachment Facility
        (RRSAF) function that was called.

     dsnrli-return
        A numeric value that indicates the reason for the failure.

     rrsaf-return
        The return code issued by DB2 Recoverable Resource Services
        Attachment Facility (RRSAF).

     rrsaf-reason
        The reason code issued by the DB2 Recoverable Resource
        Services Attachment Facility (RRSAF).

     System action:
     The program terminates.

User response:
Use the return codes provided for DSNRLI and RRSAF to determine
the problem, and proceed as instructed.

Severity:
12 (severe error)

DSNT014I program-name file-operation FILE ERROR FOR DD:dd-name.
         DIAGNOSTIC TEXT diagnostic-text

Explanation:
The program encountered an error for the data set allocated to
the data definition statement.

file-operation
  The file operation during which the error occurred: OPEN,
  READ, WRITE, or CLOSE.

dd-name
  The name of the data definition statement.

diagnostic-text
  Additional diagnostic information for the error.

System action:
The file operation fails and the program terminates.

User response:
Correct the error indicated by the diagnostics, which are
provided by the IBM Language Environment.

Severity:
12 (severe error)

DSNT016I DSNTXAZP THE CLIST INPUT MEMBER dsname(member) WAS
         SUCCESSFULLY CREATED

Explanation:
DSNTXAZP has successfully created the CLIST defaults input
member and stored it as dsname(member).

dsname(member)
  The name of the data set and member.

System Action:
In addition to the generated CLIST defaults input member, a
report is also generated and written to SYSPRINT.

User Response:
None.

DSNT017I DSNTXAZP AN ERROR WAS ENCOUNTERED DURING PROCESSING,
         ERROR = error-text
Explanation
The program encountered an error during processing.

error-text
  Additional information about the error. Expected values
  include:
  o THE DB2 VERSION AND THE VERSION OF THE CLIST INPUT MEMBER
    ARE NOT THE SAME
  o FAILED TO CONNECT TO DB2
  o DSNWLI CALL FAILED, IFCARC1=ifcarc1, IFCARC2=ifcarc2,
    IFCABNM=ifcabnm, IFCAGRSN=ifcagrsn, IFCAGBNM=ifcagbnm
  o RETRIEVE FILE INFO FAILED (diagnostic-text)
  o INVALID ACTION 'action' WAS SPECIFIED
  o UNEXPECTED NUMBER OF PARAMETERS FOUND (ACTUAL=number-found,
    EXPECTED=number-expected)
  o MAXIMUM LENGTH FOR ACTION IS max-length
  o MAXIMUM LENGTH FOR SSID IS max-length
  o INSUFFICIENT MEMORY AVAILABLE
  o THE INPUT AND OUTPUT DATA SET MEMBER ARE THE SAME
  o VERSION version IS NOT SUPPORTED

  Tokens used within the error-text value include:

  action
    The action that was specified.

  diagnostic-text
    Diagnostic information for the failure.

  number-found
    The number of parameters provided.

  number-expected
    The number of parameters expected.

  max-length
    The maximum length permitted for the indicated object.
  ifcarc1
    A numeric value that indicates the reason for the failure.

  ifcarc2
    A numeric value that indicates the reason for the failure.

  ifcabnm
    A numeric value that indicates the number of bytes that
    could not fit in the return area.
  ifcagrsn
    A numeric value that indicates the reason for the failure.
  ifcagbnm
    A numeric value that indicates the number of bytes that
    could not fit in the return area.
  version
    The version that was specified.

System Action:
  The program terminates and the CLIST input member is not
  created.

User Response:
    Check error-text for further description on the error and
    correct the error.

  Severity:
    12 (severe error)
ACTION:
  This PTF updates DB2 installation job DSNTIJSG to add BIND
  and GRANT statements for the DSNTXAZP package and plan. It also
  updates the installation CLIST to add support for a number of
  opaque ZPARMs that is recognized by the CLIST defaults input
  member update tool. If you have already installed or migrated
  to Version 9, then after applying this PTF you need to take the
  following actions:

  (1) Update private copies of the installation CLIST
  (2) Update your customized copy of job DSNTIJSG
  (3) Run the BIND and GRANT statements
  (4) Copy updated DB2 installation panels to alternate libraries
  (5) Customize and run sample job DSNTIJXZ to create an updated
      DSNTIDxx CLIST defaults input member

  Procedures for these actions are given below.
  ----
  (1) Update private copies of the installation CLIST
      ****
      * All current V9 customers need to perform this step
      ****
      This PTF modifies the DB2 installation CLIST member
      DSNTINST and DSNTINS1 in the prefix.SDSNCLST target library.
      After applying this PTF, you need to redo any record format
      changes and reapply any tailoring you have done to your
      copies of DSNTINST and DSNTINS1. You may also want to move
      them to the prefix.NEW.SDSNCLST data set, where the CLISTs
      processed by job DSNTIJVC reside.

  (2) Update your customized copy of job DSNTIJSG
      ****
      * All V9 customers who maintain a private copy of DB2
      * installation job DSNTIJSG need to perform this step.
      ****
      (a) Add the following BIND statements in step DSNTIRU after
          the BIND PACKAGE(DSNWSPM) statement:

          BIND PACKAGE(DSNTXAZP) MEMBER(DSNTXAZP) -
              ACTION(REPLACE) ENCODING(EBCDIC) -
              LIBRARY('prefix.SDSNDBRM')
          BIND PLAN(DSNTXAZP) -
              PKLIST(DSNTXAZP.DSNTXAZP) -
              ACTION(REPLACE) ENCODING(EBCDIC)

          where <prefix> is the high-level qualifier for the
          target DB2 subsystem.

        (b) Add the following GRANT statements in step DSNTIJG

                              110

```
                  GRANT EXECUTE ON PLAN DSNTXAZP TO PUBLIC;
                  GRANT EXECUTE ON PACKAGE DSNTXAZP.DSNTXAZP TO PUBLIC;
```

(3) Run the BIND and GRANT statements
    ****
    * All V9 customers who want to use the DSNTXAZP program
    * must submit a job to bind the package and plan and grant
    * execute access on the plan and package. It should contain
    * the following BIND and GRANT statements:
    ****

    Submit a job that contains the following BIND statements:

```
        BIND PACKAGE(DSNTXAZP) MEMBER(DSNTXAZP) -
              ACTION(REPLACE) ENCODING(EBCDIC) -
              LIBRARY('prefix.SDSNDBRM')
        BIND PLAN(DSNTXAZP) -
              PKLIST(DSNTXAZP.DSNTXAZP) -
              ACTION(REPLACE) ENCODING(EBCDIC)
```

    where <prefix> is the high-level qualifier for the
    target DB2 subsystem.

    Submit a job that contains the following GRANT statements:

```
        GRANT EXECUTE ON PLAN DSNTXAZP TO PUBLIC;
        GRANT EXECUTE ON PACKAGE DSNTXAZP.DSNTXAZP TO PUBLIC;
```

(4) Copy updated DB2 installation panels to alternate libraries
    ****
    * All V9 customers who maintain copies of the DB2 install
    * panels outside of SMP/E need to perform this step
    ****
    This PTF modifies DB2 installation panel DSNTIPA in the
    prefix.SDSNSPFP target library. If you keep the DB2
    installation panels in a different library then after
    applying this PTF, you need to copy the updated DSNTIPA
    panel to that library.

(5) Customize and run sample job DSNTIJXZ to create an updated
    DSNTIDxx CLIST defaults input member
    ****
    * Optional for V9 customers who want to run the DSNTIJXZ
    * job to update their DSNTIDxx CLIST defaults input member
    ****
    This PTF adds DB2 installation job DSNTIJXZ in the
    prefix.SDSNSAMP target library. If you want to create an
    updated version of your private DSNTIDxx member from
    current DB2 settings then copy this job to your
    prefix.NEW.SDSNSAMP library and customize it by following
    the directions in the job prolog. Run the job
    periodically to keep your DSNTIDxx member up to date.

    The user ID specified to run job DSNTIJXZ requires DB2
    MONITOR1 privilege.

    .

                          111

```
------ COVER LETTER FOR PTF UK59283 ------------

PROBLEM DESCRIPTION(S):
  PM14772 -
      ****************************************************************
      * USERS AFFECTED: All DB2 for z/OS users with data-sharing    *
      *                 groups that have coexistence between a      *
      *                 DB2 for z/OS V8 or DB2 9 for z/OS subsystem *
      *                 and a DB2 subsystem of higher release.      *
      ****************************************************************
      * PROBLEM DESCRIPTION: Incorrect MODE reported in the         *
      *                 DISPLAY GROUP command output of a DB2       *
      *                 V8 or DB2 9 member when in coexistence      *
      *                 with a DB2 subsystem of higher release.     *
      ****************************************************************
      * RECOMMENDATION:                                             *
      ****************************************************************
      DB2 V8 and DB2 9 code did not recognize the group level of
      a higher DB2 release, leading to their incorrectly reporting a
      MODE of "N ".
      DB2 V8 and DB2 9 code have been modified to display the correct
      MODE in the DISPLAY GROUP command output, when in coexistence
      with a DB2 subsystem with higher release.

      Note that both DB2 V8 and DB2 9's DISPLAY GROUP outputs for
      MODE will now always be a length-4 character field instead of
      the previous length-2 character field.

      Before application of this PTF, the DISPLAY GROUP output for
      a DB2 9 subsystem may show:

      *** BEGIN DISPLAY OF GROUP(XXXXXXXX) GROUP LEVEL(910) MODE(N )

      After application of this PTF, the DISPLAY GROUP output for
      the same subsystem and data-sharing group will show:

      *** BEGIN DISPLAY OF GROUP(XXXXXXXX) GROUP LEVEL(910) MODE(N   )

      ADDITIONAL KEYWORDS: DB2DSHR

  PM20545 -
      ****************************************************************
      * USERS AFFECTED: All users of DB2 9 for z/OS who will be     *
      *                 using Query Accelerator support enabled     *
      *                 by APAR PM10993 (PTF UK58717).              *
      ****************************************************************
      * PROBLEM DESCRIPTION: New function to support Query          *
      *                 Accelerator.                                *
      ****************************************************************
      * RECOMMENDATION:                                             *
      ****************************************************************
      This APAR provides new function needed by Query Accelerator.

      This APAR provides new function needed by Query Accelerator.
```

PM23243 -
```
      ****************************************************************
      * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS users *
      *                 that:                                         *
      *                                                              *
      *                 (1) Use the -DISPLAY GROUP command           *
      *                                                              *
      *                 or                                           *
      *                                                              *
      *                 (2) Use the following DB2-supplied           *
      *                     stored procedures:                       *
      *                     (a) SYSPROC.ADMIN_COMMAND_DB2            *
      *                     (b) SYSPROC.ADMIN_INFO_SYSPARM           *
      *                     (c) SYSPROC.ADMIN_INFO_HOST              *
      *                     (d) SYSPROC.GET_CONFIG                   *
      ****************************************************************
      * PROBLEM DESCRIPTION: The DISPLAY GROUP command output         *
      *                      displayed an incorrect MODE value        *
      *                      when the data sharing group is in        *
      *                      coexistence.                             *
      *                                                              *
      *                      In a data sharing group with mixed       *
      *                      releases, when SYSPROC.ADMIN_COMMAND_     *
      *                      DB2 and SYSPROC.ADMIN_INFO_SYSPARM are    *
      *                      executing in a DB2 version 8 or 9         *
      *                      member, and the request is to be         *
      *                      executed at a V10 member, the request     *
      *                      is not processed. Message DSNA601I is     *
      *                      returned by ADMIN_COMMAND_DB2 to          *
      *                      indicate that the DB2 member is           *
      *                      invalid, and DSNA635I is returned by      *
      *                      ADMIN_INFO_SYSPARM to indicate that       *
      *                      the DB2 version is not supported.         *
      ****************************************************************
      * RECOMMENDATION:                                              *
      ****************************************************************
```
When a DISPLAY GROUP command is issued on any subsystem, the
MODE of the subsystem itself could be displayed. This may be
misleading in data sharing groups with members at different
DB2 releases.

In a data sharing group with mixed releases, when
SYSPROC.ADMIN_COMMAND_DB2 and SYSPROC.ADMIN_INFO_SYSPARM are
executing in a DB2 version 8 or 9 member, these procedures
check the DB2 version of the member where the request is to be
executed. If the version of the target DB2 member is not 8 or
9, the request is rejected.
This APAR will change the output of the DISPLAY GROUP command
in 3 ways:

(1) The MODE field will now display "X " under these scenarios:

    (a) If not all members of the data sharing group are on the
        same DB2 release level (i.e. the group is in
        coexistence)

(b) If a DB2 subsystem was previously at a higher DB2
              release level. (i.e. a fallback was performed)

      (2) The GROUP LEVEL field name will be changed to CATALOG LEVEL

      (3) The CATALOG LEVEL field will now display a meaningful value
          such as '910' (for DB2 9) when the DISPLAY GROUP command is
          issued on non data sharing subsystems. Previously, a value
          of '...' was displayed.

      For more information on the DISPLAY GROUP changes, please refer
      to the information about -DISPLAY GROUP in the Information
      Management Software for z/OS Solutions information center.

      This APAR also contains changes to the following DB2-supplied
      stored procedures:

      (1) SYSPROC.ADMIN_COMMAND_DB2 and SYSPROC.ADMIN_INFO_SYSPARM
          to support DB2 10 for z/OS

      (2) SYSPROC.ADMIN_COMMAND_DB2 and SYSPROC.GET_CONFIG to handle
          the change of the GROUP LEVEL field name to CATALOG LEVEL
          in the -DISPLAY GROUP output.

      ADDITIONAL KEYWORDS: MSGDSNA601I , MSGDSNA635I , DB2DSHR

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM14772,PM20545,PM23243
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    After application of PM23243's PTF, the CATALOG LEVEL and MODE
    field in the DISPLAY GROUP command output may change and
    applications or programs that read those fields may need to be
    updated.

    For example, in a data sharing group with DB2 V8 and 9 members,
    the DISPLAY GROUP output on a DB2 9 member will now show 'X'
    in the MODE field:

    DSN7100I -DB1A DSN7GCMD
    *** BEGIN DISPLAY OF GROUP(DSNDB10) CATALOG LEVEL(910) MODE(X)
            PROTOCOL LEVEL(2) GROUP ATTACH NAME(DB10)

    DB2   DB2 SYSTEM   IRLM
    MEMBER   ID SUBSYS CMDPREF   STATUS   LVL NAME   SUBSYS
    -------- --- ----   -------- -------- --- -------- ----
    DB1A   1 DB1A   -DB1A   ACTIVE   910 MVSA   DJ1A
    DB1B   2 DB1B   -DB1B   ACTIVE   910 MVSB   DJ1B
    DB1C   3 DB1C   -DB1C   ACTIVE   910 MVSC   DJ1C
    DB1D   4 DB1D   -DB1D   FAILED   810 MVSD   DJ1D
    DB1E   5 DB1E   -DB1E   QUIESCED 810 MVSE   DJ1E

    *** END DISPLAY OF GROUP(DSNDB10)

```
DSN9022I -DB1A DSN7GCMD ' DISPLAY GROUP ' NORMAL COMPLETION


Similarly, in a data sharing group with DB2 9 and 10 members,
the DISPLAY GROUP output on a DB2 9 member will now show 'X'
in the MODE field:


DSN7100I -DB1A DSN7GCMD
*** BEGIN DISPLAY OF GROUP(DSNDB10 ) CATALOG LEVEL(101) MODE(X )
         PROTOCOL LEVEL(2)  GROUP ATTACH NAME(DB10)
-------------------------------------------------------------------
DB2                                      DB2 SYSTEM    IRLM
MEMBER    ID  SUBSYS CMDPREF    STATUS   LVL NAME      SUBSYS
--------  --- ----   --------   -------- --- --------  ----
DB1A       1 DB1A    -DB1A      ACTIVE   910 MVSA      DJ1A
DB1B       2 DB1B    -DB1B      ACTIVE   910 MVSB      DJ1B
DB1C       3 DB1C    -DB1C      ACTIVE   910 MVSC      DJ1C
DB1D       4 DB1D    -DB1D      ACTIVE   101 MVSD      DJ1D
DB1E       5 DB1E    -DB1E      QUIESCED 101 MVSE      DJ1E
-------------------------------------------------------------------
*** END DISPLAY OF GROUP(DSNDB10 )
DSN9022I -DB1A DSN7GCMD ' DISPLAY GROUP ' NORMAL COMPLETION


Additionally, the CATALOG LEVEL field will now show a meaningful
value even on non data sharing members:


DSN7100I -DB1A DSN7GCMD
*** BEGIN DISPLAY OF GROUP(.......) CATALOG LEVEL(910) MODE(N )
         PROTOCOL LEVEL(...)  GROUP ATTACH NAME(....)
-------------------------------------------------------------------
DB2                                      DB2 SYSTEM    IRLM
MEMBER    ID  SUBSYS CMDPREF    STATUS   LVL NAME      SUBSYS
--------  --- ----   --------   -------- --- --------  ----
........    0 DB1A    -DB1A      ACTIVE   910 MVSA      DJ1A
-------------------------------------------------------------------
*** END DISPLAY OF GROUP(DSNDB10)
DSN9022I -DB1A DSN7GCMD 'DISPLAY GROUP ' NORMAL COMPLETION


Note that some unchanged portions of the outputs were omitted
in these samples.

Finally, the description of message DSN7101I was modified in the
information about -DISPLAY GROUP in the Information Management
Software for z/OS Solutions information center to reflect the
changes shown above:

===================================================================
Description of message DSN7101I:

GROUP
   The name of the data sharing group
```

```
      CATALOG LEVEL
        A string of numeric characters that lists the following
        information:
          - DB2 version
          - DB2 release
          - DB2 modification level
        DB2 release indicates the highest release with which any DB2
        subsystem in the group has been started.

      MODE
        Indicates the member's mode, as follows:
          - C indicates conversion mode. In this case, all
            members in the group are on the same DB2 release.
          - ...
          - X indicates coexistence mode. In this case, at
            least one other member in the data sharing group
            has a different release or performed fallback
            from a higher DB2 release.
      ================================================================
  ACTION:
    Note that after the application of PM14772's PTF, the MODE in
    in the DISPLAY GROUP output will be a length-4 character field
    instead of the previous length-2 character field.

    See PM14772's APAR/PTF text for additional information.
.


------ COVER LETTER FOR PTF UK59310 ------------

PROBLEM DESCRIPTION(S):
  PM16020 -
    ****************************************************************
    * USERS AFFECTED: All DB2 for z/OS parallelism users          *
    *                 who are on V9.                              *
    ****************************************************************
    * PROBLEM DESCRIPTION: Poor query performance when a          *
    *                      suboptimal access path is chosen       *
    *                      when parallelism is enabled.           *
    *                                                             *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    Prior to DB2 V9, DB2 chose the access path with the cheapest
    sequential cost then attempted to parallelize this access path.
    In DB2 V9, DB2 costs candidate access paths and preserves
    several access paths for parallelism consideration.  There
    is a parallelism-based cost reduction provided to the candidate
    access paths based on their ability to exploit parallelism.
    The ability to go parallel and the degree of parallelism for
    a particular access path can become a major factor in the
    access path being chosen.  DB2 can be overly optimistic
    when providing a cost reduction based on the effectiveness
    of parallelism.  This can cause DB2 to choose an access path
    which has higher processing cost, but parallelizes better.
    If the parallelism is not as effective as expected, the higher
```

processing costs result in DB2 choosing an access path which
has a higher processing cost without the expected parallelism
elapsed time reduction.

Additional Keywords:
SQLCPUP   SQLPARALLELISM   SET CURRENT DEGREE ANY
SQLPERFORMANCE   SQLACCESSPATH

This APAR introduces a new subsystem parameter, PARA_EFF.
PARA_EFF is a parameter which DB2 uses to control how
much cost reduction to provide based on parallelism.
It controls DB2's parallelism efficiency assumption.

1. Setting PARA_EFF:

You can set PARA_EFF to a value from 0 to 100.
Consider the value as a percentage from 0% to 100%.

If you set PARA_EFF to 0, DB2 will choose the access
path with the cheapest estimated sequential cost.
This effectively restores pre-DB2 9 behavior.

The default for PARA_EFF is 100. DB2 will apply the
same DB2 9 parallelism cost reduction as you would have
without applying this fix.

If you set PARA_EFF to a value between 1 and 99,
this results in a less optimistic assumption regarding
parallelism efficiency within DB2. So DB2 will retain
the DB2 9 behavior of allowing an access path which
obtains (more) parallelism in the optimization decision,
but the cost reduction is diluted.

The closer PARA_EFF is to 100, the more aggressive
DB2 will be at choosing an access path that has
higher estimated processing costs to obtain an
access path with more parallelism.

The closer PARA_EFF is to 1, DB2 will still consider
the parallelism reduction but it will have a
proportionally reduced effect on the overall
optimization choice.

2. The following arbitrary example is for illustration purposes:

Query 1 has access path candidates AP1 and AP2

AccessPath	sequential_cost	parallel_degree	parallel_reduced_cost
AP1	1000	5	400
AP2	2000	20	300

In this case, access path AP2 has 2x the cost of AP1's
sequential access path estimated cost. However, access
path AP2 obtains a degree 4x as high as access path AP1
(20 degrees versus 5 degrees). With a full parallelism
cost reduction, DB2 chooses an access path whose sequential
cost is 2 times higher, but the benefit is a higher degree
of parallelism and hopefully a lower elapsed time.

If PARA_EFF is set to 50, the sequential costs for both
AP1 and AP2 would be the same as before, but both parallel
reduced costs would be higher.

```
AccessPath sequential_cost parallel_degree parallel_reduced_cost
---------- --------------- --------------- ---------------------
AP1        1000            5               700
AP2        2000            20              1150
```

With PARA_EFF of 50, the parallelism reduction for access path
AP2 is no longer enough to compensate for the higher processing
cost to result in a cheaper estimate than the parallel reduced
cost for AP1. Indeed, the parallel reduced cost for AP2 is
higher than the sequential cost for access path AP1. It is
possible if AP2 were able to obtain 40, 50, or 60 degrees of
parallelism and AP1 were stuck at 5 degrees of parallelism that
the parallelism reduction might make AP2 more competitive, and
DB2 might once again choose access path AP2 over access path
AP1.

3. Interactions with PARAMDEG:

Queries which have a high degree of parallelism get a larger
parallelism reduced cost. The lower PARAMDEG, the lower the
possible parallelism reduced cost (fewer degrees of parallelism
means less parallelism reduced cost). If PARAMDEG were set to
10, access path AP2 above would not have been able to obtain 20
degrees of parallelism. It would not have obtained the initial
parallel reduced cost that drove it to be chosen over access
path AP1. The higher the possible degree of parallelism,
the lower PARA_EFF would need to be set to obtain a conservative
choice.

4. Recommendation:

Without the fix, DB2's parallelism assumptions are too
optimistic. For an access path with a higher sequential cost
to win over competing plans, it's sequential cost needs to be
closer, or it's parallelism benefit great enough to win over
the access paths it is competing against. We recommend you
use 50 for PARA_EFF. For existing DB2 9 parallelism users,
if by any chance there is performance regression after setting
PARA_EFF to 50, switching it back to 100 will restore the
original performance.

If you are migrating from DB2 V8 and you do not want DB2 to

consider parallelism reduction at all, you can set it to 0.
This will allow for parallelizing of the winning sequential
plan only, just as in V8.

If you have been running with DB2 9 parallelism and are not
experiencing access path regressions for parallel queries,
you can retain existing behavior by keeping PARA_EFF at the
default setting, which is 100.

5. Why does this APAR contain a V8 change?

Please note that although this is a V9 APAR, it does include
a small V8 change. The APAR updates DSNADMIZ, the external
module for the SYSPROC.ADMIN_INFO_SYSPARM stored procedure
in DB2 V8 and V9, so that it can report the setting for the
new PARA_EFF subsystem parameter. In DB2 data sharing, a
SYSPROC.ADMIN_INFO_SYSPARM connection on any member of the
group can query the subsystem, DECP and certain IRLM
parameter settings of any other member of that group.
In order to support V9 data sharing coexistence mode, the V8
SYSPROC.ADMIN_INFO_SYSPARM must recognize the new PARA_EFF
subsystem parameter.

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM16020
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  DB2BIND:
    See PM16020 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM16020 fixes a query performance problem in which a poor access
    path may be chosen when parallelism is enabled. A new
    subsystem parameter, PARA_EFF, is introduced to control how much
    cost reduction to provide when estimating the cost of the query
    based on parallelism.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PM02615 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM02615 corrects an ABEND04E problem in DSNXSPRM when
    parallelism is enabled and the leading table of a join uses
    list prefetch on a DPSI index. This problem is data dependent.
    Queries that do not ABEND now may still run into this
    problem in the future when data evolves with new or updated
    data, until rebind is done.

    To make this fix effective for a static application, it must be

```
     rebound after application of this PTF.  Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
DB2BIND:
  ***Action for PK90370:

  See PK90370 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK90370 corrects a problem of inaccurate cost estimation
  of a query that uses OPTIMIZE FOR n ROWS and parallelism is
  enabled.  Such inaccurate cost estimation may result in an
  inefficient access path.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF.  Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
ACTION:
  Installation-related post-apply actions:

  This PTF adds a new DB2 9 subsystem parameter, PARA_EFF, that
  specifies a parallelism efficiency factor for the DB2 optimizer.
  Valid settings are integers ranging from 0 to 100.  The default
  is 100.

  If you have already installed or migrated to DB2 9, you need
  to take the following actions after applying this PTF:
  (1) Update your DB2 subsystem parameter (DSNZPxxx) modules:
      * Add the keyword parameter
          PARA_EFF=<n>,
        where <n> is an integer from 0 to 100, to the
        invocation of the DSN6SPRM macro in your customized
        version of the installation job DSNTIJUZ.  Make sure to
        add a continuation character in column 72 if needed.
        If you omit adding PARA_EFF here, the value will be
        set to the default of 100 when you assemble the
        DSNZPxxx
      * Run the first two steps of the DSNTIJUZ job you modified
      * After the job completes, you must either use the -SET
        SYSPARM command or stop and start DB2 for the change to
        take effect.

  (2) This PTF adds an entry for PARA_EFF=100 to the CLIST
      default input member, DSNTIDXA, in the SDSNSAMP target
      library.  You need to add this entry to all private copies
      of your CLIST output (DSNTIDxx) member.  In each such copy,
      add the following line:

PARA_EFF NUM   M  0              100             100

      If you specified a setting other than 100 for PARA_EFF in
      step (1) above then change the second occurrence of 100
      in your DSNTIDxx entry to that setting.

  (3) Update customized copies of DB2 installation CLIST member
```

DSNTINST:
            This PTF modifies CLIST member DSNTINST in the SDSNCLST
            target library only. You need to redo any record format
            changes and reapply any tailoring you have done to your
            copies of this CLIST. You may also want to move it to the
            prefix.NEW.SDSNCLST data set, where the CLISTs processed by
            job DSNTIJVC reside.
.

------ COVER LETTER FOR PTF UK59347 ------------

PROBLEM DESCRIPTION(S):
  PM11458 -
      ****
      * USERS AFFECTED: DB2 users with single column indexes.   *
      ****
      * PROBLEM DESCRIPTION: DB2 may choose an undesirable list   *
      *   prefetch access path when matching   *
      *   on a range predicate on a single   *
      *   column index.   *
      ****
      * RECOMMENDATION: *
      ****
      DB2 may choose a poorly performing list prefetch access path
      under the following conditions:

        1. There exists a range (<,>,<=,>=) or BETWEEN predicate
           qualifying for index matching;
        2. The candidate index contains only a single column; and
        3. The candidate index is not a DPSI.

      If the range/between predicate matching on the index provides
      little filtering, the selection of list prefetch at bind
      time could fallback to a tablespace scan at runtime due
      to a RID pool failure.

      There are many factors contributing to access path selection.
      This fix corrects a problem related to optimizer's choice
      of list prefetch in a narrow scenario. There are various
      other reasons optimizer may choose list prefetch. This fix
      does not change these cases.

      Additional Keywords:
      SQLPERFORMANCE SQLACCESSPATH SQLBETWEEN
      DB2 has been modified to avoid this specific poor performing
      list prefetch case. An access path without list prefetch
      for the scenario described is more likely with the fix
      applied.
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APARS FIXED: PM11458
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  DB2BIND:
    ***Action for PM11458:

See PM11458 APAR/PTF text for additional information about
why a REBIND is necessary.

PM11458 corrects a problem in which an inefficient list
prefetch plan could be chosen for a range predicate matching
on a single column index.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK59480 ------------

PROBLEM DESCRIPTION(S):
  PM14629 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS users of RUNSTATS   *
    *   utility collecting FREQUENCY statistics on *
    *   index keycolumns defined with DESC ordering *
    *   with PK98985 / UK53640 applied.   *
    ****
    * PROBLEM DESCRIPTION: FREQUENCY COLVALUE appears inverted   *
    *   in the RUNSTATS report and in the   *
    *   statistics catalog tables with   *
    *   PK98985 / UK53640 applied.   *
    ****
    * RECOMMENDATION: Apply corrective PTF when available   *
    ****
    With PK98985 / UK53640 applied, when a RUNSTATS TABLESPACE
    INDEX ALL is executed where more than one index is involved,
    the FREQUENCY statistic COLVALUE appears inverted in
    MSGDSNU616I and MSGDSNU626I report and in the
    SYSIBM.SYSCOLDISTSTATS and SYSIBM.SYSCOLDIST catalog tables.

    When more than one index is scanned, an incorrect
    object identifier was used to collect the frequency
    statistics causing the incorrect frequency COLVALUE to be
    generated.

    In addition, incorrect frequency COLVALUE statistics for
    DESC columns were generated because the NUMCOLS value specified,
    was not taken into account.
    Code was modified to use the correct index object identifier
    and the NUMCOLS specified by the user.
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APARS FIXED: PM14629
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    After applying the PTF for APAR PM14629, all the COLVALUE
    values in the FREQUENCY statistics will now appear

uninverted for indexes with key columns in descending order.

However, any previously collected FREQUENCY statistics in
SYSCOLDISTSTATS, SYSCOLDIST, SYSKEYTGTDISTSTATS or
SYSKEYTGTDIST catalog tables, for indexes with multi key
columns and mixed ordering which includes descending columns,
will remain inverted until the statistics are recollected
by running the RUNSTATS utility.

This may affect the aggregation of the partition level
FREQUENCY statistics for the partitioned indexes. Hence it
is recommended to recollect the frequency statistics of
indexes defined with multi key columns and with an ordering
sequence which includes descending columns.
.

------ COVER LETTER FOR PTF UK59523 ------------

PROBLEM DESCRIPTION(S):
  PM02152 -
    ****
    * USERS AFFECTED: All users of the installation CLIST and the *
    *   installation verification procedures in DB2   *
    *   UDB for z/OS Version 8 and DB2 Version 9.1   *
    *   for z/OS are affected by this change.   *
    ****
    * PROBLEM DESCRIPTION: The following errors can occur: *
    *   (1) In DB2 V9 only, installation panel   *
    *   DSNTIPM displays the error messages *
    *   "Incorrect Command Prefix" and   *
    *   "DSNT410I The subsystem command   *
    *   prefix entered is incorrect" when   *
    *   the COMMAND PREFIX field contains   *
    *   an entry that includes the "cent"   *
    *   sign (code point x'4A' in CCSID 37) * *
    *   (2) In DB2 V8 only, customized copies   *
    *   of installation jobs DSNTIJPD and   *
    *   DSNTIJPT fail with a JCL error   *
    *   because data sets created by these   *
    *   jobs have a null prefix. Example: *
    *   DSN=.DSNTIJPM.DSNTP2DP.OUTPKGS   *
    *   (3) In DB2 V8 and V9, job DSNTEJ0   *
    *   does not free sample plan DSNTP4!!, *
    *   where '!!' is the version and   *
    *   release of DB2.   *
    *   (4) In DB2 V9 only, when DB2's default   *
    *   EBCDIC CCSID is 930, 1390, or 5026   *
    *   job DSNTEJ1, job step PH01S02, ends * *
    *   with return code 12 and messages   *
    *   like the following appear in the   *
    *   SYSPRINT output of the CREATE INDEX * *
    *   requests for   *
    *   DSN8910.PROD_NAME_XMLIDX and   *
    *   DSN8910.PROD_DETAIL_XMLIDX: *
    *   *

```
*                              DSNT408I SQLCODE = -16002, ERROR:  *
*                                AN XQUERY EXPRESSION HAS AN       *
*                                UNEXPECTED TOKEN p FOLLOWING /.   *
*                                EXPECTED TOKENS MAY INCLUDE:      *
*                                token-list                       *
*                                ERROR QNAME=err:XPST0003          *
*                                                                 *
*                          (5) In DB2 V9 only, when DB2's default *
*                              EBCDIC CCSID is 930, 1390, or 5026 *
*                              job DSNTEJ1, job step PH01S13, ends *
*                              with return code 4 and messages    *
*                              like the following appear in the   *
*                              SYSPRINT output of the LOAD request *
*                              for table DSN8910.PRODUCT:         *
*                                                                 *
*                              DSNU283I  DSNURWBF - XML ERROR      *
*                                SQLCODE = -20398                 *
*                                SQLERRM = 1.An incorrect          *
*                                        character is found       *
*                                        within markup.           *
*                                        RC=000C,RSN=3029.        *
*                                SQLSTATE= 2200M                  *
*                                SQLERRP = DSNNOPAR               *
*                                                                 *
*                          (6) In DB2 V8 and V9, job DSNTEJ2U     *
*                              does not process the GRANT          *
*                              EXECUTE statement on sample plan    *
*                              DSN8UW!!, where '!!' is the        *
*                              version and release of DB2.        *
*                                                                 *
*                          Additional keywords:                   *
*                            SQLCODE16002                         *
*                            SQLCODE20398                         *
*******************************************************************
* RECOMMENDATION:                                                 *
*******************************************************************
```

This APAR concerns the following DB2 for z/OS installation
issues:
(1) In DB2 V9 only, the COMMAND PREFIX field on installation
    panel DSNTIPM currently does not accept any entry that
    contains the "cent" sign (code point x'4A' in CCSID 37).
    The error occurs because the validation logic for this
    field checks for x'27' rather than x'4A'

(2) In DB2 V8 only, data sets created and used by jobs DSNTIJPD
    and DSNTIJPT have no prefix when these jobs are customized
    by the DB2 installation CLIST. The jobs therefore abend
    due to JCL errors. The editing error is caused by a bug
    in the DB2 installation CLIST.

(3) In DB2 V8 and V9, job DSNTEJ0 does not free the sample plan
    for the DSNTEP4 application. This plan is named DSNTP4!!
    where !! is the version and release of DB2.

(4) In DB2 V9 only, when DB2's default EBCDIC CCSID is 930,
    1390, or 5026, job DSNTEJ1, job step PH01S02 ends with

return code 8 and the following message appears in the
SYSPRINT output in response to CREATE requests for XML
indexes DSN8910.PROD_NAME_XMLIDX and
DSN8910.PROD_DETAIL_XMLIDX:

```
DSNT408I SQLCODE = -16002, ERROR:  AN XQUERY
    EXPRESSION HAS AN UNEXPECTED TOKEN p
    FOLLOWING /. EXPECTED TOKENS MAY INCLUDE:
    token-list ERROR QNAME=err:XPST0003
```

The error occurs because XMLPATTERN text in the create index
statements contains lower-case latin characters in CCSID 37,
at code points that correspond to other characters in CCSIDs
930, 1390, and 5026.

(5) In DB2 V9 only, when DB2's default EBCDIC CCSID is 930,
    1390, or 5026, job DSNTEJ1, job step PH01S13 ends with
    return code 4 and messages like the following appear in
    the SYSPRINT output for the LOAD request for table
    DSN8910.PRODUCT:

```
DSNU283I  DSNURWBF - XML ERROR
    SQLCODE = -20398
    SQLERRM = 1.An incorrect character is found within
              within markup.  RC=000C,RSN=3029.
    SQLSTATE= 2200M
    SQLERRP = DSNNOPAR
```

The error occurs because XML text in the DESCRIPTION column
of this table contains lower-case latin characters in CCSID
37, at code points that correspond to other characters in
CCSIDs 930, 1390, and 5026.

(6) In DB2 V8 and V9, job DSNTEJ2U does not grant execute access
    to sample plan DSN8UW!!, where !! is the version and release
    of DB2. The error occurs because job step PH02US15 contains
    an extraneous SYSIN DD * statement with no instream data.
    This causes the DSNTIAD executable SQL program to ignore
    a subsequent SYSIN DD * statement where the grant statement
    resides.

In response, the following changes are made:

(1) In DB2 V9, installation panel DSNTIPM is corrected
    to accept the "cent" sign (code point x'4A') in the COMMAND
    PREFIX field.

(2) In DB2 V8, the installation CLIST is corrected to perform
    a valid edit of names of data sets created and used by
    jobs DSNTIJPD and DSNTIJPT.

(3) In DB2 V8 and V9, sample job DSNTEJ0 is updated to free
    the plan for the DSNTEP4 sample application.

(4) In DB2 V9, the installation CLIST editing of job DSNTEJ1
    is modified to add statements to job step PH01S02 that

bind, use, and free a special plan for DSNTIAD called
DSNTIA37 using ENCODING(37) to ensure that lower-case
latin characters in XMLPATTERN text are interpreted
correctly. The statements for DSNTIA37 are added only
if the default EBCDIC CCSID for DB2 is 930, 1390, or 5026.

(5) In DB2 V9, the installation CLIST editing of job DSNTEJ1
    is modified to add CCSID(37,65534,65534) to the LOAD
    control statement for the DSN8910.PRODUCT table when the
    default EBCDIC CCSID for DB2 is 930, 1390, or 5026. Use
    of this option ensures that lower-case latin characters
    loaded into the DESCRIPTION XML column of the table are
    interpreted correctly.

(6) In DB2 V8 and V9, sample job DSNTEJ2U job step PH02US15 is
    modified to remove the extraneous SYSIN DD * statement so
    that the remaining SYSIN DD * is honored and the GRANT
    EXECUTE statement for plan DSN8UW!! (where !! is the version
    and release of DB2) is processed.
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APARS FIXED: PM02152
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  ACTION:
    ***Action for PM02152 (V9):

    This PTF makes the following fixes to the DB2 Version 9.1 for
    z/OS installation process:
    - Fixes a bug in installation panel DSNTIPM that prevents
      entering a COMMAND PREFIX that contains a "cent" sign (code
      point hex 4A in CCSID 37)
    - Modifies sample job DSNTEJ0 to free DSNTP491, the V9 sample
      plan for the DSNTEP4 application
    - Modifies editing of sample job DSNTEJ1 for customers who
      specify a default EBCDIC CCSID of 930, 1390, or 5026 to
      prevent SQL errors when creating indexes on sample XML
      tables, and when loading data to a sample XML table.
    - Fixes a bug in sample job DSNTEJ2U that prevents the grant
      execute statement for plan DSN8UW91 from being processed.

    If you have already installed or migrated to DB2 V9 then
    after applying this PTF you need to take the following actions:
    (1) Update customized copies of DB2 install CLIST member
        DSNTINS3
    (2) Copy updated DB2 installation panels to alternate libraries
    (3) Update your customized copy of job DSNTEJ0
    (4) Update your customized copy of job DSNTEJ1
    (5) Update your customized copy of job DSNTEJ2U

    Detailed guidance for these actions follows:

    ----
    (1) Update customized copies of DB2 installation CLIST member
        DSNTINS3

```
==> This action is required for all V9 customers

    This PTF modifies CLIST member DSNTINS3 in the SDSNCLST
    target library only.  You need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of this CLIST.  You may also want to move it to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed by
    job DSNTIJVC reside.

    -----------------------------------------------------------------
(2) Copy updated DB2 installation panels to alternate libraries
    -----------------------------------------------------------------
==> This action is required for all V9 customers who maintain
    copies of the DB2 installation panels outside of SMP/E:

    This PTF modifies DB2 installation panel DSNTIPM in the
    prefix.SDSNSPFP target library.  If you keep the DB2
    installation panels in a different library then after
    applying this PTF, you need to copy the updated DSNTIPM
    panel to that library.

    -----------------------------------------------------------------
(3) Update your customized copy of job DSNTEJ0
    -----------------------------------------------------------------
==> This action is required if you maintain a customized copy of
    DSNTEJ0

    * Edit your customized copy of job DSNTEJ0
    * In job step PH00S02, locate FREE PLAN(DSNTEP91)
    * Insert a new line with the following: FREE PLAN(DSNTP491)
    * Save your change
    * Do not run the job unless you want to drop the V9 sample
      objects.

    -----------------------------------------------------------------
(4) Update your customized copy of job DSNTEJ1
    -----------------------------------------------------------------
==> This action is required if you maintain a customized copy of
    DSNTEJ1 and DB2 has a default EBCDIC CCSID of 930, 1390, or
    5026

    * Edit your customized copy of job DSNTEJ1
    * In job step PH01S02, change the content of the SYSTSIN DD
      from:

        //SYSTSIN  DD  *
          DSN SYSTEM(ssid)
          RUN  PROGRAM(DSNTIAD) PLAN(DSNTIA91) -
               LIB('prefix.RUNLIB.LOAD')
        //SYSPRINT DD  SYSOUT=*

      to:

        //SYSTSIN  DD  *
          DSN SYSTEM(ssid)
          BIND PLAN(DSNTIA37) MEM(DSNTIAD) -
```

```
                ACT(REP) ISO(CS) CURRENTDATA(YES) ENCODING(37) -
                LIB('prefix.DBRMLIB.DATA')
              RUN  PROGRAM(DSNTIAD) PLAN(DSNTIA37) -
                LIB('prefix.RUNLIB.LOAD')
            FREE PLAN(DSNTIA37)
          //SYSPRINT DD  SYSOUT=*
```

         where:
           - ssid is the subsystem name
           - DSNTIA91 is the name of the plan for PGM=DSNTIAD
           - prefix.RUNLIB.LOAD is the name of the library where
             the DSNTIAD module resides
           - prefix.DBRMLIB.DATA is the name of the library where
             the DSNTIAD DBRM resides

      * In job step PH01S13, locate the LOAD DATA control
        statement for DSN8910.PRODUCT and append the following:

          CCSID(37,65534,65534)

      * Save your changes
      * Do not run the job unless you want to create the V9 sample
        database.

      ----
      (5) Update your customized copy of job DSNTEJ2U

      ==> This action is required if you maintain a customized copy of
          DSNTEJ2U

      * Edit your customized copy of job DSNTEJ2U
      * In job step PH02US15, there are two occurrences of
        //SYSIN   DD *
        - Remove the one that does not have any instream data
          below it
        - Retain the one that has a GRANT EXECUTE statement.
      * Save your change
      * Do not run the job unless you want to create the V9 sample
        UDFs and create and execute sample callers of them.
.

      ------ COVER LETTER FOR PTF UK59611 ------------

PROBLEM DESCRIPTION(S):
  PM13412 -
      ****
      * USERS AFFECTED: All DB2 users.   *
      ****
      * PROBLEM DESCRIPTION: ABEND0C4 in module DSN3CL0X while   *
      *   processing an SSI EOM request and DB2 *
      *   shutdown is almost complete.   *
      ****
      * RECOMMENDATION: *
      ****
      DB2 SSI EOM processing gets an ABEND0C4 because the ACOM has
```

already been freed by DB2 shutdown processing. Module DSN3CL0X
         should be updated to avoid the ABEND0C4.
         Module DSN3CL0X has been updated to avoid an ABEND0C4
         when referencing the ACOM during DB2 shutdown.
COMPONENT: 5740-XYR01-HIZ9910
APARS FIXED: PM13412
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR01 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  IPL:
     ****
     * FUNCTION AFFECTED: 5740XYR01   (PM13412) *
     *   DB2 EARLY CODE   *
     ****
     * DESCRIPTION   : IPL with CLPA   *
     ****
     * TIMING   : Post-APPLY   *
     ****

     In order for this PTF to be fully effective, an IPL with CLPA
     is required.
  ACTION:
     In order for this PTF to be fully effective, an IPL or
     REFRESH DB2,EARLY is required. The DB2 member should be
     stopped before issuing the REFRESH DB2,EARLY command.
.

------ COVER LETTER FOR PTF UK59743 ------------

PROBLEM DESCRIPTION(S):
  PM12332 -
     ****
     * USERS AFFECTED: All DB2 9 for z/OS utility users of the   *
     *   DISPLAY UTILITY command in a data sharing   *
     *   environment.   *
     ****
     * PROBLEM DESCRIPTION: The DISPLAY UTILITY command MSGDSNU116I *
     *   may show an invalid starting or ending *
     *   RBA or LRSN.   *
     *   *
     *   In a data sharing environment, the   *
     *   DISPLAY UTILITY command MSGDSNU116I   *
     *   is only issued when the command is   *
     *   executed on the member the utility is *
     *   running on.   *
     *   *
     *   In a data sharing environment, the   *
     *   -DISPLAY UTILITY command DSNU116I   *
     *   starting and ending RBA values are   *
     *   irrelevant and may be misleading.   *
     ****
     * RECOMMENDATION: Apply corrective PTF when available   *
     ****
     If the DISPLAY UTILITY command is issued against a RECOVER
     utility in the LOGAPPLY phase, MSGDSNU116I is issued to give

                              129

details on the starting and ending RBA and LRSN values. RECOVER
was not storing the correct values used in this message. For
example, the STARTLRSN was not the lowest starting LRSN.

In a data sharing environment, the DISPLAY UTILITY command
MSGDSNU116I is only issued when the command is executed on the
data sharing member the utility is running on. This makes it
difficult to monitor the progress of the utility from other
data sharing members.

In a non-data-sharing environment, the log apply range is from
a starting RBA to an ending RBA, and equal to the start and end
LRSN. In a data sharing environment, the log apply range is
from a starting and ending LRSN range across all members, and
the RBA values are not relevant and may be misleading. For
clarity, these RBA values will now be zeroed in MSGDSNU116I when
the DISPLAY command is issued in a data sharing environment for
a RECOVER in the LOGAPPLY phase.
RECOVER code has been modified to store the correct starting
and ending RBA's and LRSN's for use in informational messages.

MSGDSNU116I will now be issued in response to a DISPLAY UTILITY
command for an active RECOVER utility in the LOGAPPLY phase
regardless of the member the utility is running on or of the
member from which the -DISPLAY UTILITY command is issued.

MSGDSNU116I will contain START and END RBA values of ZEROES in a
data sharing environment.

The explanation for DSNU116I message has been modified by this
APAR/PTF. The change will be documented in the DB2 Messages
manual and in the Information Management Software for z/OS
Solutions Information Center.

    The new message text will be similar to the following:

        DSNU116I csect-name RECOVER LOGAPPLY
        PHASE DETAILS: STARTING TIME =
        timestamp START RBA = ss START
        LRSN =rr END RBA = ee END LRSN =
        nn LAST COMMITTED RBA = cc LAST
        COMMITTED LRSN = ll ELAPSED
        TIME = hh:mm:ss

    Explanation: This message is only issued during RECOVER
    LOGAPPLY phase in response to a DISPLAY UTILITY command.

    Use the information from this message to estimate how much
    processing RECOVER has completed in the LOGAPPLY phase. The
    starting and ending RBA/LRSN information shows the range of
    log records that will be applied. The range covers all
  | objects in the list. In a data sharing environment, the
  | starting and ending LRSN range is used, and the RBA values
  | are displayed with zeroes. The last committed RBA/LRSN
    shows the RBA/LRSN of the last log record applied at the
    last commit point in the LOGAPPLY phase. If fast log apply

is active, then the last committed RBA/LRSN values might not
always increase if multiple DISPLAY UTILITY commands are
issued consecutively, because the log records have been
sorted by object and page number. The elapsed time is based
on the starting time of the LOGAPPLY phase.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM12332
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    See PM12332 APAR/PTF text for additional information.

    The explanation for DSNU116I message has been modified by this
    APAR/PTF. The change will be documented in the DB2 Messages
    manual and in the Information Management Software for z/OS
    Solutions Information Center.

    The new message text will be similar to the following:

        DSNU116I csect-name RECOVER LOGAPPLY
        PHASE DETAILS: STARTING TIME =
        timestamp START RBA = ss START
        LRSN =rr END RBA = ee END LRSN =
        nn LAST COMMITTED RBA = cc LAST
        COMMITTED LRSN = ll ELAPSED
        TIME = hh:mm:ss

        Explanation: This message is only issued during RECOVER
        LOGAPPLY phase in response to a DISPLAY UTILITY command.

        Use the information from this message to estimate how much
        processing RECOVER has completed in the LOGAPPLY phase. The
        starting and ending RBA/LRSN information shows the range of
        log records that will be applied. The range covers all
     | objects in the list. In a data sharing environment, the
     | starting and ending LRSN range is used, and the RBA values
     | are displayed with zeroes. The last committed RBA/LRSN
        shows the RBA/LRSN of the last log record applied at the
        last commit point in the LOGAPPLY phase. If fast log apply
        is active, then the last committed RBA/LRSN values might not
        always increase if multiple DISPLAY UTILITY commands are
        issued consecutively, because the log records have been
        sorted by object and page number. The elapsed time is based
        on the starting time of the LOGAPPLY phase.

        System action: This message reflects the state of RECOVER
        log apply at the time that the DISPLAY UTILITY command is
        issued. The system continutes processing. A subsequent
        DISPLAY UTILITY command reflects the continued processing.

        Severity: 0 (informational)
  ACTION:
     ***Action for PM12332:
    See PM12332 APAR/PTF text for additional information.

APAR PM12332 has modified the content of the START RBA and END
RBA values in DB2 message DSNU116I, issued in response to a
DISPLAY UTILITY command of a RECOVER utility in the LOGAPPLY
phase. In a data sharing environment, where RECOVER uses the
START and END LRSN log range, the START and END RBA values will
be zeroed. In a non-data-sharing environment, the START and
END RBA values are displayed, and the START and END LRSN are set
to the same RBA values.
.

------ COVER LETTER FOR PTF UK59782 ------------

PROBLEM DESCRIPTION(S):
  PK81471 -
     ****
     * USERS AFFECTED: ALL DB2 for z/OS non-segmented and   *
     *   non-UTS table with APPEND attribute which   *
     *   is explicitly specified.   *
     ****
     * PROBLEM DESCRIPTION: There are high number of get pages and *
     *   CPU utilization with tables defined   *
     *   with APPEND YES attributes in the   *
     *   non-segmented tablespace during   *
     *   high concurrent insert workload   *
     ****
     * RECOMMENDATION: *
     ****
     During INSERT activity when formatting a new space map page
     that could result in physical extend processing, the space
     search algorithm triggers an exhaustive space search before
     doing the extend for table defined with APPEND YES attributes.
     This could resulted in high get page and cpu activities.

                   ++++++++++++++++++++++
                   +++   NOTE   ++++
                   ++++++++++++++++++++++

     High concurrent INSERT workloads using the APPEND YES keyword
     may encounter contention on the last space map page in a data
     sharing environment.
     In order to obtain the best performance when using APPEND YES,
     the use of MEMBER CLUSTER attribute combined with a large
     primary/secondary quantity allocation is recommended.

     The DB2 space search algorithm is changed to favor extend
     physical space instead of exhaustive search when inserting to
     the end of the table space.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PK81471
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
     High concurrent INSERT workloads using the APPEND YES keyword
     may encounter contention on the last space map page in a data

sharing environment.
In order to obtain the best performance when using APPEND YES,
the use of MEMBER CLUSTER attribute combined with a large
primary/secondary quantity allocation is recommended.
.

------ COVER LETTER FOR PTF UK59841 ------------

PROBLEM DESCRIPTION(S):
  PM19341 -
    ****
    * USERS AFFECTED: ALL DB2 users who use REBIND PLAN with the   *
    *   COLLID option.   *
    ****
    * PROBLEM DESCRIPTION: REBIND PLAN with the COLLID option may *
    *   cause an inconsistency between   *
    *   the SYSENTRIES column in   *
    *   SYSIBM.SYSPLAN or SYSIBM.SYSPACKAGE   *
    *   table and the actual number of entries *
    *   in SYSIBM.SYSPLSYSTEM or   *
    *   SYSIBM.SYSPKSYSTEM table.   *
    ****
    * RECOMMENDATION: *
    ****
    REBIND PLAN with the COLLID option automatically converts DBRMs
    bound with the plan into packages. During such a process, if
    the plan has entries in SYSPLSYSTEM table or the ENABLE option
    is specified with REBIND PLAN, DB2 failed to initialize the
    SYSTEM ENTRY counter for packages. This caused the SYSENTRIES
    column in both SYSPLAN and SYSPACKAGE to be inconsistent with
    the actual number of entries in the SYSPLSYSTEM and SYSPKSYSTEM
    tables.
    DB2 will now correctly initialize the SYSTEM ENTRY counter
    before converting DBRMs into packages during REBIND PLAN
    with the COLLID option.

    NOTE: if you already experienced this problem before applying
          this fix, then SYSENTRIES column must have an incorrect
          number of entries. See HOLD information to correct them.

    ADDITIONAL KEYWORDS:
    REBIND PLAN COLLID SYSENTRIES SYSPLSYSTEM SYSPKSYSTEM
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM19341
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    Since the problem that occurred could leave incorrect SYSENTRIES
    values in both SYSIBM.SYSPLAN and SYSIBM.SYSPACKAGE tables, if
    you discover the number in the SYSENTRIES column for a plan or
    package does not match the number of entries in
    SYSIBM.SYSPLSYSTEM or SYSIBM.SYSPKSYSTEM, you will need to
    manually correct the SYSENTRIRES column. Please contact
    IBM Service for assistance in correcting those records.
                          133

.

PROBLEM DESCRIPTION(S):
  PM16736 -
    ****
    * USERS AFFECTED: All users of DB2 for z/OS V8 and DB2 9 for *
    *   z/OS who are using the DB2 stored procedures *
    *   SYSPROC.ADMIN_INFO_SYSPARM and   *
    *   SYSPROC.GET_CONFIG.   *
    ****
    * PROBLEM DESCRIPTION: In a DB2 data sharing environment,   *
    *   SYSPROC.GET_CONFIG failed when   *
    *   processing a DB2 member whose name is *
    *   longer than 5 characters, returning   *
    *   the following error message in the   *
    *   XML_MESSAGE output document: *
    *   *
    *   <key>Display Name</key>   *
    *   <string>Short Message Text</string> *
    *   <key>Value</key>   *
    *   <string>DSNA623I DSNADMGC THE   *
    *   PROCEDURE SYSPROC.ADMIN_INFO_SYSPARM *
    *   DID NOT COMPLETE SUCCESSFULLY,   *
    *   RETURN CODE=12 DSNA601I DSNADMIZ THE *
    *   PARAMETER DB2_MEMBER IS NOT VALID.   *
    *   INVALID REASON CODE=5</string>   *
    *   <key>DB2 Object</key>   *
    *   <string>ABCDE</string>   *
    *   <key>Hint</key>   *
    *   <string />   *
    *   *
    *   where ABCDE is the truncated member   *
    *   name.   *
    *   *
    *   In the above error message, the   *
    *   INVALID REASON CODE value specified   *
    *   for message DSNA601I is incorrect.   *
    *   The correct value should be 1 (value *
    *   is not acceptable).   *
    ****
    * RECOMMENDATION: APPLY PTF   *
    ****
    In DSNADMGC, when a DB2 member name is copied to the
    pthread_parms structure, only the first 5 characters
    (DB2SSID_SIZE+1) are copied. Therefore, if a member name
    is longer than 5 characters, the name is truncated.

    When an invalid DB2 member input is passed to
    ADMIN_INFO_SYSPARM, DSNADMIZ incorrectly sets the invalid
    reason code in DSNA601I to 5 (value is not null), instead of
    1 (value is not acceptable).

    DSNADMG3 still contains calls to DSNX9I4R, although it should

not.

        DSNADMGS and DSNADMIZ compiles are generating 'Warning'
        compilation messages.
        To avoid truncating a DB2 member name, DSNADMGC copies
        8 characters (DSG_MEMBER_SIZE) of a member name to the
        pthread_parms structure.

        DSNADMIZ sets the invalid reason code in message DSNA601I
        to 1 if the DB2 member name passed to ADMIN_INFO_SYSPARM is
        invalid.

        All calls to DSNX9I4R in DSNADMG3 are removed. The module
        DSNX9I4R will also be removed from the load module DSNADMGC.
        This is done by using ++DELETE and also supplying the updated
        JCLIN to define DSNADMGC without DSNX9I4R.

        All 'Warning' compilation messages in DSNADMGC and DSNADMIZ
        are fixed.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM16736
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    This PTF allows the DB2 stored procedure SYSPROC.GET_CONFIG
    to process DB2 members with names longer than 5 characters.

    ****
    Actions for customers who are already using DB2 V9:
    ****
    If you have already installed or migrated to DB2 9 for z/OS
    then after applying this PTF, you need to take the following
    action:
    (1) Bind the DBRM for the stored procedure
        SYSPROC.ADMIN_INFO_SYSPARM.

    Procedure for this action is given below.
    ----
    (1) Bind the DBRM for the stored procedure
        SYSPROC.ADMIN_INFO_SYSPARM.
        ****
        * All V9 customers who want to use the stored procedure
        * SYSPROC.ADMIN_INFO_SYSPARM need to perform this step.
        ****
        Use the following procedure to avoid disrupting your
        existing DB2-supplied stored procedures and databases:
        (a) Create and edit a copy of your customized DSNTIJSG job
        (b) Remove all job steps except DSNTIAE
        (c) In job step DSNTIAE:
            - remove all BIND PACKAGE statements under the SYSTSIN
              DD, except for the following:
                BIND PACKAGE(DSNADM) MEMBER(DSNADMIZ) - ...
            - remove all CREATE statements under the SYSIN DD
        (d) Run the job to bind the DBRM for the stored

procedure SYSPROC.ADMIN_INFO_SYSPARM

   DELETE:
     This PTF rebuilds the load module DSNADMGC because it no longer
     needs the module DSNX9I4R.
.

------ COVER LETTER FOR PTF UK59852 ------------

PROBLEM DESCRIPTION(S):
  PM17533 -
     ****
     * USERS AFFECTED: DB2 users of RLF Predictive Governing   *
     ****
     * PROBLEM DESCRIPTION: Qualified dynamic statements   *
     *   from a package was not predictively   *
     *   governed.   *
     ****
     * RECOMMENDATION: *
     ****
     For RLF predictive governing, RLFFUNC='6' is used to govern
     dynamic statements from a DBRM bound into a PLAN, and
     RLFFUNC='7' is used to govern dynamic statements from
     a package for an entry specified in RLSTxx table.
     For RLFFUNC='7', PLANNAME column must be blank since
     PLANNAME column is not applicable for RLFFUNC='7'.

     In the reported case, non-blank value was used in PLANNAME
     column along with RLFFUNC='7'. The predictive governing
     thresholds from the invalid entry was chosen for dynamic
     statements from a package since non-blank PLANNAME precedes
     the correctly specified blank PLANNAME for entries with
     RLFFUNC ='7'due to the descending index order of PLANNAME in
     DSNARLxx index.

     This resulted in incorrect predictive governing of a dynamic
     statement by package or collection.

     DB2 code has been modified to ignore invalid RLSTxx table
     entries with non-blank PLANNAME and RLFFUNC='7' value and
     to choose the most applicable entries for a package
     correctly.

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM17533
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
     BEFORE APPLYING THIS PTF, DYNAMIC STATEMENTS FROM A PACKAGE
     COULD BE INCORRECTLY GOVERNED BY RLF PREDICTIVE GOVERNING,
     MEANING INADVERTENTLY GET OR NOT GET SQLCODE -/+495 WHEN
     INCORRECT ERROR/WARNING THRESHOLDS WERE APPLIED FROM AN
     INVALID DSNRLSTxx TABLE ENTRY WITH RLFFUNC='7' AND NON-BLANK
     PLANNAME.

```
     AFTER APPLYING THIS PTF, DYNAMIC STATEMENTS FROM A PACKAGE
     WOULD GET OR NOT GET SQLCODE -/+495 CORRECTLY BASED ON THE
     ERROR/WARNING THRESHOLDS FROM THE BEST MATCHING DSNRLSTxx
     ENTRY FOR THE PACKAGE.
.


------ COVER LETTER FOR PTF UK59853 ------------

PROBLEM DESCRIPTION(S):
  PM15130 -
     ****************************************************************
     * USERS AFFECTED: ALL DB2 9 for z/OS users of pair-wise join  *
     *                 queries that contain a WITH HOLD clause or   *
     *                 are bound (BIND) with RELEASE DEALLOCATE.    *
     ****************************************************************
     * PROBLEM DESCRIPTION: ABEND0C4 RC00000038 in DSNXPRE2 +1712  *
     *                      or ABEND04E RC00C90101 in DSNIWNPR     *
     *                      :5004 can occur when a pair-wise join  *
     *                      query contains a WITH HOLD clause or is *
     *                      bound with the RELEASE DEALLOCATE bind  *
     *                      option.                                 *
     ****************************************************************
     * RECOMMENDATION:                                             *
     ****************************************************************
     An ABEND0C4 RC00000038 in DSNXPRE2 +1712 or an ABEND04E
     RC00C90101 in DSNIWNPR :5004 can occur when running a pair-wise
     join query that contains the WITH HOLD clause or is bound using
     the RELEASE DEALLOCATE bind option.  The failure occurs because
     acquired storage is freed too early.
     The code in DB2 is modified to hold the acquired storage until
     it is time to release or free it.  This will prevent the
     abend(s) from occurring.

     Additional Keywords: PARALLELISM SQLPARALLELISM SQLCPUP
                          SQLPAIRWISEJOIN
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM15130
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
     ***Action for PM15130:

     See PM15130 APAR/PTF text for additional information about
     why a REBIND is necessary.

     Aoar PM15130 corrects a problem of ABEND0C4 RC00000038 in
     DSNXPRE2 +1712 or ABEND04E RC00C90101 in DSNIWNPR :5004 when
     running a pair-wise join query that contains a WITH HOLD clause
     or was bound using the RELEASE DEALLOCATE bind option.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF.  Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
```

.

------ COVER LETTER FOR PTF UK59877 ------------

PROBLEM DESCRIPTION(S):
  PM15296 -
      ****
      * USERS AFFECTED: DB2 V9 users of xml schema validation   *
      *   function SYSFUN.DSN_XMLVALIDATE.   *
      ****
      * PROBLEM DESCRIPTION: When there is a validation error during *
      *   XML schema validation, sqlcode -20399   *
      *   would be returned. The second token of *
      *   -20399 describes the parsing error in   *
      *   detail. It may be longer than 70 bytes, *
      *   which is the limit of sqlca message.   *
      *   In this case, the error token would be *
      *   truncated. However, Get Diagnostics SQL *
      *   statement should be able to return the *
      *   entire error token. Without this apar   *
      *   fix, Get Diagnostics returns a partial *
      *   error token.   *
      ****
      * RECOMMENDATION: *
      ****
      When we pass the error message from validation UDF to DB2,
      the length of the message we transfer was incorrect. This
      results in the message being truncated. Therefore,
      GET Diagnostics cannot return the entire message to the caller.
      DB2 code has been fixed to allocate the correct size of buffer
      for the error message and the UDF code has been fixed to
      return the entire message.

      Additional keyword: SQLCODE20399
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM15296
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    Users need to process the following commands to bind the
    packages that are updated as a result of installing this PTF:

    BIND PACKAGE(SYSXSR) MEMBER(DSNNVBXT) -
         ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
         ENCODING(UNICODE) -
         LIBRARY('<prefix>.SDSNDBRM')

    BIND PACKAGE(SYSXSR) MEMBER(DSNNVVAL) -
         ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
         ENCODING(UNICODE) -
         LIBRARY('<prefix>.SDSNDBRM')

    BIND PACKAGE(SYSXSR) MEMBER(DSNNVXRG) -
         ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -

```
        ENCODING(UNICODE) -
        LIBRARY('<prefix>.SDSNDBRM')

   BIND PACKAGE(SYSXSR) MEMBER(DSNNVXAD) -
        ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
        ENCODING(UNICODE) -
        LIBRARY('<prefix>.SDSNDBRM')

   BIND PACKAGE(SYSXSR) MEMBER(DSNNVXRM) -
        ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
        ENCODING(UNICODE) -
        LIBRARY('<prefix>.SDSNDBRM')

   BIND PACKAGE(SYSXSR) MEMBER(DSNNVDCP) -
        ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
        ENCODING(UNICODE) -
        LIBRARY('<prefix>.SDSNDBRM')

   Note: <prefix> is the data set prefix of your DB2 V9
   target libraries
ACTION:
   Users need to process the following commands to bind the
   packages that are updated as a result of installing this PTF:

   BIND PACKAGE(SYSXSR) MEMBER(DSNNVBXT) -
        ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
        ENCODING(UNICODE) -
        LIBRARY('<prefix>.SDSNDBRM')

   Note: <prefix> is the data set prefix of your DB2 V9
   target libraries
ACTION:
   Users need to process the following commands to bind the
   packages that are updated as a result of installing this PTF:

   BIND PACKAGE(SYSXSR) MEMBER(DSNNVBXT) -
        ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
        ENCODING(UNICODE) -
        LIBRARY('<prefix>.SDSNDBRM')

   BIND PACKAGE(SYSXSR) MEMBER(DSNNVVAL) -
        ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
        ENCODING(UNICODE) -
        LIBRARY('<prefix>.SDSNDBRM')

   BIND PACKAGE(SYSXSR) MEMBER(DSNNVXRG) -
        ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
        ENCODING(UNICODE) -
        LIBRARY('<prefix>.SDSNDBRM')

   BIND PACKAGE(SYSXSR) MEMBER(DSNNVXAD) -
        ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
        ENCODING(UNICODE) -
        LIBRARY('<prefix>.SDSNDBRM')

   BIND PACKAGE(SYSXSR) MEMBER(DSNNVXRM) -
```

```
          ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
          ENCODING(UNICODE) -
          LIBRARY('<prefix>.SDSNDBRM')

    BIND PACKAGE(SYSXSR) MEMBER(DSNNVDCP) -
          ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
          ENCODING(UNICODE) -
          LIBRARY('<prefix>.SDSNDBRM')
```

  Note: <prefix> is the data set prefix of your DB2 V9
  target libraries
ACTION:
  Process the following commands to bind the packages that
  updated as a result of installing this PTF:

```
    BIND PACKAGE(SYSXSR) MEMBER(DSNNVBXT) -
          ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
          ENCODING(UNICODE) -
          LIBRARY('<prefix>.SDSNDBRM')

    BIND PACKAGE(SYSXSR) MEMBER(DSNNVVAL) -
          ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
          ENCODING(UNICODE) -
          LIBRARY('<prefix>.SDSNDBRM')

    BIND PACKAGE(SYSXSR) MEMBER(DSNNVXRG) -
          ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
          ENCODING(UNICODE) -
          LIBRARY('<prefix>.SDSNDBRM')

    BIND PACKAGE(SYSXSR) MEMBER(DSNNVXAD) -
          ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
          ENCODING(UNICODE) -
          LIBRARY('<prefix>.SDSNDBRM')

    BIND PACKAGE(SYSXSR) MEMBER(DSNNVXRM) -
          ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
          ENCODING(UNICODE) -
          LIBRARY('<prefix>.SDSNDBRM')

    BIND PACKAGE(SYSXSR) MEMBER(DSNNVDCP) -
          ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
          ENCODING(UNICODE) -
          LIBRARY('<prefix>.SDSNDBRM')
```

  Note: <prefix> is the data set prefix of your DB2 V9
  target libraries
ACTION:
  Process the following command to bind the package that
  updated as a result of installing this PTF:

```
    BIND PACKAGE(SYSXSR) MEMBER(DSNNVBXT) -
          ACTION(REPLACE) ISO(CS) CURRENTDATA(YES) -
          ENCODING(UNICODE) -
          LIBRARY('<prefix>.SDSNDBRM')
```

Note: <prefix> is the data set prefix of your DB2 V9
        target libraries
.

------- COVER LETTER FOR PTF UK59884 ------------

PROBLEM DESCRIPTION(S):
  PM05519 -
      ****
      * USERS AFFECTED: ALL DB2 9 FOR z/OS USERS WITH VERSIONED   *
      *   DATA   *
      ****
      * PROBLEM DESCRIPTION: ABEND04E RC00C90101 DSNIMOFR:5006   *
      *   WHEN ACCESSING TABLES   *
      *   WITH VERSIONED DATA FOLLOWING MODIFY   *
      *   RECOVERY UTILITY   *
      ****
      * RECOMMENDATION: *
      ****
         In a data sharing environment, an ALTER TABLE statement
      was done which resulted in multiple versions of the data.
      Without running REORG, COPY utility was run. Later,
      MODIFY RECOVERY utility was run, and after that access
      to earlier versions of the data failed with
      ABEND04E RC00C90101 DSNIMOFR ERQUAL5006, ERQUAL5399,
      or other abends or SQL codes.
         This happened because the ALTER and certain update activity
      was done within a unique timing window, causing COPY to
      record incorrect oldest version information in SYSIBM.SYSCOPY.
      MODIFY RECOVERY relies on this information, and because
      it was incorrect, some versioning info in the OBD was
      deleted prematurely, and data that needed that info could
      not be properly accessed.
         COPY utility was changed to ensure that incorrect oldest
      version info, which could cause MODIFY RECOVERY to incorrectly
      delete versioning information from the OBD which is still
      needed, is not inserted into SYSCOPY.
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APARS FIXED: PM05519
SPECIAL CONDITIONS:
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  DOCUMENTATION:
      The following changes will be documented in the next refresh
      of the DB2 Utility Guide and Reference manual (SC18-9855) in
      chapter MODIFY RECOVERY. At the end of paragraph
      "If MODIFY RECOVERY deletes at least one SYSCOPY record and the
      target table space or partition is not recoverable, the target
      object is placed in COPY-pending status.", the following text
      will be added:
      "If you take system-level backups with the BACKUP SYSTEM
      utility, then you can prevent the MODIFY RECOVERY utility from
      placing objects in COPY-pending status by specifying YES in the
      SYSTEM_LEVEL_BACKUPS field of the DB2 Utilities Parameters
      panel, DSNTIP6, of the installation CLIST."

ACTION:
    The MODIFY RECOVERY utility is changed to not place the target
    table space in COPY-pending status, if YES was specified for
    SYSTEM_LEVEL_BACKUPS on install panel DSNTIP6.
.

------ COVER LETTER FOR PTF UK59886 ------------

PROBLEM DESCRIPTION(S):
  PM11045 -
    ****
    * USERS AFFECTED: All users of the DB2 UDB for z/OS Version 8 *
    *   and DB2 9.1 for z/OS installation process   *
    *   are affected by this change.   *
    ****
    * PROBLEM DESCRIPTION: The following errors can occur: *
    *   (1) The DB2 V8 and V9 installation   *
    *   CLISTs halt with messages like the *
    *   following when run in UPDATE or   *
    *   ENFM mode: *
    *   IKJ56893I DATA SET   *
    *   prefix.COMPRESS.TEMP NOT   *
    *   ALLOCATED   *
    *   IGD17293I DATA SET   *
    *   prefix.COMPRESS.TEMP HAS   *
    *   PARTITIONED ORGANIZATION AND IS *
    *   NOT ELIGIBLE TO BE A   *
    *   MULTI-VOLUME DATA SET,   *
    *   ALLOCATION FAILED   *
    *   (2) The DB2 V8 and V9 installation   *
    *   CLISTs do not free the following   *
    *   file allocations for DSNTF80 and   *
    *   DSNLBDEF when terminating   *
    *   (3) The V9 installation CLIST generates *
    *   messages like the following during *
    *   editing of job DSNTIJEN   *
    *   IKJ52507I LINE 248900 TRUNCATED+ *
    *   IKJ52507I LINE 248920 TRUNCATED+ *
    *   (4) V9 job DSNTIJEN terminates with   *
    *   return code 8 in job step ENFM1103 *
    *   or job step ENFM1105 due to SQLCODE *
    *   -104 when DSNHDECP.DECIMAL=COMMA   *
    *   (5) V9 job DSNTEJ3M terminates with   *
    *   return code 8 in job step PH03MS04 *
    *   due to SQLCODE -104 when   *
    *   DSNHDECP.DECIMAL=COMMA   *
    *   (6) V9 job DSNTEJ66 terminates with   *
    *   return code 8 in job step PH066S03 *
    *   due to SQLCODE -104 when   *
    *   DSNHDECP.DECIMAL=COMMA   *
    *   (7) V9 job DSNTEJ66 terminates with   *
    *   return code 12 in job step PH066S12 *
    *   due to SQLCODE = -908 (AUTO-REBIND *
    *   ERROR) when DSN6SPRM.ABIND=NO   *
    *   (8) V9 jobs DSNTIJOS and DSNTIJOC   *

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```
*                            terminate in V9 conversion mode     *
*                            with return code 12 in job step     *
*                            DSNTIAS due to SQLCODE -4700         *
*                            because the CREATE STOGROUP          *
*                            DSNOSCSG statement contains the      *
*                            DATACLAS, MGMTCLAS, or STORCLAS       *
*                            options, which are not valid         *
*                            prior to new-function mode.          *
*                  (9) The V9 C/C++ INCLUDE file DSNSYSTM         *
*                      (alias SQLSYSTM), does not contain         *
*                      entries for the BIGINT data type.          *
*                                                                 *
*                  Additional keywords:                           *
*                   SQLCODE104                                     *
*                   SQLCODE908                                     *
*                   SQLCODE4700                                    *
*****************************************************************
* RECOMMENDATION:                                                 *
*****************************************************************
```

This APAR concerns the following DB2 for z/OS installation
issues:

(1) When run in ENFM or UPDATE mode, the DB2 installation CLIST
    allocates a data set called prefix.COMPRESS.TEMP for use as
    a work file for compressing the prefix.NEW.SDSNSAMP library.
    Currently, the V8 and V9 CLISTs use the LIKE option of the
    TSO/E ALLOCATE command to obtain modelling attributes from
    prefix.NEW.SDSNSAMP, for allocating prefix.COMPRESS.TEMP.
    However, in some system environments, including certain SMS
    configurations, the LIKE attribute returns insufficient
    modelling attributes, and the ALLOCATE request fails with
    messages noted in the Problem Description section.

(2) The DB2 installation CLIST builds a TSO/E attribute list
    called DSNTF80 for use in dynamic data set allocation. It
    also allocates a DD name called DSNLBDEF to check for
    presence of certain ISPF panels that indicate use of DB2
    Value Unit Edition (VUE). Currently, the V8 and V9 CLISTs
    do not release DSNTF80 and DSNLBDEF so these files remain
    allocated to the TSO session.

(3) In DB2 V9 only, the prolog of job DSNTIJEN contains a pair
    of example LISTCAT statements that can be used to list VSAM
    clusters for table spaces converted by running DSNTIJEN.
    Currently, if the catalog alias is 8 characters long,
    the truncation warning messages noted in the Problem
    Description section appear during job editing of DSNTIJEN.

(4) In V9 only, job steps ENFM1103 and ENFM1105 of job DSNTIJEN
    contain utility control statements for migrating the user-
    managed runtime statistics (RTS) database into the DB2
    catalog. Currently, each of these utility control
    statements contains the following clause:
       ,1 AS "INSTANCE"
    which is invalid syntax when the DSNHDECP DECIMAL option is
    set to COMMA.

(5) In V9 only, job step PH03MS04 of job DSNTEJ3M contains SQL
    INSERT statements for populating sample tables. Currently,
    one of these statements contains the following:
       5,'2003-12-14'
    which is invalid syntax when the DSNHDECP DECIMAL option is
    set to COMMA.

(6) In V9 only, job step PH066S03 of job DSNTEJ66 prepares a
    sample native SQL procedure, DSN8ES3. Currently, the source
    code for DSN8ES3 contains the following:
       SUBSTR(LINE,1,72)
       SUBSTR(LINE,73,LINE_LENGTH-72)
       SUBSTR((LINE || REPEAT(' ',80)),1,80)
    which is invalid syntax when the DSNHDECP DECIMAL option is
    set to COMMA.

(7) In V9 only, job step PH066S12 of job DSNTEJ66 executes
    DSN8ED9, a sample caller of the DSN8ES3 sample native SQL
    procedure. Currently, if auto bind is disabled on DB2 by
    setting the DSN6SPRM.ABIND parameter to NO, this job step
    will fail because DSN8ED9 is not rebound after the previous
    job step, PH066S11, alters DSN8ES3.

(8) In V9 only, job step DSNTIAS of jobs DSNTIJOS and DSNTIJOC
    can be configured by the MIGRATE mode of the installation
    CLIST to include SMS options (DATACLAS, MGMTCLAS, STORCLAS)
    in the CREATE STOGROUP DSNOSCSG statement. If the jobs
    are run in conversion mode, the CREATE STOGOUP request will
    fail because SMS options are not supported in that
    statement until new-function mode.

(9) In V9 only, the V9 C/C++ include file DSNSYSTM (alias
    SQLSYSTM), does not contain typedef entries for the BIGINT
    data type.
In response, the following changes are made:

(1) In DB2 V8 and V9, the installation CLIST is modified to
    allocate the prefix.COMPRESS.TEMP data set using explicit
    attributes rather than attempting to model from those of
    the prefix.NEW.SDSNSAMP data set.

(2) In V8 and V9, the installation CLIST is modified to free
    the DSNTF80 and DSNLBDEF file allocations.

(3) In V9 only, the sample LISTCAT commands in the prolog of
    job DSNTIJEN are shifted to prevent the truncation warning
    messages during editing of this job.

(4) In V9 only, the utility control statements in job steps
    ENFM1103 and ENFM1105 of job DSNTIJEN are modified to have
    syntax that is valid for either setting of the DSNHDECP
    DECIMAL parameter.

(5) In V9 only, SQL INSERT statements in job step PH03MS04 of
    job DSNTEJ3M are modified to have syntax that is valid for
    either setting of the DSNHDECP DECIMAL parameter.

(6) In V9 only, the DSN8ES3 sample native SQL procedure is
            modified to have syntax that is valid for either setting
            of the DSNHDECP DECIMAL parameter.

        (7) In V9 only, a REBIND PACKAGE statement is added to job
            step PH066S12 of job DSNTEJ66, to rebind the package for
            DSN8ED9 after it is invalidated by the ALTER PROCEDURE
            statement in job step PH066S11.

        (8) In V9 only, the DB2 installation CLIST is modified to
            prevent it from adding SMS clauses when performing
            MIGRATE mode editing of the CREATE STOGROUP statement
            in job step DSNTIAS of jobs DSNTIJOC and DSNTIJOS.

        (9) In V9 only, the SQLSYSTM C/C++ header file is modified to
            provide typedefs for the BIGINT data type as sqlint64
            (signed) and sqluint64 (unsigned).
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APARS FIXED: PM11045
SPECIAL CONDITIONS:
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  ACTION:
    ***Action for PM11045 (V9)

    This PTF updates the DB2 installation CLIST and certain jobs:
    * Installation CLIST member DSNTINST is modified to prevent a
      possible allocation error of the COMPRESS.TEMP data set, and
      to ensure that DDs allocated during processing are freed.
    * Installation CLIST member DSNTINS1 is modified to prevent it
      from adding SMS options to the CREATE STOGROUP statements in
      job DSNTIJOC and DSNTIJOS when the CLIST is run in MIGRATE
      mode. CREATE STOGROUP does not support these options prior
      to new-function mode.
    * The following parts are modified to prevent SQLCODE -104
      errors that can occur when DB2 uses DSNHDECP.DECIMAL=COMMA
      - DSNTIJEN: Installation job for enabling new function mode
      - DSNTEJ3M: Sample job for materialized query tables
      - DSN8ES3 : Sample native SQL procedure
    * Job DSNTIJEN is also modified to prevent text truncation
      messages during job editing by the installation CLIST
    * Sample job DSNTEJ66 is modified to prevent -908 (AUTO-REBIND
      ERROR) when DB2 uses DSN6SPRM.ABIND=NO
    * C header include file DSNSYSTM (alias SQLSYSTM) is modified
      to define a C type for the BIGINIT data type.

    If you have already installed or migrated to DB2 V9, you need to
    take the following actions after applying this PTF:
    ----
    (1) Update customized copies of DB2 installation CLIST members
    ----
    ==> This action is required for all V9 customers

        This PTF modifies CLIST member DSNTINST and DSNTINS1 in the
        SDSNCLST target library only. You need to redo any record

format changes and reapply any tailoring you have done to
        your copies of these CLISTs. You may also want to move them
        to the prefix.NEW.SDSNCLST data set, where the CLISTs
        processed by job DSNTIJVC reside.
        ----
    (2) Update customized copies of DB2 installation job DSNTIJEN

    ==> This action is required if you maintain a customized copy
        of DSNTIJEN and DB2 uses DSNHDECP.DECIMAL=COMMA

        This PTF modifies job DSNTIJEN in the SDSNSAMP target
        library only. After applying this PTF, you need to update
        your private copies of this job as follows:
        - Edit your private copy of DSNTIJEN
        - Locate this line in the job prolog
            AND B.TSNAME IN('SYSOBJ','SYSPKAGE')
          and change it to
            AND B.TSNAME IN('SYSOBJ', 'SYSPKAGE')
        - Change all occurrences of ",1 " to ", 1 "
        - Save your changes.
        ----
    (3) Update customized copies of DB2 sample job DSNTEJ3M

    ==> This action is required if you maintain a customized copy
        of DSNTEJ3M and DB2 uses DSNHDECP.DECIMAL=COMMA

        This PTF modifies job DSNTEJ3M in the SDSNSAMP target
        library only. After applying this PTF, you need to update
        your private copies of this job as follows:
        - Edit your private copy of DSNTEJ3M
        - Change "5,'2003-12-14'" to "5, '2003-12-14'"
        - Change "COLUMN(CUSTOMERID,STOREID,PRODUCTID)"
              to "COLUMN(CUSTOMERID, STOREID, PRODUCTID)"
        - Save your changes.
        ----
    (4) Update customized copies of DB2 sample job DSNTEJ66

    ==> This action is required if you maintain a customized copy
        of DSNTEJ66 and DB2 uses DSN6SPRM.ABIND=NO

        This PTF modifies job DSNTEJ66 in the SDSNSAMP target
        library only. After applying this PTF, you need to update
        your private copies of this job as follows:
        - Edit your private copy of DSNTEJ66
        - In job step PH066S12, add the following statement directly
          after the DSN SYSTEM command:
            REBIND PACKAGE(DSN8ED91.DSN8ED9) PLANMGMT(OFF)
        - Save your changes.
  ACTION:
    This PTF modifies DSNTEJ3M, the DB2 IVP job for materialized
    query tables (MQTs) to ensure that it causes DB2 to select
    materialized query tables in preference to base tables.

    No action is required after applying this PTF unless you have
    already created a customized copy of DSNTEJ3M by running the
    V9 installation CLIST in INSTALL or ENFM mode. If so, you can

optionally update your customized DSNTEJ3M job as follows:

        (a) Run the V9 installation CLIST in INSTALL mode
        (b) For the INPUT MEMBER NAME (field 8 on panel DSNTIPA1),
            use the name of the defaults file in which the defaults
            for your existing DB2 are stored. (This is probably the
            name you entered in field 9 on panel DSNTIPA1 when you
            previously ran the V9 installation CLIST.)
        (c) On panel DSNTIPT, change the data set names in fields 1,
            2, and 3 (TEMP CLIST LIBRARY, SAMPLE LIBRARY, and CLIST
            LIBRARY) to "work" names in order to prevent your
            existing prefix.NEW.SDSNTEMP, prefix.NEW.SDSNSAMP, and
            prefix.NEW.SDSNCLST data sets from being overwritten.
        (d) Keep the default values for all the rest of the panels.
        (e) When this run of the installation CLIST completes, make
            any local tailoring changes to the DSNTEJ3M member in
            the work data set you specified for SAMPLE library in
            step (c) above.
        (f) Copy your updated, customized DSNTEJ3M job to the
            prefix.NEW.SDSNSAMP data set you used to install or
            migrate to DB2 V9.
        (g) When finished, you can erase the work data set you
            specified in step (c) above.
.

------ COVER LETTER FOR PTF UK59928 ------------

PROBLEM DESCRIPTION(S):
  PM15839 -
     ****
     * USERS AFFECTED: All DB2 for z/OS V9 users of query   *
     *   containing CTE and sparse index   *
     *   access is picked.   *
     ****
     * PROBLEM DESCRIPTION: ABEND04E RC00C90101 at DSNIIMSI:5008   *
     *   may occur for query containing CTE and *
     *   sparse index access is picked for CTE *
     *   table.   *
     ****
     * RECOMMENDATION: *
     ****
     ABEND04E RC00C90101 at DSNIIMSI:5008 may occur for query
     containing CTE and sparse index access is picked for CTE table.

     The following query is an example of this case.

        WITH CTE1(CX,CZ,CR,CY, CE) AS
          (SELECT T1.C2, T1.C5,'','' , T1.C1 FROM T1)

        SELECT T1.C1 , T1.C2 , A.CZ, A.CY FROM T1, CTE1 A
          WHERE T1.C1 = 1 AND T1.C2=A.CZ AND T1.C3='AAA'
          AND EXISTS (SELECT 1 FROM CTE1 V);
     The bindtime code in DB2 is modified to correct the conditions
     leading to the incorrect result.

```
     Additional Keywords: SQLCTE SQLSPARSEINDEX
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APARS FIXED: PM15839
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM15839 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PM15839 corrects a problem that can cause an abend at
    DSNIIMSI:5008 for a query containing CTE.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.


------ COVER LETTER FOR PTF UK60000 ------------

PROBLEM DESCRIPTION(S):
  PK60762 -
    **************************************************************
    * USERS AFFECTED: Users of DB2 V9 for z/OS who use XPath     *
    *                 function fn position() in XMLQUERY,        *
    *                 XMLEXISTS, or XMLTABLE functiion.          *
    **************************************************************
    * PROBLEM DESCRIPTION: There are three problems related      *
    *                 to the XPath function fn position().       *
    *                                                            *
    *                 1. DB2 V9 for z/OS would raise             *
    *                 SQLCODE16031, when the context of          *
    *                 fn position() is a filter expression       *
    *                 containing descendant or                   *
    *                 descendant-or-self axis.                   *
    *                                                            *
    *                 2. An ABEND04E at                          *
    *                 DSNXGRDS.DSNX5XPD M101                     *
    *                 could occur if the context of              *
    *                 fn position() is a parent axis in          *
    *                 XPath expression.                          *
    *                                                            *
    *                 3. An incorrout could occur if             *
    *                 a nullable numeric expression is used      *
    *                 as a positional predicate in XPath.        *
    **************************************************************
    * RECOMMENDATION:                                            *
    **************************************************************
    SQLCODE16031 could occur if the query uses the XPath function
    fn position() when its context is a filter expression
    containing descendant or descendant-or-self axis. The following
    is an example of the failed query:
```

```
     SELECT XMLQUERY('((((//a)[2]//b)[3]//c)[2]'
               PASSING T.XMLCOL)
       FROM T;
```

An ABEND04E at DSNXGRDS.DSNX5XPD M101 could occur if the
context of fn position() is parent axis. The following query
will hit the abend:

```
     SELECT XMLQUERY('/a/(parent::*)[1]'
               PASSING XMLPARSE
                 ('<a><b><c>c1</c><c>c2</c></b></a>'))
       FROM SYSIBM.SYSDUMMYU;
```

An incorrout could occur if a nullable expression is used as a
positional predicate in the XPath expression. The following
query is supposed to get B2 as its result. However,
it will get B1B2B3, which is not correct.

```
     CREATE TABLE T1 (id int, doc XML);
     INSERT INTO T1
       values(2, '<a><b>B1</b><b>B2</b><b>B3</b></a>');


     SELECT XMLQUERY('$doc/a/b[$i]'
       PASSING T1.doc as "doc", T1.id as "i")
       FROM T1;
```

Solution:
DB2 is modified to fix these three problems related to XPath
function fn position(). First, it adds the support
of fn position() when its context is a filter expression
containing descendant or descendant-or-self axis. Second, it
fixes the ABEND04E at DSNXGRDS.DSNX5XPD M101 when the context
of fn position() is parent axis. Finally, it fixes the
incorrout when a nullable numeric expression is used as a
positional predicate in the XPath expression.

Additional keywords: SQLXML

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APARS FIXED: PK60762
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  DB2BIND:
    ***Action for PK60762:

    See PK60762 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PK60762 fixes three problem related to XPath function
    fn position(). First, it adds the support of fn position()
    when its context is a filter expression containing descendant
    or descendant-or-self axis. Second, it fixes the ABEND04E at
    DSNXGRDS.DSNX5XPD M101 when the context of fn position() is
```

a parent axis. Finally, it fixes the incorrout when a nullable
numeric expression is used as a positional predicate in XPath.

To make this fix effective for a static application, it must be
rebound after application of this PTF.  Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.


------ COVER LETTER FOR PTF UK60114 ------------

PROBLEM DESCRIPTION(S):
  PM18971 -
    ****************************************************************
    * USERS AFFECTED: All DB2 for z/OS sysplex parallelism users.  *
    ****************************************************************
    * PROBLEM DESCRIPTION: ABEND04E RC00E70005 DSNXOLDP M060       *
    *                      when the leading table is using         *
    *                      table space scan under sysplex          *
    *                      parallelism.                            *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    ABEND04E RC00E70005 DSNXOLDP M060 when the leading table is
    using table space scan under sysplex parallelism.  The abend
    happens under the condition that there are multiple
    qualified partition ranges.  For example:

    CREATE table T1 (C1 INTEGER, C2 INTEGER)
    PARTITION BY (C1)
    ( PART 1 VALUE (10),
      PART 2 VALUE (20),
      PART 3 VALUE (30),
      PART 4 VALUE (40),
      PART 5 VALUE (50)) IN TS1.TB1;

    SELECT * FROM T WHERE T.C1 IN (5, 15, 45);

    With the IN-LIST predicate, there are two qualified partition
    ranges -- the first range contains partition 1 and 2, and the
    second range contains partition 5.

    When DB2 chooses to access the table with table space scan
    and use sysplex parallelism (where PARALLELISM_MODE = 'X' in
    PLAN_TABLE), this abend can happen.

    Additional Keywords:
    SQLCPUP  SQLPARALLELISM  SET CURRENT DEGREE ANY
    SYSPLEX  SQLSYSPLEXP

    Code is changed to correct the abend mentioned above.
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APARS FIXED: PM18971
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DB2BIND:
   See PM18971 APAR/PTF text in the PTF cover letter for
   additional information about why a REBIND is necessary.

   PM18971 fixes an abend ABEND04E RC00E70005 DSNXOLDP M060
   during execution time that can happen when sysplex parallelism
   is used.

   To make this fix effective for a static application, it must be
   rebound after application of this PTF.  Review the PTF cover
   letter to determine which, if any, applications could be
   affected by this change.
.


------ COVER LETTER FOR PTF UK60115 ------------

PROBLEM DESCRIPTION(S):
  PM19456 -
     ****************************************************************
     * USERS AFFECTED: All DB2 for z/OS V9 internal users          *
     *                 who set hidden subsystem parameter SPRMSLDB. *
     *                 There is NO impact on external users.        *
     ****************************************************************
     * PROBLEM DESCRIPTION: ABEND04E RC00C90101 at DSNIRNXT:501D    *
     *                      can occur when parallelism is enabled,  *
     *                      the table is the leading table, the     *
     *                      table is accessed with R-scan, and      *
     *                      hidden subsystem parameter SPRMSLDB     *
     *                      is turned ON.                           *
     ****************************************************************
     * RECOMMENDATION:                                              *
     ****************************************************************
     The abend only happens when hidden subsystem parameter
     SPRMSLDB is ON. The abend happens because the wrong SHIFT value
     is used and the logical parallel partitioning page ranges are
     not valid.

     Additional Keywords:
     SQLCPUP  SQLPARALLELISM  SET CURRENT DEGREE ANY
     VLDB  SPRMSLDB  PBG  PARTITION BY GROWTH
     ABEND04E RC00C90101 DSNIRNXT ERQUAL501D
     The problem is fixed for V9.

COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM19456
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM12863:

    See PM12863 APAR/PTF text for additional information about
    why a REBIND is necessary.

PM12863 corrects a problem of an abend when parallelism is used
    for an OUTER JOIN statement with a VARCHAR type column.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PK92184 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PK92184 corrects an incorrect output problem when a
    full outer join query is run in parallelism.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.


    ------ COVER LETTER FOR PTF UK60156 ------------

PROBLEM DESCRIPTION(S):
  PM17278 -
    ****************************************************************
    * USERS AFFECTED: All users of DB2 9 for z/OS who will be     *
    *                 using Query Accelerator suport.             *
    ****************************************************************
    * PROBLEM DESCRIPTION: New function to support Query          *
    *                      Accelerator.                           *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    This APAR provides new function needed by Query Accelerator.

    Additional Keywords:
    QUERYACCEL
    new function
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM17278
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM18054 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM18054 corrects a problem where incorrect output can happen
    when a multi-index plan is used, and an XML value index is used
    in the multi-index plan with a regular index.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.

```
DB2BIND:
  ***Action for PM16786:


  See PM16786 APAR/PTF text for additional information about
  why a REBIND is necessary.


  PM16786 corrects the problem of possible incorrect output when
  using sparse index on a table involved in a left outer join.


  To make this fix effective for a static application, it must be
  rebound after application of this PTF.  Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PM14981 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.


  PM14981 fixes an access path selection problem. Without the fix,
  incorrect output might occur when there is a GROUP BY
  clause in the table expression or view.


  To make this fix effective for a static application, it must be
  rebound after application of this PTF.  Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PM13714:


  See PM13714 APAR/PTF text for additional information about
  why a REBIND is necessary.


  PM13714 corrects a problem of inaccurate filter factor
  estimation for a predicate that is generated by global
  optimization for an IN subquery or EXISTS subquery if there are
  multiple IN or EXISTS subqueries in the same query block.


  To make this fix effective for a static application, it must be
  rebound after application of this PTF.  Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PM04697 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.


  PM04697 corrects a problem where an inefficient starjoin access
  path may be chosen due to underestimated column cardinality
  on a snowflake materialization workfile.


  To make this fix effective for a static application, it must be
  rebound after application of this PTF.  Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
.


------ COVER LETTER FOR PTF UK60221 ------------
```

```
PROBLEM DESCRIPTION(S):
  PM13316 -
    ****************************************************************
    * USERS AFFECTED: All DB2 R910 users of native SQL procedures  *
    *                 which reference a table column which is       *
    *                 defined with a field procedure.              *
    *                                                              *
    ****************************************************************
    * PROBLEM DESCRIPTION: Incorrect output could occur when       *
    *                 executing a native SQL procedure that        *
    *                 references an SQL variable or               *
    *                 procedure parameter in a SQL statement       *
    *                 containing a table column defined with       *
    *                 a field procedure.                          *
    *                                                              *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    Incorrect output could occur when
    executing a native SQL procedure that references an
    SQL variable or procedure parameter in a SQL statement
    containing a table column defined with a field procedure.

    Example:

    CREATE TABLE T1 (C1 VARCHAR(5) FIELDPROC FPCVD4);
    INSERT INTO T1 VALUES('12345');

    CREATE PROCEDURE MYTEST2 (INOUT NUM INT)
     L1: BEGIN
      DECLARE A CHAR(5);
      SET A   = '12345';
      SELECT 9 INTO NUM FROM T1 WHERE C2 = A;
     END L1

    The SQL variable A in the predicate does not apply the
    definition of the field procedure correctly for comparison.

    DB2 is updated to handle SQL variables which need the
    application of field procedures correctly.

    Additional Keywords: SQLNATIVESQLPL SQLFIELDPROC SQLINCORR
                         INCORROUT SQLINCORROUT

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APARS FIXED: PM13316
SPECIAL CONDITIONS:
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  ACTION:
    ***Action for PM13316:

    See PM13316 APAR/PTF text for additional information about
    why a REBIND is necessary.
```

PM13316 corrects a problem of incorrect output when
executing a native SQL procedure that references an
SQL variable or procedure parameter in a sql statement
containing a table column defined with field procedure.

After the application of this PTF, ALTER PROCEDURE REGENERATE is
required for each native SQL procedure that is affected.
Review the PTF cover letter to determine which, if any, native
SQL procedure could be affected by this change.
.

------ COVER LETTER FOR PTF UK60278 ------------

PROBLEM DESCRIPTION(S):
  PM09226 -
    ****
    * USERS AFFECTED: All DB2 R910 users who use built-in function *
    *   TIMESTAMP_FORMAT and VARCHAR_FORMAT.   *
    ****
    * PROBLEM DESCRIPTION: This APAR delivers an enhancement for   *
    *   built-in function TIMESTAMP_FORMAT   *
    *   and VARCHAR_FORMAT.   *
    ****
    * RECOMMENDATION: *
    ****
    This APAR enhances existing VARCHAR_FORMAT and TIMESTAMP_FORMAT
    built-in functions.

    Here is the summary of the enhancements(changes only).
    TIMESTAMP_FORMAT function
    ****
    >>-TIMESTAMP_FORMAT-(-string-expression-,-format-string-)

    format-string:
    A character string constant with a length that is not
    greater than 255 bytes. The value is a template for how
    string-expression is interpreted and then converted to a
    timestamp value. A valid format-string must contain at
    least one format element, must not contain multiple
    specifications for any component of a timestamp, and can
    contain any combination of the format elements, unless
    noted otherwise.

    For example, format-string cannot contain both YY and YYYY,
    because they are both used to interpret the year component of
    string-expression. Two format elements can optionally be
    separated by one or more of the following separator characters:
      - minus sign (-)
      - period (.)
      - forward slash (/)
      - comma (,)
      - apostrophe (→)
      - semi-colon (;)
      - colon (:)
      - blank ( )

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Separator characters can also be specified at the start or
end of format-string. These separator characters can be
used in any combination in the format string, for example
→YYYY/MM-DD HH MM.SS→. Separator characters specified in
a string-expression are used to separate components and
are not required to match the separator characters specified
in the format-string.

The following lists the new format string supported.
Format element   Description
* * * * * * * * * * * * *   *
AM or PM   Meridian indicator (morning or evening)
                    without periods. This format element uses
                    the exact string 'AM' or 'PM'.

FF or FFn   Fractional seconds (0-999999). The number
                    n is used to specify the number of digits
                    expected in the string-expression. Valid
                    values for n are 1-6 with no leading zeros.
                    Specifying FF is equivalent to specifying
                    FF6.

HH12   Hour of the day(00-12) in 12-hour format.
                    AM is the default meridian indicator
HH   HH behaves the same as HH12.

MONTH,Month,month Name of the month in English.

MON, Mon, mon   Abbreviated name of the month in English

RR   Last two digits of the adjusted year(00-99)

RRRR   4-digit adjusted year(0000-9999).

Y   Last digit of the year(0-9). First three
                    digits of the current year are used to
                    determine the full 4-digit year.

YY   Last two digits of the year(00-99). First
                    two digits of the current year are used to
                    determine the full 4-digit year.

YYY   Last three digits of the year(000-999).
                    First digit of the current year are used to
                    determine the full 4-digit year.

Format elements are not case sensitive, except for the
following:
 AM, PM
 MONTH, Month, month
 MON, Mon, month

The following defaults are used when a format-string does not
include a format element for one of the following components
of a timestamp:

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```
TImestamp component    Default
******************     ************************
year                   current year, as 4 digits
month                  current month, as 2 digits
day                    01(first day of the month)
hour                   00
minute                 00
second                 00
fractional seconds     000000
```

If string-expression does not include a value corresponding to
an hour, minute, second, or fractional seconds format element
that is specified in the format-string, the same defaults are
used.

Leading zeros can be specified for any component of the
timestamp value (that is, month, day, hour, minutes, seconds)
that does not have the maximum number of significant digits for
the corresponding format element in the format-string.

A substring of the string-expression representing a component
of a timestamp (such as year, month, day, hour, minutes,
seconds) can include less than the maximum number of digits for
that component of the timestamp indicated by the corresponding
format element. Any missing digits defaults to zero. For
example, with a format-string of →YYYY-MM-DD HH24 MI:SS→, an
input value of →999-3-9 5:7:2→ produces the same result as
→0999-03-09 05:07:02→.

The RR and RRRR format elements can be used to alter how a
specification for a year is to be interpreted by adjusting the
value to produce a 2-digit value or a 4-digit value depending
on the leftmost two digits of the current year according to the
following table.

```
Digits of the      Two-digit year in    First two digits of the
current year       string-expression    year component of
                                         timestamp
*************      *****************     ***********************
00-50              00-49                 First two digits of the
                                         current year
51-99              00-49                 First two digits of the
                                         current year + 1
00-50              50-99                 First two digits of the
                                         current year - 1
51-99              50-99                 First two digits of the
                                         current year
```

For example, if the current year is 2007, →86→ with format →RR→
means 1986, but if the current year is 2052, it means 2086.

TIMESTAMP_FORMAT is a deterministic function. However, the
following invocations of the function depend on the value of
the special register CURRENT TIMESTAMP.
- format-string is a constant and does not include a format
  element that fully defines the year (that is YYYY). In this

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case the current year is used.
- format-string is a constant and does not include a format
  element that fully defines the month (for example, MM, MONTH,
  or MON). In this case the current month is used.
These invocations that depend on the value of a special register
cannot be used wherever special registers cannot be used.

Here are a few examples on TIMESTAMP_FORMAT usage.
Example 1:
Insert a row into the IN_TRAY table with a receiving timestamp
that is equal to one second before the beginning of the year
2000 (December 31, 1999 at 23:59:59).
  INSERT INTO IN_TRAY (RECEIVED)
  VALUES(TIMESTAMP_FORMAT('1999-12-31 23:59:59',
                          'YYYY-MM-DD HH24 MI:SS'))

Example 2:
An application receives strings of date information into a
variable called INDATEVAR. This value is not strictly formatted
and might include two or four digits for years, and one or two
digits for months and days. Date components might be separated
with minus sign (-) or slash (/) characters and are expected to
be in day, month, and year order. Time information consists of
hours (in 24-hour format) and minutes, and is usually separated
by a colon. Sample values include →15/12/98 13:48→ and
→9-3-2004 8:02→. Insert such values into the IN_TRAY table.
  INSERT INTO IN_TRAY (RECEIVED)
  VALUES (TIMESTAMP_FORMAT(:INDATEVAR, 'DD/MM/RRRR HH24 MI'))

The use of RRRR in the format allows for 2-digit and 4-digit
year values and assigns missing first two digits based on the
current year. If YYYY were used, input values with a 2-digit
year would have leading zeros. The slash separator also allows
the minus sign character. Assuming a current year of 2007,
resulting timestamps from the sample values are:
   '15/12/98 13:48' --> 1998-12-15-13.48.00.000000
   '9-3-2004 8:02' --> 2004-03-09-08.02.00.000000

VARCHAR_FORMAT function
****
>>--VARCHAR_FORMAT---(--expression--,--format-string--)

format-string
The format element in format-string is no longer case sensitive,
except for the following:
 MONTH, Month, month
 Mon, Mon, mon
 D

Following format elements are additionally allowed:

Format element   Description

```
    *************          *****************************************
    I                      ISO year(0-9). The last digit of the year
                           based on the ISO week that is returned.

    IY                     ISO year(00-99).  The last two digits of
                           the year based on the ISO week that is
                           returned.

    IYY                    ISO year(000-999).  The last three digits
                           of the year based on the ISO week that is
                           returned.

    MONTH,Month,month      Name of the month in uppercase, title case,
                           or lowercase format in English,

    MON, Mon, mon          Abbreviated name of the month in uppercase,
                           title case, or lowercase format in English.

    RRRR                   RRRR behaves the same as YYYY.

    W                      Week of the month(1-5), where week 1 starts
                           on the first day of the month and ends on
                           the seventh day.

    Y                      Last digit of the year(0-9).

    YYY                    Last three digits of the year(000-999).


    An example for usage of new format string for VARCHAR_FORMAT.
    Assume that the variable TMSTAMP is defined as a TIMESTAMP and
    has the following value: 2007-03-09-14.07.38.123456. The
    following examples show several invocations of the function
    and the resulting string values.

     Function invocation                         Result
     ----------------------------------          ------
     VARCHAR_FORMAT(TMSTAMP,'DD/MM/YY')          09/03/07
     VARCHAR_FORMAT(TMSTAMP,'MM-DD-YYYY')        03-09-2007
     VARCHAR_FORMAT(TMSTAMP,'W')                 2
     VARCHAR_FORMAT(TMSTAMP,'WW')                10
     VARCHAR_FORMAT(TMSTAMP,'Month')             March
     VARCHAR_FORMAT(TMSTAMP,'MONTH')             MARCH
     VARCHAR_FORMAT(TMSTAMP,'MON')               MAR


    This APAR enhances built-in function TIMESTAMP_FORMAT and
    VARCHAR_FORMAT.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM09226
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM16546:
```

See PM16546 APAR/PTF text for additional information about
why a REBIND is necessary.

PM16546 corrects a problem of ABEND0C4 at DSNNXML.DSNNOGET
which could occur on an SELECT statement with XML functions,
UNION ALL and ORDER BY.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM13769:

See PM13769 APAR/PTF text for additional information about
why a REBIND is necessary.

PM13769 corrects a problem of ABND04E RC00E70005 in
DSNXGRDS.DSNXRINT P017 or DSNXGRDS.DSNXRINT P015 when a query
contains OLAP specification and more than one sort keys are
specified in the window partition clause.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM09226:

See PM09226 APAR/PTF text for additional information about
why a REBIND may be necessary.

PM09226 provides enhancement features for built-in function
TIMESTAMP_FORMAT and VARCHAR_FORMAT.

Here is the summary of the enhancements(changes only).
TIMESTAMP_FORMAT function
****
>>-TIMESTAMP_FORMAT-(-string-expression-,-format-string-)

format-string:
A character string constant with a length that is not
greater than 255 bytes. The value is a template for how
string-expression is interpreted and then converted to a
timestamp value. A valid format-string must contain at
least one format element, must not contain multiple
specifications for any component of a timestamp, and can
contain any combination of the format elements, unless
noted otherwise.

For example, format-string cannot contain both YY and YYYY,
because they are both used to interpret the year component of
string-expression. Two format elements can optionally be
separated by one or more of the following separator characters:
  - minus sign (-)
  - period (.)

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```
    - forward slash (/)
    - comma (,)
    - apostrophe (→)
    - semi-colon (;)
    - colon (:)
    - blank ( )
```
Separator characters can also be specified at the start or
end of format-string. These separator characters can be
used in any combination in the format string, for example
→YYYY/MM-DD HH MM.SS→. Separator characters specified in
a string-expression are used to separate components and
are not required to match the separator characters specified
in the format-string.

The following lists the new format string supported.

Format element	Description
AM or PM	Meridian indicator (morning or evening) without periods. This format element uses the exact string 'AM' or 'PM'.
FF or FFn	Fractional seconds (0-999999). The number n is used to specify the number of digits expected in the string-expression. Valid values for n are 1-6 with no leading zeros. Specifying FF is equivalent to specifying FF6.
HH12	Hour of the day(00-12) in 12-hour format. AM is the default meridian indicator
HH	HH behaves the same as HH12.
MONTH,Month,month	Name of the month in English.
MON, Mon, mon	Abbreviated name of the month in English
RR	Last two digits of the adjusted year(00-99)
RRRR	4-digit adjusted year(0000-9999).
Y	Last digit of the year(0-9). First three digits of the current year are used to determine the full 4-digit year.
YY	Last two digits of the year(00-99). First two digits of the current year are used to determine the full 4-digit year.
YYY	Last three digits of the year(000-999). First digit of the current year are used to determine the full 4-digit year.

Format elements are not case sensitive, except for the
following:
 AM, PM
 MONTH, Month, month

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MON, Mon, month

The following defaults are used when a format-string does not
include a format element for one of the following components
of a timestamp:

TImestamp component   Default
******************   ************************
year   current year, as 4 digits
month   current month, as 2 digits
day   01(first day of the month)
hour   00
minute   00
second   00
fractional seconds   000000

If string-expression does not include a value corresponding to
an hour, minute, second, or fractional seconds format element
that is specified in the format-string, the same defaults are
used.

Leading zeros can be specified for any component of the
timestamp value (that is, month, day, hour, minutes, seconds)
that does not have the maximum number of significant digits for
the corresponding format element in the format-string.

A substring of the string-expression representing a component
of a timestamp (such as year, month, day, hour, minutes,
seconds) can include less than the maximum number of digits for
that component of the timestamp indicated by the corresponding
format element. Any missing digits defaults to zero. For
example, with a format-string of →YYYY-MM-DD HH24 MI:SS→, an
input value of →999-3-9 5:7:2→ produces the same result as
→0999-03-09 05:07:02→.

The RR and RRRR format elements can be used to alter how a
specification for a year is to be interpreted by adjusting the
value to produce a 2-digit value or a 4-digit value depending
on the leftmost two digits of the current year according to the
following table.

Digits of the current year	Two-digit year in string-expression	First two digits of the year component of timestamp
*************	*****************	***********************
00-50	00-49	First two digits of the current year
51-99	00-49	First two digits of the current year + 1
00-50	50-99	First two digits of the current year - 1
51-99	50-99	First two digits of the current year

For example, if the current year is 2007, →86→ with format →RR→
means 1986, but if the current year is 2052, it means 2086.

TIMESTAMP_FORMAT is a deterministic function. However, the
following invocations of the function depend on the value of
the special register CURRENT TIMESTAMP.
- format-string is a constant and does not include a format
  element that fully defines the year (that is YYYY). In this
  case the current year is used.
- format-string is a constant and does not include a format
  element that fully defines the month (for example, MM, MONTH,
  or MON). In this case the current month is used.
These invocations that depend on the value of a special register
cannot be used wherever special registers cannot be used.

Here are a few examples on TIMESTAMP_FORMAT usage.
Example 1:
Insert a row into the IN_TRAY table with a receiving timestamp
that is equal to one second before the beginning of the year
2000 (December 31, 1999 at 23:59:59).
  INSERT INTO IN_TRAY (RECEIVED)
  VALUES(TIMESTAMP_FORMAT('1999-12-31 23:59:59',
                          'YYYY-MM-DD HH24 MI:SS'))

Example 2:
An application receives strings of date information into a
variable called INDATEVAR. This value is not strictly formatted
and might include two or four digits for years, and one or two
digits for months and days. Date components might be separated
with minus sign (-) or slash (/) characters and are expected to
be in day, month, and year order. Time information consists of
hours (in 24-hour format) and minutes, and is usually separated
by a colon. Sample values include →15/12/98 13:48→ and
→9-3-2004 8:02→. Insert such values into the IN_TRAY table.
  INSERT INTO IN_TRAY (RECEIVED)
  VALUES (TIMESTAMP_FORMAT(:INDATEVAR, 'DD/MM/RRRR HH24 MI'))

The use of RRRR in the format allows for 2-digit and 4-digit
year values and assigns missing first two digits based on the
current year. If YYYY were used, input values with a 2-digit
year would have leading zeros. The slash separator also allows
the minus sign character. Assuming a current year of 2007,
resulting timestamps from the sample values are:
   '15/12/98 13:48' --> 1998-12-15-13.48.00.000000
   '9-3-2004 8:02' --> 2004-03-09-08.02.00.000000

VARCHAR_FORMAT function
****
>>--VARCHAR_FORMAT---(--expression--,--format-string--)

format-string
The format element in format-string is no longer case sensitive,
except for the following:
 MONTH, Month, month
 Mon, Mon, mon

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```
 D

Following format elements are additionally allowed:
Format element       Description
*************        *****************************************
I                    ISO year(0-9). The last digit of the year
                     based on the ISO week that is returned.

IY                   ISO year(00-99).  The last two digits of
                     the year based on the ISO week that is
                     returned.

IYY                  ISO year(000-999).  The last three digits
                     of the year based on the ISO week that is
                     returned.

MONTH,Month,month    Name of the month in uppercase, title case,
                     or lowercase format in English,

MON, Mon, mon        Abbreviated name of the month in uppercase,
                     title case, or lowercase format in English.

RRRR                 RRRR behaves the same as YYYY.

W                    Week of the month(1-5), where week 1 starts
                     on the first day of the month and ends on
                     the seventh day.

Y                    Last digit of the year(0-9).

YYY                  Last three digits of the year(000-999).


An example for usage of new format string for VARCHAR_FORMAT.
Assume that the variable TMSTAMP is defined as a TIMESTAMP and
has the following value: 2007-03-09-14.07.38.123456. The
following examples show several invocations of the function
and the resulting string values.

 Function invocation                         Result
 ---------------------------------           ------
 VARCHAR_FORMAT(TMSTAMP,'DD/MM/YY')          09/03/07
 VARCHAR_FORMAT(TMSTAMP,'MM-DD-YYYY')        03-09-2007
 VARCHAR_FORMAT(TMSTAMP,'W')                 2
 VARCHAR_FORMAT(TMSTAMP,'WW')                10
 VARCHAR_FORMAT(TMSTAMP,'Month')             March
 VARCHAR_FORMAT(TMSTAMP,'MONTH')             MARCH
 VARCHAR_FORMAT(TMSTAMP,'MON')               MAR



After applying this PTF, all static applications containing
VARCHAR_FORMAT or TIMESTAMP_FORMAT must be rebound to exploit
the enhancement.
Review the PTF cover letter to determine which, if any,
applications could be affected by this change.
```

```
   DB2BIND:
     ***Action for PM03692:


     See PM03692 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM03692 corrects a problem of ABEND04E rc00E70005 when a TIME
     or DATE related built-in function such as YEAR() and MONTH()
     is used in an ORDER BY clause and the input is an AS NAME
     column that is nullable.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF.  Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
   DB2BIND:
     ***Action for PM02613:


     See PM02613 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM02613 corrects a problem involving the XML storage used by
     the XMLSERIALIZE scalar functions to prevent a possible
     SQLCODE -904 condition.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF.  Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
.



  ------ COVER LETTER FOR PTF UK60304 ------------


PROBLEM DESCRIPTION(S):
  PM18189 -
     ****************************************************************
     * USERS AFFECTED: All DB2 V8 and 9 (for z/OS) users that use   *
     *                 the SET PACKAGE PATH special register.       *
     ****************************************************************
     * PROBLEM DESCRIPTION: CURRENT PACKAGE PATH special register   *
     *                      maintains the residual collection id    *
     *                      after the special register has been set *
     ****************************************************************
     * RECOMMENDATION:                                              *
     ****************************************************************
     When applications with the same name appear in different
     collections, a SET CURRENT PACKAGE PATH may not take into effect
     to correctly resolve references to packages under the new search
     path.
     DB2 code has been modified to trigger the new search path
     correctly so that package resolution will find the right
     package.

     Additional Keywords: SQLSPECIALREG
COMPONENT:  5740-XYR00-HDB9910
```

```
APARS FIXED: PM18189
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    Note that with this PTF, a change in application logic may be
    required for packages with the same name that are in different
    collection ids and use the SET CURRENT PACKAGE PATH special
    register.
.


------ COVER LETTER FOR PTF UK60388 ------------

PROBLEM DESCRIPTION(S):
  PM02658 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS users of the DB2         *
    *                 scheduler for administrative tasks          *
    ****************************************************************
    * PROBLEM DESCRIPTION: The DB2 scheduler has some limitations: *
    *                      - it does not keep the execution       *
    *                        status history of its tasks, only    *
    *                        the latest execution status is       *
    *                        available for each task.             *
    *                      - it does not give access to the       *
    *                        output parameter values and result   *
    *                        sets of the stored procedures it      *
    *                        executes.                            *
    *                      - it does not allow the update of a    *
    *                        task schedule without removing and   *
    *                        adding the task again, making it     *
    *                        impossible to keep an execution      *
    *                        status history.                      *
    *                      - it does not have an interface to     *
    *                        cancel a task that is currently      *
    *                        executing.                           *
    *                      - it does not provide the stored       *
    *                        procedures it executes with          *
    *                        information as to which task they    *
    *                        belong to, making it impossible for  *
    *                        them to interact with their task     *
    *                        schedule or status. For example,     *
    *                        a scheduled stored procedure cannot  *
    *                        reschedule itself.                   *
    ****************************************************************
    * RECOMMENDATION: Apply this PTF.                             *
    ****************************************************************
    This PTF fixes errors found in the DB2 scheduler. It also
    provides new capabilities to manage the scheduled tasks by
    providing the following stored procedures and user-defined
    functions: SYSPROC.ADMIN_TASK_CANCEL, SYSPROC.ADMIN_TASK_UPDATE,
    DSNADM.ADMIN_TASK_STATUS(max-history) and
    DSNADM.ADMIN_TASK_OUTPUT.

    The following errors are found in the scheduler:
```

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- When the scheduler stored procedures and user-defined
     functions return the message DSNA618I, the message parameters
     are substituted with values that do not conform to their
     description as documented in the DB2 Messages manual.
   - When the stored procedure SYSPROC.ADMIN_TASK_REMOVE is called
     with a NULL task name, it returns 0 instead of 12 in the
     output parameter return-code.
   - When the user-defined function DSNADM.ADMIN_TASK_LIST or
     DSNADM.ADMIN_TASK_STATUS encounters an error, it returns
     a nonstandard SQLSTATE beginning with "A6".
   - When the user-defined function DSNADM.ADMIN_TASK_STATUS is
     called, the MSG column contains a message without a message
     number for each JCL task that was submitted or executed
     successfully.
   - When the user-defined function DSNADM.ADMIN_TASK_STATUS
     returns the status of a JCL task that is executed
     synchronously, the column JOB_ID is not set to the system
     job ID until the task has finished execution. This makes it
     difficult to locate the job in the system in case the task
     has to be terminated manually.

The following features are missing in the scheduler:
 - Only the most current execution status of a task is kept by
   the scheduler, as the scheduler overwrites previous execution
   statuses.
 - The output parameter values and the result set values of
   a stored procedure task executed by the scheduler are
   not available to the user, as the scheduler discards them.
 - The schedule of a task cannot be modified without losing its
   current execution status. To modify the task schedule, the
   task has to be removed from the scheduler while it is not
   running and added again, thus losing its execution status.
 - A scheduler task that is executing cannot be cancelled using
   the scheduler.
 - A stored procedure does not know which scheduler invoked it
   and which task name it is running under. This prevents the
   stored procedure from interacting with the scheduler. For
   example, the stored procedure cannot determine which tasks
   depend on its execution or it cannot calculate its next
   execution time.
You need to install this PTF to fix some scheduler errors and
to make use of the new capabilities of the scheduler.

What's changed?
================
(1) The following errors found in the scheduler are fixed:
    a. When the scheduler stored procedures and user-defined
       functions return the message DSNA618I, the message
       parameters are substituted with values that now conform
       to their description as documented in the DB2 Messages
       manual.
    b. When the stored procedure SYSPROC.ADMIN_TASK_REMOVE is
       called with a NULL task name, it now returns 12 in the
       output parameter return-code.
    c. When the scheduler user-defined functions encounter an
       error, they now return the standard SQLSTATE 38553.

d. When the user-defined function DSNADM.ADMIN_TASK_STATUS
   returns the status of a JCL task that was submitted or
   executed successfully, the column MSG is now always
   blank.
   Applications that rely on the information in the
   column MSG should now rely on the value in the column
   COMPLETION_TYPE.
e. When the user-defined function DSNADM.ADMIN_TASK_STATUS
   returns the status of a JCL task that is executed
   synchronously, the column JOB_ID now contains the system
   job ID as soon as the JCL task has been submitted for
   execution.

(2) To support the new task cancel feature, the text of message
    DSNA655I is modified
    from:
        DSNA655I csect-name THE TASK task-name IS CURRENTLY
                            EXECUTING
    to:
        DSNA655I csect-name THE TASK task-name HAS AN EXECUTION
                            STATUS THAT IS NOT COMPATIBLE WITH
                            THE REQUESTED ACTION

    Currently, this message is issued by the stored procedure
    SYSPROC.ADMIN_TASK_REMOVE when it cannot remove a task
    because the task is currently executing. The new stored
    procedure SYSPROC.ADMIN_TASK_CANCEL will also issue this
    message when it cannot cancel a task because the task is
    currently not executing.

What's new?
===========
(1) The scheduler now maintains several execution statuses for
    each task. The following features have been added:
    a. The scheduler startup procedure has a new parameter
       MAXHIST that contains the maximum number of execution
       statuses to be kept for each task. MAXHIST defaults to
       10. The parameter MAXHIST can be indicated in the
       scheduler startup procedure or modified dynamically using
       the following console command:
       MODIFY DSNADMT,APPL=MAXHIST=N
       where DSNADMT is the name of the scheduler and N is a
       positive integer value for parameter MAXHIST.
       Setting MAXHIST to 1 lets the scheduler work as before,
       where only the latest execution status is available for
       each task.
    b. A new table SYSIBM.ADMIN_TASKS_HIST is defined to store
       the execution statuses of the tasks, up to a maximum
       of MAXHIST statuses per task. At most the latest 5
       execution statuses are stored redundantly in the
       scheduler task lists, so that if the new table
       SYSIBM.ADMIN_TASKS_HIST is not defined or not available,
       the latest 5 execution statuses are still available to
       the user.
       If the table SYSIBM.ADMIN_TASKS_HIST is not available
       for a period of time where a task is executed more than

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5 times, older execution statuses are lost.

c. To access the history of the execution statuses, a new user-defined function is defined:
DSNADM.ADMIN_TASK_STATUS(max-history)
where max-history is the maximum number of execution statuses that is returned per task. If max-history is NULL, all available execution statuses are returned. If max-history is 1, only the latest execution status is returned for each task. In this case, the returned table is the same as the table returned by the existing user-defined function DSNADM.ADMIN_TASK_STATUS().
The table returned by this new user-defined function has the same columns as the table returned by the existing user-defined function DSNADM.ADMIN_TASK_STATUS().
If not all of the max-history last execution statuses are available for a task, then only the available statuses among the latest max-history execution statuses are returned.

(2) The scheduler now manages the output parameter values and the result set values of the stored procedure tasks it executes:

a. The output parameter values and the result set values of each stored procedure task execution is stored in the new table SYSIBM.ADMIN_TASKS_HIST. If this table is not available at the time the stored procedure execution completes, nothing is stored and the values are lost.
At most 32 kb of output values and result set values are stored in a proprietary format for each task execution. If a result set is too big, only the latest rows of the result set are stored, as many rows as possible based on the space assigned to the result set. If some values are too big to be stored in the available space, they are not stored.

b. The new user-defined function DSNADM.ADMIN_TASK_OUTPUT (task-name, num-invocations) is introduced to return the output parameter values and the result set values of the n-th execution of the specified stored procedure task, where n is the value of the input parameter num-invocations. This new function returns a table containing one row for each output parameter value or result set value. The columns of this table are:

- RESULT_SET of type SMALLINT: the number of the result set that contains the value. The result sets are numbered from 1 to the number of result sets returned by the specified stored procedure task. This column contains NULL if the value belongs to an output parameter.
- ROW of type SMALLINT: the number of the row in the result set that contains the value. The rows are numbered from 1 to the number of rows in the result set. This column contains NULL if the value belongs to an output parameter.
- COLUMN of type SMALLINT: the number of the column in the result set that contains the value, which ranges from 1 to the number of columns in the result set, or the position, within the routine signature, of the

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parameter that contains the value, which can range
from 1 to the total number of parameters in the
routine signature.
- TYPE of type CHAR(8): the type of the column or
  parameter which contains the value. The supported
  value types are DATE, TIME, TIMESTMP, CHAR, VARCHAR,
  FLOAT, BIGINT, INTEGER, and SMALLINT. Unsupported
  value types are mapped to string OTHER.
- VALUE of type VARCHAR(32180): the string
  representation of the value. The value is NULL if
  the value has a non-supported type or if its length
  was too long to be stored.

(3) A new stored procedure SYSPROC.ADMIN_TASK_UPDATE is
introduced to update the schedule of a task. This new stored
procedure is invoked with the following parameters:
task-name, description, begin-timestamp, end-timestamp,
max-invocations, interval, point-in-time, trigger-task-name,
trigger-task-cond, trigger-task-code, DB2-SSID, return-code
and message. These parameters are a subset of the stored
procedure SYSPROC.ADMIN_TASK_ADD parameters. They are used
in the same way, with one exception. To execute the task
once, set interval, point-in-time and trigger-task-name to
NULL, and set max-invocations to a value that is greater
than the current number of executions for this task or NULL.
The user that executes the task and the stored procedure or
JCL job to be executed cannot be changed using the new
stored procedure SYSPROC.ADMIN_TASK_UPDATE.
Only the user that added the task, or a user with SYSADM,
SYSOPR or SYSCTRL authority, is allowed to update the task
schedule. The task schedule can be updated while the task
is executing, in which case the new schedule will take
effect when the task terminates executing. Otherwise, the
new task schedule applies immediately.

(4) A new stored procedure SYSPROC.ADMIN_TASK_CANCEL is
introduced to interrupt a task that is currently executing.
The stored procedure takes the task-name as input parameter
and returns as output parameters a return-code and a
message. The stored procedure tries to cancel the JCL job
that the specified task is executing or the DB2 thread that
the specified task is using to connect to DB2 to execute a
stored procedure. The return-code is 0 when the cancel
command has been submitted, it may take some time until the
tasks are stopped effectively.
Only a user with SYSOPR, SYSADM, or SYSCTRL authority can
cancel a stored procedure task. Only the user that added
the task, or a user with SYSADM, SYSOPR or SYSCTRL
authority, is allowed to cancel a JCL task, provided that
this user has the relevant RACF CANCEL authority.

(5) Before executing a stored procedure task, the scheduler sets
DB2 registers to the scheduler name, the task name and the
ID of the user that executes the task. The stored procedure
can then access those values in the following DB2 registers:
CURRENT CLIENT_APPLNAME: scheduler name
CURRENT CLIENT_ACCTNG: task name
CURRENT CLIENT_USERID: execution user ID (first 16 bytes)

```
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM02658
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    After applying this PTF on DB2 9 for z/OS
    ========================================


    The following post-apply actions are required of all current
    V9 customers to activate the changes in this PTF:
    (1) Stop the DB2 scheduler for administrative tasks.
    (2) Start the DB2 scheduler for administrative tasks.

    Each of these actions is detailed below.

    (1) If the DB2 scheduler is running, stop it first by executing
        the following console command:
        MODIFY DSNADMT,APPL=SHUTDOWN
        where DSNADMT is the name of the scheduler.

    (2) To start the DB2 scheduler again, execute the following
        console command:
        START DSNADMT
        where DSNADMT is the name of the scheduler.
  ACTION:
    After applying this PTF on DB2 V9.1 for z/OS
    ==========================================


    The following post-apply actions are required of all current
    V9 customers.

    (1) Update private copies of the installation CLIST
        This PTF modifies the DB2 installation CLIST member
        DSNTINS1 in the prefix.SDSNCLST target library.
        After applying this PTF, you need to redo any record format
        changes and reapply any tailoring you have done to your
        copy of DSNTINS1. You may also want to move it to the
        prefix.NEW.SDSNCLST data set, where the CLISTs processed
        by job DSNTIJVC reside.
    (2) Update your customized copy of job DSNTIJSG
        This PTF modifies DB2 installation job DSNTIJSG in the
        prefix.SDSNSAMP target library.
        (a) Edit your customized copy of DSNTIJSG
        (b) Add the following SQL statements under the SYSIN DD of
            job step DSNTICU. If DSNTICU is commented out then you
            should also comment out these statements:
              DROP PROCEDURE SYSPROC.ADMIN_TASK_UPDATE RESTRICT;
              DROP PROCEDURE SYSPROC.ADMIN_TASK_CANCEL RESTRICT;
              DROP SPECIFIC FUNCTION DSNADM.ADMIN_TASK_STATUSH
                   RESTRICT;
              DROP SPECIFIC FUNCTION DSNADM.ADMIN_TASK_OUTPUT
                   RESTRICT;

        (c) In job step DSNTIAS, add the following bind statements:
              BIND PACKAGE(DSNADM) MEMBER(DSNADMTC) -
```

```
              ACTION(REPLACE) ISOLATION(CS) ENCODING(EBCDIC) -
              RELEASE(COMMIT) LIBRARY('DSN!!0.SDSNDBRM')
           BIND PACKAGE(DSNADM) MEMBER(DSNADMTD) -
              ACTION(REPLACE) ISOLATION(CS) ENCODING(EBCDIC) -
              RELEASE(COMMIT) LIBRARY('DSN!!0.SDSNDBRM')
           BIND PACKAGE(DSNADM) MEMBER(DSNADMTH) -
              ACTION(REPLACE) ISOLATION(UR) ENCODING(EBCDIC) -
              RELEASE(COMMIT) LIBRARY('DSN!!0.SDSNDBRM')
           BIND PACKAGE(DSNADM) MEMBER(DSNADMTO) -
              ACTION(REPLACE) ISOLATION(UR) ENCODING(UNICODE) -
              RELEASE(COMMIT) LIBRARY('DSN!!0.SDSNDBRM')
```

     Replace DSN!!0.SDSNDBRM in these statements with the
     name of the library where the DBRMs delivered in this
     PTF have been installed.
(d) Also in job step DSNTIAS, copy in the following new DDL
     statements from prefix.SDSNSAMP(DSNTIJSG):
```
        CREATE TABLESPACE DSNADMTH ... ;
        CREATE TABLE SYSIBM.ADMIN_TASKS_HIST ... ;
        CREATE UNIQUE INDEX SYSIBM.ADMIN_TASKS_HIST_IX ... ;
        CREATE PROCEDURE SYSPROC.ADMIN_TASK_UPDATE ... ;
        CREATE PROCEDURE SYSPROC.ADMIN_TASK_CANCEL ... ;
        CREATE FUNCTION DSNADM.ADMIN_TASK_STATUS
                                 ( MAX_HISTORY INTEGER ) ... ;
        CREATE FUNCTION DSNADM.ADMIN_TASK_OUTPUT ... ;
```

     Then edit these new CREATE PROCEDURE and
     CREATE FUNCTION statements as follows:
      - Change WLMENV6 to the name of the WLM environment
        you use to run stored procedures and user-defined
        functions of the DB2 scheduler.
(e) In job step DSNTIJG, add the following grant statements:
```
        GRANT SELECT ON TABLE SYSIBM.ADMIN_TASKS_HIST TO PUBLIC;
        GRANT ALL ON TABLE SYSIBM.ADMIN_TASKS_HIST
             TO !STARTUID!;
        GRANT EXECUTE ON PROCEDURE SYSPROC.ADMIN_TASK_UPDATE
             TO PUBLIC;
        GRANT EXECUTE ON PROCEDURE SYSPROC.ADMIN_TASK_CANCEL
             TO PUBLIC;
        GRANT EXECUTE ON SPECIFIC FUNCTION
             DSNADM.ADMIN_TASK_STATUSH TO PUBLIC;
        GRANT EXECUTE ON FUNCTION DSNADM.ADMIN_TASK_OUTPUT
             TO PUBLIC;
        GRANT EXECUTE ON PACKAGE DSNADM.DSNADMTC TO PUBLIC;
        GRANT EXECUTE ON PACKAGE DSNADM.DSNADMTD TO PUBLIC;
        GRANT EXECUTE ON PACKAGE DSNADM.DSNADMTH TO PUBLIC;
        GRANT EXECUTE ON PACKAGE DSNADM.DSNADMTO TO PUBLIC;
```

     Replace !STARTUID! with the user name that starts the
     DB2 scheduler. This name should match the user name
     specified in your customized copy of DSNTIJSG for this
     statement:
```
        GRANT ALL ON TABLE SYSIBM.ADMIN_TASKS TO ... ;
```
(f) Also in job step DSNTIJG:
     replace
```
        GRANT EXECUTE ON FUNCTION DSNADM.ADMIN_TASK_STATUS
```

```
                    TO PUBLIC;
        with
           GRANT EXECUTE ON SPECIFIC FUNCTION
                 DSNADM.ADMIN_TASK_STATUS TO PUBLIC;
```

The following post-apply actions are required of all current
V9 customers that use the DB2 scheduler.

To activate the changes in this PTF you need to take the
following additional actions:
(3) Stop the scheduler for administrative tasks.
(4) Define the new scheduler interfaces in DB2.
(5) Optional: Add parameter MAXHIST to the scheduler startup
    procedure.
(6) Start the scheduler for administrative tasks.
(7) Adapt the user applications.

Each of these actions is detailed below. Note that DB2 must
be running.

(3) Stop the scheduler for administrative tasks.
    If the scheduler is running, stop it first by executing
    the following console command:
    MODIFY DSNADMT,APPL=SHUTDOWN
    where DSNADMT is the name of the scheduler.
(4) Define the new scheduler interfaces in DB2.
    Create and grant access to the new stored procedures and
    functions of the scheduler, bind or rebind all packages
    of the scheduler.
    For data sharing, this action needs to be performed only
    once for the group:
    (a) Make a work copy of your updated customized copy of
        job DSNTIJSG.
    (b) Remove all job steps except DSNTIAS and DSNTIJG.
    (c) In job step DSNTIAS:
        - remove the BIND PACKAGE command for members DSNADMCD
          and DSNADMCW.
        - remove all CREATE statements, except the following:
          CREATE TABLESPACE DSNADMTH ...
          CREATE TABLE SYSIBM.ADMIN_TASKS_HIST ...
          CREATE UNIQUE INDEX SYSIBM.ADMIN_TASKS_HIST_IX ...
          CREATE PROCEDURE SYSPROC.ADMIN_TASK_UPDATE ...
          CREATE PROCEDURE SYSPROC.ADMIN_TASK_CANCEL ...
          CREATE FUNCTION DSNADM.ADMIN_TASK_STATUS
                            (MAX_HISTORY INTEGER) ...
          CREATE FUNCTION DSNADM.ADMIN_TASK_OUTPUT ...
      (d) Remove all GRANT statements from step DSNTIJG except
          the following:
          GRANT SELECT ON TABLE SYSIBM.ADMIN_TASKS_HIST TO PUBLIC;
          GRANT ALL ON TABLE SYSIBM.ADMIN_TASKS_HIST ...
          GRANT EXECUTE ON PROCEDURE SYSPROC.ADMIN_TASK_UPDATE
                  TO PUBLIC;
          GRANT EXECUTE ON PROCEDURE SYSPROC.ADMIN_TASK_CANCEL
                  TO PUBLIC;
          GRANT EXECUTE ON SPECIFIC FUNCTION
                  DSNADM.ADMIN_TASK_STATUSH TO PUBLIC;
```

```
               GRANT EXECUTE ON FUNCTION DSNADM.ADMIN_TASK_OUTPUT
                     TO PUBLIC;
               GRANT EXECUTE ON PACKAGE DSNADM.DSNADMTC TO PUBLIC;
               GRANT EXECUTE ON PACKAGE DSNADM.DSNADMTD TO PUBLIC;
               GRANT EXECUTE ON PACKAGE DSNADM.DSNADMTH TO PUBLIC;
               GRANT EXECUTE ON PACKAGE DSNADM.DSNADMTO TO PUBLIC;
         (e) Run the modified job to create the new objects, bind
             all scheduler packages, and grant access.
         (f) When finished, you can erase the work copy of the job.
         (g) If you already defined a backup policy for table
             SYSIBM.ADMIN_TASKS, consider adding table
             SYSIBM.ADMIN_TASKS_HIST to this policy in order
             to always backup a consistent state for both tables.
    (5) Optional: Add parameter MAXHIST to the scheduler startup
        procedure.
         (a) Edit the scheduler startup procedure.
         (b) Add the new procedure variable MAXHIST=n to the PROC
             statement, where n is the default number of execution
             statuses per task that you want the scheduler to keep,
             for example MAXHIST=10.
         (c) Append ' MAXHIST=&MAXHIST' to the PARM parameter of
             the EXEC PGM=DSNADMT0 statement as follows:
             //STARTADM EXEC PGM=DSNADMT0,DYNAMNBR=100,REGION=0K,
             //             PARM=('DB2SSID=&DB2SSID',
             //               ' DFLTUID=&DFLTUID',
             //               ' TRACE=&TRACE',
             //               ...
             //               ' MAXHIST=&MAXHIST')
    (6) Start the scheduler for administrative tasks.
        Start the scheduler by executing the following console
        command:
        START DSNADMT
        where DSNADMT is the name of the scheduler.
    (7) Adapt the user applications.
        Modify any user application that calls one of the stored
        procedures or functions of the scheduler and relies on any
        of the following which has been modified by this PTF:
           o  error message
           o  SQLSTATE
           o  execution status stored in column MSG of a JCL task
        These changes are explained in the PTF cover letter or
        APAR closing text.
ACTION:
  After applying this PTF on DB2 9 for z/OS
  =======================================


  The following post-apply actions are required of all current
  V9 customers to activate the changes in this PTF:
  (1) Stop the DB2 scheduler for administrative tasks.
  (2) Refresh the DB2 scheduler package.
  (3) Start the DB2 scheduler for administrative tasks.


  Each of these actions is detailed below. Note that DB2 must
  be running.


  (1) If the DB2 scheduler is running, stop it first by executing
```

```
      the following console command:
      MODIFY DSNADMT,APPL=SHUTDOWN
      where DSNADMT is the name of the scheduler.

  (2) Refresh the DB2 scheduler package. Use the following
      procedure to avoid disrupting your existing DB2-supplied
      stored procedures and databases:
      (a) Create a work copy of your customized DSNTIJSG job.
      (b) Remove all job steps except DSNTIAS.
      (c) In job step DSNTIAS:
            - remove all CREATE statements under the SYSIN DD
            - remove all BIND PACKAGE commands under the SYSTSIN DD
              except for the following:
              BIND PACKAGE(DSNADM) MEMBER(DSNA6THP) -
              ...
      (d) Run the modified job to bind the DB2 scheduler package.
      (e) When finished, you can erase the work copy of the job.

  (3) To start the DB2 scheduler again, execute the following
      console command:
      START DSNADMT
      where DSNADMT is the name of the scheduler.
ACTION:
  After applying this PTF on DB2 9 for z/OS
  ========================================

  The following post-apply actions are required of all current
  V9 customers to activate the changes in this PTF:
  (1) Stop the DB2 scheduler for administrative tasks.
  (2) Start the DB2 scheduler for administrative tasks.

  Each of these actions is detailed below.

  (1) If the DB2 scheduler is running, stop it first by executing
      the following console command:
      MODIFY DSNADMT,APPL=SHUTDOWN
      where DSNADMT is the name of the scheduler.

  (2) To start the DB2 scheduler again, execute the following
      console command:
      START DSNADMT
      where DSNADMT is the name of the scheduler.
ACTION:
  After applying this PTF on DB2 9 for z/OS
  ========================================

  The following post-apply actions are required of all current
  V9 customers to activate the changes in this PTF:
  (1) Stop the DB2 scheduler for administrative tasks.
  (2) Refresh the DB2 scheduler package.
  (3) Start the DB2 scheduler for administrative tasks.

  Each of these actions is detailed below. Note that DB2 must
  be running.

  (1) If the DB2 scheduler is running, stop it first by executing
```

```
         the following console command:
         MODIFY DSNADMT,APPL=SHUTDOWN
         where DSNADMT is the name of the scheduler.

    (2) Refresh the DB2 scheduler package. Use the following
        procedure to avoid disrupting your existing DB2-supplied
        stored procedures and databases:
        (a) Create a work copy of your customized DSNTIJSG job.
        (b) Remove all job steps except DSNTIAS.
        (c) In job step DSNTIAS:
            - remove all CREATE statements under the SYSIN DD
            - remove all BIND PACKAGE commands under the SYSTSIN DD
              except for the following:
              BIND PACKAGE(DSNADM) MEMBER(DSNA6DB2) -
              ...
        (d) Run the modified job to bind the DB2 scheduler package.
        (e) When finished, you can erase the work copy of the job.

    (3) To start the DB2 scheduler again, execute the following
        console command:
        START DSNADMT
        where DSNADMT is the name of the scheduler.
ACTION:
  After applying this PTF on DB2 V9.1 for z/OS
  ============================================

  The following post-apply actions are required of all current
  V9 customers to activate the changes in this PTF:
  (1) Stop the DB2 scheduler for administrative tasks.
  (2) Refresh the DB2 scheduler package.
  (3) Start the DB2 scheduler for administrative tasks.

  Each of these actions is detailed below. Note that DB2 must
  be running.

  (1) If the DB2 scheduler for administrative tasks is running,
      stop it first by executing the following console command:
      modify dsnadmt,appl=shutdown
      where dsnadmt is the name of the scheduler.

  (2) Refresh the DB2 scheduler package. Use the following
      procedure to avoid disrupting your existing DB2-supplied
      stored procedures and databases:
      (a) Create a work copy of your customized DSNTIJSG job.
      (b) Remove all job steps except DSNTIAS.
      (c) In job step DSNTIAS:
          - remove all CREATE statements under the SYSIN DD
          - remove all BIND PACKAGE commands under the SYSTSIN DD
            except for the following:
            BIND PACKAGE(DSNADM) MEMBER(DSNA6DB2) -
            ...
      (d) Run the modified job to bind the DB2 scheduler package.
      (e) When finished, you can erase the work copy of the job.

  (3) To start the DB2 scheduler for administrative tasks again,
      execute the following console command:
```

```
        start dsnadmt
        where dsnadmt is the name of the scheduler.
ACTION:
  The following post-apply actions are required of all current
  V9 customers to activate the changes in this PTF:
  (1) Refresh the DB2 scheduler package.
  (2) Refresh the WLM environments used by the scheduler stored
      procedures and user-defined functions.

  Each of these actions is detailed below. Note that DB2 must
  be running.

  (1) Refresh the DB2 scheduler package.

      Use the following procedure to avoid disrupting your
      existing DB2-supplied stored procedures and databases:
      (a) Create a work copy of your customized DSNTIJSG job.
      (b) Remove all job steps except DSNTIAS.
      (c) In job step DSNTIAS:
          - remove all CREATE statements under the SYSIN DD
          - remove all BIND PACKAGE commands under the SYSTSIN DD
            except for the following:
            BIND PACKAGE(DSNADM) MEMBER(DSNADMTU) -
            ...
      (d) Run the modified job to bind the DB2 scheduler package.
      (e) When finished, you can erase the work copy of the job.

  (2) Refresh the WLM environments used by the scheduler stored
      procedures and user-defined functions.

      Refresh the WLM environments used by the stored procedures
      SYSPROC.ADMIN_TASK_ADD and SYSPROC.ADMIN_TASK_REMOVE, and
      by the user-defined functions DSNADM.ADMIN_TASK_LIST and
      DSNADM.ADMIN_TASK_STATUS, as defined in their respective
      CREATE statements in job step DSNTIAS of your customized
      DSNTIJSG job. Execute the following console command for
      each different WLM environment:
      vary wlm,applenv=wlmenv6,refresh
      where wlmenv6 is the name of a WLM environment.
ACTION:
  This PTF updates the DB2 administrative scheduler to be able to
  check passtickets against a given user ID as it is able to do
  with passwords.

  After applying this PTF on DB2 9 for z/OS, the following
  actions are required:
  (1) Stop the DB2 scheduler for administrative tasks.
  (2) Refresh the DB2 scheduler package.
  (3) Start the DB2 scheduler for administrative tasks.
  (4) Refresh the WLM environment in which
      SYSPROC.ADMIN_TASK_ADD is running

  Each of these actions is detailed below. Note that DB2 must
  be running.

  (1) If the DB2 scheduler for administrative tasks is running,
```

stop it first by executing the following console command:
        modify dsnadmt,appl=shutdown
        where dsnadmt is the name of the scheduler.

    (2) Refresh the DB2 scheduler package. Use the following
        procedure to avoid disrupting your existing DB2-supplied
        stored procedures and databases:
        (a) Create a work copy of your customized DSNTIJSG job.
        (b) Remove all job steps except DSNTIAS.
        (c) In job step DSNTIAS:
            - remove all CREATE statements under the SYSIN DD
            - remove all BIND PACKAGE commands under the SYSTSIN DD
              except for the following:
              BIND PACKAGE(DSNADM) MEMBER(DSNADMTA) -
              ...
        (d) Run the modified job to bind the DB2 scheduler package.
        (e) When finished, you can erase the work copy of the job.

    (3) To start the DB2 administrative scheduler again, execute
        the following console command:
        start dsnadmt
        where dsnadmt is the name of the scheduler.

    (4) Refresh the WLM environment in which SYSPROC.ADMIN_TASK_ADD
        is running by executing the following console command:
        vary wlm,applenv=wlmenv6,refresh
        where wlmenv6 is the WLM ENVIRONMENT parameter value in the
        CREATE PROCEDURE SYSPROC.ADMIN_TASK_ADD statement in your
        customized DSNTIJSG job.
ACTION:
  To activate the changes in this PTF you need to take following
  actions:
  (1) Stop the scheduler for administrative tasks.
  (2) Bind the packages of the scheduler.
  (3) Start the scheduler again.

  Each of these actions is detailed below. Note that DB2 must
  be running.

  (1) If the scheduler is running, stop it first by executing
      following console command:
      modify dsnadmt,appl=shutdown
      where dsnadmt is the name of the scheduler.
  (2) Bind the scheduler packages as follows:
      (a) Make a work copy of your customized copy of DSNTIJSG.
      (b) Remove all job steps except DSNTIAS.
      (c) In job step DSNTIAS, remove all CREATE statements and
          remove the BIND PACKAGE commands for members DSNADMTU,
          DSNA6THP and DSNADMCD.
      (d) Run the modified job to bind the scheduler packages.
      (e) When finished, you can erase the work copy of the job.

      For data sharing, this action needs to be performed only
      once for the group.
  (3) Start the scheduler again by executing following console
      command:

```
      start dsnadmt
      where dsnadmt is the name of the scheduler.
.


------ COVER LETTER FOR PTF UK60396 ------------

PROBLEM DESCRIPTION(S):
  PM18114 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS users of native SQL      *
    *                 procedures containing a control statement   *
    *                 with a search-condition with a LOB type SQL *
    *                 variable or parameter.                      *
    ****************************************************************
    * PROBLEM DESCRIPTION: An incorrect behavior could happen when *
    *                 executing a native SQL procedure that       *
    *                 satisfies the following conditions.         *
    *                                                             *
    *                 1. It contains an IF, a REPEAT, a           *
    *                    WHILE, or a CASE statement.              *
    *                 2. The above statement contains a           *
    *                    search-condition with a LOB type         *
    *                    SQL variable or parameter.               *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    An incorrect behavior could happen when executing a native SQL
    procedure that satisfies the following conditions.

    1. It contains an IF, a REPEAT, a WHILE, or a CASE statement.
    2. The above statement contains a search-condition with a LOB
       type SQL variable or parameter.


    The following example helps to illustrate the problem.

    Step 1. Create a table with following statement.

    CREATE TABLE T1 (
      C1_LOB CLOB(1M) NOT NULL
    )


    Step 2. Create a native SQL procedure which satisfies the
    aforementioned conditions.

    CREATE PROCEDURE SYSPROC.SP1
      LANGUAGE SQL MODIFIES SQL DATA
      BEGIN
        DECLARE H1 CLOB(1M);
        SET H1 = NULL;
        IF H1 IS NOT NULL THEN
          INSERT INTO T1(C1_LOB) VALUES (H1);
        END IF;
      END #
```

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Step 3. Call the procedure and check the results.

The search-condition for the IF statement, "H1 IS NOT NULL",
should evaluate to False since H1 has been set to NULL.
The expected execution path is to skip the THEN part of this
IF statement. However, wrong path was taken and the INSERT
statement under the THEN part was executed. The attempt to
insert a NULL value into a column defined as NOT NULL
resulted in SQLCODE407 (or -407) to be issued.

DB2 is modified to correctly process the search-condition
referencing SQL variable or SQL parameter of LOB type,
so that execution of native SQL procedure will take the
expected path whenever the result of such search-condition
evaluated for an SQL control statement determines the
execution path.
DB2 is modified to process the aforementioned statements
correctly so the native SQL stored procedure performs well.

Additional Keywords: SQLSP SQLSTOREDPROC SQLNATIVESQLPL
                     SQLISNULL SQLISNOTNULL SQLLOB INCORROUT
                     SQLINCORR SQLINCORROUT
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM18114
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    PM18114 corrects a problem that an incorrect behavior could
    happen when executing a native SQL procedure that satisfies the
    following conditions.

    1. It contains an IF, a REPEAT, a WHILE, or a CASE statement.
    2. The above statement contains a search-condition with a LOB
       type SQL variable or parameter.

    After the application of this PTF, ALTER PROCEDURE REGENERATE is
    required for each native SQL procedure that is affected.
    Review the PTF cover letter to determine which, if any, native
    SQL procedure could be affected by this change.
.

------ COVER LETTER FOR PTF UK60464 ------------

PROBLEM DESCRIPTION(S):
  PM16836 -
    ****
    * USERS AFFECTED: All Distributed Data Facility (DDF) users. *
    *   Specifically where the availability of the *
    *   z/OS Integrated Cryptographic Services   *
    *   Facility (ICSF) environment is required by *
    *   a DB2 9 for z/OS system to perform   *
    *   encryption and decryption processing.   *

```
****************************************************************
* PROBLEM DESCRIPTION: During DB2 cryptographic processing,   *
*                      if the z/OS ICSF environment becomes    *
*                      unavailable, DB2 may issue message      *
*                      DSNL046I to the system console.         *
*                      Further, when the z/OS ICSF             *
*                      environment becomes available again,    *
*                      DB2 will not be aware of this (until     *
*                      DB2 is restarted) and thus causing       *
*                      subsequent cryptographic processing     *
*                      (those requiring the services of        *
*                      z/OS ICSF) requests to fail.            *
****************************************************************
* RECOMMENDATION:                                              *
****************************************************************
   During DB2 cryptographic processing, such as AES encryption,
   if DB2 detects that ICSF is unavailable, an internal indicator
   is set, and it will remain set until DB2 is restarted. Message
   DSNL046I may be issued to the system console to indicate that
   ICSF is not available. Unfortunately, when ICSF becomes
   available, DB2 will continue to rely on the value of the
   internal indicator to determine the availability of ICSF. In
   this case, DB2 is incorrectly led to believe ICSF is
   unavailable which causes all cryptographic processing (that
   requires the services of ICSF) to fail. Hence, the only way to
   cause DB2 to accurately determine the status of ICSF is to
   reset this internal indicator by way of restarting DB2 (as this
   would implicitly reset the internal indicator). This flawed
   method is undesirable as it causes an unnecessary DB2 system
   outage.

   DB2 9 for z/OS has been changed to properly determine the
   availability of the z/OS ICSF environment during cryptographic
   processing. When the z/OS ICSF environment becomes available,
   a restart of DB2 is no longer required except when there is a
   failed attempt of loading the ICSF callable services during DB2
   startup processing. Evidence of message DSNX211I would be
   available in the system console log.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM16836
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    *** Action for PM17561 ***
    DB2 9 for z/OS server processing has been changed to no longer
    favor AES as the encryption algorithm for security credentials
    when a remote client does not explicitly specify an encryption
    algorithm to use.
    After applying this change, AES will no longer be utilized as
    an implied default encryption algorithm. Therefore, to insure
    that the necessary AES protection of security credentials
    continues to be utilized, and for cases where AES is not
    currently being utilized but its use is desired, IBM recommends
    that users perform the following actions before applying this
    change:
```

o Determine all remote clients that encrypt security
            credentials when accessing DB2 by enabling the IFCID319
            audit trace record and examine these fields:
             . QW0319IPA - IP address (internal form) of remote client
             . QW0319PRT - Port (internal form) of remote client
             . QW0319FL - Status byte where
                              '40'X means AES is used, and
                              '00'X means DES is used.
          o For those client system(s) identified by the IFCID319
            record(s), insure that the necessary client system related
            environmental and configurational conditions are set up to
            explicity require AES (if desired).
            For Java applications using the IBM Data Server Driver for
            JDBC and SQLJ type 4 connectivity:
             . Ensure the Java Cryptography Extension (JCE) Unlimited
               Jurisdiction Policy files are installed in the Java
               environment where the Java application program(s) run.
             . The JDBC DataSource property, encryptionAlgorithm, needs
               to be set to 2 (AES).
            For non-Java DB2 clients for Linux, UNIX, and Windows
            users:
             . CLP and embedded SQL clients, the AUTHENTICATION type for
               the remote database entry in the system database
               directory needs to be set to SERVER_ENCRYPT_AES.
             . CLI/ODBC applications, the ClientEncAlg configuration
               keyword in the db2cli.ini file or the equivalent
               environment or connection attribute,
               SQL_ATTR_CLIENT_ENCALG, needs to be set to 2 (or AES).
               Similarly, you can also set the Authentication
               configuration keyword with the value of
               "SERVER_ENCRYPT_AES" in the [Data Source] section of the
               db2cli.ini file for the given data source, or in a
               connection string, or in the db2dsdriver.cfg
               configuration file.
             . DB2 .NET Data Provider applications, the
               DB2ConnectionStringBuilder.ClientEncAlg property needs
               to be set to "AES".
      .

      ------ COVER LETTER FOR PTF UK60529 ------------

      PROBLEM DESCRIPTION(S):
        PM17872 -
          ****
          * USERS AFFECTED: All DB2 for z/OS V8 and All DB2 9 for z/OS *
          *   users of queries that reference a View or   *
          *   Table expression which contains UNION ALL   *
          *   clause.   *
          ****
          * PROBLEM DESCRIPTION: An SQLCODE -180 may be issued   *
          *   unexpectedly for a query that satisfies *
          *   all of the following conditions: *
          *   *
          *   1. The query contains a VIEW or table *
          *   expression containing UNION ALL   *
                                        182

```
*                           clause.                              *
*                                                                *
*                   2. There is a branch of UNION ALL that       *
*                      include in the select list, set           *
*                      function MAX (or MIN) with argument        *
*                      of Date, Time or Timestamp type.          *
*                                                                *
*                   3. The query contains a predicate that       *
*                      references host variable or               *
*                      parameter marker of datetime values       *
*                      or string representation of datetime       *
*                      values.                                   *
******************************************************************
* RECOMMENDATION:                                                *
******************************************************************
```

An SQLCODE -180 may be issued unexpectedly for a query that
satisfies all of the following conditions:

1. The query contains a VIEW or table expression containing a
   UNION ALL clause.

2. There is a branch of UNION ALL that includes in the select
   list, set function MAX (or MIN) with argument of Date, Time
   or Timestamp type.

3. The query contains a predicate that references host variable
   or parameter marker of datetime values or string
   representation of datetime values.

example
==

 Below is the original query statement.(Where value_1
 can represent parameter markers and host variables. value_1
 also represent Date,Time or timestamp type data.).


```
SELECT C11
  FROM (
  SELECT MIN(CU11) FROM TU1
  UNION ALL
  SELECT CU11 FROM TU1
  ) AS TX(C11)
  WHERE C11 = value_1;

SELECT C11
FROM (
      SELECT MAX(CU13)
      FROM TU1
      UNION ALL
      SELECT CU13
      FROM TU1 ) AS TX(C11)
      WHERE value_1 BETWEEN C11 AND C11;
```

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The failure occurs because DB2 did not process the Date,Time
or Timestamp type of host variable or parameter marker
correctly.

DB2 is modified to perform a UNION ALL transformation correctly
for a query that involves a Date, Time or Timestamp type host
variable or parameter marker.

Additional Keywords: SQLUNIONALL SQLVIEW SQLPMARKER SQLPMK
                     PARAMETERMARKER SQLTABLEEXPR SQLGROUPBY
                     SQLHOSTVAR SQLCODE180 SQLTIMESTAMP SQLMAX
                     SQLMIN SQLTIME SQLDATE
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM17872
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM17872:

    See PM17872 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM17872 corrects a problem of (
     An SQLCODE -180 may be issued unexpectedly for a query that
     satisfies all of the following conditions:

     1. The query contains a VIEW or table expression containing a
        UNION ALL clause.

     2. There is a branch of UNION ALL that includes in the select
        list, set function MAX (or MIN) with argument of Date, Time
        or Timestamp type.

     3. The query contains a predicate that references host variable
        or parameter marker of datetime values or string
        representation of datetime values.
).

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK60560 ------------

PROBLEM DESCRIPTION(S):
  PM21111 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS utility users of UNLOAD   *
    *   and LOAD using XML CLOBF File Reference   *
    *   Variable (FRV) with mixed XML data   *
                              184

```
****************************************************************
* PROBLEM DESCRIPTION: UNLOAD from a table containing mixed    *
*                      XML data using XML CLOBF FRVs to        *
*                      UNICODE output results in message       *
*                      DSNU283I and SQLCODE -20412             *
*                                                              *
*                      LOAD of XML columns using XML CLOBF     *
*                      FRVs with mixed XML data results in     *
*                      message DSNU283I and SQLCODE -20398     *
****************************************************************
* RECOMMENDATION: Apply corrective PTF when available          *
****************************************************************
```

UNLOAD of an XML column containing mixed XML data using FRVs to
UNICODE output results in message MSGDSNU283I and SQLCODE
-20412 because UNLOAD used the single-byte CCSID for
conversion and not the mixed CCSID.

LOAD of an XML column using XML FRV with mixed XML data
resulted in SQLCODE -20398 because the single byte CCSID was
used for conversion and not the mixed CCSID.

Additional Keywords:
SQLCODE-20412 SQLCODE-20398 SQLCODE20398 SQLCODE20412 HFS PDS
ABEND04E RC00E60176 at DSNWVAPR+1FCA +'1FCA'x 1FCA
LOAD and UNLOAD of mixed XML data using CLOBF FRVs have both
been changed to attempt to use the mixed CCSID first before
using the single-byte CCSID.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM21111
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
     ***Action for PM12286:
    See PM12286 APAR/PTF text for additional information.

    This APAR changes the way UNLOAD and LOAD handle file reference
    variables (FRV) for zero length LOBs.

    The following describes the behavior after the application of
    this APAR.

    When unloading a zero length LOB to FRV, unload writes a zero
    length VARCHAR or blank CHAR in SYSREC and does not create a
    data set member or file for the LOB. If the field is nullable,
    the null byte is set to '00'x indicating not NULL.

    When loading a LOB FRV field, LOAD treats a zero length VARCHAR,
    blank VARCHAR or blank CHAR as a zero length LOB. This assumes
    the LOB is not nullable or is not NULL as indicated by the NULL
    byte; a NULL FRV results in a NULL LOB.

    Note: A file reference variable with a file name or data set
    name which references an empty file still represents an empty
    LOB.

Note: This is an incompatible change for any product which
expects there to be an empty file representing an empty
LOB after UNLOAD using FRVs.
.

------ COVER LETTER FOR PTF UK60600 ------------

PROBLEM DESCRIPTION(S):
  PM16991 -
     ****
     * USERS AFFECTED: All users of DB2 for z/OS V8 and DB2 9 for *
     *   z/OS who are using the DB2 stored procedure *
     *   SYSPROC.ADMIN_JOB_FETCH.   *
     ****
     * PROBLEM DESCRIPTION: The DB2 stored procedure   *
     *   SYSPROC.ADMIN_JOB_FETCH is leaking   *
     *   memory.   *
     ****
     * RECOMMENDATION: APPLY PTF   *
     ****
     After processing each SYSOUT data set, the stored procedure
     SYSPROC.ADMIN_JOB_FETCH does not free the DCB and DCBE
     storage which it has acquired using the GETMAIN macro to open
     and read a SYSOUT data set.
     The stored procedure SYSPROC.ADMIN_JOB_FETCH is modified
     to use the C/C++ fopen(), fread(), and fclose() functions
     to access the SYSOUT data sets to fix the memory leak.
     By using these functions, it is no longer necessary to
     separately acquire storage for a DCB and DCBE.

     By switching to fopen(), fread(), and fclose(), it is no
     longer necessary to include DSNADMJ5 in the load module
     DSNADMJF. To remove DSNADMJ5 from DSNADMJF, DSNADMJF will be
     deleted first using ++DELETE and an updated JCLIN supplied
     to define DSNADMJF without DSNADMJ5. Since DSNADMJF is the
     only module using DSNADMJ5, DSNADMJ5 will also be deleted.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM16991
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
     This PTF fixes a memory leak problem in the DB2 stored procedure
     SYSPROC.ADMIN_JOB_FETCH.

     ****
     Actions for customers who are already using DB2 V9:
     ****
     After applying this PTF, you need to take the following
     action:
     (1) Bind the DBRM for the stored procedure
         SYSPROC.ADMIN_JOB_FETCH.

     Procedure for this action is given below.

```
         -------------------------------------------------------------
         (1) Bind the DBRM for the stored procedure
             SYSPROC.ADMIN_JOB_FETCH.
             ********************************************************
             * All V9 customers who want to use the stored procedure
             * SYSPROC.ADMIN_JOB_FETCH need to perform this step.
             ********************************************************
             Use the following procedure to avoid disrupting your
             existing DB2-supplied stored procedures and databases:
             (a) Create and edit a copy of your customized DSNTIJSG job
             (b) Remove all job steps except DSNTIAE
             (c) In job step DSNTIAE:
                 - remove all BIND PACKAGE statements under the SYSTSIN
                   DD, except for the following:
                     BIND PACKAGE(DSNADM) MEMBER(DSNADMJF) - ...
                 - remove all CREATE statements under the SYSIN DD
             (d) Run the job to bind the DBRM for the stored
                 procedure SYSPROC.ADMIN_JOB_FETCH
             (e) Delete the DSNTIJSG work copy created in step (1)(a)
         -------------------------------------------------------------
       DELETE:
         This PTF rebuilds the module DSNADMJF as it no longer needs
         the module DSNADMJ5.
       DELETE:
         This PTF deletes the module DSNADMJ5.
     .


     ------ COVER LETTER FOR PTF UK60802 ------------


  PROBLEM DESCRIPTION(S):
    PM04843 -
       ****************************************************************
       * USERS AFFECTED: All DB2 9 users of the BIND PACKAGE DEPLOY   *
       *                 command for Native SQL Procedures            *
       ****************************************************************
       * PROBLEM DESCRIPTION: SQLCODE -4731 SQLCODE4731               *
       *                      when running Native SQL Procedures      *
       *                      that participate in DRDA or SET          *
       *                      CURRENT PACKAGESET/SET CURRENT           *
       *                      PACKAGE PATH statements                  *
       ****************************************************************
       * RECOMMENDATION: Native SQL Procedures that currently         *
       *                 encounter SQLCODE -4731 will encounter       *
       *                 SQLCODE -805 after this fix is applied        *
       *                 to all sites involved in the BIND            *
       *                 DEPLOY and the procedure is re-deployed.      *
       *                 Eliminate SQLCODE -805 by utilising          *
       *                 BIND COPY and not BIND DEPLOY, or by          *
       *                 eliminating the DRDA or the                   *
       *                 SET statement activity.                       *
       ****************************************************************
                                                                    .
       This APAR introduces incompatible code changes to the BIND
       PACKAGE DEPLOY command for Native SQL Procedures.
                                                                    .
```

Before application of this APAR, DB2 deployment code
incorrectly generates a procedure with the exact same package
consistency token (catalog columns SYSIBM.SYSPACKAGE CONTOKEN
and SYSIBM.SYSROUTINES CONTOKEN) as the source procedure.
After application of this APAR, the deployment code will
generate a procedure with a unique package consistency token
that is different from that of the source procedure.

.

If the Native SQL Procedures participate in DRDA or SET
CURRENT PACKAGE PATH / SET CURRENT PACKAGESET statements,
then target package of that activity must be a package
generated from BIND COPY and not generated from BIND DEPLOY.

.

Otherwise, if the target package of that activity is,
incorrectly, a package generated from BIND DEPLOY, then
sql statement requests may encounter SQLCODE -4731.

.

Native SQL Procedures that currently encounter
SQLCODE -4731 will encounter SQLCODE -805 after this fix
is applied to all sites involved in the BIND DEPLOY and
the procedure is re-deployed.

.

DB2 Code has been modified to change the value of the package
CONTOKEN for packages that are generated with the BIND DEPLOY
command. SQLCODE -805 is expected to occur if the Native
SQL procedure incorrectly uses packages that result from BIND
DEPLOY commands as target packages of DRDA or SET CURRENT
PACKAGE PATH / SET CURRENT PACKAGESET activity after
application of this PTF.

.

.

Additional Keywords:
sqlsp sqlpl sqlstoredproc sqlset sqlconnect drda idrda
sqlcode805 sqlcode-805
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM04843
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    PM04843 changes the value of the package CONTOKEN for packages
    that are generated with the BIND DEPLOY command. To make this
    PTF effective, please re-DEPLOY those SQL procedures after
    application of the PTF.

    Native SQL Procedures that currently encounter SQLCODE -4731
    will encounter SQLCODE -805 after this fix is applied to all
    sites involved in the BIND DEPLOY and the procedure is
    re-deployed. Please use BIND COPY instead of BIND DEPLOY, or
    by eliminating the DRDA or the SET statement activity to avoid
    SQLCODE -805.
.

------ COVER LETTER FOR PTF UK60839 ------------

PROBLEM DESCRIPTION(S):
  PM14223 -
    ****
    * USERS AFFECTED: All users of the DSN_VIRTUAL_INDEXES explain *
    *   table in DB2 UDB for z/OS Version 8 and DB2   *
    *   9.1 for z/OS are affected by this change.   *
    ****
    * PROBLEM DESCRIPTION: DB2 returns SQLCODE -545 (THE REQUESTED *
    *   OPERATION IS NOT ALLOWED BECAUSE A ROW   *
    *   DOES NOT SATISFY THE CHECK CONSTRAINT)   *
    *   when creating a virtual index on an   *
    *   empty table.   *
    ****
    * RECOMMENDATION: *
    ****
    Virtual indexes allow optimization tools to test the effect of
    creating and dropping indexes on the performance of particular
    queries. Virtual indexes use an EXPLAIN table called
    DSN_VIRTUAL_INDEXES. Prior to DB2 V8 new-function mode, this
    table is named DSN_VIRTUAL_INDEX.

    The current implementation of virtual indexes does not support
    index evaluation of empty tables because the following columns
    in DSN_VIRTUAL_INDEXES are defined with CHECK constraints that
    do not allow a value of zero:

      NLEAF
      NLEVELS
      FIRSTKEYCARDF
      FULLKEYCARDF

    An empty table may have a value of zero for some or all of
    these columns. As a result, the create request for the virtual
    index fails with SQLCODE -545.

    In addition, the CLUSTERRATIOF column is currently defined as
    NOT NULL WITH DEFAULT instead of NOT NULL WITH DEFAULT -1.
    This change relaxes the constraints to allow a virtual index to
    be used on an empty table.

    It also modifies the CLUSTERRATIOF column as follows:
    - The default setting is now NOT NULL WITH DEFAULT -1
    - The CHECK constraint now specifies
      CHECK("CLUSTERRATIOF" >= -1)

    The following DB2 parts are affected:
    - DSNTXTB: REXX exec for migrating an EBCDIC explain table to
                Unicode
    - DSNTESC : DDL for creating sample explain tables
    - DSNTIJOS: Job for installing the DB2 Optimization Service
                Center

    If you maintain private copies of these members, you need to
    update them after applying this PTF. You also need to update
    any existing DSN_VIRTUAL_INDEXES tables. See the ++HOLD actions
    of this APAR for guidance.

```
       Additional keywords:
          SQLCODE545
          DSN_VIRTUAL_INDEX
          DSN_VIRTUAL_INDEXES
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM14223
SPECIAL CONDITIONS:
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  ACTION:
    ***Actions for PM14223 (V9)

    This PTF modifies DDL for creating the DSN_VIRTUAL_INDEXES
    explain table to permit creating of virtual indexes on empty
    tables.

    If you have already installed or migrated to DB2 Version 9 then
    after applying this PTF you need to take the following actions:

    (1) Update your existing DSN_VIRTUAL_INDEXES tables to the new
        format
    (2) Update your customized copy of sample DDL member DSNTESC
    (3) Update your customized copy of install job DSNTIJOS

    Detailed guidance follows:
    -----------------------------------------------------------------
    (1) Update your existing DSN_VIRTUAL_INDEXES tables to the new
        format
    -----------------------------------------------------------------
    => This action is required for all customers who have created
       one or more DSN_VIRTUAL_INDEXES tables:

       The process consists of dropping the old check constraints,
       then adding the new check constraints and updating the
       default value for CLUSTERRATIOF.

       (1) Use the following query to identify creators of existing
           DSN_VIRTUAL_INDEXES tables:

               SELECT CREATOR
               FROM SYSIBM.SYSTABLES
               WHERE NAME IN( 'DSN_VIRTUAL_INDEXES');

       (2)  For each DSN_VIRTUAL_INDEXES table, process the
            following statements:

                  ALTER TABLE schema.DSN_VIRTUAL_INDEXES
                     DROP CHECK NLEAF;
                  ALTER TABLE schema.DSN_VIRTUAL_INDEXES
                     DROP CHECK NLEVELS;
                  ALTER TABLE schema.DSN_VIRTUAL_INDEXES
                     DROP CHECK FIRSTKEYCARDF;
                  ALTER TABLE schema.DSN_VIRTUAL_INDEXES
                     DROP CHECK FULLKEYCARDF;
                  ALTER TABLE schema.DSN_VIRTUAL_INDEXES
```

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```
                    DROP CHECK CLUSTERRATIOF;

         (b) Add new check constraints:
             ALTER TABLE schema.DSN_VIRTUAL_INDEXES
                 ADD CHECK("NLEAF" >= -1);
             ALTER TABLE schema.DSN_VIRTUAL_INDEXES
                 ADD CHECK ("NLEVELS" >= -1);
             ALTER TABLE schema.DSN_VIRTUAL_INDEXES
                 ADD CHECK ("FIRSTKEYCARDF" = - 1
                       OR "FIRSTKEYCARDF" >= 0);
             ALTER TABLE schema.DSN_VIRTUAL_INDEXES
                 ADD CHECK ("FULLKEYCARDF" = - 1
                       OR "FULLKEYCARDF" >= 0);
             ALTER TABLE schema.DSN_VIRTUAL_INDEXES
                 ADD CHECK ("CLUSTERRATIOF" = -1
                       OR "CLUSTERRATIOF" >= 0);

         (c) Update the default value for CLUSTERRATIOF:
             ALTER TABLE schema.DSN_VIRTUAL_INDEXES
                ALTER COLUMN CLUSTERRATIOF SET DEFAULT -1;

      Note:
         If the value in the special register CURRENT RULES is
         'DB2', the table space containing the
         DSN_VIRTUAL_INDEXES table will be placed into check
         pending status when the new constraints are added.

         If the table is accessed at this time, an SQLCODE -904
         will be issued.  The check pending status can be
         resolved by running the CHECK DATA utility on the
         table space.

   ------------------------------------------------------------------
   (2) Update your customized copy of sample DDL member DSNTESC
   ------------------------------------------------------------------
   => This action is required for all customers who maintain
      customized copies of DSNTESC

      Edit DSNTESC, locate the CREATE TABLE statement for
      DSN_VIRTUAL_INDEXES, and modify as follows:
      - Change:
         CHECK("NLEAF" = -1
             OR "NLEAF" > 0)
        to:
         CHECK("NLEAF" >= -1)

      - Change:
         CHECK("NLEVELS" = -1
             OR "NLEVELS" > 0)
        to:
         CHECK("NLEVELS" >= -1)

      - Change:
         CHECK("FIRSTKEYCARDF" = -1
             OR "FIRSTKEYCARDF" > 0)
        to:
```

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```
            CHECK("FIRSTKEYCARDF" = -1
                OR "FIRSTKEYCARDF" >= 0)


      - Change:
            CHECK("FULLKEYCARDF" = -1
                OR "FULLKEYCARDF" > 0)
         to:
            CHECK("FULLKEYCARDF" = -1
                OR "FULLKEYCARDF >= 0)


      - Change:
            ,"CLUSTERRATIOF"          FLOAT          NOT NULL WITH DEFAULT
                                      CHECK("CLUSTERRATIOF" >= 0)
         to:
            ,"CLUSTERRATIOF"          FLOAT       NOT NULL WITH DEFAULT -1
                                      CHECK("CLUSTERRATIOF" = - 1
                                          OR "CLUSTERRATIOF" >= 0)
      - Save your changes.


   ------------------------------------------------------------------
   (3) Update your customized copy of install job DSNTIJOS
   ------------------------------------------------------------------
   => This action is required for all customers who maintain
      customized copies of DSNTIJOS

      Edit DSNTIJOS, locate the CREATE TABLE statement for
      DSN_VIRTUAL_INDEXES, and modify as follows:
      - Change:
            CHECK("NLEAF" = -1
                OR "NLEAF" > 0)
         to:
            CHECK("NLEAF" >= -1)


      - Change:
            CHECK("NLEVELS" = -1
                OR "NLEVELS" > 0)
         to:
            CHECK("NLEVELS" >= -1)


      - Change:
            CHECK("FIRSTKEYCARDF" = -1
                OR "FIRSTKEYCARDF" > 0)
         to:
            CHECK("FIRSTKEYCARDF" = -1
                OR "FIRSTKEYCARDF" >= 0)


      - Change:
            CHECK("FULLKEYCARDF" = -1
                OR "FULLKEYCARDF" > 0)
         to:
            CHECK("FULLKEYCARDF" = -1
                OR "FULLKEYCARDF >= 0)


      - Change:
            ,"CLUSTERRATIOF"          FLOAT          NOT NULL WITH DEFAULT
                                      CHECK("CLUSTERRATIOF" >= 0)
```

```
          to:
            ,"CLUSTERRATIOF"        FLOAT     NOT NULL WITH DEFAULT -1
                                      CHECK("CLUSTERRATIOF" = - 1
                                        OR "CLUSTERRATIOF" >= 0)
        - Save your changes.
.


------ COVER LETTER FOR PTF UK60888 ------------

PROBLEM DESCRIPTION(S):
  PM17542 -
    ****************************************************************
    * USERS AFFECTED: All DB2 users.                              *
    ****************************************************************
    * PROBLEM DESCRIPTION: DB2 exploits z/OS 1.12 new allocation  *
    *                      functions to improve the performance of *
    *                      allocation, deallocation, open, and    *
    *                      close of the data sets in DB2 page     *
    *                      sets.  It will improve the performance *
    *                      when opening a large number of data    *
    *                      sets concurrently, especially for DB2  *
    *                      users with high DSMAX.  Significant     *
    *                      reduction in elapsed time has been     *
    *                      observed by DB2 and z/OS performance   *
    *                      test.  DB2 shutdown time may also be   *
    *                      improved.                              *
    *                                                            *
    *                      z/OS Version 1 Release 12. V1.12. R12. *
    ****************************************************************
    * RECOMMENDATION:                                            *
    ****************************************************************
    This APAR provides exploitation of new z/OS 1.12 allocation
    functions.  DB2 performance may be improved when opening or
    closing many data sets concurrently.  DB2 shutdown may be
    shortened especially for subsystems with a large DSMAX value.
    DB2 code exploits z/OS 1.12 new allocation functions.
    Allocation will manage DB2 data set ENQs in memory, and suppress
    certain DB2 DD-level accounting in the SMF records to save
    significant overhead.

    ATTENTION to DB2 DBA and system programmers:

      To make the APAR effective, if you use z/OS 1.12 or later, you
      should complete one of the following actions:

      - Update the ALLOCxx parmlib member to set the SYSTEM
        MEMDSENQMGMT value to ENABLE.  SYSTEM MEMDSENQMGMT(ENABLE).

      - Issue system command SETALLOC SYSTEM,MEMDSENQMGMT=ENABLE.

      Updating the ALLOCxx parmlib is strongly recommended as it
      remains effective across IPLs.  If the SETALLOC command is
      used to enable SYSTEM MEMDSENQMGMT, a DB2 restart is required
      to make the change effective.
COMPONENT:  5740-XYR00-HDB9910
```

```
APARS FIXED: PM17542
SPECIAL CONDITIONS:
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  ACTION:
    See PM17542 APAR/PTF text for additional information.

    To make the APAR effective, if you use z/OS 1.12 or later, you
    should work with your system programmer to complete one of the
    following actions:

    - Update the ALLOCxx parmlib member to set the SYSTEM
      MEMDSENQMGMT value to ENABLE.  SYSTEM MEMDSENQMGMT(ENABLE).

    - Issue system command SETALLOC SYSTEM,MEMDSENQMGMT=ENABLE.

    Note:
    1.  Updating the ALLOCxx parmlib is strongly recommended as it
        remains effective across IPLs.  You may apply the PTF and
        update the ALLOCxx parmlib member at different times.
        However the full benefit of the APAR will only be available
        after re-IPL with ALLOCxx changes or after issuing the
        SETALLOC command as described above.

    2.  If the SETALLOC command is used to enable SYSTEM
        MEMDSENQMGMT, a DB2 restart is required to make the change
        effective.

    3.  System command D ALLOC,OPTIONS can be used to display the
        status of MEMDSENQMGMT in z/OS 1.12.

        Sample DISPLAY output:

        IEFA003I 15.35.15 ALLOC OPTIONS 904
        SPACE             PRIMARY:         4
                          SECONDARY:       24
        :
        SYSTEM            IEFBR14_DELMIGDS: LEGACY
                          TAPELIB_PREF:    EQUAL
                          REMIND_INTV:     90
                          VERIFY_UNCAT:    FAIL
                          TEMPDSFORMAT:    INCLUDELABEL
                          MEMDSENQMGMT:    ENABLE
.


------ COVER LETTER FOR PTF UK60971 ------------

PROBLEM DESCRIPTION(S):
  PM14774 -
    ****************************************************************
    * USERS AFFECTED: All DB2 users of IFCID 316 on DB2 9         *
    *                 (for z/OS).                                 *
    ****************************************************************
    * PROBLEM DESCRIPTION: Large amounts of redundant data        *
    *                      returned on subsequent IFI             *
                              194
```

```
*                        READS requests.                          *
******************************************************************
* RECOMMENDATION:                                                 *
******************************************************************
```
IFCID 316 records statistics of statements belonging to DB2 for
z/OS dynamic statement cache. In DB2 9, the only way to retrieve
IFCID 316 data is through an IFI READS request. A qualification
area (WQAL) can be provided on the READS request to
apply filtering (or constraints) on data returned by READS.

With the current implementation, on subsequent READS requests,
there is no way to retrieve only those statements that
are newly inserted into the cache or whose statistics have been
updated since the last READS snapshot.This causes DB2 to return
large amounts of data that READS applications need to process
causing high CPU and storage consumption. This large data
overhead (which is unnecessary since only a small percentage of
statistics may have changed since last snapshot) is prohibitive
for many READS applications.

This apar adds support for:
(1) Filtering by insert timestamp - DB2 already has an insert
timestamp in IFCID 316 that reflects when the statement is
first inserted into the dynamic statement cache. However,
currently DB2 does not support WQAL filtering by
this insert timestamp. This apar adds filtering support by the
existing insert timestamp.
(2) Update timestamp - Another timestamp field is added to
IFCID 316 that reflects when the statement statistics
were last updated.
(3) Filtering by update timestamp - WQAL filtering by the new
update timestamp is added.

These are affected interfaces -
New fields in IFCID 316 mapping:

QW0316TM2 DS CL8 Date/Time when statement was inserted into
                         the cache - in store clock format
QW0316UT1 DS CL8   Date/Time when the stmt stat was updated-
                          in store clock format
QW0316UT2 DS CL10 Date/Time when the stmt stat was updated-
                          in internal format

New fields in WQAL filter:

WQALFFL8 EQU C'8'   FILTER ON UPDATE TIMESTAMP WHEN
                         STATISTICS WERE LAST UPDATED
WQALFFL9 EQU C'9'   FILTER ON INSERT TIMESTAMP WHEN
                         STATEMENT WAS FIRST INSERTED INTO
                         DYNAMIC STATEMENT CACHE
WQALFVAL64   DS   D 64-bit threshold value for IFCID 316.
                         If this is non-zero and target system
                         v9 or higher, this value will be used
With this apar, it is now possible to retrieve only those
dynamic statements whose statistics are new or changed from last
READS snapshot, significantly reducing the amount of data READS

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```

applications need to transfer and process.


RELATED KEYWORDS: PERFM SQLSTATS


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APARS FIXED: PM14774
SPECIAL CONDITIONS:
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  ACTION:

  PM14774 adds 3 capabilities to READS for IFCID 316 -
  1. WQAL filtering by existing insert timestamp that reflects
     when the dynamic statement was first inserted into dynamic
     statement cache.
  2. Addition of update timestamp that reflects when statement
     statistics were last updated.
  3. WQAL filtering by the new update timestamp.

  This is a compatible change in DB2 9 and existing IFI
  applications will continue to work. Exploitation of
  new features (new timestamp and filtering) is optional.
  Affected external interfaces (IFCID316, WQAL) are
  documented in the closing text.
.


------ COVER LETTER FOR PTF UK60974 ------------

PROBLEM DESCRIPTION(S):
  PM16852 -
    ****************************************************************
    * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS      *
    *                 users of SQL statement with ROWSET          *
    *                 POSITIONING cursor defined and table        *
    *                 locator used.                               *
    ****************************************************************
    * PROBLEM DESCRIPTION: ABEND04E RC00C90101 DSNICREL 5002 may  *
    *                      occur on a SQL statement that involves  *
    *                       table locator and on which a ROWSET    *
    *                      POSITIONING cursor is defined.          *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    ABEND04E RC00C90101 DSNICREL 5002 may occur on a SQL statement
    that involves table locator and on which a ROWSET POSITIONING
    cursor is defined.
    The following is an example :

    ==========
      CREATE PROCEDURE PROC1
      (IN OLD_TAB TABLE LIKE T1 AS LOCATOR,
       IN NEW_TAB TABLE LIKE T1 AS LOCATOR)
      LANGUAGE SQL

```
P1: BEGIN
  DECLARE OUT CHAR(3);
  DECLARE UPDATE_CURSOR CURSOR WITH ROWSET POSITIONING FOR
  SELECT N.C1
  FROM TABLE (OLD_TAB LIKE T1) O
  JOIN TABLE (NEW_TAB LIKE T1) N
  ON N.C3 = O.C3;
  OPEN UPDATE_CURSOR;
  FETCH UPDATE_CURSOR INTO OUT;
  CLOSE UPDATE_CURSOR;
END P1!

CREATE TRIGGER TRIG1
  AFTER UPDATE ON T1
  REFERENCING OLD_TABLE AS OLD_TAB
              NEW_TABLE AS NEW_TAB
  FOR EACH STATEMENT MODE DB2SQL
WHEN ( (SELECT COUNT(*) FROM NEW_TAB) > 0)
BEGIN ATOMIC
  CALL PROC1(TABLE OLD_TAB, TABLE NEW_TAB);
END!

UPDATE T1
SET C1 = '456'
WHERE C2 = 'ABCD'!
```

In this example, transition tables in the trigger TRIG1 are
passed as table locator into the procedure PROC1. ROWSET
POSITIONING cursor is defined on a SQL statement, which
involves the table locator. ABEND04E RC00C90101 DSNICREL 5002
may occur on this SQL statement.
DB2 has been fixed to handle the SQL statement that involves
table locator and on which a ROWSET POSITIONING cursor is
defined.

ADDITIONAL KEYWORDS:
SQLROWSET SQLSP SQLSTOREDPROC SQLUDF SQLROWSET SQLTRIGGER
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM16852
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM16852:

    See PM16852 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM16852 corrects a problem of ABEND04E RC00C90101 DSNICREL 5002
     on a SQL statement that involves table locator and on
    which a ROWSET POSITIONING cursor is defined.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.

.

PROBLEM DESCRIPTION(S):
  PM00402 -
    ****
    * USERS AFFECTED: DB2 Version 9 for z/OS users of ALTER   *
    *   TABLE ALTER COLUMN SET DATA TYPE   *
    *   command.   *
    ****
    * PROBLEM DESCRIPTION: ABEND04E rc00E70005 at location   *
    *   DSNXISB5 P040 occurs when ALTER TABLE   *
    *   ALTER COLUMN SET DATA TYPE BINARY is   *
    *   done on a CHAR FOR BIT DATA type   *
    *   column with a user defined default   *
    *   value.   *
    ****
    * RECOMMENDATION: *
    ****
    ABEND04E rc00E70005 at location DSNXISB5 P040 occurs when an
    ALTER TABLE ALTER COLUMN SET DATA TYPE BINARY or VARBINARY is
    done on a CHAR FOR BIT DATA or VARCHAR FOR BIT DATA column with
    a default value. The abend occurs because the new data type is
    not compatible with the existing default value.
    To address the problem, the existing default value will be
    cast as a binary string.

    The following scenario below results in the abend.
       CREATE TABLE DSL0.TEST001 (
       MSGID   CHAR(14) FOR BIT DATA NOT NULL
        WITH DEFAULT X'0000000000000000000000000000'
) ;
        ALTER TABLE DSL0.TEST001 ALTER COLUMN MSGID
        SET DATA TYPE BINARY(14);

    When a CHAR/VARCHAR FOR BIT DATA column is converted to a
    BINARY/VARBINARY data type, the following applies:
     -The existing space characters in the table will not be
      changed to hexadecimal zeros (X'00')
     -If the new length attribute is greater than current length
      attribute of the column, the values in the table are padded
      with hexadecimal zeros (X'00')
     -The resulting binary string will be at least twice the
      original size. The alter will fail if the resulting
      binary string length exceeds 1536 UTF-8 bytes.
      (SQLCODE -148, reason-code 14).

    When a CHAR FOR BIT DATA column with a system default value
    is converted to a BINARY data type, the following applies:
     -The existing system default will be stored as a binary string
      constant.

    In addition to casting the default value, DB2 will now

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restrict CHAR/VARCHAR FOR BIT DATA columns to character strings.
Existing columns may still be used, however creating new
columns with a default other than a character string will
result in SQLCODE -574. Altering existing CHAR/VARCHAR FOR
BIT DATA columns with defaults other than character strings to
BINARY/VARBINARY will also result in SQLCODE -574. In order
to alter the data type to BINARY/VARBINARY, the default value
must be dropped or altered.

DB2 has been modified to cast the default value when altering
the data type from CHAR/VARCHAR FOR BIT to BINARY/VARBINARY.
In addition, DB2 will restrict CHAR/VARCHAR FOR BIT to string
characters.

DB2 SQL Reference: ALTER TABLE->SET DATA TYPE

When a CHAR/VARCHAR FOR BIT DATA column is converted to a
BINARY/VARBINARY data type, the following applies:
 -The existing space characters in the table will not be
  changed to hexadecimal zeros (X'00')
 -If the new length attribute is greater than current length
  attribute of the column, the values in the table are padded
  with hexadecimal zeros (X'00')
 -The resulting binary string may be at least twice the
  original size. The alter will fail if the resulting
  binary string length exceeds 1536 UTF-8 bytes.
  (SQLCODE -148, reason-code 14).

DB2 SQL Reference: (CREATE TABLE and ALTER TABLE) ->
FOR subtype DATA -> BIT

Only character strings are valid when subtype is BIT.

DB2 Codes-> -148

-148 THE SOURCE TABLE source-name CANNOT BE ALTERED,
REASON reason-code

Add new reason-code 14:
14: The ALTER statement specified an ALTER COLUMN clause
 that attempted to SET DATA TYPE from character FOR BIT DATA to
 BINARY, but the cast default value length exceeds 1536 UTF-8
 bytes.

ADDITIONAL KEYWORDS:
SQLCODE574

SQLALTER

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM00402
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    The DB2 SQL Reference and DB2 Codes will have the following
    text added or modified.

    DB2 SQL Reference: ALTER TABLE->SET DATA TYPE

    When a CHAR/VARCHAR FOR BIT DATA column is converted to a
    BINARY/VARBINARY data type, the following applies:
     -The existing space characters in the table will not be
      changed to hexadecimal zeros (X'00')
     -If the new length attribute is greater than current length
      attribute of the column, the values in the table are padded
      with hexadecimal zeros (X'00')
     -The resulting binary string may be at least twice the
      original size. The alter will fail if the resulting
      binary string length exceeds 1536 UTF-8 bytes.
      (SQLCODE -148, reason-code 14).

    DB2 SQL Reference: (CREATE TABLE and ALTER TABLE) ->
    FOR subtype DATA -> BIT

    Only character strings are valid when subtype is BIT.

    DB2 Codes-> -148

    -148 THE SOURCE TABLE source-name CANNOT BE ALTERED,
    REASON reason-code
    Add new reason-code 14:
    14: The ALTER statement specified an ALTER COLUMN clause
     that attempted to SET DATA TYPE from character FOR BIT DATA to
     BINARY, but the cast default value length exceeds 1536 UTF-8
     bytes.
  ACTION:
    In addition to casting the default value, PM00402 will now
    restrict CHAR/VARCHAR FOR BIT DATA columns to character strings.
    Existing columns may still be used, however creating new
    columns with a default other than a character string will
    result in SQLCODE -574. Altering existing CHAR/VARCHAR FOR
    BIT DATA columns with defaults other than character strings to
    BINARY/VARBINARY will also result in SQLCODE -574. In order
    to alter the data type to BINARY/VARBINARY, the default value
    must be dropped or altered.

SYSIBM.SYSCOLUMNS can be queried to identify CHAR FOR BIT DATA
and VARCHAR FOR BIT DATA columns with a unicode hexadecimal or
graphic user defined default value. Once the columns are
identified, ALTER TABLE ALTER COLUMN with SET DEFAULT or
DROP DEFAULT specified may be use to alter or drop the
existing default value.

Example Query
=============
SELECT TBCREATOR,TBNAME,NAME
FROM SYSIBM.SYSCOLUMNS
WHERE
((DATATYPEID = 448
 OR DATATYPEID = 452)
 AND CCSID = 65535
 AND (DEFAULT = '6'
      OR DEFAULT = '8')) ;
.

------ COVER LETTER FOR PTF UK61037 ------------

PROBLEM DESCRIPTION(S):
  PM17194 -
     ****
     * USERS AFFECTED: All DB2 users using indexes.   *
     ****
     * PROBLEM DESCRIPTION: Deadlock and timeout happened when   *
     *   applications tried to lock the pseudo *
     *   deleted RIDs in indexes.   *
     *   MSGDSNT375I and MSGDSNT501I messages   *
     *   were issued(RC00C90088).   *
     ****
     * RECOMMENDATION: *
     ****
     There are many committed pseudo deleted RIDs in the index
     and these RIDs have been reused for INSERTs of different key
     values. While the locks on these RIDs are held by inserters,
     the delete lock attribute on these RIDs are turned on for the
     following reason:

     If an SQL INSERT replaces a pseudo deleted RID in an
     unique index and the RID is deleted by the same INSERT
     transaction, index manager code turns on the delete lock
     attribute on the newly inserted RID. So an SQL query accessing
     the index will not skip over this key value when ZPARM
     SKIPUNCI(skip uncommitted insert) is set to YES.

     While this logic avoids the SQL query incorrect output when
     ZPARM SKIPUNCI is set, it causes deadlocks and timeouts when
     transactions need to lock originally pseudo deleted RIDs
     to determine if they are committed.
     Index manager code is changed to only promote the delete lock
     attribute on a newly inserted RID when inserting into an
     unique index if the following conditions are all met:

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(1) The newly inserted RID replaces a pseudo deleted RID in an
        unique index and the RID being replaced is deleted by the
        same INSERT transaction.
        (2) ZPARM SKIPUNCI (skip uncommitted insert) is set to YES.
        (3) ZPARM EVALUNC (evaluate uncommitted) is set to NO.
        (4) Row level locking is used.

        This change reduces the lock contention caused by the pseudo
        deleted RIDs.

        This APAR changes the system ZPARM EVALUNC to be global
        scope. After applying the PTF for this APAR, all members
        in a DB2 data sharing group must have the same setting for
        ZPARM EVALUNC. If this is not done and the ZPARM SKIPUNCI
        is set to YES, an SQL query using index scan may return
        incorrect output.

        If the transaction which performs delete and insert runs on a
        subsystem with ZPARM EVALUNC set to YES and the SQL query
        runs on a subsystem with ZPARM EVALUNC set to NO, the query
        can skip over committed key values incorrectly. This
        incorrect output will only happen when ZPARM SKIPUNCI is set
        to YES.

        To avoid possible incorrect output, this PTF modifies the DB2
        installation CLIST to enforce the same EVALUNC setting when
        installing or migrating a member of a DB2 data sharing group.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM17194
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    This PTF changes subsystem ZPARM DSN6SPRM.EVALUNC
    (evaluate uncommit) to be global scope.

    EVALUNC will be added to the table of Parameters that
    must have the same value on every member of a data
    sharing group.

    Information about this change will be included in the
    Information Management Software for z/OS Solutions Information
    Center at a later date.
  ACTION:
    After applying this PTF, in the DB2 data sharing environment, if
    the DSN6SPRM.SKIPUNCI (skip uncommitted inserts) ZPARM is set
    to YES, an SQL query using index scan can return incorrect
    output if the DSN6SPRM.EVALUNC(evaluate uncommitted)
    subsystem ZPARM is not set to the same value on all members
    of the group.

    ****
    * Special attention for DB2 data sharing customers who specify *
    * DSN6SPRM.SKIPUNCI=YES: Before applying this PTF to any member*
    * of the group, ensure that all members use the same setting   *
    * for DSN6SPRM.EVALUNC.   *

```
*****************************************************************
```

The SQL incorrect output can happen in the following scenario :

A key and RID value in the SQL search range has been deleted
from an unique index by one transaction, which then inserts
the same key value into this index with a different RID.
If this transaction runs on a member with ZPARM
DSN6SPRM.EVALUNC set to YES and the SQL query runs on a
member with ZPARM DSN6SPRM.EVALUNC set to NO, the query can
skip over this key value incorrectly. This incorrect output
will only happen when SKIPUNCI ZPARM is set to YES.

In order to avoid the incorrect output, this PTF modifies the
DB2 installation CLIST to enforce the same EVALUNC setting when
installing or migrating a member of a DB2 data sharing group.

Before applying this PTF to any member of a DB2 data sharing
group, ensure that all members use the same setting for EVALUNC:

==> This action is required for all data sharing customers

    In order to avoid the SQL query incorrect output, use the
    same setting for DSN6SPRM.EVALUNC on all members of your
    data sharing group.
    * For each member, review the customized DSNTIJUZ or other
      job used to create and maintain the DSNZPxxx module and
      verify that it specifies the same EVALUNC setting as the
      other members of the group. If the EVALUNC parameter is
      not specified in the job then the setting is NO by
      default.
    * If not all members use the same setting, consult the DB2
      Installation Guide and the cover letter of this APAR for
      guidance to determine the appropriate setting for the
      whole group.
    * If you change the EVALUNC setting for a member then after
      running the job steps to reassemble and link the DSNZPxxx
      module, use the -SET SYSPARM command or stop and start the
      member to bring the change online.

After applying this PTF, you need to take the following actions:
----
(1) Copy updated DB2 installation panels to alternate libraries
----
==> This action is required for all customers who maintain
    copies of the DB2 installation panels outside of SMP/E

    This PTF updates DB2 installation panel DSNTIP8 in the
    SDSNSPFP target library so that when installing or migrating
    DB2 data sharing, the EVALUATE UNCOMMITTED field can be
    modified only for the first member. For subsequent members
    of the group, EVALUATE UNCOMMITTED will be set to the
    value specified for the first member.For subsequent
    members of the group, EVALUATE UNCOMMITTED will be set
    to the value specified for the first member.

If you keep the DB2 installation panels in a different
            library then after applying this PTF, you need to copy the
            updated DSNTIP8 panel to that library.

            ----
            (2) Update private copies of the DSNTIDxx CLIST input member
            ----
            ==> This action is required for all customers

            This PTF modifies the entry for EVALUNC to the CLIST default
            input member, DSNTIDXA, in the SDSNSAMP target library so
            that it has a data sharing scope of group rather than
            member. You need to modify this entry to all private copies
            of your CLIST output DSNTIDxx member. In each such copy,
            locate the entry for EVALUNC and change the third column
            from M to G.
.

------ COVER LETTER FOR PTF UK61190 ------------

PROBLEM DESCRIPTION(S):
  PM17550 -
      ****
      * USERS AFFECTED: All users of DB2 9 for z/OS who will be   *
      *   using Query Accelerator support enabled   *
      *   by APAR PM10993 (PTF UK58717).   *
      ****
      * PROBLEM DESCRIPTION: New function to support Query   *
      *   Accelerator.   *
      ****
      * RECOMMENDATION: *
      ****
      This APAR provides new function needed by Query Accelerator.

      Additional Keywords:
      QUERYACCEL
      This APAR provides new function needed by Query Accelerator.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM17550
SPECIAL CONDITIONS:
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             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    *** Action for PM10385 ***
    This fix corrects a symptom observed at the remote server site
    (site2), but to correct the problem this fix must be applied to
    the DB2 z/OS requester (site1).
                                                              .
    The problem symptom is that when using DB2 cross-loader Utility
    function at the DB2 z/OS requester (site1) to issue explicit
    SET CURRENT DEGREE statement and a distributed / remote SQL
    request both targeted for a remote server site (site2), at
    server site2 parallelism was not enabled or disabled for
    the SQL request as specified by the SET CURRENT DEGREE statement
    issued at the requester site (site1).

Please see PTF cover letter for more information.
.

------ COVER LETTER FOR PTF UK61195 ------------

PROBLEM DESCRIPTION(S):
  PM11039 -
     ****
     * USERS AFFECTED: All DB2 for z/OS utility users of COPY   *
     *   INDEXSPACE or REPAIR, or any users of   *
     *   indexes created prior to DB2 8 for z/OS.   *
     ****
     * PROBLEM DESCRIPTION: ABEND04E RC00C90101 DSNIDM.DSNICUBC   *
     *   ERQUAL5001 occurred while running the   *
     *   COPY utility against an index space.   *
     *   COPY could also complete successfully, *
     *   but the version information could be   *
     *   incorrect.   *
     *   *
     *   For REPAIR VERSIONS, the utility can   *
     *   complete successfully, but the versions *
     *   may not have been repaired correctly.   *
     *   *
     *   For indexes created prior to DB2 8 for *
     *   z/OS, unexpected results may occur on   *
     *   ALTER INDEX ADD COLUMN or   *
     *   ALTER TABLE SET DATA TYPE when the   *
     *   column being altered is part of an   *
     *   index.   *
     ****
     * RECOMMENDATION: *
     ****
     The ABEND04E RC00C90101 DSNIDM.DSNICUBC ERQUAL5001 was caused
     when the COPY utility was copying an index space and called the
     module DSNKNUMV, which encountered a resource unavailable
     condition. After detecting the resource unavailable condition,
     the module DSNKNUMV then incorrectly set up the return and
     reason code values to pass back to its caller, which was the
     utility in this case. The COPY utility ignored the failed call
     and internal DB2 processing continued until module DSNICUBC
     abended.

     There are 2 other situations where the module DSNKNUMV can be
     called within DB2, which can lead to inconsistent results if
     a resource unavailable situation is encountered or multiple
     Index Directory Pages (IDPs) exist. One is the REPAIR
     VERSIONS utility and the second is when either ALTER INDEX ADD
     COLUMN or ALTER TABLE SET DATA TYPE and the column being
     altered is part of an index created prior to DB2 8 for z/OS.
     The code in module DSNKNUMV has been modified to correctly set
     return and reason codes to pass back to its caller when a
     resource unavailable condition is encountered. Additionally,
     module DSNKNUMV has been enhanced to read multiple IDPs, if
     there is sufficient index versioning information to cause the

                                205

creation of multiple IDPs.

The REPAIR VERSIONS utility will now fail with abend code
RC00E40413 when it is unable to determine the object version
number, because a resource unavailable situation has been
detected after calling module DSNKNUMV.

The DDL module DSNXISB5 has been modified to issue SQLCODE904,
when a resource unavailable situation has been detected after
calling module DSNKNUMV.

Additional keywords:
SQLALTER
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM11039
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    DB2 CODES manual is changed.
    The second sentence in the explanation for 00E40413 is removed.

    00E40413
    Explanation: An error has been detected by the
    REPAIR utility.
.

------ COVER LETTER FOR PTF UK61200 ------------

PROBLEM DESCRIPTION(S):
  PK56922 -
    ****
    * USERS AFFECTED: All DB2 V8 and V9 users migrating to V10.   *
    ****
    * PROBLEM DESCRIPTION: Toleration of fallback from DB2   *
    *   Version 10.   *
    *   *
    *   In a Data Sharing environment,   *
    *   required for coexistence of   *
    *   V10 with V9 or V10 with V8.   *
    ****
    * RECOMMENDATION: *
    ****
    This APAR must be applied on all DB2 members and all members
    must be stopped and restarted prior to starting migration
    to DB2 Version 10.

    This APAR must be applied to allow fallback to DB2 Version 8
    or DB2 Version 9 after a migration to DB2 Version 10.

    Refer to the DB2 Version 10 publications for procedures
    for migration and then subsequent fallback to DB2 Version 8 or
    DB2 Version 9.

    This APAR must be applied to all members of a data sharing

group and DB2 V8/V9 started on all members before one of
the members can be started with DB2 Version 10 to migrate the
DB2 catalog. Non-data sharing DB2 subsystems must also run
with this fallback SPE before attempting to migrate to DB2
Version 10.
The purpose of this APAR is to allow fallback from Version 10.
Refer to the chapter 'Falling back and Remigration' in the DB2
Version 10 Installation Guide for this procedure.

++HOLD COMMENT FOR RELEASE 810, TYPE ACT:
After applying this PTF, you need to re-assemble and linkedit
DSNHDECP to pick up the changes in DSNARIB. Under DB2 data
sharing, if each member of the group has its own DSNHDECP module
then you need to repeat the steps below for each member.

These are the steps to update DSNHDECP:
   (1) Create a separate job containing only the DSNTIZP and
   DSNTIZQ steps from the job DSNTIJUZ previously edited
   by the install CLIST.
   (2) Re-assemble and linkedit the DSNHDECP load module
   by running your newly created job to produce a new
   DSNHDECP.
   (3) Stop and start your DB2 V8.

See INFO APAR II14474 for more information.

++HOLD COMMENT FOR RELEASE 910, TYPE ACT:
After applying this PTF, you need to re-assemble and linkedit
DSNHDECP to pick up the changes in DSNARIB. Under DB2 data
sharing, if each member of the group has its own DSNHDECP module
then you need to repeat the steps below for each member.

These are the steps to update DSNHDECP:
   (1) Create a separate job containing only the DSNTIZP and
   DSNTIZQ steps from the job DSNTIJUZ previously edited
   by the install CLIST.
   (2) Re-assemble and linkedit the DSNHDECP load module
   by running your newly created job to produce a new
   DSNHDECP.
   (3) Stop and start your DB2 V9.

   See INFO APAR II14477 for more information.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PK56922
SPECIAL CONDITIONS:
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  ACTION:
   After applying this PTF, you need to re-assemble and linkedit
   DSNHDECP to pick up the changes in DSNARIB. Under DB2 data
   sharing, if each member of the group has its own DSNHDECP module
   then you need to repeat the steps below for each member.

   These are the steps to update DSNHDECP:
      (1) Create a separate job containing only the DSNTIZP and
      DSNTIZQ steps from the job DSNTIJUZ previously edited

```
        by the install CLIST.
        (2) Re-assemble and linkedit the DSNHDECP load module
        by running your newly created job to produce a new
        DSNHDECP.
        (3) Stop and start your DB2 V8.

     See INFO APAR II14474 for more information.
.


------ COVER LETTER FOR PTF UK61202 ------------

PROBLEM DESCRIPTION(S):
  PM06307 -
     ******************************************************************
     * USERS AFFECTED: All DB2 for z/OS V8 users of empty LOBs.    *
     ******************************************************************
     * PROBLEM DESCRIPTION: DB2 can issue an ABEND04E RC00C90101    *
     *                      from DSNOFRLC:1001 when a LOB Locator,  *
     *                      holding an empty LOB, is freed.  The    *
     *                      empty LOB results from being loaded by  *
     *                      a DB2 Utility Tool.                     *
     ******************************************************************
     * RECOMMENDATION:                                              *
     ******************************************************************
     An ABEND04E RC00C90101 from DSNOFRLC:1001 can occur when a LOB
     Locator, holding an empty LOB, is freed.  The 'unexpected' empty
     LOB results from being loaded by a DB2 Utility Tool.


     The following example illustrates the problem.

     1. Create a Table with an empty LOB column.

        CREATE TABLE MYTB(COLINT INTEGER,
                        COLCLOB  CLOB(1G));

        INSERT INTO MYTB(COLINT, COLCLOB) VALUES (1,'');


     2. Use a DB2 Utility Tool to load the empty LOB into a
        LOB TABLE SPACE by using a File Reference Variable (FRV).


     3. From an application, setup and use a LOB LOCATOR for the
        empty LOB.

        DCL HCLOB1 SQL TYPE IS CLOB_LOCATOR;

        EXEC SQL SELECT COLCLOB INTO :HCLOB1 FROM MYTB;

        EXEC SQL HOLD LOCATOR :HCLOB1;

        EXEC SQL COMMIT;

        EXEC SQL FREE LOCATOR :HCLOB1;
```

4. Check the result.

When the application frees the LOB Locator :HCLOB1, holding the
empty LOB, DB2 can issue the ABEND because it does not handle an
empty LOB properly during load.

Please note.
(1). The problem can also occur when migrating to
     DB2 9 with an empty LOB in the table.
The code in DB2 has been modified to process an empty LOB
properly and avoid issuing the ABEND.

Additional Keywords: SQLLOB ERQUAL1001 VRACE1001
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM06307
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    See PM04836 APAR/PTF text for additional information.

    This APAR/PTF addes the description for a new DB2 reason code
    00C900DA. The change will be documented in the DB2 Codes
    manual and in the Information Management Software for z/OS
    Solutions Information Center.

    The new text for reason code 00C900DA is:

    Explanation

     The number of concurrently held application LOB locators and
     the cursors exceeded the maximum of 65535.

    System action

     The operation fails. DB2 generates a dump.

    System programmer response
     If you suspect an error in DB2, refer to Part 2 of Diagnosis
     guide for information on identifying and reporting the problem

    Problem determination

     Collect the following diagnostic items:

     -Console output from the system on which the job
      was run, and a listing of the SYSLOG data set for the
      period of time spanning the failure.

     -Dynamic dump, taken to SYS1.DUMPxx data set, by DB2 (04E)
      abend
.

```
------ COVER LETTER FOR PTF UK61213 ------------

PROBLEM DESCRIPTION(S):
  PM21277 -
    ****************************************************************
    * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS REORG *
    *                 and CHECK INDEX and REBUILD INDEX users who  *
    *                 use DB2 Sort for z/OS                        *
    ****************************************************************
    * PROBLEM DESCRIPTION: The REORG utility may run with reduced  *
    *                      performance because the resources       *
    *                      are not balanced well enough between    *
    *                      the data sort and index sort(s).        *
    *                                                              *
    *                      The CHECK INDEX, and REBUILD INDEX      *
    *                      utility may fail with ABENDS878         *
    *                      RC00000010 when using many parallel     *
    *                      sort tasks.                             *
    ****************************************************************
    * RECOMMENDATION: Apply corrective PTF when available          *
    ****************************************************************
    When the REORG utility is executing without unload/reload
    partition parallelism, the available resources in data spaces
    and memory objects were not balanced well enough between the
    data sort and the index sort(s). This could result in reduced
    overall performance, especially if not all available resources
    were actually used.

    The calculation for memory use below the line did not take into
    account all possible memory users, so the degree of parallelism
    may have been selected higher than the system could support for
    the CHECK INDEX, or REBUILD INDEX utility.
    The REORG utility was changed to assign data spaces and memory
    objects to the data sort and index sorts in a more balanced way
    when running with DB2 Sort.

    The CHECK INDEX and REBUILD INDEX utilities were changed to
    take all users of below the line memory into account when
    calculating the degree of parallelism when running with
    DB2 Sort.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM21277
SPECIAL CONDITIONS:
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  ACTION:
    The PTF for APAR PM21277 has modified CSECTs in both the
    DSNUT910 and DSNUTILA load modules, affecting the utility batch
    and DB2 DBM1 address spaces.  After the PTF has been applied,
    it will become active in the utility batch address space
    immediately upon job submission, while it will not take effect
    in the DB2 DBM1 address space until DB2 is stopped and started.

    The PTF does not have to be applied to all members in a data
    sharing environment simultaneously, and may be staged across
    each member.  However, until the fix is active in both the
```

utility batch and DB2 DBM1 address spaces, the problem the PTF
        addresses will not be resolved.
.

------ COVER LETTER FOR PTF UK61259 ------------

PROBLEM DESCRIPTION(S):
  PM02571 -
      ****
      * USERS AFFECTED: All DB2 for z/OS users joining 3 or more   *
      *   tables together in a query.   *
      ****
      * PROBLEM DESCRIPTION: Inefficient access path caused by   *
      *   taking a cartesian join before joining *
      *   other tables by their primary key.   *
      ****
      * RECOMMENDATION: *
      ****
      An inefficient access path can occur when a cartesian join is
      taken before joining other tables by their primary key.
      Not all join permutations were considered, in order
      to save query preparation time. As a result, a good access
      path was missed.

      Additional Keywords:
      SQLACCESSPATH PERFM
      Previously, not all join permutations were considered in order
      to save query preparation time. This APAR will modify the code
      so that DB2 will consider more join permutations when necessary
      to avoid access paths that may perform very poorly.

      This change will increase the PREPARE time for some queries.

      This fix can improve the access path chosen for some queries,
      in some cases, with dramatic improvements. However, as with
      any change to DB2 query optimization that can drive a
      different access path, there is some risk of query
      performance regression.

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM02571
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM02571:

    See PM02571 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM02571 corrects a query performance problem due to an
    inefficient access path when not all join permutations are
    considered.

    To make this fix effective for a static application, it must be

```
      rebound after application of this PTF.  Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
   DB2BIND:
     ***Action for PK85475:

     See PK85475 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PK85475 corrects a problem where a suboptimal join sequence can
     be chosen for a query with one or more subqueries and two
     or more base tables on V9.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF.  Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
.


------ COVER LETTER FOR PTF UK61407 ------------

PROBLEM DESCRIPTION(S):
  PK96294 -
     ***************************************************************
     * USERS AFFECTED: All DB2 z/OS 9 users who uses a LIKE        *
     *                 predicate where the left-hand side (LHS) of *
     *                 LIKE can match to a key that is defined in a *
     *                 padded index on expression.                 *
     ***************************************************************
     * PROBLEM DESCRIPTION: A query may receive an incorrect output *
     *                      or experience a poor performance if the *
     *                      query meets the following conditions:   *
     *                      1. references a LIKE predicate whose    *
     *                         LHS operand matches to a key         *
     *                         of an index on expression.           *
     *                      2. the pattern of LIKE is a stand-      *
     *                         alone constant, host variable, or    *
     *                         parameter marker.                    *
     *                      3. for the incorrect output case, the   *
     *                         matched index is a padded index.     *
     ***************************************************************
     * RECOMMENDATION:                                             *
     ***************************************************************
     A query may receive an incorrect output or experience a poor
     performance if the query meets the following conditions:

      1. references a LIKE predicate whose LHS operand matches to
         a key of an index on expression.

      2. the pattern of LIKE is a stand-alone constant, host
         variable, or parameter marker.

      3. for the incorrect output case, the matched index is a
         padded index.
```

The following query is an example that may receive an
incorrect output:

```
CREATE  INDEX
IDX1 ON T1
 (UPPER(FRST_NM,'En_US')
  UPPER(LAST_NM,'En_US'))
PADDED

SELECT FRST_NM, LAST_NM
FROM T1
WHERE UPPER(FRST_NM) LIKE ('THOM%');
```

When the index is padded, DB2 didn't utilize the key
expression value correctly in the LIKE processing when
the index is chosen in the access path.

The following query is an example that may experience
a poor performance:

```
SELECT FRST_NM, LAST_NM
FROM T1
WHERE UPPER(FRST_NM) LIKE ?;
```

When the pattern is a stand-alone host variable or
parameter marker, DB2 didn't consider the key expression
value in the LIKE processing, thus, may yield to a poor
performance.
DB2 has been modified to ensure the above example LIKE
predicates are handled correctly. As part of the solution,
DB2 replicates the example LIKE predicates. The replicated
LIKE predicate is shown in the EXPLAIN tables but does not
effect the query performance.

Additional keyword: INCORROUT INCORRECTOUTPUT SQLINCORROUT
                    SQLINDEXONEXP SQLLIKE SQLPERFORMANCE
                    SQLPADDED SQLIOE
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PK96294
SPECIAL CONDITIONS:
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  DB2BIND:
    Action for PM15662:

    See PM15662 APAR/PTF text for additional information about
    why a REBIND is necessary.

    An ABEND04E RC00E70005 at location DSNXGINB M629 (a bindtime
    failure) or less rows than expected can be returned (a runtime
    symptom) for a query that satisfies these conditions.

    1. The query contains a view or a table
       expression containing a UNION ALL.

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2. The query contains a join predicate
   that contains a graphic and mixed
   data column.

Since this fix corrects both a possible bind time failure and
an incorrect result from being returned, a rebind may be needed.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM13599:

  See PM13599 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM13599 corrects a problem of incorrect ouput in SELECT from
  INSERT statement.
  Incorrect output could occur when a query satisfies following
  conditions:
  1. the query is a SELECT from INSERT statement with INCLUDE
     clause;
  2. columns in INCLUDE clause are declared with same data type
     and length;
  3. VALUES clause is used in insert part.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PM10641 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  PM10641 corrects a problem that a star join query can hit
  ABEND04E at DSNISJNN:5006 when fact table uses partial
  match index access and one of the matching columns on the
  index is unique.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PM03397 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  APAR PM03397 corrects a problem that can cause an incorrect
  result being returned for a query containing a LIKE predicate on
  mixed data.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.

DB2BIND:
  See PK96294 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  APAR PK96294 corrects a problem that an incorrect output
  could be returned by a query that references a LIKE
  predicate where the left-hand side (LHS) operand of LIKE
  matches to a key in a padded index on expression.

  APAR PK96294 also corrects a problem that a query could
  experience a poor performance when the query references
  a LIKE predicate whose pattern is a stand-alone host
  variable or parameter marker and the LHS of LIKE could
  match to a key expression in an index.

  To make this fix effective for a static application that meets
  the above conditions, the static application must be rebound
  after application of this fix. Review your applications to
  determine if any, applications could be affected by this change,
  or use the following example to identify all plans/packages that
  depend on an Index on expression and rebind all of those
  plans/packages:

```
    SELECT SPLD.DNAME, 'PLAN'
    FROM SYSIBM.SYSINDEXES SIX, SYSIBM.SYSPLANDEP SPLD
    WHERE SIX.IX_EXTENSION_TYPE = 'S'
    AND SPLD.BTYPE = 'I'
    AND SPLD.BNAME = SIX.NAME
    AND SPLD.BCREATOR = SIX.CREATOR
    UNION
    SELECT SPKD.DNAME, 'PLACKAGE'
    FROM SYSIBM.SYSINDEXES SIX, SYSIBM.SYSPACKDEP SPKD
    WHERE SIX.IX_EXTENSION_TYPE = 'S'
    AND SPKD.BTYPE = 'I'
    AND SPKD.BNAME = SIX.NAME
    AND SPKD.BQUALIFIER = SIX.CREATOR;
```

DB2BIND:
  ***Action for PK94820:

  See PK94820 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK94820 corrects a problem of an incorrect output when the
  query references a LIKE predicate where the match-expression
  matches a key expression and the pattern contains a non-
  constant.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.

DB2BIND:
  ***Action for PK90477:

  See PK90477 APAR/PTF text for additional information about
  why a REBIND is necessary.

PK90477 corrects a problem of ABEND04E RC00C200A2 at DSNIDM.
DSNIWKFD+0F5A may occur when an OUTER JOIN query contains an
AFTER JOIN predicate running in parallel.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK61478 ------------

PROBLEM DESCRIPTION(S):
  PM20417 -
    ****
    * USERS AFFECTED: DB2 9 for z/OS users of the RECOVER utility *
    *   for DB2 directory and catalog objects for   *
    *   disaster recovery, that start DB2 with   *
    *   DEFER ALL specified.   *
    *   *
    ****
    * PROBLEM DESCRIPTION: MSGDSNT376I   *
    *   CORRELATION-ID=022.TCCBLD02   *
    *   RC00C900BA TYPE00002000   *
    *   NAME DSNDB01 .DBD01 encountered by   *
    *   RECOVER utility with the PARALLEL   *
    *   option specified on directory   *
    *   table space DSNDB01.DBD01, when DB2   *
    *   is started with DEFER ALL.   *
    *   This happens after DELETE/DEFINE   *
    *   CLUSTER for DSNDB01.DBD01   *
    *   *
    ****
    * RECOMMENDATION: *
    ****
    DB2 was started with DEFER ALL to recover the DSNDB01.DBD01
    table space. The RECOVER utility with the PARALLEL option
    specified to recover table space DSNDB01.DBD01 triggered the
    trusted context cache to be built, which resulted in the
    message like the following:
        DSNT376I CORRELATION-ID=022.TCCBLD02 RC00C900BA TYPE2000
    This occurred in a disaster recovery situation after the
    clusters for the directory and catalog objects were deleted
    and defined.

    The trusted context cache build service tried to access the
    trusted context catalog tables to build the cache, which
    requires access to DSNDB01.DBD01. However, the RECOVER utility
    had previously acquired a drain of all readers and writers on
    DSNDB01.DBD01, this resulted in the timeout condition.

    The trusted context cache will not be built if the DB2
    subsystem has been started with the DSNZPARM option to
    DEFER ALL objects. Hence, trusted connections will not

```
      be available.

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APARS FIXED: PM20417
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    The "DB2 for z/OS Installation Guide (GC18-9846-10)"
    is updated with the changes below.

    Chapter 4:
    Databases and spaces to start automatically panel: DSNTIPS
    START NAMES field (ALL subsystem parameter)

    ALL
    Trusted connections are not available if ALL is used in this
    field and DEFER is used in the RESTART OR DEFER field.
.


------ COVER LETTER FOR PTF UK61531 ------------

PROBLEM DESCRIPTION(S):
  PM19247 -
    ****************************************************************
    * USERS AFFECTED: DB2 for z/OS V9 users of XML schema         *
    *                 validation functions.                       *
    ****************************************************************
    * PROBLEM DESCRIPTION: XML schema validation function         *
    *                      SYSFUN.DSN_XMLVALIDATE returns         *
    *                      sqlcode -20399 (SRN20399) when         *
    *                      the XML document to be validated       *
    *                      contains a string like the following:  *
    *                                                             *
    *                      <EMAIL>xxx.xxxxxx@xxxx.xxx</EMAIL>     *
    *                                                             *
    *                      and the pattern string defined in the  *
    *                      XML schema is as follows:              *
    *                                                             *
    *                      <xsd pattern value="                   *
    *                      [\d\w]([\d\w_(\.)(\-)])*@([\d\w]       *
    *                      ([\d\w_(\-)])*\.)+([a-zA-Z]){2,4}"/>   *
    *                                                             *
    *                      The following error message is         *
    *                      returned when validating the XML doc:  *
    *                      SQLCODE: -20399, SQLSTATE: 2201R,      *
    *                      SQLERRMC: 692;6009 cvc-pattern-valid   *
    *                      cvc-pattern-valid: Value               *
    *                      "xxx.xxxxxx@xxxx.xxx" is not           *
    *                      facet-valid with respect to           *
    *                      pattern for type "xxxxxxx".            *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    Pattern string in the XML schema, for example,
                              217
```

```
<xsd pattern value="[\d\w]([\d\w_(\.)(\-)])*@([\d\w]
                      ([\d\w_(\-)])*\.)+([a-zA-Z]){2,4}" />
```
     is not interpreted correctly by the XML schema compiler.
     Therefore validation failed with sqlcode -20399.
     The code bug in XML Schema Compiler has been fixed.

     Additional keywords:
     SQLCODE20399, SQLXML

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  ACTION:
    This PTF fixes a code bug in XML schema Compiler.
    If the XML schemas that are affected by this problem
    have already been registered, they need to be
    re-registered to pick up the change.
  ACTION:
    This PTF fixes a code bug in XML schema Compiler.
    If the XML schemas that are affected by this problem
    have already been registered, they need to be
    re-registered to pick up the change.
  ACTION:
    This PTF fixes a code bug in XML schema Compiler.
    If the XML schemas that are affected by this problem
    have already been registered, they need to be
    re-registered to pick up the change.
  ACTION:
    *** Action for PK68887

    This PTF fixes a code bug in XML schema Compiler.
    If the XML schemas that are affected by this problem
    have already been registered, they need to be
    re-registered to pick up the change.
.

------ COVER LETTER FOR PTF UK61576 ------------

PROBLEM DESCRIPTION(S):
  PM21636 -
    ****
    * USERS AFFECTED: All DB2 for z/OS 8 and DB2 9 for z/OS   *
    *   parallelism users of queries that contain a *
    *   LOB column and run in a parallel sort group. *
    ****
    * PROBLEM DESCRIPTION: An ABEND0C4 RC00000004 can occur at   *
    *   location DSNXORLI +08DA when executing   *
    *   a query that contains a LOB column and   *
    *   runs in a parallel sort group.   *
    ****
    * RECOMMENDATION: *
    ****
    An ABEND0C4 RC00000004 at DSNXORLI +08DA can occur when a query
```

```
        that contains a LOB column runs in a parallel sort group.

        The problem occurs because DB2 does not handle the LOB column
        buffer properly if it is in a parallel sort group.

        The following example represents a failing query.

           SELECT C1, C2, ..., LOB1, LOB2, ...
             FROM T1
           ORDER BY 1, 2;

        Please note that there are many ways of generating a parallel
        sort group.
        DB2 is modified to process the LOB column buffer properly in a
        parallel sort group.


        Additional Keywords: PARALLELISM SQLPARALLELISM SQLLOB
                             SQLORDERBY SQLGROUPBY SQLSMJ
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM21636
SPECIAL CONDITIONS:
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  DB2BIND:
     ***Action for PM21636:

        See PM21636 APAR/PTF text for additional information about
        why a REBIND is necessary.

        PM21636 corrects a problem of ABEND0C4 RC00000004 at DSNXORLI
        +08DA for a query that contains a LOB column and runs in a
        parallel sort group.


        To make this fix effective for a static application, it must be
        rebound after application of this PTF.  Review the PTF cover
        letter to determine which, if any, applications could be
        affected by this change.
.


        ------ COVER LETTER FOR PTF UK61644 ------------


PROBLEM DESCRIPTION(S):
  PM20787 -
     ****************************************************************
     * USERS AFFECTED: All DB2 9 for z/OS users of native SQL      *
     *                 procedures.                                 *
     ****************************************************************
     * PROBLEM DESCRIPTION: An incorrect result set can be returned *
     *                      from a query that resides in a native   *
     *                      SQL procedure if it references the same *
     *                      input VARGRAPHIC SQL Variable more than *
     *                      once.                                   *
     ****************************************************************
     * RECOMMENDATION:                                              *
```

```
*****************************************************************
An incorrect result set can be returned from a query that
references the same input VARGRAPHIC SQL Variable more than once
if it resides in a native SQL procedure.


The following example helps to illustrate the problem.

1. Create a Table TESTY and insert a row.

   CREATE TABLE TESTY (ID1 VARGRAPHIC(10), ID2 VARGRAPHIC(10));

   INSERT INTO TESTY values ( '02','02');


2. Create a native SQL procedure SP1 that references the table.

   CREATE PROCEDURE SP1
     ( IN V_ID VARGRAPHIC(10) CCSID UNICODE )
     LANGUAGE SQL
     RESULT SETS 1
    BEGIN
     DECLARE SQLERRM VARCHAR(255);
     DECLARE SQLCODE INTEGER DEFAULT 0;

     DECLARE CUR_PROD CURSOR WITH RETURN FOR
      SELECT ID1, ID2
        FROM TESTY
        WHERE ID1 = V_ID
          AND ID2 = V_ID ;

     OPEN CUR_PROD;
   END?

Please note: The input VARGRAPHIC SQL Variable V_ID
is referenced twice in the SELECT statement above.


3. An application calls the SQL procedure SP1 and fetches using
   the cursor CUR_PROD.

   DCL HV1    GRAPHIC(10) VARYING;
   DCL HV2    GRAPHIC(10) VARYING;
   DCL HIND1  BIN FIXED(15);
   DCL HIND2  BIN FIXED(15);
   DECLARE LOC1 SQL TYPE IS RESULT_SET_LOCATOR VARYING;

   EXEC SQL CALL SP1('02');

   EXEC SQL
   ASSOCIATE RESULT SET LOCATORS (:LOC1) WITH PROCEDURE SP1;

   EXEC SQL
   ALLOCATE Cur_Prod CURSOR FOR RESULT SET :LOC1;

   EXEC SQL
```

```
        FETCH Cur_Prod INTO :HV1:HIND1, :HV2:HIND2;


    4. Check the results.


    The FETCH statement returns an incorrect result for column ID1
    and ID2 because DB2 does not handle the VARGRAPHIC length
    properly inside a native SQL procedure when it is referenced
    more than once.
    The code in DB2 has been modified to correct the problem which
    results from referencing a vargraphic SQLPL variable in a query
    within a procedure more than once.


    Additional Keywords: SQLINCORR SQLNATIVESQLPL SQLPROCEDURE
COMPONENT:   5740-XYR00-HDB9910
APARS FIXED: PM20787
SPECIAL CONDITIONS:
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  ACTION:
    ***Action for PM20787:


    See PM20787 APAR/PTF text for additional information about
    why an ACTION is necessary.


    PM20787 corrects a problem of incorrect output when running
    a native SQL procedure which contains a sql statement that
    references vargraphic type sql variable multiple times.


    After the application of this PTF, ALTER PROCEDURE REGENERATE is
    required for each native SQL procedure that is affected.
    Review the PTF cover letter to determine which, if any, native
    SQL procedure could be affected by this change.
.


------ COVER LETTER FOR PTF UK61878 ------------

PROBLEM DESCRIPTION(S):
  PM23174 -
    ****************************************************************
    * USERS AFFECTED: All Distributed Data Facility (DDF) users.  *
    *                 Specifically where a DB2 for z/OS system is  *
    *                 configured to access remote servers.        *
    ****************************************************************
    * PROBLEM DESCRIPTION: SQLCODE -950 DSNLTSET when attempting   *
    *                      an outbound access to a remote server   *
    *                      if the SYSIBM.LOCATIONS PORT value is    *
    *                      blank padded beyond 32 characters.       *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    In order for a DB2 for z/OS system to create connections to a
    remote system, the Communications Database (CDB) is populated
    with a SYSIBM.LOCATIONS row where the PORT value, if used,
    refers to the TCP/IP port number of the remote server. If the
```

SYSIBM.LOCATIONS PORT value is blank padded to be larger than
32 characters, the SYSIBM.LOCATIONS row will not be found
which can incorrectly lead to the SQLCODE -950 DSNLTSET
reported symptom. The problem can therefore be solved by
changing the PORT value to be no longer than 32 characters
(blank padding included).
 Note: It is not necessary, and highly discouraged, to define
   PORT values that exceed 32 characters. It is also
   unnecessary to define PORT values (blank padding included)
   if SNA protocols is being used to access the remote system.
   Therefore, if SNA protocols is being used to access the
   remote system, do not define any PORT values (blank padding
   included).

DB2 has been changed to detect SYSIBM.LOCATIONS PORT values
that exceed 32 characters, blank padding included.
If the PORT value exceeds 32 characters, an unavailable
resource message will now be returned back to the application,
with reason code '00D31030'X and resource type '00000A00'X, to
indicate the table and the name of the column that is in error.
 Note: The reason the PORT value has been expanded to
   VARCHAR(96) is to provide Unicode support where the Unicode
   data representation of each character may occupy up to 3
   bytes of storage. The intent of this expansion was not to
   provide extra column data to the user, but rather to allow
   only for the potential expansion of any 32 character input.
   Since the CDB tables are populated via SQL, as opposed to
   DDL, there can be no DDL imposed length restrictions on the
   input data when it is added to the CDB. As a result, it is
   necessary for DB2 to impose the restrictions during runtime,
   via an unavailable resource condition, when the incorrect
   CDB data is accessed.

DB2 for z/OS V8 Codes manual needs to be updated to include an
additional symptom for the existing reason code '00D31030'X as
follows:

   00D31030

   Explanation:

   A remote connection cannot be established. This may be
   caused by one of the following symptoms:

     . the LINKNAME column in the SYSIBM.LOCATIONS table in
       the Communications Data Base (CDB) is greater than 8
       bytes.

     . the LUNAME column in the SYSIBM.LULIST table in the
       Communications Data Base (CDB) is greater than 8 bytes.

     . the MODENAME column in the SYSIBM.MODESELECT or
       SYSIBM.LUMODES table in the Communications Data Base
       (CDB) is greater than 8 bytes.

     . the TPN column in the SYSIBM.LOCATIONS table in the

Communications Database (CDB) is greater than 64 bytes.
|
| . the PORT column in the SYSIBM.LOCATIONS table in the
| Communications Database (CDB) is greater than 32 bytes.

    System action:

    Notification of the failure is returned to the application.
    The remote connection is unsuccessful.

    System programmer response:

    Correct the column in error as indicated by the unavailable
    resource message. For DB2 authorization ID translation
    failure make sure the remote BIND OWNER option contains an
    authorization ID less than or equal to 8 bytes for normal
    connection.

    Problem determination:

    Collect a listing of the SQL that was used to configure
    the CDB table in the error.

DB2 9 for z/OS Codes manual needs to be updated to include an
additional symptom for the existing reason code '00D31030'X as
follows:

    00D31030

    Explanation:

    A remote connection cannot be established. This may be
    caused by one of the following symptoms:

      . the LINKNAME column in the SYSIBM.LOCATIONS table in
        the Communications Data Base (CDB) is greater than 8
        bytes.

      . the LUNAME column in the SYSIBM.LULIST table in the
        Communications Data Base (CDB) is greater than 8 bytes.

      . the MODENAME column in the SYSIBM.MODESELECT or
        SYSIBM.LUMODES table in the Communications Data Base
        (CDB) is greater than 8 bytes.

      . the TPN column in the SYSIBM.LOCATIONS table in the
        Communications Database (CDB) is greater than 64 bytes.
|
| . the PORT column in the SYSIBM.LOCATIONS table in the
| Communications Database (CDB) is greater than 32 bytes.

      . DB2 authorization ID used for outbound authorization ID
        translation is greater than 8 bytes.

    System action:

                                223

Notification of the failure is returned to the application.
The remote connection is unsuccessful.

System programmer response:

Correct the column in error as indicated by the unavailable
resource message. For DB2 authorization ID translation
failure make sure the remote BIND OWNER option contains an
authorization ID less than or equal to 8 bytes for normal
connection.

Problem determination:

Collect a listing of the SQL that was used to configure
the CDB table in the error.

DB2 10 for z/OS Codes manual needs to be updated to include an
additional symptom for the existing reason code '00D31030'X as
follows:

00D31030

Explanation:

A remote connection cannot be established. This may be
caused by one of the following symptoms:

  . the LINKNAME column in the SYSIBM.LOCATIONS table in
    the Communications Data Base (CDB) is greater than 8
    bytes.

  . the LUNAME column in the SYSIBM.LULIST table in the
    Communications Data Base (CDB) is greater than 8 bytes.

  . the MODENAME column in the SYSIBM.MODESELECT or
    SYSIBM.LUMODES table in the Communications Data Base
    (CDB) is greater than 8 bytes.

  . the TPN column in the SYSIBM.LOCATIONS table in the
    Communications Database (CDB) is greater than 64 bytes.

  . the PORT column in the SYSIBM.LOCATIONS table in the
    Communications Database (CDB) is greater than 32 bytes.

  . DB2 authorization ID used for outbound authorization ID
    translation is greater than 8 bytes.

System action:

Notification of the failure is returned to the application.
The remote connection is unsuccessful.

System programmer response:

Correct the column in error as indicated by the unavailable
resource message. For DB2 authorization ID translation

224

```
        failure make sure the remote BIND OWNER option contains an
        authorization ID less than or equal to 8 bytes for normal
        connection.

        Problem determination:

        Collect a listing of the SQL that was used to configure
        the CDB table in the error.

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APARS FIXED: PM23174
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    ***Documentation for PM23174:

    This APAR/PTF changes the description for DB2 reason code
    00D31030.  The change will be documented in the DB2 9 for z/OS
    Codes manual and in the Information Management Software for
    z/OS Solutions Information Center.

    See the PTF cover letter for the text of the new reason code.
.


    ------ COVER LETTER FOR PTF UK61927 ------------

PROBLEM DESCRIPTION(S):
  PM16936 -
    ****************************************************************
    * USERS AFFECTED: 1. All users of DB2 9 for z/OS who will be   *
    *                    using Query Accelerator support enabled   *
    *                    by APAR PM10993; and                      *
    *                 2. Users of the CORRELATION or               *
    *                    COVARIANCE aggregate functions            *
    ****************************************************************
    * PROBLEM DESCRIPTION: 1. Additional Query Accelerator support *
    *                      2. Change the result data type of       *
    *                         the CORRELATION and COVARIANCE       *
    *                         aggregate functions                  *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    1. Additional Query Accelerator support; and
    2. The result data type for the CORRELATION and COVARIANCE
       aggregate functions is being changed for certain input
       data type combinations to be consistent with other
       DB2 platforms.   The result data type will change from
       DECFLOAT(34) to a double precision floating-point
       when the input is all integer or decimal values, or a
       mixture of float/double with integer/decimal.

    Keywords:
    QUERYACCEL SQLCORRELATION SQLCOVARIANCE
    See the text of APAR PM10993 for more information of
```

about the Query Accelerator support.
For the CORRELATION and COVARIANCE aggregate functions, the
result data type is being changed for certain input
data type combinations to be consistent with other
DB2 platforms. If an argument is DECFLOAT(n), the result of
the function will be DECFLOAT(34). Otherwise, the result of
the function will be double precision floating-point.
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APARS FIXED: PM16936
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  DB2BIND:
    ***Action for PM22768:

    See PM22768 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM22768 corrects a problem that after applying PM07464, the
    access path could be regressed for an SQL statement that
    satisfies the following conditions.

    1. It contains a non-correlated subquery predicate.
    2. The above predicate is Boolean term.
    3. It contains a predicate with a parameter marker or host
       variable.
    4. Transitive closure applies for the predicate with a parameter
       marker or host variable.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PM12740 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PM12740 corrects a problem that can cause an abend for
    hybrid join involving XML columns.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM07464:

    See PM07464 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM07464 corrects a problem that can result in an incorrect
    number of rows being returned for an SQL statement that
    satisfies the following conditions.

    1. The SQL statement is in the form of SELECT... INTO ....
    2. The SQL statement contains a subquery predicate in the form

of COL op (non-correlated subquery), where COL is defined
NOT NULL, and the op is =, >, >=, <, <= or <>.
3. The subquery predicate is connected to a residual predicate
with an OR operator.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
ACTION:
The changes introduced for this APAR regarding the
CORRELATION and COVARIANCE aggregate functions are incompatible
with earlier DB2 V9 support. These changes are necessary to
standardize the resulting data types for these functions
between different DB2 platforms.

The difference from the original V9 rule will only affect cases
where the input is all integer or decimal values, or a mixture
of float/double with integer/decimal.

In the DB2 9 for z/OS SQL Reference, under the "Aggregate
Functions" subheading, the following lines have been added
to the CORRELATION and COVARIANCE functions:

CORRELATION

. . .
If an argument is DECFLOAT(n), the result of the function is
DECFLOAT(34). Otherwise, the result of the function is double
precision floating-point. The result is between -1 and 1.
The result can be null.
. . .

COVARIANCE

. . .
If an argument is DECFLOAT(n), the result of the function is
DECFLOAT(34). Otherwise, the result of the function is double
precision floating-point. The result can be null.
. . .

The following line was removed from both the CORRELATION
and COVARIANCE sections:

The data type of the result is a double-precision floating point
value if both of the input arguments are float or double,
otherwise the result is DECFLOAT(34).
.

------ COVER LETTER FOR PTF UK61931 ------------

PROBLEM DESCRIPTION(S):
  PM22336 -
    ****

```
* USERS AFFECTED: All DB2 9 for z/OS utility users with       *
*                 PK87762/UK59095 applied.                     *
****************************************************************
* PROBLEM DESCRIPTION: After user applied PK87762/UK59095,     *
*                      the following problems were encountered *
*                      when running the REORG TABLESPACE       *
*                      utility:                                 *
*                                                              *
*                      - REORG TABLESPACE PART SHRLEVEL NONE   *
*                        failed with ABEND04E RC00E40304       *
*                        during the BUILD/SORTBLD phase on     *
*                        NPIs.                                  *
*                                                              *
*                      - REORG TABLESPACE PART SHRLEVEL NONE   *
*                        with zero records unloaded caused     *
*                        Real Time Statistics to be            *
*                        incorrectly updated for all data and  *
*                        index partitions defined.             *
*                                                              *
*                      - REORG TABLESPACE STATISTICS with      *
*                        LISTDEF PARTLEVEL left partitioned     *
*                        indexes in non-recoverable state      *
*                        resulting in subsequent application   *
*                        failure with RC00C202B2               *
*                                                              *
****************************************************************
* RECOMMENDATION: Apply corrective PTF when available.         *
****************************************************************
```

After user applied PK87762/UK59095, the following problems were
encountered when running the REORG TABLESPACE utility:

- REORG TABLESPACE SHRLEVEL NONE with a LISTDEF containing
  disjoint partition ranges could result in ABEND04E RC00E40304
  in the BUILD/SORTBLD phase on the non-partitioned index(es)
  (NPI) processed. If the REORG utility completed, the
  NPI could also have missing index keys resulting in a broken
  index.

  The same problem can occur without using LISTDEF, when REORG
  is specified with the new disjoint partition range syntax.

  Example: LISTDEF L INCLUDE TABLESPACE dbb.tss PARTLEVEL 3
                       INCLUDE TABLESPACE dbb.tss PARTLEVEL 5
             REORG TABLESPACE LIST L SHRLEVEL NONE
        or
             REORG TABLESPACE dbb.tss PART (3,5)

- REORG TABLESPACE PART SHRLEVEL NONE with zero records
  unloaded (i.e. due to empty partition(s) reorganized, or by
  REORG DISCARD deleting all existing data) would cause Real
  Time Statistics (RTS) for all data and index partitions to
  be updated, effectively zeroing all RTS statistics relevant
  to the last REORG for those partitions not reorganized.

- REORG TABLESPACE STATISTICS with a LISTDEF containing
        non-contiguous partition range specification would leave
        partitioned index(es) in a non-recoverable state, resulting
        in subsequent RC00C202B2 failure when these indexes were
        accessed. The DB2 catalog tables were also updated with
        incorrect, zeroed statistics for the index partitions not
        reorganized. RC00C202B1 failures can also happen.

        This problem applies to all SHRLEVEL of REORG TABLESPACE.

        Example: LISTDEF K INCLUDE TABLESPACE dbb.tss PARTLEVEL 3
                  REORG TABLESPACE LIST K STATISTICS

        Additional symptom: ABEND04E 00E40202 with RC00C90088 when
        running concurrent partlevel REORG on different parts of
        the same partitioned table space with partitioned index(s)
        defined, while collecting inline statistics.

    Code is modified to correct the reported problems.
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APARS FIXED: PM22336
SPECIAL CONDITIONS:
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  ACTION:
    The PTF for APAR PM22336 has modified CSECTs in both the
    DSNUT910 and DSNUTILA load modules, affecting the utility batch
    and DB2 DBM1 address spaces. After the PTF has been applied,
    it will become active in the utility batch address space
    immediately upon job submission, while it will not take effect
    in the DB2 DBM1 address space until DB2 is stopped and started.

    The PTF does not have to be applied to all members in a data
    sharing environment simultaneously, and may be staged across
    each member. However, until the fix is active in both the
    utility batch and DB2 DBM1 address spaces, the problem the PTF
    addresses will not be resolved.
.

------ COVER LETTER FOR PTF UK62023 ------------

PROBLEM DESCRIPTION(S):
  PM17138 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS users of the SET   *
    *   ENCRYPTION PASSWORD special register.   *
    ****
    * PROBLEM DESCRIPTION: When using the SET ENCRYPTION PASSWORD *
    *   special register, an unexpected SQLCODE *
    *   -20143 can be returned when running   *
    *   in parallelism mode.   *
    ****
    * RECOMMENDATION: *
    ****

After setting an encryption password using the SET ENCRYPTION
PASSWORD special register within a given application, the
encryption value is not honored when (later) using a decryption
function (DECRYPT_BINARY, DECRYPT_BIT, DECRYPT_CHAR, or
DECRYPT_DB) when running in parallelism mode.

In the reported case, an SQLCODE -20143 or SQLCODE20143 is
returned from module DSNXRSBC for the DECRYPT_CHAR function for
a package that is bound with DEGREE(ANY) for parallelism.
The problem occurs because a parallel task does not have access
to the saved ENCRYPTION password information.

The following example helps to illustrate a failing case.

Step 1. Create a simple Table.

        CREATE TABLE ENCDEC
        (COL1 VARCHAR(48) NOT NULL FOR BIT DATA) ;

Step 2. In an application set an encryption password using a
        host variable. The HV MYPASS contains 'SECRET'.

        SET ENCRYPTION PASSWORD = MYPASS

Step 3. Insert data into the table as being encrypted.

        EXEC SQL INSERT INTO ENCDEC (COL1) VALUES
            (ENCRYPT_TDES("ABCDEF")) ;

Step 4. Use a decrypt function and the encryption password to
        retrieve the data

        SELECT DECRYPT_CHAR(COL1, MYPASS)
                INTO MYOUT-RAW
                FROM ENCDEC ;

Step 5. If the application package is bound with DEGREE(ANY),
        an SQLCODE -20143 can occur from DSNXRSBC. If the
        package is bound to run without parallelism, the failure
        does not occur and the proper row is returned.

Please note that the following additional problem is also being
addressed by this apar.

In a given application, the ENCRYPTION PASSWORD can not be
altered within a fetch loop. For example, if the ENCRYPTION
PASSWORD special register sets a new password within a fetch
loop, the encryption password special register value will change
but it will not be honored while in the loop. The originating
encyrption password at cursor open when entering the fetch loop

will be honored. The changed password will be honored after
exiting the loop.

The following example illustrates the problem.

```
        Set an ENCRYPT password 'TOPSECRET'
        OPEN cursor
Fetch-loop:
        FETCH (using DECRYPT password)
        Set an ENCRYPT password 'MYSECRET'
        If <> SQLCODE +100, repeat Fetch-loop
        ...
```

So, in this example, fetches will be performed with respect to
the encrypt password 'TOPSECRET'. Once the loop is exited,
the new encryption password 'MYSECRET' will take effect.
The code has been modified in DB2 to save away the ENCRYPTION
password information so that it can be accessed by a parallel
thread or a separate task that does not have access to the
encryption information. This will insure the encryption
information is readily available for DB2 decryption functions.

Additional Keywords: SQLENCRYPT SQLDECRYPT SQLSPECIALREG

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM17138
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM17138:

    See PM17138 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM17138 corrects a problem of using the ENCRYPTION PASSWORD
    special register. In a static application, tne ENCRYPTION
    PASSWORD may not be found or honored as expected resulting in an
    SQLCODE -20143. For example, this can occur when the
    application package is bound using parallelism.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  ACTION:
    The folllowing action(s) may need to be performed along with
    apar PM17138. The following queries are being provided to
    assist in identifying plans, packages, or routines that may need
    to be rebound along with applying this apar.

    The following three queries are provided to help find DBRMs,
    packages, and routines that use the ENCRYPTION PASSWORD special
    register or contain ENCRYPT / DECRYPT functions that may need
    to be rebound after the application of this apar.

For Packages,

```
 SELECT DISTINCT COLLID,NAME,VERSION
   FROM SYSIBM.SYSPACKSTMT
   WHERE
   CAST (STMT AS
   VARCHAR(3500) CCSID UNICODE FOR SBCS DATA)
   LIKE '% DECRYPT/_%' ESCAPE '/' OR
   CAST (STMT AS
   VARCHAR(3500) CCSID UNICODE FOR SBCS DATA)
   LIKE '% ENCRYPT_TDES %' OR
   CAST (STMT AS
   VARCHAR(3500) CCSID UNICODE FOR SBCS DATA)
   LIKE '% ENCRYPTION %' OR
   CAST (STMT AS
   VARCHAR(3500) CCSID UNICODE FOR SBCS DATA)
   LIKE '% GETHINT %'
 WITH UR;
```

For DBRMs,

```
SELECT NAME,
 SUBSTR(TEXT,1,4) ||
 SUBSTR(TEXT,5,4) ||
 CAST(CAST(SUBSTR(TEXT,9,3792) AS VARCHAR(3792) CCSID 1208)
       AS VARCHAR(3792) CCSID EBCDIC)
 FROM SYSIBM.SYSSTMT
  WHERE
     CAST(CAST(SUBSTR(TEXT,9,3792) AS VARCHAR(3792) CCSID 1208)
     AS VARCHAR(3792) CCSID EBCDIC)
       LIKE '% DECRYPT/_%' ESCAPE '/' OR
     CAST(CAST(SUBSTR(TEXT,9,3792) AS VARCHAR(3792) CCSID 1208)
     AS VARCHAR(3792) CCSID EBCDIC)
       LIKE '% ENCRYPT_TDES %' OR
     CAST(CAST(SUBSTR(TEXT,9,3792) AS VARCHAR(3792) CCSID 1208)
     AS VARCHAR(3792) CCSID EBCDIC)
       LIKE '% ENCRYPTION %' OR
     CAST(CAST(SUBSTR(TEXT,9,3792) AS VARCHAR(3792) CCSID 1208)
     AS VARCHAR(3792) CCSID EBCDIC)
       LIKE '% GETHINT %' ;
```

For Sysroutines,

```
 SELECT NAME, TEXT FROM SYSIBM.SYSROUTINES
         WHERE TEXT LIKE '% DECRYPT/_%' ESCAPE '/' OR
               TEXT LIKE '% ENCRYPT_TDES %' OR
               TEXT LIKE '% ENCRYPTION %' OR
               TEXT LIKE '% GETHINT %' ;
```
.

------ COVER LETTER FOR PTF UK62054 ------------

PROBLEM DESCRIPTION(S):

```
   PM14568 -
      ****************************************************************
      * USERS AFFECTED: All DB2 for z/OS users joining 4 or fewer  *
      *                 tables in a query block.                   *
      ****************************************************************
      * PROBLEM DESCRIPTION: An inefficient join sequence was      *
      *                      selected for a query block joining     *
      *                      four or fewer tables and using one or  *
      *                      more inner joins.                      *
      ****************************************************************
      * RECOMMENDATION:                                            *
      ****************************************************************
      DB2 improperly identified join dependencies among tables in
      the query block which caused DB2 to favor an inefficient
      join sequence.  Specifically, a lookup table referenced
      via a unique key may be selected as the inner table of the
      join even if a better access path exists with the lookup
      table as the outer table of the join.

      Additional Keywords:
      SQLACCESSPATH SQLPERFORMANCE
      DB2 has been changed to adequately cost all available options
      for query blocks with one or more inner joins and four or
      fewer tables.
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APARS FIXED: PM14568
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM14568:

    See PM14568 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM14568 resolves a case in which an inefficient join sequence
    could be chosen for a query block with four or fewer tables.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.


------ COVER LETTER FOR PTF UK62154 ------------

PROBLEM DESCRIPTION(S):
  PM22867 -
      ****************************************************************
      * USERS AFFECTED: All DB2 for z/OS V9 parallelism users.     *
      ****************************************************************
      * PROBLEM DESCRIPTION: ABEND04E RC00E20027                   *
      *                      LOC=DSNXOAF .DSNSVBK OFFSET 0A02       *
      *                      when the old format of partition      *
      *                      level statistics low2key and          *
```

```
*                        high2key are used in parallelism        *
*                        processing.                             *
*                                                                *
******************************************************************
* RECOMMENDATION:                                                *
******************************************************************
ABEND04E RC00E20027 LOC=DSNXOAF .DSNSVBK OFFSET 0A02 in
parallelism processing when the old format of low2key and
high2key from catalog table SYSIBM.SYSCOLSTATS are used.
The old format of low2key and high2key are of type CHAR(8)
and were collected before DB2 V8.  If a column's length is
smaller than 8, for example CHAR(1), a storage overlay may
occur when 8 bytes of low2key or high2key are copied into a
smaller buffer.


    Additional Keywords:
    SQLCPUP  SQLPARALLELISM  SET CURRENT DEGREE ANY
    SQLSTATS SQLSTORAGE


    Code is changed to correct the problem mentioned above.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM22867
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM20429 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM20429 fixes an incorrect output problem when a query
    is run in parallelism with multiple column sort merge join.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM15420:

    See PM15420 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM15420 corrects a problem of multiple column frequency
    statistics not being used if non-frequency statistics exist
    for the same column group.  This problem could cause poor
    query performance due to an inefficient access path.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM09740:

    See PM09740 APAR/PTF text for additional information about
```

why a REBIND is necessary.

PM09740 corrects a problem of an incorrect filter factor being
calculated when many frequency and/or histogram statistics
exist.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
  DB2BIND:
    ***Action for PM08299:

    See PM08299 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM08299 corrects a problem of an incorrect filter factor
    being chosen for a predicate on a nullable column with a
    COLCARD of 2.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PK91840:

    See PK91840 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PK91840 corrects a problem of suboptimal access path chosen
    when valid multi-column histogram statistics are discarded.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PK84057 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PK84057 corrects a problem where the frequency statistics
    in the SYSIBM.SYSCOLDIST table may not be used when DB2
    chooses the access plan. It may cause a suboptimal access
    plan to be generated.

    To make this fix effective for a static application, it must
    be rebound after application of this PTF. Review the PTF
    cover letter to determine which, if any, applications could
    be affected by this change.
.

------ COVER LETTER FOR PTF UK62329 ------------

PROBLEM DESCRIPTION(S):

```
PM13467 -
   ****************************************************************
   * USERS AFFECTED: All DB2 users.                              *
   ****************************************************************
   * PROBLEM DESCRIPTION: New Function APAR to enable IFAUSAGE   *
   *                      product intersection support.         *
   ****************************************************************
   * RECOMMENDATION:                                             *
   ****************************************************************
   New function support to use the IFAUSAGE FBFE keyword when
   SMF 89 detailed data collection is enabled.
   Early code support for APAR PM13466.
COMPONENT:  5740-XYR01-HIZ9910
APARS FIXED: PM13467
SPECIAL CONDITIONS:
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  ACTION:
   In order for this PTF to be fully effective, an IPL with CLPA or
   REFRESH DB2,EARLY is required.  The DB2 member should be
   stopped before issuing the REFRESH DB2, EARLY command.
  ACTION:
   In order for this PTF to be fully effective, an IPL or
   REFRESH DB2,EARLY is required.  The DB2 member should be
   stopped before issuing the REFRESH DB2, EARLY command.
.


------ COVER LETTER FOR PTF UK62365 ------------

PROBLEM DESCRIPTION(S):
  PM20207 -
   ****************************************************************
   * USERS AFFECTED: All DB2 V8 and DB2 9 users of CPU           *
   *                 parallelism with zIIP specialty engines     *
   *                 enabled on z/OS V1.6 or later.              *
   ****************************************************************
   * PROBLEM DESCRIPTION: DB2 may generate a non-optimal number  *
   *                      of parallel tasks when there are       *
   *                      online zIIP engines.                   *
   ****************************************************************
   * RECOMMENDATION:                                             *
   ****************************************************************
   An internal field was passed to query optimizer with an
   incorrect value, possibly leading to a non-optimal degree of
   parallelism.
   The internal field in question has been corrected so query
   optimizer will derive the degree of parallelism with more
   information.

   ADDITIONAL KEYWORDS:
   sqlparallelism sqlcpup
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM20207
SPECIAL CONDITIONS:
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```

  ACTION:
    After application of PM20207's PTF, plans and packages with
    static queries will need to undergo a REBIND in order to pick
    up the new changes. Dynamic queries are not affected.
.

------ COVER LETTER FOR PTF UK62499 ------------

PROBLEM DESCRIPTION(S):
  PM23606 -
    ****
    * USERS AFFECTED: All DB2 9 and 10 for z/OS   *
    *   parallelism users.   *
    ****
    * PROBLEM DESCRIPTION: ABEND0CF RC0F in DSNXOLET+198E   *
    *   when a query is run in   *
    *   parallelism with key range   *
    *   partitioning (RANGEKIND='K'   *
    *   in DSN_PGROUP_TABLE).   *
    *   *
    ****
    * RECOMMENDATION: *
    ****
    ABEND0CF-0F IN DSNXOLET+198E when a query is
    run in parallelism with key range partitioning.
    The abend may happen from dividing by 0 when the
    key ranges are cut on a column which has a NULL value
    for LOW2KEY or HIGH2KEY.

    Additional Keywords:
    SQLCPUP SQLPARALLELISM SET CURRENT DEGREE ANY
    SQLSTATS

    The abend described above is fixed.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM23606
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM23606 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM23606 fixes an abend problem when a query is run in
    parallelism with key range partitioning on a column
    which has LOW2KEY=NULL or HIGH2KEY=NULL.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:

```
       See PK60076 APAR/PTF text in the PTF cover letter for
       additional information about why a REBIND is necessary.

       PK60076 fixes an incorrect output problem when a query
       is run in parallelism with key range partitioning on a
       VARBINARY column with a generic low key value.

       To make this fix effective for a static application,
       it must be rebound after application of this PTF.
       Review the PTF cover letter to determine which, if any,
       applications could be affected by this change.
.


       ------ COVER LETTER FOR PTF UK62507 ------------

PROBLEM DESCRIPTION(S):
  PM08877 -
     ****************************************************************
     * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS      *
     *                 users of REORG SHRLEVEL CHANGE DISCARD from  *
     *                 a table with no indexes.                     *
     ****************************************************************
     * PROBLEM DESCRIPTION: ABENDS002 REASON=000000AC with          *
     *                 MSGIEC036I during a REORG SHRLEVEL           *
     *                 CHANGE DISCARD from a table with no          *
     *                 indexes defined on it.                       *
     *                                                              *
     *                 Infinite loop during a REORG TABLESPACE      *
     *                 SHRLEVEL CHANGE DISCARD on a Partition-      *
     *                 By-Growth (PBG) Universal Table Space        *
     *                 (UTS) with no indexes.                       *
     ****************************************************************
     * RECOMMENDATION: Apply corrective PTF when available          *
     ****************************************************************
     A REORG SHRLEVEL CHANGE DISCARD was run on a table that had no
     indexes defined on the table.  The REORG abended during the
     UNLOAD phase with an ABENDS002 RC=000000AC and MSGIEC036I for
     the SYSREC (unload) data set.  The abend was caused by incorrect
     positioning while unloading the table after a procedure which
     added the index entry for a discarded row. The procedure was
     assuming an index key was always present and adjusted
     positioning according to this assumption.

     This same problem caused an infinite loop during a REORG
     SHRLEVEL CHANGE DISCARD on a PBG where there was no index
     defined on the table.
     Code has been modified to correct the reported problem.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM08877
SPECIAL CONDITIONS:
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  ACTION:
     The PTF for APAR PM08877 has modified CSECTs in both the
     DSNUT910 and DSNUTILA load modules, affecting the
```

utility batch and DB2 DBM1 address spaces. After the PTF has
been applied, it will become active in the utility batch address
space immediately upon job submission, while it will not take
effect in the DB2 DBM1 address space until DB2 is stopped and
started.

The PTF does not have to be applied to all members in a data
sharing environment simultaneously, and may be staged across
each member. However, until the fix is active in both the
utility batch and DB2 DBM1 address spaces, the problem the PTF
addresses will not be resolved.
.

------ COVER LETTER FOR PTF UK62541 ------------

PROBLEM DESCRIPTION(S):
  PM11731 -
    ****
    * USERS AFFECTED: All DB2 users that have an XID associated   *
    *   with any thread. This is also referred to   *
    *   as a global transaction.   *
    ****
    * PROBLEM DESCRIPTION: If any thread involved in a global   *
    *   transaction has reached a final   *
    *   decision (commit or abort), then no   *
    *   other threads associated with that   *
    *   global transaction are allowed to   *
    *   begin another unit of recovery (UR).   *
    *   Diagnosing this situation is often   *
    *   difficult and additional information   *
    *   is needed.   *
    *   *
    *   If a begin UR is done for a thread   *
    *   that is part of a global transaction   *
    *   which has already reached a decision,   *
    *   ABEND04E RC00D91001 is issued and the   *
    *   thread is terminated.   *
    ****
    * RECOMMENDATION: *
    ****
    Additional diagnostic information needs to be collected and
    recorded for global transactions to aid in problem determination
    if a protocol violation results in an abend.
    Diagnostic information will be kept in internal control blocks
    so that the history of a global transaction can be more easily
    determined. Some UR control log records will have the XID and
    optionally the BQUAL added.
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APARS FIXED: PM11731
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    A new abend reason code for abend code 04E is added by this
    APAR and will be added to the DB2 codes manual. The

description of the new reason code follows:

00D92025

Explanation: During restart, it was determined that a unit of
recovery (UR) was still active at the previous termination of
this DB2 subsystem and that the subsystem was last started at
a different release level. When migrating to a new release or
falling back to an older release, all activity must be quiesced
and there should be no active units of recovery. DB2 restart
will fail until the situation is resolved.

System action: The restart terminates abnormally, which
terminates the subsystem. This is to prevent the loss or
incorrect processing of a DB2 unit of recovery. An SVC dump
is scheduled and an entry is created in SYS1.LOGREC.

Operator response: Do not attempt to restart DB2 until the
error is resolved. Notify the system programmer and collect
the following diagnostic items listed in Appendix B, "Problem
determination" 1, 3 and 5.

System programmer response: As stated in the DB2 Installation
Guide, all work must be quiesced before either migration or
fallback of a DB2 subsystem. Therefore, the recommended action
is to restart the DB2 subsystem at the release level that
created the outstanding UR(s) and let the UR(s) end normally.
Use of the -RECOVER INDOUBT command may be necessary to resolve
INDOUBT threads. After all URs have completed processing, stop
DB2 with MODE(QUIESCE) and restart using the desired release
level. Using a different release level may require additional
migration or fallback actions. Refer to the DB2 Installation
Guide for further details.

If it is not possible to restart DB2 at the release level that
created the outstanding URs, then a cold start must be
performed. Print the BSDS using the Print Log Map (DSNJU004)
utility. Find the highest written RBA using the output from
DSNJU004. Use the Change Log Inventory (DSNJU003) utility to
create a conditional restart record, specifying the same value
for STARTRBA and ENDRBA. The RBA value must be an even
multiple of 4096 (a hexadecimal value ending in 000) and
should be rounded up from the highest written RBA as indicated
by the DSNJU004 output. Additional actions may be necessary to
recover from possible data inconsistencies. Refer to the DB2
Administration Guide for further details.

Another option is to restore the DB2 logs and data to a prior
consistent point in time. See "Recovering from unresolvable
BSDS or log data set problem during restart" in the DB2
Administration guide.
.

------ COVER LETTER FOR PTF UK62634 ------------

```
PROBLEM DESCRIPTION(S):
  PM17673 -
    INTEGRITY PROBLEM
COMPONENT:  5740-DRE00-HDRE910
APARS FIXED: PM17673
SPECIAL CONDITIONS:
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  INTEGRITY:
    INTEGRITY SET: UK62633,UK62634
  EXIT:
    Installation of this PTF requires that you:

      1. Verify that the exit options in the exit
         are set to values that are appropriate
         for your installation.

      2. Assemble and link-edit the exit and place the
         load module into the APF-authorized DB2 exit
         load library.

     After you complete these steps, the RACF access control
     module will be initialized the next time the DB2 subsystem
     is started.

     Further information may be found in "RACF Access Control
     Module Guide" (SC18-7433 for DB2 V8, SC19-9852 for DB2 V9).
  EXIT:
    Installation of this PTF requires that you:

    1. Verify that the exit options in the exit
       are set to values that are appropriate
       for your installation.

    2. Assemble and link-edit the exit and place the
       load module into the APF-authorized DB2 exit
       load library.

    After you complete these steps, the RACF access control
    module will be initialized the next time the DB2 subsystem
    is started.

    Further information may be found in "RACF Access Control
    Module Guide (SC18-9852)"
  EXIT:
    1. Verify that the exit options in the exit
       are set to values that are appropriate
       for your installation.

    2. Assemble and link-edit the exit and place the
       load module into the APF-authorized DB2 exit
       load library.

    After you complete these steps, the RACF access control
    module will be initialized the next time the DB2 subsystem
    is started.
```

Further information may be found in "RACF Access Control
Module Guide (SC18-9852)"
EXIT:
  Installation of this PTF requires that you:

  1. Verify that the exit options in the exit
     are set to values that are appropriate
     for your installation.

  2. Assemble and link-edit the exit and place the
     load module into the APF-authorized DB2 exit
     load library.

  After you complete these steps, the RACF access control
  module will be initialized the next time the DB2 subsystem
  is started.

  Further information may be found in "RACF Access Control
  Module Guide (SC18-9852)".
DOCUMENTATION:
  The RACF Access Control Module Guide (SC18-9852) is updated
  as follows:

  - In Chapter 8, table 7 "Checks for implicit privileges of
    ownership", the table is changed to indicate the
    situations in which the XAPLUCHK ownership check is
    suppressed:

Type of Owner (XAPLONRT)	Type of Auth ID Checked by DB2 (XAPLUCKT)	Check Performed	RSN_CODE
Auth ID	Auth ID	XAPLOWNR=XAPLUCHK(1) XAPLOWNR=XAPLUPRM (1) Not checked if XAPLACAC is ON	13
Auth_ID	Role	XAPLOWNR=XAPLUPRM	13
Role	Auth_ID	XAPLOWNR=XAPLROLE	16

  - In Chapter 8, table 8 "Checks for implicit privileges of
    ownership of table and index spaces in implicitly
    created databases", the table is changed to indicate the
    situations in which the XAPLUCHK ownership check is
    suppressed.

    The title of table is changed to "Checks for implicit

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privileges of ownership of view's base table and
table spaces and index spaces in implicitly created
data bases" to reflect the fact that the checks in table 8
are performed against the owner information
of the base table in an updatable view.

The situations in which the XAPLUCHK ownership check is
suppressed:

```
+-----------+-------------+------------------------+--------+
| Type of   | Type of Auth| Check Performed        |RSN_CODE|
| Owner     | ID Checked  |                        |        |
|           | by DB2      |                        |        |
| (XAPLOOOT)| (XAPLUCKT)  |                        |        |
+-----------+-------------+------------------------+--------+
|| Auth ID  | Auth ID     | XAPLOOON=XAPLUCHK (1)  |        |
||          |             | XAPLOOON=XAPLUPRM      |17      |
||          |             |                        |        |
||          |             | (1) Not checked if     |        |
||          |             |     XAPLACAC is ON     |        |
+-----------+-------------+------------------------+--------+
| Auth_ID   | Role        | XAPLOOON=XAPLUPRM      |17      |
+-----------+-------------+------------------------+--------+
| Role      | Auth_ID     | XAPLOOON=XAPLROLE     |18      |
+-----------+-------------+------------------------+--------+
| Role      | Role        | If XAPLFLG1=B'1xxxxxx' |        |
|           |             |     XAPLOOON=XAPLUCHK  |        |
|           |             |     XAPLOOON=XAPLROLE  |        |
|           |             |                        |        |
|           |             | If XAPLFLG1=B'0xxxxxx' |        |
|           |             |     XAPLOOON=XAPLUCHK  | 18     |
+-----------+-------------+------------------------+--------+
```

- In Chapter 8, table 9 "Ownership checks with roles"
  the first row is changed to indicate that the
  XAPLOWNR=XAPLUCHK check is not performed if
  XAPLACAC='1'B and XAPLONRT is a blank and XAPLUCKT
  is a blank.

In Chapter 10, "Special considerations", a new section
titled "Processing cache requests" is added with the text:

  If DB2 is caching the results of RACF access control
  module requests, it may need to determine if access is
  allowed due to reasons other than the ownership of
  the object by XAPLUCHK. DB2 indicates that this type of
  request is being performed by setting XAPLACAC
  (XAPLFLG1 bit 5) to '1'B. When this bit is on,
  and XAPLUCHK is an authid, the RACF access control module
  suppresses the XAPLUCHK ownership check for the object.

  The objects and privileges which may have XAPLACAC
  set on by DB2 include: Package (execute), UDF (execute),
  stored procedure (execute), sequence (usage),
  table (select, insert, delete, update), and

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view (select, insert, delete, update). Note that
           there is no ownership check for the execute privilege
           on a package, and that view ownership checks on select,
           insert, delete, and update are performed against the
           view's base table.
DOCUMENTATION:
     The "RACF Access Control Module Guide" (SC18-7433 for DB2 V8,
     SC19-9852 for DB2 V9) is updated with the changes below.

     Chapter 5: Protecting DB2 Objects

     - table-qualifier.table-name.view-qualifier.view-name is added
       to the table "DB2 object name qualifiers for RACF
       resources" for views.

     Chapter 10: Special Considerations

     - A new section "Authorization checking for operations
       on views" is added.

       For most operations on views, the RACF access
       control module checks for authorization on
       the view. Authorization checking for INSERT,
       DELETE, and UPDATE are different because
       the operations on views can affect the
       underlying tables for the views.

       In general, three types of views can be defined:

       - Updatable view: For example, a view that is
          defined with simple column
          references in the SELECT list of the
          view definition, and a single table in the
          FROM clause of the view definition.

          An INSERT, DELETE, or UPDATE
          operation to the view is reflected to
          the underlying table.

       - Read-only view: For example, a view created from
          multiple tables. The INSERT, DELETE, and UPDATE
          operations fail for these views.

       - INSTEAD OF trigger view: The privilege is checked
          on the view, but the SQL in the trigger
          package can update the underlying table or tables.

       For INSERT, DELETE, and UPDATE operations on
       updatable views, the RACF access control module
       checks for authorization to resource name which
       includes both the underlying table information (qualifier
       and name) and view information (qualifier and
       name) and not to the view itself.

       For INSERT, DELETE, and UPDATE operations on

read-only and INSTEAD OF trigger views, the RACF
access control module checks for authorization on
the view.

If a view is created on another view, during view
creation the RACF access control module does
authorization checks for INSERT, DELETE, and
UPDATE. These checks are done on the base view.

Appendix D: The DELETE, INSERT, and UPDATE privilege
for views is updated:

- If the view is updatable (for example, a view created
  from a single table), then the ownership check is done
  on the base table only if SETR MLS is not in effect.

- For a DELETE (DELETAUT) operation on an
  updateable view, the first resource name
  which is checked is now:

    - db2-subsystem.table-qualifier.table-name.view-qualifier.
      view-name.DELETE

- For an INSERT (INSRTAUT) operation on an
  updateable view, the first resource name
  which is checked is now:

    - db2-subsystem.table-qualifier.table-name.view-qualifier.
      view-name.INSERT

- For an UPDATE (UPDTEAUT) operation on an
  updateable view, the first and second
  resource names which are checked are now:

    - db2-subsystem.table-qualifier.table-name.view-qualifier.
      view-name.UPDATE

    - db2-subsystem.table-qualifier.table-name.column-name.
      view-qualifier.view-name.UPDATE

For all of these resource names, the view and table information
is truncated according to these rules:

    - table-qualifier and view-qualifier are truncated at
      32 characters
    - Table-name and view-name are truncated at 64 characters.
DOCUMENTATION:
  The "RACF Access Control Module Guide (SC18-9852)"
  is updated with the changes below.

  Chapter 5: Protecting DB2 Objects

  - table-qualifier.table-name is added to table
    "DB2 object name qualifier for RACF resources" for views.

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Chapter 10: Special Considerations

- A new section "Authorization checking for operations
  on views" is added.

Appendix D: The DELETE, INSERT, and UPDATE privilege
for views is updated:

- If the view is updatable (for example, a view created
  from a single table), then the ownership check is done
  on the base table, only if SETR MLS is not in effect.

- If the user is not the owner of the base table,
  then the object-level resource that is checked is:
  DB2-subsystem.table-qualifier.table-name.<function>,
  where <function> is 'DELETE', 'INSERT', or 'UPDATE'.

- If the XAPLPRIV value is UPDTEAUT then in addition to
  the base table 'UPDATE' resource check, the resource
  for the base table column,
  DB2-subsystem.table-qualifier.table-name.column-name.UPDATE
  is checked.

Complete details on these changes can be found at
ftp://ftp.software.ibm.com/eserver/zseries/zos/racf/pdf
/pk75583v9_doc.pdf.
ACTION:
  Examine CACHEPAC, CACHERAC, and CACHEDYN values in ZPARM
  to see if your DB2 subsystem is using these DB2 caching
  mechanisms. If it is not, then no further action is required.
  The DB2 Installation Guide (GC18-9846) describes
  CACHEPAC, CACHERAC, and CACHEDYN.

  If your DB2 subsystem has enabled caching then any application
  which changes the primary authorization ID (such as by a
  SET CURRENT SQLID statement) to an ID which is expected to
  match the owner of the object, must authorize that ID to
  the object, as the primary authorization ID may no longer
  have access to the object based on the ownership of the
  object.
ACTION:

  The application of the PTF associated with PM17673
  changes the RACF resources which are checked when
  a view is used in an INSERT, UPDATE, or DELETE operation.

  Application plans and packages that were bound with the RACF
  Access Control Module controlling access to views which
  are used for INSERT, UPDATE, or DELETE must be rebound.

  Details on the actions required can be found at:
  ftp://public.dhe.ibm.com/eserver/zseries/zos/racf/pdf
  /pm17673_act.pdf
ACTION:
  The application of PK75583 changes the RACF resources which are
  checked when a view is used in an INSERT, UPDATE, or DELETE

operation. For these operations, the underlying table
information (qualifier, name, optionally column name, and owner)
is used in the access control decision. As a result, new RACF
profiles may need to be defined to protect the underlying
tables.

Also, application plans and packages that were bound with the
RACF Access Control Module controlling access to views which are
used for INSERT, UPDATE, or DELETE must be rebound.

Details on the actions required can be found at:
ftp://ftp.software.ibm.com/eserver/zseries/zos/racf/pdf
/pk75583_act.pdf
.

------ COVER LETTER FOR PTF UK62668 ------------

PROBLEM DESCRIPTION(S):
  PM22698 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS utility users of the   *
    *   DSNUTILU stored procedure or users who   *
    *   use EBCDIC DBCS or UNICODE characters in   *
    *   object names in the utility SYSIN data set. *
    ****
    * PROBLEM DESCRIPTION: Four distinct problems are addressed   *
    *   in this APAR fix: *
    *   *
    *   (1) Utility stored procedures   *
    *   (DSNUTILS and DSNUTILU) fail with   *
    *   DSNU299I (CONVERSION ERROR) when   *
    *   multibyte characters exist in the   *
    *   UTSTMT input string.   *
    *   *
    *   (2) Valid UNICODE object names may be   *
    *   rejected with DSNU049I (INVALID   *
    *   OPERAND FOR KEYWORD) showing no   *
    *   associated keyword in the message.   *
    *   *
    *   (3) Valid UNICODE object names may be   *
    *   rejected with a variety of error   *
    *   messages such as DSNU1212I (INVALID   *
    *   COLUMN NAME) when the name can not   *
    *   be translated to EBCDIC.   *
    *   *
    *   (4) Valid UNICODE object names may be   *
    *   rejected with DSNU088I (INVALID   *
    *   CHARACTER STRING) when they are   *
    *   enclosed in quotation marks and the   *
    *   EBCDIC translation of the object   *
    *   name contains DBCS characters.   *
    ****
    * RECOMMENDATION: *
    ****
    (1) Existing DSNUTILS and DSNUTILU logic cuts the UTSTMT into

72 byte segments before writing it into RECFM=F, LRECL=80
records. At random this would divide any multibyte
character that happened to cross one of the 72-byte
boundaries. The partial characters later caused a
translation error, MSGDSNU299I. In DSNUTILS this may occur
with DBCS characters. In DSNUTILU this may occur with
multibyte UNICODE characters.

(2) Existing logic was not using the correct UNICODE
indicator bit in the correct situation. This caused
a valid UNICODE operand to be rejected with MSGDSNU49I
when it was correct. In addition, no keyword was shown
in the error message.

(3) Existing logic to identify UNICODE object names in SYSIN
failed when the object name could not be translated into
EBCDIC. A variety of error messages are possible
depending on which utility is processing the table name,
index name or column name. UNLOAD utility fails with
MSGDSNU1212I indicating an invalid column name.
There is no requirement that UNICODE object names be
translatable into EBCDIC and the program logic should
handle this case.

(4) Existing logic to determine an object name length failed
when the UNICODE object name translated successfully into
an EBCDIC string containing DBCS characters. The result of
the incorrect length was an incorrect error message
MSGDSNU088I.
(1) DSNUTILU and DSNUTILS stored procedures are
modified to write a single RECFM=V, LRECL=32K
SYSIN record containing the entire UTSTMT. This avoids
cutting multibyte characters across two records.

(2) The logic to detect invalid object names was modified to
correctly handle UNICODE names, avoiding the DSNU049I
message.

(3) The logic to handle UNICODE object names which can not be
translated to EBCDIC was corrected.

(4) The logic to handle UNICODE object names which translate
into EBCDIC names containing DBCS characters was corrected.
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APARS FIXED: PM22698
SPECIAL CONDITIONS:
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  ACTION:
    ***Action for PM22698:

    See PM22698 APAR/PTF text for additional information about
    why a WLM refresh is necessary.

    PM22698 changes the RECFM and LRECL for the SYSIN dataset
    used by the DSNUTILS and DSNUTILU stored procedures. WLM must

be refreshed to deallocate any previously allocated SYSIN
datasets which use the old RECFM and LRECL.

To refresh WLM for the two changed stored procedures execute
the following z/OS console commands for the WLM environment
under which they run:
        V WLM,APPLENV=<wlm environment name>,REFRESH
        V WLM,APPLENV=<wlm environment name>,RESUME
  ACTION:
    The PTF for APAR PK91403 changes the behavior for one instance
    of the LOAD utility. Previous to this change, the following
    LOAD utility:

        LOAD INTO TABLE WHEN predicate COPYDDN (and/or RECOVERYDDN)

    would complete successfully but the COPY would not be done.
    However, this LOAD statement is invalid because when COPYDDN
    (and/or RECOVERYDDN) follows INTO TABLE, PART REPLACE is
    required.

    This PTF now causes MSGDSNU071I - KEYWORD 'keyword' REQUIRES
    KEYWORD 'PART REPLACE' to be issued and the LOAD utility will
    end with RC8.
  ACTION:
     ***Action for PK74109:
    See PK74109 APAR/PTF text for additional information.

    Post-apply actions after applying the fix for APAR PK74109:
    (a) STOP PROC(SYSPROC.DSNUTILS) to suspend DSNUTILS activity
    (b) Rebind package for DSNUTILS. An example on how to do this is
        BIND PACKAGE(DSNUTILS) MEMBER(DSNUTILS) -
            ACTION(REPLACE) ISOLATION(CS) ENCODING(EBCDIC) -
            VALIDATE(BIND) CURRENTDATA(NO) -
            LIBRARY('DSN!!0.SDSNDBRM')
        Change 'DSN!!0' to the prefix of your target library name.
    (c) START PROC(SYSPROC.DSNUTILS) to resume DSNUTILS activity

    Post-apply actions after applying the fix for APAR PK74109:
    (a) STOP PROC(SYSPROC.DSNUTILU) to suspend DSNUTILU activity
    (b) Rebind package for DSNUTILU. An example on how to do this is
        BIND PACKAGE(DSNUTILU) MEMBER(DSNUTILU) -
            ACTION(REPLACE) ISOLATION(CS) ENCODING(EBCDIC) -
            VALIDATE(BIND) CURRENTDATA(NO) -
            LIBRARY('DSN!!0.SDSNDBRM')
        Change 'DSN!!0' to the prefix of your target library name.
    (c) START PROC(SYSPROC.DSNUTILU) to resume DSNUTILU activity
.

------ COVER LETTER FOR PTF UK62819 ------------

PROBLEM DESCRIPTION(S):
  PM25665 -
    ****
    * USERS AFFECTED: All users of the -DISPLAY THREAD command.   *
    ****

```
      * PROBLEM DESCRIPTION: 1. In DB2 v9/v10, an ABEND04E        *
      *                     RC00F9000C in CSECT DSN9SCNP          *
      *                     may occur after issuing a             *
      *                     -DISPLAY THREAD SCOPE(GROUP)          *
      *                     command without specifying LIMIT(*).  *
      *                                                           *
      *                     2. In DB2 v10, remote member -DISPLAY *
      *                     THREAD output may be unnecessarily    *
      *                     truncated generating a DSNV478I       *
      *                     message.                              *
      *************************************************************
      * RECOMMENDATION:                                           *
      *************************************************************
      1. If remote -DISPLAY THREAD output was truncated and the
      last message was a DSNV515I message, an improper DSNV477I
      message would be inserted into the message chain.  This message
      would result in an ABEND04E RC00F9000C in CSECT DSN9SCNP
      if the output was directed to a console.

      2. v10 members can handle more -DISPLAY THREAD output.  When
      communicating with remote members, the return area size used
      is the v8/v9 size, so truncation of remote member output
      is more likely.
      1. The improper DSNV477I message will not be inserted into the
      message chain when remote member data is truncated and exceeds
      the message limit.

      2. v10 members will broadcast the ability to handle more
      -DISPLAY THREAD output from remote members. All v8/v9 members
      coexisting with v10 must apply this APAR before applying it
      to v10 members.
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APARS FIXED: PM25665
SPECIAL CONDITIONS:
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  ACTION:
    In version 10 coexistence mode, all active version 8 and
    version 9 members MUST apply this APAR before any version 10
    member with this APAR applied is restarted. If not applied
    properly, -DISPLAY THREAD SCOPE(GROUP) commands will not return
    valid data from remote version 8 and version 9 members which may
    result in a large amount of invalid output on the version
    10 member. In addition, an ABEND0C4 in CSECT DSNVDTT may
    be encountered on the version 10 member.
.


------ COVER LETTER FOR PTF UK62950 ------------

PROBLEM DESCRIPTION(S):
  PM19528 -
      *************************************************************
      * USERS AFFECTED: All DB2 Users                             *
      *************************************************************
      * PROBLEM DESCRIPTION: This APAR addresses two issues:      *
```

```
    *                         - Negative value in sequential GETPAGE  *
    *                           counter QBSTSGT.                       *
    *                         - Serviceability enhancement for data    *
    *                           set open and close.                    *
    ***************************************************************
    * RECOMMENDATION:                                             *
    ***************************************************************
    - The sequential GETPAGE counter QBSTSGT may contain a negative
      value because it is adjusted by subtracting from total failed
      GETPAGE requests instead of total failed sequential GETPAGE
      requests.

    - Performance trace is needed for data set open and close.
    - A new counter QBSTNSG has been added for failed sequential
      GETPAGE requests.

    - IFCIDs 370 and 371 are added to class 19 performance trace
      to track information related to data set open and close,
      including allocation/de-allocation elapse time, open/close
      elapse time, DSMAX, and number of opened data sets.
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APARS FIXED: PM19528
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  DB2BIND:
    ***Action for PM19528:

    See PM19528 APAR text for additional information.

    Two new DB2 IFCID 370 and 371 have been added by this APAR.
    Their mapping is in DSNDQW04. A new counter QBSTNSG has
    been added by this APAR as a field in QBST block. Its
    mapping is in DSNDQBST. The flat file DSNWMSGS will be
    modified to reflect those changes.
.


------ COVER LETTER FOR PTF UK62956 ------------

PROBLEM DESCRIPTION(S):
  PM17168 -
    INTEGRITY PROBLEM
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM17168
SPECIAL CONDITIONS:
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  INTEGRITY:
    INTEGRITY SET: UK62955,UK62956
  DB2BIND:
    ***Action for PM22826:

    See PM22826 APAR/PTF text for additional information about
    why a REBIND is necessary.
```

PM22826 corrects a problem of unexpect ABEND04E RC00E70005 in
DSNXGRDS.DSNXEFDA M500 or ABEND04E RC00C90101 in
DSNXIDM.DSNICUMW:1002 when a cursor is declared with UR and for
select from insert/update/delete/merge.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK62982 ------------

PROBLEM DESCRIPTION(S):
  PM18816 -
      ****
      * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users whose   *
      *   SQL contains DECFLOAT type columns with   *
      *   histogram statistics   *
      ****
      * PROBLEM DESCRIPTION: ABEND04E RC00E70005 in DSNXRLNU P372   *
      *   may occur when a user issues a query   *
      *   that satisfies the conditions below: *
      *   *
      *   1. The index key data type   *
      *   is DECFLOAT.   *
      *   2. The predicate is very filtering.   *
      *   3. The DECFLOAT type column has   *
      *   histograms.   *
      ****
      * RECOMMENDATION: *
      ****
      When predicates with DECFLOAT columns exist in a query and
      the DECFLOAT columns have histogram statistics, DB2 may give
      ABEND04E RC00E70005 in DSNXRLNU P372.
      PROBLEM COMCLUSION:

      The problems mentioned above are fixed so that DB2 will not
      abend in that situation. DB2 will support DECFLOAT columns
      using histogram statistics to calculate filter factors.

      ADDITIONAL KEYWORDS:

      HISTOGRAM DECFLOAT ABEND04E RC00E70005

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APARS FIXED: PM18816
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  DB2BIND:
    ***Action for PM18816:

See PM18816 APAR/PTF text for additional information about
why a REBIND is necessary.

PM18816 corrects a problem of ABEND04E RC00E70005 in
DSNXRLNU P372 that may occur when executing a query using a
column defined as DECFLOAT and histogram statistics exist on
the column.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM04629:

See PM04629 APAR/PTF text for additional information about
why a REBIND is necessary.

PM04629 corrects a problem of uninitialized variables that cause
inaccurate filter factor estimation.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM01913:

See PM01913 APAR/PTF text for additional information about
why a REBIND is necessary.

PM01913 corrects a problem that DB2 may intermittently select an
inefficient access path due to incorrect filter factor
estimation of a NOT EQUAL predicate.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PK98879:

See PK98879 APAR/PTF text for additional information about
why a REBIND is necessary.

PK98879 corrects a problem of inaccurate filter factor
estimation for a predicate generated by predicate transitive
closure.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  See PK94481 APAR/PTF text in the PTF cover letter for

additional information about why a REBIND is necessary.

PK94481 will fix a problem where the statistics in SYSCOLSTATS
for the non-leading partition key is used incorrectly to help
filter factor evaluation of RANGE/BETWEEN predicates.

To make this fix effective for a static application, it must
be rebound after application of this PTF. Review the PTF
cover letter to determine which, if any, applications could
be affected by this change.
.

------ COVER LETTER FOR PTF UK63026 ------------

PROBLEM DESCRIPTION(S):
  PM16252 -
    ****
    * USERS AFFECTED: DB2 users who invoke the REBIND PACKAGE   *
    *   command with the SWITCH option to revert   *
    *   to an invalid PREVIOUS or ORIGINAL copy of *
    *   a package.   *
    ****
    * PROBLEM DESCRIPTION: When using the REBIND PACKAGE command *
    *   to switch to a package copy that is   *
    *   invalid, DB2 will issue the DSNT269I   *
    *   warning ("The {PREVIOUS/ORIGINAL} copy   *
    *   of package {package-name} was   *
    *   invalid."). This is a new behavior that   *
    *   is being introduced with this fix. The   *
    *   message is intented to serve as a   *
    *   caution to users who switch to an   *
    *   invalid package copy not realizing that   *
    *   the package will be autobound by DB2 on   *
    *   the next invocation.   *
    ****
    * RECOMMENDATION: *
    ****
    When using the REBIND PACKAGE command to switch to a
    package copy that is invalid, DB2 will issue the
    DSNT269I warning ("The {PREVIOUS/ORIGINAL} copy of
    package {package-name} was invalid."). This is a new
    behavior that is being introduced with this fix. The
    message is intented to serve as a caution to users
    who switch to an invalid package copy not realizing
    that the package will be autobound by DB2 on the
    next invocation.

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM16252
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    When using the REBIND PACKAGE command to switch to a package
    copy that is invalid, DB2 will issue the following warning

```
message:

DSNT269I
    csect-name THE copy-indicator COPY OF PACKAGE package-name
    WAS INVALID.

csect-name          Name of the csect
copy-indicator      An indicator of which copy was invalid:
                    PREVIOUS OR ORIGINAL
package-name        Name of the package in the format:
                    location-id.collection-id.package-id.(ver)

System Action:
The command was successfully processed, but the invalid
copy has replaced the current package copy. This copy cannot
be used.

User Response:
No immediate action is required. However, you should determine
why the package is invalid and resolve the condition before
invoking the package. Otherwise, it will be automatically
rebound at the first invocation.

Severity:
4 (warning)
.


------ COVER LETTER FOR PTF UK63111 ------------

PROBLEM DESCRIPTION(S):
  PM07087 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS users.                   *
    ****************************************************************
    * PROBLEM DESCRIPTION: When the RELEASE bind option is NOT    *
    *                      specified on a BIND PACKAGE command,   *
    *                      the bind option associated to the plan *
    *                      is used. However once RELEASE is       *
    *                      explicitly specified on BIND PACKAGE,  *
    *                      there is no way to indicate that the   *
    *                      package should still inherit the bind  *
    *                      option from the plan.                  *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    A method is needed to override the RELEASE bind option for
    a package on the BIND PACKAGE command, so that the local
    plan's RELEASE value is used during execution.

    A new value, INHERITFROMPLAN, is now supported for the RELEASE
    bind option on BIND PACKAGE. This indicates that the package
    should inherit the value from the plan. For additional details,
    refer to the product documentation.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM07087
```

SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    PM07087 adds a new value to the RELEASE BIND/REBIND PACKAGE
    option, so that the package's RELEASE option can inherit the
    value from the local plan during execution.

    To make this fix effective for packages that already created
    with other RELEASE value, a REBIND PACKAGE command with
    RELEASE(INHERITFROMPLAN) option is required after application
    of this PTF. Review the PTF cover letter to determine which,
    if any, packages could be affected by this change.
.

------ COVER LETTER FOR PTF UK63139 ------------

PROBLEM DESCRIPTION(S):
  PM21676 -
    ****
    * USERS AFFECTED: All DB2 for z/OS V8, DB2 9 for z/OS, and   *
    *   DB2 10 for z/OS users of Cross Loader   *
    ****
    * PROBLEM DESCRIPTION: When cross loading data from a Unicode *
    *   table to a second Unicode table   *
    *   substitution characters were used   *
    *   in place of a two byte character.   *
    ****
    * RECOMMENDATION: *
    ****
    Data stored in a Unicode table uses CCSID 1208. When cross
    loading data between two Unicode tables an intermediate
    CCSID of 367 was used because MIXED=NO on the system.
    This caused substitution characters to be inserted in an
    intermediate buffer before loading into the target table.

    Additional Keywords: INCURSOR LOAD
    Modified Cross Loader algorithm to allow MIXED CLOB from
    the cursor to be loaded into a Unicode CLOB column regardless
    of the MIXED attribute on the system.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM21676
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    The PTF for APAR PM21676 has modified CSECTs in both the
    DSNUT910 and DSNUTILA load modules, affecting the utility
    batch and DB2 DBM1 address spaces. After the PTF has been
    applied, it will become active in the utility batch address
    space immediately upon job submission, while it will not take
    effect in the DB2 DBM1 address space until DB2 is stopped and
    started.

    The PTF does not have to be applied to all members in a data

sharing environment simultaneously, and may be staged across
each member. However, until the fix is active in both the
utility batch and DB2 DBM1 address spaces, the problem the PTF
addresses will not be resolved.
.

------ COVER LETTER FOR PTF UK63208 ------------

PROBLEM DESCRIPTION(S):
  PM15908 -
    ****
    * USERS AFFECTED: All Distributed Data Facility (DDF) users.   *
    ****
    * PROBLEM DESCRIPTION: One of the following symptoms may   *
    *   occur: *
    *   . When performing a remote bind from a *
    *   DB2 for z/OS requester, it is   *
    *   impossible to specify bind options   *
    *   supported by the target server unless *
    *   they are also supported by DB2.   *
    *   . DB2 for z/OS server returns SQLCODE   *
    *   -30104 and terminates bind processing *
    *   for unrecognized options during   *
    *   remote bind processing.   *
    ****
    * RECOMMENDATION: *
    ****
    Two requirements are addressed by this APAR:

    1. DB2 for z/OS requester validates all options for remote binds
    before sending the bind request to the server. This prevents
    DB2 from sending bind options supported by the target server
    unless those same options are also recognized by DB2. A new
    function is needed to allow specification of BIND and REBIND
    options supported by the target server without requiring DB2 to
    recognize them.

    2. DB2 for z/OS server returns SQLCODE -30104 and terminates
    bind processing for unrecognized bind options during remote bind
    processing. This behavior is inconsistent with other DB2 family
    members which return SQLCODE +20 for unrecognized bind options.
    Two new functions are provided by this APAR:

    1. DB2 for z/OS requester adds a new GENERIC keyword to the
    BIND PACKAGE and REBIND PACKAGE commands. This allows the
    specification of bind options that are defined and supported by
    the target server, but which are not supported by DB2 for z/OS
    as BIND or REBIND PACKAGE command options.

    2. DB2 for z/OS server is changed to return SQLCODE +20 and
    continue processing the bind or rebind command when unrecognized
    options are received for consistency with DB2 family behavior.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM15908
SPECIAL CONDITIONS:

DOCUMENTATION:
   PM15908 adds the new GENERIC("string") option to the BIND
   PACKAGE and REBIND PACKAGE command.

   The GENERIC keyword supports the specification of bind options
   that are defined and supported by the target server, but which
   are not supported by DB2 as a BIND (REBIND) PACKAGE command
   option. Do not use this option to pass options that are
   explicitly defined in BIND, REBIND, or PRECOMPILE.

   The maximum length of the string is 4096 bytes.

   The string consists of a series of pairs of tokens as follows:

   GENERIC("option-1 value-1 option-2 value-2..... option-n
   value-n"), where each token is delimited by one or more blank
   spaces. If a bind option is specified more than once in the
   GENERIC string, only the first occurrence is used and all
   subsequent duplicate occurrences of the bind option (and its
   corresponding value token) are skipped and ignored.

   PM15908 adds the new SQLCODE +20.

   +20

   BIND, REBIND, OR PRECOMPILE OPTION option-name IS NOT SUPPORTED
   BY THE TARGET SERVER AND WILL BE IGNORED.

   Explanation: This warning is returned when at least one option
   specified at bind, rebind, or precompile time is not supported
   by the target server. The first unsupported option encountered
   is option-name.

   The unsupported options will be ignored.

   Refer to the DB2 Command Reference for a list of options
   supported by DB2 for z/OS.

   User response: Ensure the specification of bind, rebind, or
   precompile option-name(s) or the associated option value(s) was
   intended while connected to this server.

   SQLSTATE: 01615
.

------ COVER LETTER FOR PTF UK63214 ------------

PROBLEM DESCRIPTION(S):
  PM05101 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
    *   users   *
    ****

```
* PROBLEM DESCRIPTION: This PTF ships a new DB2-supplied      *
*                      stored procedure,                      *
*                      SYSPROC.ADMIN_INFO_SMS.                 *
***************************************************************
* RECOMMENDATION: Apply PTF                                   *
***************************************************************
```

The ADMIN_INFO_SMS stored procedure returns space information
about copy pools and their storage groups and volumes.
The ADMIN_INFO_SMS stored procedure returns space information
about copy pools and their storage groups and volumes. It
reads from the created global temporary table
SYSIBM.SMS_OBJECTS to determine which objects' space
statistics it should return, and returns one result set
that contains the volume space statistics in the created
global temporary table SYSIBM.SMS_INFO.

The following syntax diagram shows the SQL CALL statement for
invoking this stored procedure:
```
>>-CALL--SYSPROC.ADMIN_INFO_SMS--(--return-code,--message--)-><
```

Option Descriptions:
o return-code
    Provides the return code from the stored procedure. The
    following values are possible:
    0   The stored procedure completed successfully.
    4   The stored procedure could not return the volume space
        statistics for all of the requested objects. The
        message output parameter contains messages that
        describe the warnings.

        This return code is issued when one or more objects
        that are returned in the result set contains one of the
        following messages in the ERRMSG column:
        - OBJECT NOT FOUND
        - NO VOLUMES ASSOCIATED WITH STORAGE GROUP
        - NO STORAGE GROUPS ASSOCIATED WITH COPY POOL
        - DSNA661I DSNADMIV THE MACRO LSPACE FAILED WITH
          RETURN CODE=nn
    12 The call did not complete successfully. The message
        output parameter contains messages that describe the
        error encountered by the procedure.
o message
    Contains messages that describe a parameter error, an SQL
    error or an internal error encountered by the procedure.

The load module for this stored procedure, DSNADMIV, must
reside in an APF-authorized library.

This stored procedure reads from the created global temporary
table SYSIBM.SMS_OBJECTS to determine which objects' space
statistics to return. The following table shows the format of
the SYSIBM.SMS_OBJECTS input table.

Column name	Data type	Contents
OBJECTID	INTEGER	A unique positive identifier
```

```
|             | NOT NULL    | for an object whose volume  |
|             |             | space statistics will be    |
|             |             | retrieved.                  |
| OBJECTTYPE  | CHAR(1)     | Valid values are:           |
|             | NOT NULL    | - 'C': Copy pool            |
|             |             | - 'S': Storage group        |
|             |             | - 'V': Volume               |
| OBJECTNAME  | VARCHAR(30) | Valid values are:           |
|             | NOT NULL    | - Copy pool name, if        |
|             |             |   OBJECTTYPE is 'C'.        |
|             |             |   Returns all of the        |
|             |             |   volumes that are          |
|             |             |   associated with each      |
|             |             |   storage group in this     |
|             |             |   copy pool, along with the |
|             |             |   corresponding volume      |
|             |             |   space statistics.         |
|             |             | - Storage group name, if    |
|             |             |   OBJECTTYPE is'S'. Returns |
|             |             |   all of the volumes that   |
|             |             |   are associated with this  |
|             |             |   storage group, along with |
|             |             |   the corresponding volume  |
|             |             |   space statistics.         |
|             |             | - Volume name, if           |
|             |             |   OBJECTTYPE is 'V'.        |
|             |             |   Returns the volume space  |
|             |             |   statistics for this volume.|
|             |             |   The maximum length of     |
|             |             |   volume name is CHAR(6).    |
```

This stored procedure returns one result set that contains the
volume space statistics. The following table shows the format
of the result set that is returned in the created global
temporary table SYSIBM.SMS_INFO. The result set rows are
returned in ascending order by ROWNUM and OBJECTID.

```
| Column name  | Data type   | Contents                    |
| -----------  | ---------   | --------                    |
| ROWNUM       | INTEGER     | Sequence number of the      |
|              | NOT NULL    | table row, from 1 to n.     |
| OBJECTID     | INTEGER     | A unique positive identifier|
|              | NOT NULL    | for an object that a set of |
|              |             | volume space statistics     |
|              |             | is associated with.         |
|              |             | This ID is used to          |
|              |             | reference the object in     |
|              |             | the input table             |
|              |             | SYSIBM.SMS_OBJECTS.         |
| COPYPOOL     | VARCHAR(30) | A copy pool. This value     |
|              |             | is NULL if OBJECTID is      |
|              |             | associated with a storage   |
|              |             | group or volume.            |
| STORAGEGROUP | VARCHAR(30) | A copy pool storage         |
|              |             | group. This value is NULL   |
```

			if OBJECTID is associated with a volume, or if OBJECTID is associated with a copy pool and the copy pool does not have any storage groups.
VOLUME	VARCHAR(6)		A volume in a copy pool storage group. This value is NULL in the following cases: - If no volumes are associated with the specified storage group - If no volumes are associated with a storage group that is associated with the specified copy pool - If no storage groups are associated with the specified copy pool
TOTALCAPACITY	INTEGER NOT NULL		Total capacity of a volume, in megabytes. The value is -1 if the VOLUME column is NULL.
FREESPACE	INTEGER NOT NULL		The total amount of free space in a volume, in megabytes. The value is -1 if the VOLUME column is NULL.
LARGESTFREEEXT	INTEGER NOT NULL		Largest free extent in a volume, in megabytes. The value is -1 if the VOLUME column is NULL.
ERRMSG	VARCHAR(256)		Possible values are: - NULL if no error occurred - OBJECT NOT FOUND - NO VOLUMES ASSOCIATED WITH STORAGE GROUP - NO STORAGE GROUPS ASSOCIATED WITH COPY POOL - DSNA661I DSNADMIV THE MACRO LSPACE FAILED WITH RETURN CODE=nn

```
COMPONENT:   5740-XYR00-HDB9910
APARS FIXED: PM05101
SPECIAL CONDITIONS:
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             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    This PTF adds a new DB2-supplied stored procedure called
    SYSPROC.ADMIN_INFO_SMS that returns SMS volume statistics.


    ************************************************************
```

```
Actions for customers who are already using DB2 V9:
****************************************************************
If you have already installed or migrated to DB2 Version 9 then
after applying this PTF, you need to take the following actions:
(1) Update private copies of the installation CLIST.
(2) Update your customized copy of job DSNTIJSG.
(3) Create, bind and grant access to the new stored procedure
    SYSPROC.ADMIN_INFO_SMS and its input and result tables.


Procedures for these actions are given below.
------------------------------------------------------------------
(1) Update private copies of the installation CLIST
    ***********************************************************
    * All current V9 customers need to perform this step
    ***********************************************************
    This PTF modifies the DB2 installation CLIST member
    DSNTINS1 in the prefix.SDSNCLST target library.
    After applying this PTF, you need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of DSNTINS1.  You may also want to move them to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed
    by job DSNTIJVC reside.
------------------------------------------------------------------
(2) Update your customized copy of job DSNTIJSG
    ***********************************************************
    * All V9 customers who maintain a private copy of DB2
    * installation job DSNTIJSG need to perform this step.
    ***********************************************************
    (a) Edit your customized copy of DSNTIJSG
    (b) Add the following SQL statements under the SYSIN DD of
        job step DSNTICU. If DSNTICU is commented out then you
        should also comment out these statements:

        DROP PROCEDURE SYSPROC.ADMIN_INFO_SMS RESTRICT;
        DROP TABLE SYSIBM.SMS_OBJECTS;
        DROP TABLE SYSIBM.SMS_INFO;

    (c) In job step DSNTIAE:
        - add the following command for binding the
          package for SYSPROC.ADMIN_INFO_SMS:

          BIND PACKAGE(DSNADM) MEMBER(DSNADMIV) -
               ISO(CS) CURRENTDATA(YES) -
               ENCODING(EBCDIC) ACT(REPLACE) -
               LIBRARY('<prefix>.SDSNDBRM')

          where <prefix> is the data set prefix of your DB2 V9
          target libraries.

        - add the following DDL for creating the
          SYSIBM.SMS_OBJECTS global temporary table:

          CREATE GLOBAL TEMPORARY TABLE SYSIBM.SMS_OBJECTS
               ( OBJECTID            INTEGER      NOT NULL
                ,OBJECTTYPE          CHAR(1)      NOT NULL
                ,OBJECTNAME          VARCHAR(30)  NOT NULL
```

262

```
                  ) CCSID EBCDIC;

        - add the following DDL for creating the
          SYSIBM.SMS_INFO global temporary table:
            CREATE GLOBAL TEMPORARY TABLE SYSIBM.SMS_INFO
                  ( ROWNUM                INTEGER      NOT NULL
                   ,OBJECTID              INTEGER      NOT NULL
                   ,COPYPOOL              VARCHAR(30)
                   ,STORAGEGROUP          VARCHAR(30)
                   ,VOLUME                VARCHAR(6)
                   ,TOTALCAPACITY         INTEGER      NOT NULL
                   ,FREESPACE             INTEGER      NOT NULL
                   ,LARGESTFREEEXT        INTEGER      NOT NULL
                   ,ERRMSG                VARCHAR(256)
                  ) CCSID EBCDIC;

        - add the following DDL for creating the
          SYSPROC.ADMIN_INFO_SMS stored procedure:

            CREATE PROCEDURE SYSPROC.ADMIN_INFO_SMS
                  ( OUT RETURN_CODE            INTEGER
                   ,OUT MSG                    VARCHAR(1331)
                  ) PARAMETER CCSID EBCDIC
                  EXTERNAL NAME DSNADMIV
                  RESULT SETS 1
                  LANGUAGE C
                  PARAMETER STYLE GENERAL WITH NULLS
                  COLLID DSNADM
                  WLM ENVIRONMENT <wlm-environment-name>
                  ASUTIME NO LIMIT
                  STAY RESIDENT NO
                  PROGRAM TYPE MAIN
                  SECURITY USER
                  RUN OPTIONS 'TRAP(OFF),STACK(,,ANY,)'
                  COMMIT ON RETURN NO;

      and change <wlm-environment-name> to the name of
      a WLM environment with NUMTCB>1.

  (d) Optional: In job step DSNTIJG, add the following DDL to
      grant access:
        GRANT ALL ON TABLE SYSIBM.SMS_OBJECTS TO PUBLIC;
        GRANT ALL ON TABLE SYSIBM.SMS_INFO TO PUBLIC;
        GRANT EXECUTE ON PROCEDURE SYSPROC.ADMIN_INFO_SMS
          TO PUBLIC;
        GRANT EXECUTE ON PACKAGE DSNADM.DSNADMIV TO PUBLIC;
  (e) Save your changes.
---------------------------------------------------------------
(3) Create, bind and grant access to the new stored procedure
    SYSPROC.ADMIN_INFO_SMS and its input and result tables
    *******************************************************
    * All V9 customers who want to use the stored procedures
    * SYSPROC.ADMIN_INFO_SMS need to perform this step.
    *******************************************************
    Use the following procedure to avoid disrupting your
    existing DB2-supplied stored procedures and databases:
```

```
        (a) Create and edit a copy of the DSNTIJSG job you updated
            in step (2) of this procedure
        (b) Remove all job steps except DSNTIAE and DSNTIJG
        (c) In job step DSNTIAE:
            - remove all BIND PACKAGE statements under the SYSTSIN
              DD, except for the following:
                 BIND PACKAGE(DSNADM) MEMBER(DSNADMIV) - ...
            - remove all CREATE statements under the SYSIN DD,
              except for the following:
                 CREATE GLOBAL TEMPORARY TABLE SYSIBM.SMS_OBJECTS ...
                 CREATE GLOBAL TEMPORARY TABLE SYSIBM.SMS_INFO ...
                 CREATE PROCEDURE SYSPROC.ADMIN_INFO_SMS ...
        (d) In job step DSNTIJG, remove all GRANT statements except
            the ones you added in step (2)(d), above
        (e) Run the job to create, bind, and grant access to the
            new stored procedure SYSPROC.ADMIN_INFO_SMS and
            its input and result tables

        ----------------------------------------------------------------
.


        ------ COVER LETTER FOR PTF UK63256 ------------

PROBLEM DESCRIPTION(S):
  PM23786 -
     ****************************************************************
     * USERS AFFECTED: All DB2 for z/OS V8, DB2 9 for z/OS,        *
     *                 and DB2 10 for z/OS users of                *
     *                 DB2 utilities that write to tape            *
     ****************************************************************
     * PROBLEM DESCRIPTION: Long elapsed time for DB2 utilities    *
     *                      that write to tape.                    *
     ****************************************************************
     * RECOMMENDATION:                                             *
     ****************************************************************
     Inefficient processing of tape marks caused utilities using
     tape data sets to run more slowly in some cases, especially
     when tape stacking was used, or if the utility used a large
     number of small data sets.
     Code was changed to improve the performance of utilities which
     use tape data sets.
     .
     Additional keywords:  TEMPLATE STACK YES
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM23786
SPECIAL CONDITIONS:
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  ACTION:
     The fix for APAR PK96023 requires DFSMS PTF UA52959 for z/OS
     DFSMS R10 or UA52960 for z/OS DFSMS R11 in order to be able to
     get the full performance benefit for UNLOAD/LOAD using LBI on
     USS pipes.
.
```

```
       ------ COVER LETTER FOR PTF UK63325 ------------

PROBLEM DESCRIPTION(S):
  PM28399 -
    ***************************************************************
    * USERS AFFECTED: DB2 Version 9.1 for z/OS users using a       *
    *                 decimal floating-point constant in an        *
    *                 SQL statement.                               *
    ***************************************************************
    * PROBLEM DESCRIPTION: DB2 terminates with ABEND04E in         *
    *                      DSNXGRDS.DSNXOLTX M200 when a DFP        *
    *                      constant with 33 digits, including a     *
    *                      leading zero, is used in an SQL          *
    *                      statement.                              *
    ***************************************************************
    * RECOMMENDATION:                                             *
    ***************************************************************
    The following example shows the 04E-00E70005 that occurs in
    DSNXGRDS.DSNXOLTX M200 :

    SELECT CHAR (0.99999999999999999999999999999999)
    FROM SYSIBM.SYSDUMMY1;

    DUMP TITLE=V91A,ABND=04E-00E70005,U=ADMF001 ,M=(N),C=910.RDS -R
          SCTCACH,M=DSNTFRCV,LOC=DSNXGRDS.DSNXOLTX M200


    DB2 code is modified so that DB2 no longer terminates with
    an unexpected ABEND04E for the case cited above.

    With the APAR fix, the correct output is produced:

    INPUT STATEMENT:
    SELECT CHAR (0.99999999999999999999999999999999)
    FROM SYSIBM.SYSDUMMY1;

        +---------------------------------------------+
        |                                             |
        +---------------------------------------------+
      1_| 0.99999999999999999999999999999999          |
        +---------------------------------------------+

    SUCCESSFUL RETRIEVAL OF        1 ROW(S)
    RETCODE=   0


COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM28399
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    APAR PK63645 adds support for the WITH common-table-expression
    in the SELECT INTO statement.  The SQL Reference will be
    updated as follows:
```

Add the WITH common-table-expression clause to the syntax
diagram for the SELECT INTO statement in Chapter 5 of the SQL
Reference.

```
>>--+-------------------------------+--select-clause-->
    |                               |
    |        .--------,---------------.  |
    |        v                       |  |
    '-WITH---common-table-expression-+-'


         .----,----------.
         v              |
>---INTO ---host-variable-+--from-clause----------------->


>--- .... ---><
```

For a description of the WITH common-table-expression clause,
see the topic 'select-statement' in Chapter 4 of the SQL
Reference.
.

------ COVER LETTER FOR PTF UK63368 ------------

PROBLEM DESCRIPTION(S):
  PM26762 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS users of CHECK utilities *
    *   (i.e. CHECK INDEX, CHECK LOB, or CHECK DATA) *
    *   with SHRLEVEL CHANGE.   *
    *   *
    *   All DB2 10 for z/OS utility users who   *
    *   use the utility FlashCopy functions.   *
    *   *
    ****
    * PROBLEM DESCRIPTION: New function is being added for the   *
    *   utility Flash Copy functions which   *
    *   facilitate use with Metro Mirror   *
    *   peer-to-peer remote copy hereafter   *
    *   referred to as PPRC. In addition,   *
    *   the fast replication option for the   *
    *   RECOVER utility can be specified   *
    *   in a zparm.   *
    ****
    * RECOMMENDATION: *
    ****
    New system parameters are added to allow the customer
    to choose the DB2 utility behavior when DFSMSdss COPY
    is invoked in regards to:
         - whether fast replication is allowed to a PPRC
           primary volume and whether the mirroring should
           be preserved
           - applicable to the V9 online CHECK utilities
             (CHECK INDEX, CHECK DATA, CHECK LOB)

```
              - applicable to these V10 utilities:
                 COPY, REORG TABLESPACE, REORG INDEX,
                 REBUILD INDEX, LOAD, RECOVER, online CHECK utilities
            - whether fast replication should be used during
               the RECOVER utility when restoring a FlashCopy
               image copy
                - RECOVER using fast replication to restore a
                  FlashCopy image copy can cause the BACKUP SYSTEM
                  utility to fail, because cascading FlashCopy is
                  not supported
This APAR adds a new DB2 subsystem parameter, FLASHCOPY_PPRC, to
DSN6SPRM in DB2 V9 and V10.  In V10 only, it adds another
DSN6SPRM parameter called REC_FASTREPLICATION:


* FLASHCOPY_PPRC (DB2 V9 and V10):
  Specifies the behavior for DFSMSdss FlashCopy requests by DB2
  Utilities when the target disk storage volume is in a peer to
  peer remote copy (PPRC) relationship.  A PPRC relationship
  exists when a DB2 Utility uses DFSMSdss FlashCopy technology
  to create a FlashCopy image copy or shadow data sets (for the
  online CHECK utility) and the target disk storage volume is
  mirrored by another disk device on a different system.

  In DB2 V9, the FLASHCOPY_PPRC parameter pertains only to the
  online CHECK utilities.  In DB2 V10, it pertains to COPY,
  REORG TABLESPACE, REORG INDEX, REBUILD INDEX, LOAD, and
  RECOVER as well as the CHECK utilities.

  Valid settings are:
  - blank    : No preserve mirror command will be
                 passed to DFSMSdss.  Use this setting when the
                 operating system for DB2 does not have a PPRC
                 license.
                 -> This is the default setting in DB2 V9

  - NONE     : DFSMSdss does not preserve mirroring when
                 processing a DB2 Utilities request, even if all
                 of the configuration requirements for preserving
                 the mirror operation are met.

  - PREFERRED: DFSMSdss allows the volume pair to go into duplex
                 pending state when processing a DB2 Utilities
                 request only if required.

  - REQUIRED : DFSMSdss does not permit the PPRC volume pair to
                 go into duplex pending state when processing a
                 DB2 Utilities request.
                 -> This is the default setting in DB2 V10

* REC_FASTREPLICATION (DB2 V10 only):
  Specifies whether recovery from a FlashCopy image copy should
  use FlashCopy.  If you use BACKUP SYSTEM to create system-
  level backups, note that a recovery from a FlashCopy image
  copy  which uses FlashCopy for the restore could cause BACKUP
  SYSTEM to fail because bi-directional FlashCopy is not
  supported.  Valid settings are:
```

- REQUIRED : The RECOVER utility forces use of FlashCopy when
                     performing recovery from a FlashCopy image copy,
                     to ensure that recovery occurs as quickly as
                     possible. However, this option will cause
                     RECOVERY to fail if Flash Copy cannot be used.

         - PREFERRED: The RECOVER utility uses FlashCopy only if
                     FlashCopy support is available.
                     -> This is the default setting

         - NONE   : The RECOVER utility will use standard
                     input/output to restore the FlashCopy image copy.
                     -> This setting is not permitted when the
                        FLASHCOPY_PPRC parameter is set to PREFERRED
                        or REQUIRED.
     The zparm and utilities were changed to add the new function.

     Why does this APAR contain a V8 change?

     Please note that although this is a V9/V10 APAR, it does include
     a small V8 change. The APAR updates DSNADMIZ, the external
     module for the SYSPROC.ADMIN_INFO_SYSPARM stored procedure in
     DB2 V8, V9, and V10 so that it can report the setting for the
     new subsystem parameters added by this APAR. In DB2 data
     sharing, a SYSPROC.ADMIN_INFO_SYSPARM connection on any member
     of the group can query the subsystem, DECP and certain IRLM
     parameter settings of any other member of that group. In order
     to support V9 and V10 data sharing coexistence modes, the V8
     SYSPROC.ADMIN_INFO_SYSPARM must recognize the new subsystem
     parameters.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM26762
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    ***Actions for PM26762 (V9)

    This APAR adds a new DB2 subsystem parameter, FLASHCOPY_PPRC,
    to DSN6SPRM in DB2 V9.

    * FLASHCOPY_PPRC:
      Specifies the behavior for DFSMSdss FlashCopy requests by the
      DB2 online CHECK utilities when the target disk storage volume
      is in a peer to peer remote copy (PPRC) relationship. A PPRC
      relationship exists when a CHECK utility uses DFSMSdss
      FlashCopy technology to create shadow data sets and the target
      disk storage volume is mirrored by another disk device on a
      different system. Acceptable settings are:
      - blank   : No preserve mirror command will be passed to
                   DFSMSdss. Use this setting when the operating
                   system for DB2 does not have a PPRC license.
                   -> This is the default setting
      - NONE   : DFSMSdss does not preserve mirroring
                   when processing a CHECK utility request,
                   even if all of the configuration
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requirements for preserving the mirror
                    operation are met.
      - PREFERRED: DFSMSdss allows the volume pair to go
                    into duplex pending state when
                    processing a CHECK utility request only
                    if required.
      - REQUIRED : DFSMSdss does not permit the PPRC
                    volume pair to go into duplex pending
                    state when processing a CHECK utility
                    request.

If you have already installed or migrated to this version of DB2
you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member
(4) Bind a new package for DSNTXAZP (DSNTIDxx refresh tool)

Detailed guidance for these actions follows:

----
(1) Update customized copies of DB2 installation CLIST members
----
==> This action is required for all customers

    This PTF modifies CLIST member DSNTINST in the SDSNCLST
    target library only. You need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of this CLIST. You may also want to move it to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed by
    job DSNTIJVC reside.

----
(2) Update your customized copy of job DSNTIJUZ

==> This action is required for all customers

    This PTF modifies DB2 installation job DSNTIJUZ in the
    SDSNSAMP target library. After applying this PTF, you
    need to update your customized copy of this job as follows:

    * Add the keyword parameter FLASHCOPY_PPRC=<x>, where <x> is
      blank, NONE, PREFERRED, or REQUIRED to the invocation of
      the DSN6SPRM macro in your customized copy of installation
      job DSNTIJUZ. Make sure to add a continuation character
      in column 72 if needed. If you omit adding FLASHCOPY_PPRC
      here, the value will be set to the default of blank
      when you assemble the DSNZPxxx module.

    * Run the first two steps of the DSNTIJUZ job you modified.

    * After the job completes, you must either use the -SET
      SYSPARM command or stop and start DB2 for the change to
      take effect.

```
-----------------------------------------------------------------
(3) Update private copies of the DSNTIDxx CLIST input member
-----------------------------------------------------------------
==> This action is required for all customers

     This PTF adds entries for FLASHCOPY_PPRC to the CLIST
     default input member, DSNTIDXA, in the SDSNSAMP target
     library.  You need to add this entry to all private copies
     of your CLIST output DSNTIDxx member.  In each such copy,
     add the following line:

FLASHCOPY_PPRC        CHAR   M  NONE        NONE            <x>

     Change <x> to the value you specified for FLASHCOPY_PPRC
     in step (2), above.  If you specified blank, change <x> to
     NULL here.


-----------------------------------------------------------------
(4) Bind a new package for DSNTXAZP (DSNTIDxx refresh tool)
-----------------------------------------------------------------
==> This action is required for all customers who use the
     DSNTXAZP to refresh input CLIST (DSNTIDxx) members from the
     current DB2 settings.

     Submit a job that contains the following BIND statement:

     BIND PACKAGE(DSNTXAZP) MEMBER(DSNTXAZP) -
          ACTION(REPLACE) ENCODING(EBCDIC) -
          LIBRARY('prefix.SDSNDBRM')

     where <prefix> is the high-level qualifier for the
     target DB2 subsystem.
ACTION:
  ***Action for PM21657

  This PTF fixes a bug in DSNTXAZP, a program that can be used to
  refresh a DB2 CLIST input (DSNTIDxx) member with DB2's current
  subsystem parameter, DSNHDECP parameter, and buffer pool
  settings.

  If you have already installed or migrated to this version of
  DB2 then after applying this PTF, you need to rebind the package
  for DSNTXAZP.  Submit a job that contains the following BIND
  statement:

       BIND PACKAGE(DSNTXAZP) MEMBER(DSNTXAZP) -
            ACTION(REPLACE) ENCODING(EBCDIC) -
            LIBRARY('prefix.SDSNDBRM')

  where <prefix> is the high-level qualifier for the
  target DB2 subsystem.


  If you have previously used DSNTXAZP to refresh a DSNTIDxx
  member, and your DB2 uses DSN6SPRM.SEQCACH=SEQ, then you also
  need to verify that the SEQCACH entry in your refreshed
  DSNTIDxx member(s) specifies a setting of SEQ rather than
```

```
     SEQUENTIAL.
ACTION:
  This PTF for PM19034 adds a new DB2 subsystem parameter in
  DSN6SPRM called CHECK_FASTREPLICATION to specify the type of
  replication to be used by DSScopy  when invoked by the DB2 CHECK
  Utilities to copy objects to shadow data sets.  The CHECK
  utilities use DSScopy to copy DB2 objects to shadow data sets
  for processing, and can stipulate fast replication as either
  PREFERRED or REQUIRED.

  * If you specify REQUIRED, the CHECK utilities force DSScopy to
    use fast replication, ensuring that object copies occur as
    quickly as possible, thus reducing the opportunity for
    resource contention and unavailability.  This option will
    cause CHECK to fail if Flash Copy cannot be used.

  * If you specify PREFERRED, the CHECK utilities direct DSScopy
    to use fast replication only if Flash Copy support is
    available.
    ==> This is the default setting.

  If you have already installed or migrated to this version of DB2
  you need to take the following actions after applying this PTF:

  (1) Update customized copies of DB2 installation CLIST members
  (2) Update your customized copy of job DSNTIJUZ
  (3) Update private copies of the DSNTIDxx CLIST input member
  (4) Bind a new package for DSNTXAZP (DSNTIDxx refresh tool)

  Detailed guidance for these actions follows:

  ----------------------------------------------------------------
  (1) Update customized copies of DB2 installation CLIST members
  ----------------------------------------------------------------
  ==> This action is required for all customers

      This PTF modifies CLIST member DSNTINST in the SDSNCLST
      target library only.  You need to redo any record format
      changes and reapply any tailoring you have done to your
      copies of this CLIST.  You may also want to move it to the
      prefix.NEW.SDSNCLST data set, where the CLISTs processed by
      job DSNTIJVC reside.


  ----------------------------------------------------------------
  (2) Update your customized copy of job DSNTIJUZ
  ----------------------------------------------------------------
  ==> This action is required for all customers

      This PTF modifies DB2 installation job DSNTIJUZ in the
      SDSNSAMP target library.  After applying this PTF, you
      need to update your customized copy of this job as follows:

      * Add the keyword parameter CHECK_FASTREPLICATION=<n>, where
        <n> is either PREFERRED or REQUIRED, to the invocation of
        the DSN6SPRM macro in your customized copy of installation
        job DSNTIJUZ.  Make sure to add a continuation character
```

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in column 72 if needed. If you omit adding
CHECK_FASTREPLICATION here, the value will be set to the
default of PREFERRED when you assemble the DSNZPxxx
module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, you must either use the -SET
  SYSPARM command or stop and start DB2 for the change to
  take effect.

----
(3) Update private copies of the DSNTIDxx CLIST input member

==> This action is required for all customers

    This PTF adds an entry for CHECK_FASTREPLICATION to the
    CLIST default input members, DSNTIDXA, in the SDSNSAMP
    target library. You need to add this entry to all private
    copies of your CLIST output DSNTIDxx member. In each such
    copy, add the following line:

CHECK_FASTREPLICATION CHAR M PREFERRED   REQUIRED   <n>

    Change <n> to the value you specified for
    CHECK_FASTREPLICATION in step (2), above.

----
(4) Bind a new package for DSNTXAZP (DSNTIDxx refresh tool)

==> This action is required for all customers who use the
    DSNTXAZP to refresh input CLIST (DSNTIDxx) members from the
    current DB2 settings.

    Submit a job that contains the following BIND statement:

    BIND PACKAGE(DSNTXAZP) MEMBER(DSNTXAZP) -
         ACTION(REPLACE) ENCODING(EBCDIC) -
         LIBRARY('prefix.SDSNDBRM')

    where <prefix> is the high-level qualifier for the
    target DB2 subsystem.

Note:
Please note that although PM19034 is a V9/V10 APAR, it does
include a small V8 change. The APAR updates DSNADMIZ, the
external module for the SYSPROC.ADMIN_INFO_SYSPARM stored
procedure in DB2 V8, V9, and V10 so that it can report the
setting for the new CHECK_FASTREPLICATION subsystem parameter.
In DB2 data sharing, a SYSPROC.ADMIN_INFO_SYSPARM connection
on any member of the group can query the subsystem, DECP and
certain IRLM parameter settings of any other member of that
group. In order to support V9 and V10 data sharing coexistence
modes, the V8 SYSPROC.ADMIN_INFO_SYSPARM must recognize the new
CHECK_FASTREPLICATION subsystem parameter.
.

```
------ COVER LETTER FOR PTF UK63389 ------------

PROBLEM DESCRIPTION(S):
  PM22024 -
    ****************************************************************
    * USERS AFFECTED: ALL DB2 9 and DB2 10 for z/OS users of      *
    *                 queries that contain a UDF (User Defined     *
    *                 Function) in a predicate.                    *
    ****************************************************************
    * PROBLEM DESCRIPTION: An ABEND0C4 RC38 can occur at location *
    *                 DSNXOHJC +02CA when running a query          *
    *                 with a UDF (User Defined Function) in        *
    *                 its predicate and the query involves a       *
    *                 join.  The join method is either a           *
    *                 nested loop join with sort composite or *
    *                 a hybrid join.  The inner table is           *
    *                 index access and the predicate               *
    *                 containing the UDF is a matching             *
    *                 predicate on the inner table.                *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************

    An ABEND0C4 RC38 can occur at location DSNXOHJC +02CA when
    running a query that contains a UDF (User Defined Function) in
    its predicate and the query involves a join.  The join method is
    either a nested loop join with a sort composite or a hybrid
    join.  The inner table is index access and the predicate
    containing the UDF is a matching predicate on the inner table.

    The following query presents an example of this case.

       CREATE INDEX I1 ON T2 (C1, C2);

       SELECT * FROM T1, T2
       WHERE T2.C1 = UDF1()
       AND   T1.C2 = T2.C2 ;

    The bindtime code in DB2 is modified to correct the conditions
    leading to the ABEND.

    Additional Keywords: SQLUDF SQLHYBRID SQLNLJ SQLJOIN
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM22024
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    See PM22024 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PM22024 corrects a problem that can cause an abend for a
    a query containing a UDF in its predicate.

    To make this fix effective for a static application, it must be
```

rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK63420 ------------

PROBLEM DESCRIPTION(S):
  PM13844 -
     ****
     * USERS AFFECTED: Users of SQL procedures with DB2 Version 9.1 *
     *   for z/OS and DB2 Version 10.1 for z/OS.   *
     ****
     * PROBLEM DESCRIPTION: Provide precompiler to support native   *
     *   SQL procedure migration and development *
     *   activity   *
     ****
     * RECOMMENDATION: *
     ****
     A HOST(SQLPL) precompiler is provided to perform a checkout
     inspection for an SQL procedure definition, validating that the
     source is properly coded to conform with native SQL PL syntax
     and behaviors. This is a recommended step to perform for all
     native SQL procedure development. It is a vital step to perform
     prior to any migration of an external SQL procedure to a native
     SQL procedure.

     The following sample JCL can be used to invoke the HOST(SQLPL)
     checkout precompiler:

      //CHKSQLPL EXEC PGM=DSNHPSM,
      //   PARM='HOST(SQLPL),SOURCE,XREF,NEWFUN(YES)'
      //STEPLIB DD DSN=... <== location of DSNHPSM loadmod ALIAS
      //SYSIN   DD DSN=... <== input: FB80 w/SQL procedure source
      //SYSPRINT DD SYSOUT=* <== output: Native SQL PL listing w/msgs
      //SYSUT1   DD DUMMY
      //SYSUT2   DD DUMMY
      //SYSTERM DD DUMMY
      //SYSCIN   DD DUMMY

     Note: Adjust the precompiler options to match your source and
           suit your needs. In particular, pay close attention to the
           accurate use of precompiler options CCSID() and MARGINS().

     This APAR adds the following new messages to the DB2 Messages
     publication:

     DSNH4772I I csectname LINE nnnn COL cc
       UNQUALIFIED IDENTIFIER name IS USED IN AN AMBIGUOUS CONTEXT

     Explanation:
     The named identifier is not a unique reference in the SQL
     statement context. An sql-parameter or an sql-variable with
     that name is declared but does not have priority over a column

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with that name in this context.

User Response:
Inspect the ambiguous reference and qualify the named
identifier to clarify the intended usage in the SQL statement.

- For a reference to an sql-parameter qualify the name with the
  SQL PL routine name.
- For a reference to an sql-variable qualify the name with the
  label of the compound-statement that declares the
  sql-variable. If missing, first add a label to the
  compound-statement.
- For a reference to a column qualify the name with the
  appropriate table designator.

Severity:
  0 (informational)

DSNH4773I W csectname LINE nnnn COL cc
  HANDLER BODY IS A CONTROL STATEMENT OTHER THAN A COMPOUND
  STATEMENT

Explanation:
The body of a handler-declaration is an SQL-control-statement
other than an SQL-compound-statement. This usage will displace
the original condition information available to the condition
handler logic. The SQL diagnostic area accessed by a GET CURRENT
DIAGOSTICS statement will be modified and unrelated to the
original condition. The values of variables SQLSTATE and SQLCODE
will be modified and unrelated to the original condition.

User Response:
Replace the SQL-control-statement (IF, CASE, LOOP, REPEAT,
WHILE) that defines the body of the handler-declaration with an
SQL-compound-statement (BEGIN).

Severity:
  4 (warning)

Additional keywords: DB2PRECOMPILER MSGDSNH4772I MSGDSNH4773I
                     SQLEXTERNALSQLPL SQLNATIVESQLPL SQLSP
The DB2 precompiler is modified to support the HOST(SQLPL)
precompiler option for providing a checkout inspection for an
SQL procedure definition.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM13844
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    Any package or plan containing a DELETE statement that has a SET
    assignment-clause without an include-column phrase, regardless
    of whether the DELETE statement is a stand-alone statement or is
    nested in a FROM clause, should be rebound after applying the

PTF to have sqlcode199 issued.
The application that has the DELETE statement needs to be
changed to correct syntax and then precompiled to generate
a DBRM, and the resulting DBRM should be bound before execution.
DOCUMENTATION:
  APAR PM13844 adds the following new messages to the DB2 Messages
  publication:

  DSNH4772I I csectname LINE nnnn COL cc
    UNQUALIFIED IDENTIFIER name IS USED IN AN AMBIGUOUS CONTEXT

  Explanation:
  The named identifier is not a unique reference in the SQL
  statement context. An sql-parameter or an sql-variable with
  that name is declared but does not have priority over a column
  with that name in this context.

  User Response:
  Inspect the ambiguious reference and qualify the named
  identifier to clarify the intended usage in the SQL statement.

  - For a reference to an sql-parameter qualify the name with the
    SQL PL routine name.
  - For a reference to an sql-variable qualify the name with the
    label of the compound-statement that declares the
    sql-variable. If missing, first add a label to the
    compound-statement.
  - For a reference to a column qualify the name with the
    appropriate table designator.

  Severity:
    0 (informational)

  DSNH4773I W csectname LINE nnnn COL cc
    HANDLER BODY IS A CONTROL STATEMENT OTHER THAN A COMPOUND
    STATEMENT

  Explanation:
  The body of a handler-declaration is an SQL-control-statement
  other than an SQL-compound-statement. This usage will displace
  the original condition information available to the condition
  handler logic. The SQL diagnostic area accessed by a GET CURRENT
  DIAGOSTICS statement will be modified and unrelated to the
  original condition. The values of variables SQLSTATE and SQLCODE
  will be modified and unrelated to the original condition.

  User Response:
  Replace the SQL-control-statement (IF, CASE, LOOP, REPEAT,
  WHILE) that defines the body of the handler-declaration with an
  SQL-compound-statement (BEGIN).

  Severity:
    4 (warning)
ACTION:

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After applying apar PK61616, programs that exhibit the problem
reported must be re-precompiled, compiled, and linked before
binding to pick up the corrected code.
.

------ COVER LETTER FOR PTF UK63422 ------------

PROBLEM DESCRIPTION(S):
  PM27640 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS users *
    *   of the DB2 scheduler for administrative   *
    *   tasks   *
    ****
    * PROBLEM DESCRIPTION: The DB2 scheduler for administrative   *
    *   tasks enters into an infinite loop when *
    *   it encounters a one-time task with a   *
    *   begin timestamp that is in the past,   *
    *   and the task was not executed yet. The *
    *   scheduler started task has to be   *
    *   manually canceled to end the infinite   *
    *   loop.   *
    ****
    * RECOMMENDATION: Apply this PTF.   *
    ****
    A one-time task is defined in the scheduler with the parameter
    max-invocations set to 1 and parameters interval, point-in-time
    and trigger-task-name set to NULL. If parameter begin-timestamp
    is not NULL, the task will be executed at begin-timestamp,
    which must be after the creation of the task. However, if the
    scheduler is stopped before begin-timestamp, and restarted more
    than 1 minute after begin-timestamp, the scheduler enters into
    an infinite loop when trying to reschedule this task. At this
    point, no other task can be executed by the scheduler, and the
    scheduler started task has to be manually canceled.
    This PTF prevents the scheduler from entering into an
    infinite loop by executing one-time tasks with a begin
    timestamp in the past immediately after the scheduler
    is restarted, provided that the tasks have not been
    executed already.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM27640
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    After applying this PTF on DB2 9 for z/OS
    ==

    The following post-apply actions are required of all current
    V9 customers that use the DB2 scheduler.

    To activate the changes in this PTF you need to take the
    following additional actions:
    (1) Stop the scheduler for administrative tasks.

(2) Start the scheduler for administrative tasks.

        Each of these actions is detailed below.

        (1) Stop the scheduler for administrative tasks.
            If the scheduler is running, stop it first by executing
            the following console command:
            MODIFY DSNADMT,APPL=SHUTDOWN
            where DSNADMT is the name of the scheduler.
        (2) Start the scheduler for administrative tasks.
            Start the scheduler by executing the following console
            command:
            START DSNADMT
            where DSNADMT is the name of the scheduler.
    .

        ------ COVER LETTER FOR PTF UK63516 ------------

PROBLEM DESCRIPTION(S):
  PM25187 -
        ****
        * USERS AFFECTED: All DB2 for z/OS V8, DB2 9 and DB2 10 for   *
        *   z/OS users of a query that contains common   *
        *   table expression, UNION ALL, and OUTER JOIN. *
        ****
        * PROBLEM DESCRIPTION: An incorrect output or various ABEND04E *
        *   may occur when a query satisfies all   *
        *   of the following conditions: *
        *   1. multiple common table or side-way   *
        *   reference are involved;   *
        *   2. an OUTER JOIN is contained in one   *
        *   of the common table expression;   *
        *   3. another common table expression   *
        *   contains UNION ALL where one   *
        *   branch references the common   *
        *   table expression which is created   *
        *   in step #2;   *
        *   4. a SELECT statement contains UNION   *
        *   ALL, where each branch references   *
        *   the common table expressions which   *
        *   are created in step #2 and #3   *
        *   respectively.   *
        *   *
        *   ABEND04E includes: *
        *   ABEND04E RC00E72018 DSNXSTSE 17E0;   *
        *   ABEND04E RC00C90101 DSNGDVRT 500B;   *
        *   *
        ****
        * RECOMMENDATION: *
        ****
        An incorrect output or various ABEND04E may occur when a query
        satisfies all of the following conditions:
        1. multiple common table expressions or side-way reference are
           involved;
        2. an OUTER JOIN is contained in one of the common table

```
     expression;
3. another common table expression contains UNION ALL where
   one branch references the common table expression which is
   created in step #2;
4. a SELECT statement contains UNION ALL, where each branch
   references the common table expression which are created
   in step #2 and #3 respectively.

ABEND04E includes:
ABEND04E RC00E72018 DSNXSTSE 17E0;
ABEND04E RC00C90101 DSNGDVRT 500B;

Example:
DDL:
CREATE TABLE TEST.T1(C1 char(2) NOT NULL, C2 char(5) NOT NULL);
CREATE TABLE TEST.T2(C1 char(2) NOT NULL, C2 char(5) NOT NULL);
INSERT INTO TEST.T1 VALUES('1A', '11ABC');
INSERT INTO TEST.T1 VALUES('1B', '12ABC');
INSERT INTO TEST.T2 VALUES('1A', '12ABC');
INSERT INTO TEST.T2 VALUES('1B', '11ABC');

For common table expression:
WITH
CTEA(CA1, CA2) AS (
 SELECT A.C1, B.C1
 FROM TEST.T1 AS A
         LEFT OUTER JOIN TEST.T2 AS B
         ON A.C2 = B.C2),
CTEB (CB1, CB2) AS (
 SELECT A.CA1, A.CA2
 FROM CTEA AS A
 UNION ALL
 SELECT B.C1, B.C2
 FROM TEST.T2 AS B)
(SELECT A.CA1, A.CA2
 FROM CTEA AS A
   UNION ALL
 SELECT B.CB1, B.CB2
 FROM CTEB AS B);

For side-way reference:
SELECT CA1, CB2
FROM TABLE (SELECT A.C1, B.C1
            FROM TEST.T1 AS A
            LEFT OUTER JOIN TEST.T2 AS B
            ON A.C2 = B.C2) AS CTEA(CA1, CA2),
     TABLE (SELECT CA1, CA2
            FROM TEST.T2 AS A
            WHERE CA1 = A.C1
              UNION ALL
            SELECT CA1, CA2
            FROM TEST.T2 AS B
            WHERE CA2 = B.C2) AS CTEB (CB1, CB2);

The aforementioned query could cause incorrect output.
DB2 is modified correctly to handle the incorrect output when a
```

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query is characterized with the aforementioned pattern.

Additional keywords: SQLOUTERJOIN SQLTABLEEXPR SQLUNIONALL
                          SQLCTE SQLSIDEWAY
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM25187
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM25187:

    See PM25187 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM25187 corrects a problem of an incorrect output or various
    ABEND04E may occur when a query satisfies all of the following
    conditions :
    1. multiple common table expressions or side-way reference
       are involved;
    2. an OUTER JOIN is contained in one of the common table
       expression;
    3. another common table expression contains UNION ALL where
       one branch references the common table expression which is
       created in step #2;
    4. a SELECT statement contains UNION ALL, where each branch
       references the common table expression which are created in
       in step #2 and #3 respectively.

    ABEND04E includes:
    ABEND04E RC00E72018 DSNXSTSE 17E0;
    ABEND04E RC00C90101 DSNGDVRT 500B;

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK63575 ------------

PROBLEM DESCRIPTION(S):
  PM21440 -
    ****
    * USERS AFFECTED: All DB2 for z/OS users using   *
    *   pairwise join and sparse index.   *
    ****
    * PROBLEM DESCRIPTION: ABEND04E RC00E70005 IN DSNXOTS M086   *
    *   may occur when starjoin is used.   *
    *   The reason is that one structure   *
    *   related to sparse index processing   *
    *   and starjoin is not based correctly.   *
    *   *
    *   SQLPAIRWISEJOIN SQLSTARJOIN   *
    *   SQLSPARSEINDEX   *

```
      ****************************************************************
      * RECOMMENDATION:                                             *
      ****************************************************************
      ABEND04E RC00E70005 IN DSNXOTS M086 may occur when star join
      is used.  The reason is that one structure related to sparse
      index processing and star join is not based correctly.
      The abend is fixed by basing the structure
      described above correctly.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM21440
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM21335:


    See PM21335 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM21335 corrects a problem of in which an inefficient index
    may be selected for the leading table in a query block.  This
    problem can occur if multiple highly selective candidate
    indexes exist.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM15389:

    See PM15389 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM15389 corrects a problem of an inefficient access path when
    OPTIMIZE FOR N ROWS or FETCH FIRST N ROWS ONLY is specified for
    a query containing subquery.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM13747:

    See PM13747 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM13747 corrects a problem of ABEND04E RC00E72018 in
    DSNXGRDS.DSNXSMRE+4EAA when sparse index is used.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
```

```
   ***Action for PM12924:

   See PM12924 APAR/PTF text for additional information about
   why a REBIND is necessary.

   PM12924 corrects a problem of a sub-optimal index chosen for
   a highly filtering query.

   To make this fix effective for a static application, it must be
   rebound after application of this PTF.  Review the PTF cover
   letter to determine which, if any, applications could be
   affected by this change.
.


------ COVER LETTER FOR PTF UK63602 ------------

PROBLEM DESCRIPTION(S):
  PM26881 -
    ****************************************************************
    * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS      *
    *                 and DB2 10 for z/OS users who have enabled  *
    *                 functionality of z/OS metrics to be included *
    *                 in the DB2 trace.                           *
    ****************************************************************
    * PROBLEM DESCRIPTION: IFCID 0001 - Data section QWS00RDO     *
    *                      z/OS METRICS shows zero values for the *
    *                      metrics related to DB2 if the          *
    *                      DB2 subsystem name is less than        *
    *                      4 characters.                          *
    ****************************************************************
    * RECOMMENDATION: Apply PTF when available.                   *
    ****************************************************************
    The filter that is used for identifying the address space names
    related to a specific DB2 system is not setup correctly if the
    subsystem name is less than 4 characters. This is because the
    trailing blanks in the subsystem name do not get handled in an
    appropriate way.
    Trace processing for z/OS metrics has been changed so that
    reporting is performed for DB2 subsystems without restriction to
    name of subsystem.
COMPONENT:  5740-XYR01-HIZ9910
APARS FIXED: PM26881
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR01 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    After installation of the PTF for APAR PM26881 it is
    recommended that the linklist be refreshed with the
    following MVS command:

    f lla,refresh
.


------ COVER LETTER FOR PTF UK63654 ------------
```

PROBLEM DESCRIPTION(S):
  PM00709 -
    ****
    * USERS AFFECTED: All users of DB2 who have queries containing *
    *   GROUP BY but no ORDER BY in table   *
    *   expressions or materialized views.   *
    ****
    * PROBLEM DESCRIPTION: Incorrect output (fewer rows than   *
    *   expected) may occur on a query   *
    *   containing a table expression or   *
    *   materialized view if the table   *
    *   expression or materialized view is sort *
    *   merge joined to another table.   *
    *   Specifically, an index with a   *
    *   descending column is used to implement *
    *   the GROUP BY in the table expression   *
    *   or view, and sort merge join is chosen *
    *   to join the table-exp/view to another   *
    *   table in order for this problem to be   *
    *   possible.   *
    ****
    * RECOMMENDATION: *
    ****
    Incorrect output (fewer rows than expected) may occur on a query
    containing a table expression or materialized view if the table
    expression or materialized view is joined by Sort Merge Join
    to another table. Specifically, for this problem to be
    possible, an index with a descending column is used to implement
    the GROUP BY in the table-exp/view because that column appears
    in the GROUP BY list, and Sort Merge Join is chosen to join the
    table-exp/view to another table.

    For example:

    SELECT T1 . C1 , Z
    FROM
    (SELECT C1
     FROM A
     WHERE C2 = 'EE') AS T1
    LEFT OUTER JOIN
    (SELECT A.C3 , SUM (S.C4) AS Z
     FROM S ,
          A ,
          J
     WHERE J.C1 = 'AA'
       AND S.C2 = 'XX'
       AND A.C3 > 0
       AND S.C1 = A.C1
       AND S.C3 = J.C2
       AND A.C2 = 'EE'
     GROUP BY A.C3) AS T2
    ON T1 . C1 = T2 . C3
    WHERE Z <> 0 ;

    Given index IX1 (C2, C3) on table A. Assume that column C3 is

defined as DESC in this index and it is used to implement the
GROUP BY on A.C3 in T2, if table expression T2 is Sort Merge
Joined to A from T1, then incorrect output can occur.

Additional Keywords:
SQLINCORR INCORROUT SQLINCORROUT SQLSMJ SQLMSJ SMJ MSJ
SQLTABLEEXPR SQLVIEW SQLGROUPBY
Code is changed to detect the situation described above and
ensure that a sort is done when required to match the order
of the descending index being used.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM00709
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM00709:

    See PM00709 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM00709 corrects a problem of possible incorrect output for
    a query involving a table expression or materialized view
    which is sort merge joined to another table. Specifically, the
    problem can occur if an index with a descending column is used
    to implement the GROUP BY in the table expression or view
    because that column appears in the GROUP BY list, and sort merge
    join is chosen to join the table expression/view to another
    table.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK63682 ------------

PROBLEM DESCRIPTION(S):
  PM22534 -
    ****
    * USERS AFFECTED: For DB2 for z/OS users who use star join.   *
    ****
    * PROBLEM DESCRIPTION: Storage overlay problem can happen when *
    *   star join is enabled and the number of *
    *   internal tables created by star join   *
    *   processing exceeds the max number of   *
    *   tables supported by DB2. The overlay   *
    *   problem can cause various abends, such   *
    *   as: *
    *   ABEND0C4-38 in DSNXOSL+1CCE   *
    *   ABEND04E RC00E20032 DSNSVSVB+156E   *
    *   ABEND0C4-10 DSNSVSGM+0A4C   *
    *   ABENDDC2-69004521   *
    *   ABEND04E RC00E20005   *

```
*                      DSNXSORI.DSNSVSVB+08F2                      *
*                      MEDIA MANAGER SERVICES(IDA0200T)ABEND       *
*                       S738, U0000, REGISTER 15 = 00000000        *
*                      ABEND0C4-3B DSNXOSJT+1298                    *
******************************************************************
* RECOMMENDATION:                                                 *
******************************************************************
    Storage overlay problem can happen when star join is enabled and
    the number of internal tables created by star join processing
    exceeds the max number of tables supported by DB2. The overlay
    problem can cause various abends.

    Additional Keywords:
    ABEND0C4 DSNXOSL SQLSTARJOIN SQLSTORAGE
    After this fix, if DB2 detects that the number of internal
    tables created by star join processing will exceed the max
    number of tables allowed by DB2, then DB2 will abandon star
    join processing and attempt a different access path.
    However, if DB2 cannot detect the problem in time, a sanity
    check is added as a serviceability aid to provide better
    diagnostics.  The sanity check abend will appear as
    ABEND04E RC00E70005 in DSNXOGP M101.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM22534
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    See PM22534 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM22534 corrects a storage overlay problem when star join is
    enabled and the number of internal tables created by star join
    processing exceeds the max number of tables supported by DB2.
    After the overlay occurs, various abends can happen.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM13779:

    See PM13779 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM13779 corrects a problem that incorrect output may be returned
    for a query with a row-value expression IN-subquery predicate
    when subsystem parameter OPTXQB=ON.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM13289:
```

See PM13289 APAR/PTF text for additional information about
why a REBIND is necessary.

PM13289 corrects a scenario in which incorrect output could be
produced for a query that contains a correlated subquery with
a correlation predicate that references two tables with
different CCSIDs.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK63874 ------------

PROBLEM DESCRIPTION(S):
  PM25906 -
    ****
    * USERS AFFECTED: All DB2 for z/OS 8, DB2 9, DB2 10 for z/OS   *
    *   users of join predicate containing UDF with *
    *   ALLOW PARALLEL attribute and paralleism plan *
    *   being used when query in executed.   *
    ****
    * PROBLEM DESCRIPTION: ABEND04E 00C90101 DSNIPSFI:5007   *
    *   and/or incorrect output may occur   *
    *   when query containing UDF with ALLOW   *
    *   PARALLEL attribute in join predicate   *
    *   runs in parallel.   *
    ****
    * RECOMMENDATION: *
    ****
    ABEND04E 00C90101 DSNIPSFI:5007 and/or incorrect output may
    occur when query containing UDF with ALLOW PARALLEL attribute
    in join predicate runs in parallel.
    Following is an example of such failing scenario:
    SELECT ...
      FROM T1
     ... JOIN T2
        ON T1.C1 = UDF1(T2.C1)
      ...
    CREATE UDF1 ... ALLOW PARALLEL
    DB2 is fixed to process the udf join predicate with ALLOW
    PARALLEL attribute in parallel group correctly.

    Additional keywords: SQLUDF PARALLELISM SQLPARALLELISM
                         DEGREEANY SQLINCORRECTOUT SQLINCORR
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM25906
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM25906:

See PM25906 APAR/PTF text for additional information about
why a REBIND is necessary.

PM25906 corrects a problem of ABEND04E 00C90101 DSNIPSFI:5007
and/or incorrect output when query containing udf with ALLOW
PARALLEL attribute in join predicat runs in parallel.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
  DB2BIND:
    See PK93237 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PK93237 corrects a problem that can cause incorrectout
    for query containing NOT BETWEEN predicate.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PK90182:

    See PK90182 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PK90182 corrects a problem of incorrect output when query
    contains outer join and correlated subquery predicate with
    correlated column has different data type/len/nullability
    than other side.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK63966 ------------

PROBLEM DESCRIPTION(S):
  PM20612 -
    ****
    * USERS AFFECTED: All DB2 Version 9 for z/OS users that   *
    *   run CATMAINT UPDATE for migration   *
    ****
    * PROBLEM DESCRIPTION: CATMAINT utility received ABEND04E   *
    *   RC00E40601 in DSNUEXDL+113C during   *
    *   migration to DB2 Version 9.   *
    ****
    * RECOMMENDATION: *
    ****
    CATMAINT utility received ABEND04E RC00E40601 at DSNUEXDL+113C

during migration to DB2 Version 9. For each release, DB2 creates
new catalog indexes. If the new index space names that DB2 is
going to use already exist in system, CATMAINT abends and
returns SQLCODE -601.
DB2 has been updated so that the CATMAINT utility will provide
more serviceability tokens when a non-zero SQLCODE is returned.

This PTF updated the DSNU778I and DSNU758I message.

Additional Keywords:
OFFSET113C
SQLCODE601
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM20612
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    This PTF added SQLCA.SQLERRP and SQLCA.SQLERRD to
    DSNU778I and DSNU758I.

    Here is a copy of the ++HOLD DOC R910:
    ====================================
    Message DSNU778I and DSNU758I are updated in the Messages and
    Codes.

    ****
    * DSNU778I *
    ****
    csect-name - ERROR PROCESSING SQL STATEMENT -
    SQL CODE IS: sql-code
    SQL MESSAGE TEXT: message-text
    SQL STATEMENT: sql-statement
    SQLERRP: sqlerrp
    SQLERRD: sqlerrd1 sqlerrd2 sqlerrd3 sqlerrd4 sqlerrd5 sqlerrd6

    Explanation:
    A utility terminated abnormally in the DB2 database services
    address space (ssnmDBM1) during CATMAINT UPDATE processing. The
    message-text indicates the problem with the SQL statement.
    The problem SQL statement sql-statement is also displayed.
    SQLERRP The name of the procedure that detected the error.
    SQLERRD Each field contains a value that indicates the number
    of rows that qualified for the SQL statement, the number of
    rows in the result table, a rough estimate of required
    resources, or an internal error code.

    For a complete description of sqlerrp, sqlerrm, and the sqlerrd
    fields, see the description of SQLCA fields in SQL Reference.

    System action:
    Utility processing terminates abnormally.

    User response:
    This message is followed by an abend04E RC00E40601. The sql-code
    message-text, and sql-statement listed in this message are

probably sufficient to diagnose and correct the problem. See the
problem determination text of RC00E40601 for additional
information.

Severity: 0 (informational)

****
* DSNU758I *
****
csect-name - WARNING DURING PROCESSING OF SQL STATEMENT –
SQLCODE IS: sql-code
SQL MESSAGE TEXT: message-text.
SQL STATEMENT: sql-statement
SQLERRP: sqlerrp
SQLERRD: sqlerrd1 sqlerrd2 sqlerrd3 sqlerrd4 sqlerrd5 sqlerrd6

Explanation:
CATMAINT executed an SQL statement as part of CATMAINT UPDATE
processing. DB2 returned a non-zero SQLCODE. This message does
not indicate a problem in the CATMAINT process.
SQLERRP The name of the procedure that detected the error.
SQLERRD Each field contains a value that indicates the number of
rows that qualified for the SQL statement,the number of rows in
the result table, a rough estimate of required resources, or an
internal error code.

For a complete description of sqlerrp, sqlerrm, and the sqlerrd
see the description of SQLCA fields in SQL Reference.

System action:
Utility processing continues normally.

Severity: 0 (informational)
.

------ COVER LETTER FOR PTF UK63972 ------------

PROBLEM DESCRIPTION(S):
  PM24808 -
    ****
    * USERS AFFECTED: All users of the installation process for   *
    *   DB2 Version 9.1 for z/OS and DB2 Version   *
    *   10 for z/OS are affected by this change.   *
    ****
    * PROBLEM DESCRIPTION: Customers using the DB2 for z/OS   *
    *   installation process can encounter one *
    *   or more of the following issues: *
    *   *
    *   (1) Installation job DSNTIJCA fails   *
    *   with a JCL error and the message: *
    *   IEF212I DSNTIJCA DSNTCAT CAT –   *
    *   DATA SET NOT FOUND   *
    *   when the VOL/SER for VSAM CATALOG,   *
    *   DEFAULT, AND WORK FILE DATABASE   *
    *   field on install panel DSNTIPA3   *

```
*                               is blank.                        *
*                                                                *
*             (2) IVP job DSNTEJ3M fails in job step             *
*                 PH03MS07 with return code 8 and the            *
*                 message:                                       *
*                    DSNT408I SQLCODE = -219, ERROR:             *
*                            THE REQUIRED EXPLANATION            *
*                            TABLE DSN81010.PLAN_TABLE           *
*                            DOES NOT EXIST                      *
*                                                                *
*             (3) V9 only: When editing job DSNTIJEN,           *
*                 the DB2 installation CLIST does not            *
*                 apply values specified in the IMAGE           *
*                 COPY field on panel DSNTIP00 to the           *
*                 image copy TEMPLATE for the                    *
*                 SYSPKAGE table space in job step              *
*                 ENFM0117.                                      *
*                                                                *
*             (4) V10 only: One or both of the                  *
*                 following errors occur when using             *
*                 installation job DSNTIJRT program             *
*                 DSNTRIN to create and configure               *
*                 DB2-supplied stored procedures and            *
*                 user-defined functions:                        *
*                                                                *
*                 * The SYSPROC.DSNACCOX stored                 *
*                   procedure is created with                    *
*                   deprecated names for three                   *
*                   parameters:                                  *
*                                                                *
*                   Deprecated Name    Preferred Name           *
*                   ---------------    --------------           *
*                   UNUSED             SPECIALPARM              *
*                   SRIINSDELUPDPCT    SRIINSDELPCT             *
*                   SRIINSDELUPDABS    SRIINSDELABS             *
*                                                                *
*                   Use of the deprecated names has            *
*                   no impact on calling an existing            *
*                   instance of SYSPROC.DSNACCOX but           *
*                   the preferred names should be              *
*                   used when creating a new                    *
*                   instance.                                   *
*                                                                *
*                 * When DSNTRIN is run in PREVIEW              *
*                   mode, it can generate (and write           *
*                   to the JCLOUT DD) a duplicate              *
*                   INSERT statement for populating            *
*                   the SYSIBMTS.SYSTEXTDEFAULTS              *
*                   table with a NAME value of                 *
*                   'UPDATEWITHBACKUP'.  This results          *
*                   in SQLCODE -803 if the duplicate           *
*                   statements are processed.                   *
*                                                                *
*             (5) V10 only: One or more of the                  *
*                 following errors occurs when using           *
*                 installation job DSNTIJRV program            *
```

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```
*                           DSNTRVFY to validate DB2-supplied    *
*                           stored procedures and UDFs:          *
*                                                                *
*                           * DSNTRVFY ends with return code 4   *
*                             and the message:                   *
*                               DSNT042I DSNTRVFY - THE          *
*                                        COLLECTION ID USED TO   *
*                                        BIND THE PACKAGE DOES    *
*                                        NOT MATCH THE            *
*                                        COLLECTTION ID DEFINED  *
*                                        IN SYSIBM.SYSROUTINES    *
*                             even when the collection ID        *
*                             matches.                           *
*                                                                *
*                           * DSNTRVFY ends with return code 8   *
*                             and the message:                   *
*                               DSNT408I SQLCODE = -300, ERROR:  *
*                                        THE STRING CONTAINED    *
*                                        IN HOST VARIABLE OR      *
*                                        PARAMETER token IS NOT  *
*                                        NUL-TERMINATED          *
*                                                                *
*                           * DSNTRVFY ends with return code 8   *
*                             and the message:                   *
*                               DSNT048I DSNTRVFY - THE DD       *
*                                        STATEMENT DD:ddname     *
*                                        WAS NOT FOUND           *
*                             when used to validate the          *
*                             DB2-supplied Java routines          *
*                             (SYSPROC.XSR_COMPLETE and          *
*                             SYSFUN.SYSTS_ENCRYPT).             *
*                                                                *
*                       (6) V10 only: The SECTNOI and VERSION    *
*                           columns are missing from the         *
*                           DSN_COLDIST_TABLE and                *
*                           DSN_KEYTGTDIST_TABLE tables          *
*                           created using installation job       *
*                           DSNTIJSG and sample DDL member       *
*                           DSNTESC.                             *
*                                                                *
*                       (7) V10 only: Job DSNTEJ6I terminates    *
*                           in job step DSNADMSB with return     *
*                           code 12 and these messages:          *
*                             DSNE248A COMMAND ENTERED           *
*                                      CONTAINS INVALID          *
*                                      CHARACTERS, RESPECIFY     *
*                             IKJ56641I DSN      ENDED DUE TO    *
*                                      ERROR+                    *
*                             IKJ56641I SYSTEM ABEND CODE 001    *
*                                      REASON CODE 00000000      *
******************************************************************
* RECOMMENDATION:                                                *
******************************************************************
This APAR concerns the following DB2 for z/OS installation
issues:
(1) Job DSNTIJCA can terminate with a JCL error
```

The customized version of installation job DSNTIJCA (defines
the ICF catalog for DB2 system data sets) fails with a JCL
error and the message:
   IEF212I DSNTIJCA DSNTCAT CAT - DATA SET NOT FOUND
when the VOL/SER entry for the VSAM CATALOG, DEFAULT, AND
WORK FILE DATABASE field on install panel DSNTIPA3 is blank.
The error occurs because the CAT DD statement is allocated
as DISP=OLD on UNIT=SYSDA but contains no VOL=SER clause.
The error is introduced during customization of DSNTIJCA by
the DB2 installation CLIST.

(2) Job DSNTEJ3M fails because the PLAN_TABLE is not available

    Installation verification procedure (IVP) job DSNTEJ3M fails
    in job step PH03MS07 with return code 8 and the message:
      DSNT408I: SQLCODE = -219, ERROR: THE REQUIRED EXPLANATION
                TABLE DSN81010.PLAN_TABLE DOES NOT EXIST
    if you have not completed a previous step of the IVP, which
    is to create the sample EXPLAIN tables as part of testing
    the SPUFI tool. The discussion of DSNTEJ3M in the DB2
    Installation Guide calls attention to the requirement for
    the PLAN_TABLE. However, the job itself contains no
    notice.

(3) The COPY TEMPLATE in job DSNTIJEN job step ENFM0117 is not
    customized by the installation CLIST.

    In DB2 V9 only, during customization of the enabling new-
    function job, DSNTIJEN, the installation CLIST does not
    apply the values specified in the IMAGE COPY fields on
    panel DSNTIP00 to the image copy TEMPLATE for the SYSPKAGE
    table space in job step ENFM0117. The error is caused by
    missing logic in the installation CLIST.

(4) Errors installing and configuring DB2-supplied routines

    In V10 only, during installation and configuration of
    DB2-supplied stored procedures and UDFs using job DSNTIJRT
    program DSNTRIN, one or both of the following errors can
    occur:
    * The SYSPROC.DSNACCOX stored procedure is created with
      deprecated names for three parameters:

        Deprecated Name   Preferred Name
        ---------------   --------------
        UNUSED   SPECIALPARM
        SRIINSDELUPDPCT   SRIINSDELPCT
        SRIINSDELUPDABS   SRIINSDELABS

      Use of the deprecated names has no impact on calling
      SYSPROC.DSNACCOX but the preferred names should be used
      by DSNTRIN.

    * When DSNTRIN is run in a PREVIEW mode, that is one of
      the following:

```
      MODE(INSTALL-PREVIEW)
      MODE(REINSTALL-PREVIEW)
      MODE(REINITIALIZE-PREVIEW)
```
it generates but does not process DDL and BIND statements
to create, configure, bind, and grant access to
to DB2-supplied routines and supporting objects such as
databases, CGTTs, and packages. Instead, the generated
statements are written to the JCLOUT DD for review and
optional processing by the user.

Currently, when run in a PREVIEW mode, DSNTRIN can
generate and write a duplicate INSERT statement for
initializing the SYSIBMTS.SYSTEXTDEFAULTS table, to add
a row with a NAME value of 'UPDATEWITHBACKUP'. If the
duplicate statement are processed, the result is an
SQLCODE -803.

(5) Errors validating DB2-supplied routines

In V10 only, during validation of DB2-supplied stored
procedures and UDFs using job DSNTIJRV program DSNTRVFY, one
of the following errors can occur:
* DSNTRVFY ends with return code 4 and the message:
    DSNT042I DSNTRVFY - THE COLLECTION ID USED TO BIND
              THE PACKAGE DOES NOT MATCH THE COLLECTION ID
              DEFINED IN SYSIBM.SYSROUTINES
even when the collection ID matches. The error occurs
because DSNTRVFY currently does not trim trailing blanks
from VARCHAR columns accessed by internal queries on the
DB2 catalog.

* DSNTRVFY ends with return code 8 and the message:
    DSNT408I SQLCODE = -300, ERROR: THE STRING CONTAINED
              IN HOST VARIABLE OR PARAMETER token IS NOT
              NUL-TERMINATED
The error occurs because DSNTRVFY currently does not
reinitilize certain variables prior to reuse.

* DSNTRVFY ends with return code 8 and the message:
    DSNT048I DSNTRVFY - THE DD STATEMENT DD:ddname WAS
              NOT FOUND
The error occurs because DSNTRVFY currently does not
correctly convert DD names used in Java WLM environments
from Unicode to EBCDIC.

(6) The SECTNOI and VERSION columns are missing from new EXPLAIN
    tables DSN_COLDIST_TABLE and DSN_KEYTGTDIST_TABLE.

In V10 only, new DB2 EXPLAIN tables called DSN_COLDIST_TABLE
and DSN_KEYTGTDIST_TABLE are introduced.
* Installation job DSNTIJSG can be used to create these
  tables in the SYSIBM schema as part of installing the DB2
  query optimization database.
* Sample DDL member DSNTESC can be used to create these
  tables in the V10 samples schema, DSN81010, as part of
  creating the sample EXPLAIN database

Currently, the CREATE statements for these tables in both
DSNTIJSG and DSNTESC do not include the SECTNOI and VERSION
columns.

(7) Job DSNTEJ6I abends because of errors in the RUN statement

In V10 only, job DSNTEJ6I can be used to execute program
DSNADMSB which calls the SYSPROC.ADMIN_INFO_SQL stored
procedure to obtain diagnostic and performce information
from DB2. DSNADMSB runs under control of the DB2 DSN
command processor. Currently, the RUN PROGRAM statement
for DSNADMSB contains an extraneous trailing hyphen. This
causes the DSNADMSB to terminate with return code 12 and
these messages:
   DSNE248A COMMAND ENTERED CONTAINS INVALID CHARACTERS,
            RESPECIFY
   IKJ56641I DSN   ENDED DUE TO ERROR+
   IKJ56641I SYSTEM ABEND CODE 001   REASON CODE 00000000

Additional keywords: SQLCODE803, SQLCODE219, SQLCODE300
In response, the following changes are made:
(1) Job DSNTIJCA can terminate with a JCL error

The DB2 installation CLIST is corrected to remove the CAT
DD statement entirely from job DSNTIJCA when the VOL/SER
entry for the VSAM CATALOG, DEFAULT, AND WORK FILE DATABASE
field on install panel DSNTIPA3 is blank. In this situation,
the install CLIST will also remove the FILE(CAT) clause from
the DEFINE UCAT statement. These changes will prevent
DSNTIJCA from terminating with a JCL error.

(2) Job DSNTEJ3M fails because the PLAN_TABLE is not available

The following notice is added to the prolog of job DSNTEJ3M:

   THIS JOB REQUIRES USE OF THE SAMPLE PLAN_TABLE. IF THIS
   TABLE DOES NOT ALREADY EXIST, USE THE DDL IN SAMPLE MEMBER
   DSNTESC TO CREATE IT.

This notice will call attention to the need to provide a
PLAN_TABLE prior to running DSNTEJ3M.

(3) The COPY TEMPLATE in job DSNTIJEN job step ENFM0117 is not
customized by the installation CLIST.

This problem occurs only in DB2 V9.

The V9 installation CLIST is corrected to customize this
TEMPLATE according to the values specified in the IMAGE COPY
fields on panel DSNTIP00.

(4) Errors installing and configuring DB2-supplied routines

These problems pertain only to DB2 V10.

The DSNTRIN program is corrected as follows:

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* The CREATE statement for the SYSPROC.DSNACCOX stored
  procedure is modified to use preferred rather than
  deprecated parameter names. Note that existing instances
  of SYSPROC.DSNACCOX and their callers are unaffected and
  can continue to use the deprecated parameter names.

* Duplicate INSERT statements for initializing the
  SYSIBMTS.SYSTEXTDEFAULTS table are no longer generated.

(5) Errors validating DB2-supplied routines

These problems pertain only to DB2 V10.

The DSNTRVFY program is corrected as follows:
* Catalog queries are modified to STRIP data selected from
  VARCHAR columns in order to prevent problems caused by
  trailing blanks.

* Variables are reinitialized before reuse in order to
  prevent errors caused by strings that are not NUL
  terminated.

* Conversion of DD names in Java WLM environments from
  Unicode to EBCDIC is fixed in order to prevent these DDs
  from incorrectly reported as missing.

(6) The SECTNOI and VERSION columns are missing from new EXPLAIN
    tables DSN_COLDIST_TABLE and DSN_KEYTGTDIST_TABLE.

This problem pertains only to DB2 V10.

The CREATE statements for these tables in installation job
DSNTIJSG and sample DDL member DSNTESC are updated to
specify the missing columns. Existing instances of these
tables need to be dropped and recreated.

(7) Job DSNTEJ6I abends because of errors in the RUN statement

This problem pertains only in DB2 V10.

The extraneous hyphen (-) is removed from the RUN PROGRAM
statement in order to prevent the request for program
DSNADMSB from failing.
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APARS FIXED: PM24808
SPECIAL CONDITIONS:
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  ACTION:
    ***Actions for PM24808 (V9)

  This PTF makes the following changes:
  - Fixes an error in the DB2 installation CLIST that can cause
    job DSNTIJCA to terminate with a JCL error when no disk
    volume is given as the destination for the ICF user catalog
    for DB2 system data sets.

- Fixes another error in the DB2 installation CLIST editing of
  job DSNTIJEN that prevents the COPY TEMPLATE statement from
  being configured correctly.
- Adds a notice to sample job DSNTEJ3M that the PLAN_TABLE is
  required.

If you have already installed or migrated to DB2 V9 then after
applying this PTF, you need to take one or more of the following
actions:
(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJCA
(3) Update your customized copy of job DSNTEJ3M
(4) Update your custimized copy of job DSNTIJEN

These actions are detailed below.
----
(1) Update customized copies of DB2 installation CLIST members
----
==> This action is required for all V9 customers

    This PTF modifies CLIST members DSNTINS1 and DSNTINS3 in the
    SDSNCLST target library only.
    You need to redo any record format changes and reapply any
    tailoring you have done to your copies of these CLISTs.
    You may also want to move them to the prefix.NEW.SDSNCLST
    data set, where the CLISTs processed by job DSNTIJVC reside.

----
(2) Update your customized copy of job DSNTIJCA

==> This action is optional for V9 customers who maintain
    a customized copy of DSNTIJCA

    This PTF corrects a bug in the DB2 installation CLIST that
    can result in a JCL error in DSNTIJCA when the VOL/SER for
    VSAM CATALOG, DEFAULT, AND WORK FILE DATABASE field on
    install panel DSNTIPA3 is blank.

    After applying this PTF, review your customized copy of
    DSNTIJCA. If the CAT DD does not contain a VOL=SER
    parameter, delete it and also delete the FILE(CAT) option
    from the DEFINE UCAT statement.

----
(3) Update your customized copy of job DSNTEJ3M

==> This action is optional for V9 customers who maintain
    a customized copy of DSNTEJ3M

    This PTF modifies DSNTEJ3M in the SDSNSAMP target library
    only. Modify your customized copy of DSNTEJ3M as follows:
    * In the job prolog, add the following comment

       THIS JOB REQUIRES USE OF THE SAMPLE PLAN_TABLE. IF THIS
       TABLE DOES NOT ALREADY EXIST, USE THE DDL IN SAMPLE MEMBER
       DSNTESC TO CREATE IT.

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```
      * Save your changes


      ----------------------------------------------------------------
      (4) Update your customized copy of job DSNTIJEN
      ----------------------------------------------------------------
      ==> This action is optional for V9 customers who maintain
          a customized copy of DSNTIJEN

          This PTF corrects a bug in the DB2 installation CLIST that
          prevents the TEMPLATE for the COPY statment in job step
          ENFM0117 from being customized with the device name and
          SMS classes specified on installation panel DSNTIP00.

          After applying this PTF, review your customized copy of
          DSNTIJEN and locate job step ENFM0117.  Verify that the
          TEMPLATE for the COPY statement is configured with the
          desired device name (and SMS classes if applicable).
.



   ------ COVER LETTER FOR PTF UK63999 ------------


PROBLEM DESCRIPTION(S):
  PM26252 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS users who exploit       *
    *                 index-on-expression in their queries.      *
    ****************************************************************
    * PROBLEM DESCRIPTION: Incorrect output might occur when     *
    *                      a predicate is chosen as a screening  *
    *                      predicate and this predicate involves *
    *                      an index on expression on both        *
    *                      the left hand side and right hand     *
    *                      side.                                 *
    ****************************************************************
    * RECOMMENDATION:                                           *
    ****************************************************************
    If a predicate involves index on expression (IOE) on both the
    left hand side and right hand side, it cannot be chosen
    as a screening predicate.
    Otherwise, incorrect output might occur.

    For example:
      SELECT *
      FROM T T1, T T2
      WHERE  T1.C1 + T1.C2 = T2.C1 + T2.C2;

        When T2 is the inner table of the join, and we have IOE on
        T(C3/C4, C1+ C2), the join predicate
        T1.C1 + T1.C2 = T2.C1 + T2.C2
        is not be able to act as a screening predicate.

    DB2 will avoid choosing a predicate which has an
    index on expression on both the left hand side and right hand
    side as a screening predicate so that incorrect output
```

is avoided.

Additional Keywords:
SQLINCORR SQLINCORROUT INCORROUT SQLINDEXONEXP

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APARS FIXED: PM26252
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM26252 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM26252 corrects an access path problem when the index is an
    index-on-expression, and a column-to-column join predicate
    is used as a screening predicate. This might lead to
    incorrect output.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM22405:

    See PM22405 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM22405 corrects a problem in which optimizer may calculate an
    incorrect index matching filter factor.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM22265:

    See PM22265 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM22265 corrects a problem of inaccurate cost estimation for an
    index on the inner table of a join.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PM18562 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM18562 fixes an incorrect output problem when an
    index-on-expression is used in an IN-subquery predicate
    on the inner table of a left join.

```
        To make this fix effective for a static application, it must be
        rebound after application of this PTF.  Review the PTF cover
        letter to determine which, if any, applications could be
        affected by this change.
.



        ------ COVER LETTER FOR PTF UK64175 ------------

PROBLEM DESCRIPTION(S):
  PM21346 -
     ****************************************************************
     * USERS AFFECTED: All DB2 for zOS v9 and v10 users who        *
     *                 perform alter table to create data          *
     *                 versioning                                  *
     ****************************************************************
     * PROBLEM DESCRIPTION: High storage usage for DB2 DBM1 address *
     *                      space with many DVS and DVVL blocks     *
     *                      that have not been freed at physical    *
     *                      close.                                  *
     ****************************************************************
     * RECOMMENDATION:                                              *
     ****************************************************************
     High private storage usage was seen for the DBM1 address space
     with a large BB1RMID pool. This is due to many DVS (data
     versioning storage) blocks with orphaned DVV blocks that have
     not been cleaned up and freed at data set physical close time.
     This problem only happens when partitioned table spaces
     are physically opened/closed at the partition level.
     DB2 code was changed to free the empty DVS block when the
     partitioned table spaces are physically closed at partition
     level.
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APARS FIXED: PM21346
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  DOCUMENTATION:
    ***Documentation for PK98850:

    See PK98850 APAR/PTF text for additional information.

    This APAR/PTF updated the Messages and Codes book to describe
    existing message DSNU1239I as follows:

    DSNU1239I
    csect-name - VERSION version-number OBDREC WAS NOT FOUND IN
    OBID obid

    Explanation
    The version information for the record being unloaded is
    unavailable in the OBD and/or the system pages from the
    image copy are not available.

    System action
```

The record in error will not be unloaded to the output data set. The UNLOAD utility continues until the total number of records in error reaches the value specified by the MAXERR option (the default is 1).

If the total number of records reaches the MAXERR value, the UNLOAD utility issues the DSNU1219I message and terminates with the return code 8.

Problem determination
This message is issued when the version information for a record being unloaded from an image copy is not available in the OBD or the system pages found in the image copy. This could occur if the SYSTEM PAGEs are not available in the image copy or if MODIFY RECOVERY had been run to delete the version 0 OBD information

User response
UNLOAD from an image copy requires that the image copy data set was taken with the SYSTEMPAGES YES option on the COPY utility statement. UNLOAD needs the system pages to unload versioned data.

If the DDL including ALTERs of the table at the time the image copy was taken is available, users are recommended to do the following to rebuild OBD information:

1. Recreate the table to the same state it was at the time the image copy was taken.
2. DSN1COPY with OBDIXLAT may need to be used to update the dbid, psid, obid information in the image copy to match with the newly recreated table.
3. UNLOAD from the updated image copy.

Severity
4 (Warning)
ACTION:
  ***Action for PK98850:

See PK98850 APAR/PTF text for additional information.

This APAR/PTF changes the behavior of UNLOAD from an image copy to issue message MSGDSNU1239I when the version information for version 0 records is not available in the OBD or the image copy due to operations such as MODIFY RECOVERY which may delete the prime OBD (version 0) information.

Users who use UNLOAD from an image copy to retrieve archived data from image copies should also save their CREATE and ALTER DDL statements at the time the image copy is taken. When the data needs to be retrieved with UNLOAD from an image copy the DDL at the time of the image copy can be used to recreate the table to the same level it was when the image copy was taken. This procedure is needed by UNLOAD to retrieve the version information when it is no longer available in the OBD or SYSTEM PAGEs in the image copy.

.

```
------ COVER LETTER FOR PTF UK64187 ------------

PROBLEM DESCRIPTION(S):
  PM24273 -
    ****************************************************************
    * USERS AFFECTED: All DB2 8 and DB2 9 users who have         *
    *                 predicates that may trigger transitive     *
    *                 closure between datetime and string        *
    *                 operands with different encoding schemes.  *
    *                                                            *
    *                 All DB2 9 users who have IN or EXISTS       *
    *                 subquery predicates when the global        *
    *                 optimization is enabled by the system      *
    *                 parameter OPTXQB=YES.                      *
    ****************************************************************
    * PROBLEM DESCRIPTION: A query may receive incorrect output  *
    *                 if the query meet the following           *
    *                 conditions:                               *
    *                                                            *
    *                 1. On DB2 8 and DB2 9, a transitive        *
    *                    closure predicate is generated         *
    *                    that involves datetime and string      *
    *                    operands with different encoding       *
    *                    schemes.                               *
    *                                                            *
    *                 2. On DB2 9, a transitive closure          *
    *                    predicate is generated that involves  *
    *                    a global optimization predicate.       *
    *                    A global optimization predicate may   *
    *                    be generated if the global            *
    *                    optimization is enabled by the        *
    *                    system parameter OPTXQB=YES and        *
    *                    there is an IN or EXISTS subquery      *
    *                    predicate.                            *
    ****************************************************************
    * RECOMMENDATION:                                           *
    ****************************************************************
    A query may receive incorrect output if the query meet the
    following conditions:

    1. On DB2 8 and DB2 9, a transitive closure predicate (TCP)
       is generated that involves datetime and string operands
       with different encoding schemes.

    2. On DB2 9, a transitive closure predicate (TCP) is generated
       that involves a global optimization predicate (GOP). A
       global optimization predicate (GOP) may be generated if the
       global optimization is enabled by the system parameter
       OPTXQB=YES and there is an IN or EXISTS subquery predicate.

    Example for #1 that may cause an incorrect output:

       CREATE TABLE TE(STRING1 CHAR(10),
```

```
                          DATE1   DATE) CCSID EBCDIC;
        CREATE TABLE TU(STRING1 CHAR(10),
                          DATE1   DATE) CCSID UNICODE;


        INSERT INTO TE VALUES('10/12/2010', '2010-10-12');
        INSERT INTO TU VALUES('10/12/2010', '2010-10-12');


        SELECT 1 FROM TE, TU
          WHERE TE.STRING1 = TU.DATE1 AND  <--  evaluate in date
                TU.DATE1 > '2010/10/10';   <--  evaluate in date


        TCP ==> TE.STRING1 > '2010/10/10'  <--  evaluate in date
```

   The above TCP, which is evaluated in date, is processed
   erroneously because of different encoding schemes.

   The EXPLAIN table can be used to determine whether such a
   TCP has been generated.

   Example for #2 that may cause an incorrect output:

```
        CREATE TABLE T1(C1 CHAR(10));
        CREATE TABLE T2(C1 CHAR(10));
        CREATE TABLE T3(C1 CHAR(10));

        SELECT 1 FROM T1, T2
          WHERE T1.C1 = T2.C1 AND
                T1.C1 IN (SELECT T3.C1 FROM T3);

          GOP ==> T1.C1 = DSNWFQB(02).C1
          TCP ==> T2.C1 = DSNWFQB(02).C1
```

   The above TCP may not be processed correctly that could cause
   an incorrect output.

   The EXPLAIN table can be used to determine whether such a
   GOP and TCP have been generated.
   DB2 has been modified to ensure the above example queries
   return the correct result.

   Additional keywords: INCORROUT SQLINCORROUT OPTXQB
                        SQLOPTXQB SQLACCESSPATH SQLTRANSITIVE
                        SQLCLOSURE SQLGLOBALOPT SQLIN SQLEXISTS
                        SQLPREDICATE SQLDATETIME SQLSTRING
                        SQLENCODING SQLCCSID
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM24273
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  DB2BIND:
    ***Action for PM24273:

    See PM24273 APAR/PTF text for additional information about
    why a REBIND is necessary.

PM24273 corrects a problem of possible incorrect output if
a transitive closure predicate is generated that involves
a global optimization predicate. A global optimization
predicate may be generated if the global optimization is
enabled by the system parameter OPTXQB=YES and there is an
IN or EXISTS subquery predicate.

PM24273 also corrects a problem of possible incorrect output if
a transitive closure predicate is generated that involves
datetime and string operands with different encoding schemes.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM14949:

  See PM14949 APAR/PTF text for additional information about
  why a REBIND is necessary.

  An ABEND04E RC00E70005 can occur at location DSNXGDT2 M201 or at
  location DSNXOTCP M133 (both bindtime failures) or less rows
  than expected can be returned (a runtime symptom) for a query
  that satisfies the following conditions.

   1.   The query contains a VIEW or table expression that contains
        a UNION ALL.

   2.   The query contains a predicate that references a host
        variable or a parameter marker.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PM14487:

  See PM14487 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM14487 corrects a problem of (

  Access path with poor performance may be generated for an SQL
  statement that satisfies the following conditions:

  1.The statement contains a correlated subquery.

  2.The predicates within the correlated subquery should trigger
    transitive closure predicates to be generated.

).

```
    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.


------ COVER LETTER FOR PTF UK64188 ------------

PROBLEM DESCRIPTION(S):
  PM27911 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS users of REPAIR SET      *
    *                 INDEX(ALL)/INDEXSPACE(ALL) TABLESPACE       *
    *                 RBDPEND/PSRBDPEND.                          *
    ****************************************************************
    * PROBLEM DESCRIPTION: MSGDSNU070I during REPAIR SET          *
    *                      INDEX(ALL) TABLESPACE RBDPEND.         *
    ****************************************************************
    * RECOMMENDATION: Apply corrective PTF when available.        *
    ****************************************************************
    DSNU070I - KEYWORD OR OPERAND 'RBDPEND' INVALID WITH
    'TABLESPACE' was issued when REPAIR SET INDEX(ALL)
    TABLESPACE dbname.tsname RBDPEND. It is because we do the
    check for tablespace if SET RBDPEND. The same problem could
    also occur for INDEXSPACE(ALL) and SET PSRBDPEND.
    Code has been modified to correct the reported problem.
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APARS FIXED: PM27911
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    DB2 Version 9 for z/OS Utility Guide and Reference (SC18-9855)
    will be updated to add two new keywords, RBDPEND and PSRBDPEND:


     ---INDEX-+-(index-name)-+-------------+-+--+-NOCOPYPEND------+-
              |              '-PART-integer' | +-NORCVRPEND------+
              '-(-ALL-)-| table-space-spec |-+  +-NORBDPEND-------+
                                               +-NOCHECKPEND-----+
                                               +-NOAREORPENDSTAR-+
     |                                         +-RBDPEND---------+
     |                                         '-PSRBDPEND-------'


     | RBDPEND
     | Specifies that the REBUILD-pending (RBDP) status is to be set
     | on the specified index.


     | PSRBDPEND
     | Specifies that the PAGE SET REBUILD-pending (PSRBDP) status
     | is to be set on the specified index.
     |
     | For more information on RBDP and PSRBDP states, refer to the
     | "Advisory or restrictive states" topic in the IBM Information
     | Management Software for z/OS Solutions Information Center.
.
```

```
------ COVER LETTER FOR PTF UK64225 ------------

PROBLEM DESCRIPTION(S):
  PM27722 -
     ****************************************************************
     * USERS AFFECTED: All Distributed Data Facility (DDF) users.  *
     ****************************************************************
     * PROBLEM DESCRIPTION: The following abend may occur on a DB2  *
     *                      for z/OS requester system when an       *
     *                      application calls a remote stored       *
     *                      procedure:                              *
     *                       . ABEND04E RC00D35011                  *
     *                          LOC=DSNLXGLM.DSNLXRSL:0065           *
     ****************************************************************
     * RECOMMENDATION:                                             *
     ****************************************************************
     An application on a DB2 for z/OS requester connects to a remote
     server and subsequently calls a stored procedure.  During call
     processing, DB2 attempts to reference information about the
     remote server, but due to timing conditions, does so
     incorrectly.  This results in the reported ABEND04E RC00D35011
     LOC=DSNLXGLM.DSNLXRSL:0065.
     DB2 requester code has been changed to get server information
     correctly.
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APARS FIXED: PM27722
SPECIAL CONDITIONS:
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  ACTION:
     ***Action for PK73600:
     Before applying this change for APAR PK73600 to any DB2 z/OS
     V8 or V9 subsystems, users must ensure that all remotely
     accessed DB2 z/OS V7 subsystems, if any, have APAR PK13896
     (PTF UK08627) applied.
     See PK73600 APAR/PTF text for additional information.
.


------ COVER LETTER FOR PTF UK64321 ------------

PROBLEM DESCRIPTION(S):
  PM25185 -
     ****************************************************************
     * USERS AFFECTED: All DB2 for z/OS V8 users, all DB2 9 for     *
     *                 z/OS users and all DB2 10 for z/OS users     *
     *                 of RUNSTATS TABLESPACE TABLE with COLGROUP   *
     *                 specified.                                   *
     ****************************************************************
     * PROBLEM DESCRIPTION: INCORROUT in MSGDSNU626I and in         *
     *                      SYSIBM.SYSCOLDISTSTATS during RUNSTATS  *
     *                      TABLESPACE TABLE with more than 255     *
     *                      COLGROUPs                               *
     ****************************************************************
```

```
   * RECOMMENDATION: Apply corrective PTF when available.          *
   ***************************************************************
   When the user executed a RUNSTATS TABLESPACE TABLE with more
   than 255 COLGROUP FREQVAL COUNT 10 BOTH, the frequency
   statistics were incorrectly reported in MSGDSNU626I and stored
   in the catalog SYSIBM.SYSCOLDISTSTATS.

   Incorrect frequency statistics were also reported in
   MSGDSNU616I and stored in SYSIBM.SYSCOLDIST catalog table.

   The INCORROUT FREQUENCY and COLVALUE statistics occurs due to
   an arithmetic overflow when a number greater than 255 exceeds
   the maximum value of a one byte integer.
   Code was changed to issue a new error message MSGDSNU637I
   when more than  255 COLGROUP specifications are executed
   in the RUNSTATS utility job statement.

   The PTF for APAR PM25185 has added the following documentation
   for MSGDSNU637I to the Messages and Codes manual.

   |DSNU637I csect-name NUMBER OF keyword SPECIFIED EXCEEDS
   |MAXIMUM LIMIT ALLOWED OF limit.
   |
   |Explanation: The keywords shown is specified too many
   |times in the control statement.
   |
   |System action: The utility processing is not initiated.
   |
   |User response: Alter the utility control statement to
   |remove the excess keywords.
   |
   |Severity: 8 (error)
COMPONENT:   5740-XYR00-HDB9910
APARS FIXED: PM25185
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
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  DOCUMENTATION:
    The PTF for APAR PM25185 has added the following documentation
    for MSGDSNU637I to the Messages and Codes manual.

   |DSNU637I csect-name NUMBER OF keyword SPECIFIED EXCEEDS
   |MAXIMUM LIMIT ALLOWED OF limit.
   |
   |Explanation: The keywords shown is specified too many
   |times in the control statement.
   |
   |System action: The utility processing is not initiated.
   |
   |User response: Alter the utility control statement to
   |remove the excess keywords.
   |
   |Severity: 8 (error)
   .
```

```
------ COVER LETTER FOR PTF UK64446 ------------

PROBLEM DESCRIPTION(S):
  PM25059 -
    ****************************************************************
    * USERS AFFECTED: All DB2 for z/OS users who utilize a        *
    *                 partitioning index and queries that can     *
    *                 benefit from page range reduction           *
    *                 optimization.                               *
    ****************************************************************
    * PROBLEM DESCRIPTION: Sometimes an inefficient plan may be   *
    *                 generated when the following                *
    *                 conditions are met.                         *
    *                                                             *
    *                 (1) The table is partitioned                *
    *                 (2) One of the non-leading                  *
    *                     partitioning keys is in                 *
    *                     descending order                        *
    *                 (3) There are local predicates on           *
    *                     more than one partitioning key          *
    *                 (4) One local predicate on a                *
    *                     partition key refers to a host          *
    *                     variable / parameter marker             *
    *                 (5) There are more predicate(s) that        *
    *                     cover later partition key(s)            *
    *                     after the partition key                 *
    *                     described in (4).                       *
    *                 (6) There is a GROUP BY / ORDER BY          *
    *                     clause                                   *
    *                 (7) There exists a non-partitioning         *
    *                     index to support GROUP BY /             *
    *                     ORDER BY order                           *
    *                                                             *
    *                 SQLWHERE SQLORDERBY SQLGROUPBY              *
    *                 SQLHOSTVAR SQLPMK                            *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    Sometimes an inefficient plan may be generated when the
    following conditions are met.

    (1) The table has partiitoning keys;
    (2) One of the non-leading partitioning keys is in
        descending order;
    (3) There are local predicates on more than one partitioning
        key;
    (4) One predicate on a partition key refers to a host variable
        or parameter marker;
    (5) There are more predicate(s) covering later partition key(s)
        after the partition key described in (4);
    (6) There exists a GROUP BY or ORDER BY clause in the query; and
    (7) There exists a non-partitioning index to support the
        GROUP BY or ORDER BY.

    When the above conditions are met, DB2 may process page
    range reduction logic incorrectly.  As a consequence,
```

DB2 may choose a plan with an extra sort for GROUP BY / ORDER BY
         incorrectly. It may cause a query performance problem.

         Additional Keywords:
         SQLACCESSPATH SQLGROUPBY SQLORDERBY DESC SQLHOSTVAR
         SQLPMK PARAMETERMARKER SQLPMARKER
         The performance problem described above
         is fixed by fixing the error in page
         range reduction logic.
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APARS FIXED: PM25059
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  DB2BIND:
    See PM25059 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM25059 corrects a problem where the page range reduction
    is done incorrectly. It may cause DB2 to choose a plan with
    an extra GROUP BY / ORDER BY sort where it is not needed.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM13452:

    See PM13452 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM13452 corrects a problem of incorrect output that can
    occur for a query comparing a varchar column to an empty string
    if the varchar column is part of the partitioning key, and
    page range screening is chosen.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK64465 ------------

PROBLEM DESCRIPTION(S):
  PM22863 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
    *   users of the DB2 scheduler for   *
    *   administrative tasks   *
    ****
    * PROBLEM DESCRIPTION: The DB2 scheduler message DSNA692I   *
    *   does not include any information about *
    *   the reason why the user can not log in. *

```
****************************************************************
* RECOMMENDATION: Apply this PTF.                             *
****************************************************************
```

All tasks of the DB2 scheduler are being executed in the
security context of the user that is assigned to the task. If
the DB2 scheduler is not able to log in under a given user to
execute a task, for example in case the user ID was revoked,
the corresponding task can not be executed and message DSNA692I
is returned in the MSG column of the table resulting from the
user-defined function ADMIN_TASK_STATUS for this task.

The message DSNA692I states that the DB2 scheduler was not able
to log in with the user assigned to the task, but does not
return any information about the underlying cause, for example
that the user ID was revoked. On the console no RACF message
appears either. So there is no way to determine the underlying
cause of this error.
This PTF modifies the message DSNA692I to include additional
information about the reason that causes this message.
Instead of listing the task name, the message now returns the
return code and the reason code of the pthread_security_np
function used to log in.

The message DSNA692I changes from:

csect-name THE ADMIN SCHEDULER scheduler-name CANNOT LOG IN AS
USER user-name TO EXECUTE TASK task-name

to:

csect-name THE ADMIN SCHEDULER scheduler-name CANNOT LOG IN AS
USER user-name. RC=return-code RSN=reason-code

return-code: The return-code returned by the z/OS UNIX System
             Services callable service pthread_security_np
             which was used to log in.

reason-code: The reason-code returned by the z/OS UNIX System
             Services callable service pthread_security_np
             which was used to log in.

Related Information:

pthread_security_np:
http://publib.boulder.ibm.com/infocenter/zos/v1r10/index.jsp?
topic=/com.ibm.zos.r10.bpxb100/tls.htm

z/OS UNIX System Services Return Codes:
http://publib.boulder.ibm.com/infocenter/zos/v1r10/index.jsp?
topic=/com.ibm.zos.r10.bpxa800/errno.htm

z/OS UNIX System Services Reason Codes:
http://publib.boulder.ibm.com/infocenter/zos/v1r10/topic/
com.ibm.zos.r10.bpxa800/errnojrs.htm
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM22863

SPECIAL CONDITIONS:
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  ACTION:
    After applying this PTF on DB2 V9.1 for z/OS
    ==
    The following post-apply actions are required of all current
    V9 customers that use the DB2 scheduler.

    To activate the changes in this PTF you need to take the
    following additional actions:
    (1) Stop the scheduler for administrative tasks.
    (2) Rebind the package DSNADMTC.
    (3) Start the scheduler for administrative tasks.
    (4) Adapt the user applications.

    Each of these actions is described in detail below.
    Note that DB2 must be running.

    (1) Stop the scheduler for administrative tasks.
        If the scheduler is running, stop it first by executing
        the following console command:
        MODIFY DSNADMT,APPL=SHUTDOWN
        where DSNADMT is the name of the scheduler.
    (2) Bind the scheduler package DSNADMTC as follows:
      (a) Make a work copy of your customized copy of DSNTIJSG.
      (b) Remove all job steps except DSNTIAS.
      (c) In job step DSNTIAS, remove all CREATE statements and
          all BIND PACKAGE statements except the BIND PACKAGE
          statement for DSNADMTC.

          BIND PACKAGE(DSNADM) MEMBER(DSNADMTC) -
          (...)

      (d) Run the modified job to bind the package.
      (e) When finished, you can erase the work copy of the job.
    (3) Start the scheduler for administrative tasks.
        Start the scheduler by executing the following console
        command:
        START DSNADMT
        where DSNADMT is the name of the scheduler.
    (4) Adapt the user applications.
        Modify any user application that rely on the message text of
        DSNA692I.
.

------ COVER LETTER FOR PTF UK64557 ------------

PROBLEM DESCRIPTION(S):
  PM11941 -
    ****
    * USERS AFFECTED: Users of DB2 9 for z/OS who need to send   *
    *   environment re-creation information to the *
    *   DB2 service team when requested for a   *
    *   problem related to DB2 query processing.   *

```
*****************************************************************
* PROBLEM DESCRIPTION: PROBLEM SCENARIO:                       *
*                                                              *
*                       Need a permanent DB2 tool to capture   *
*                       the environment related to a           *
*                       failed query or other DB2 error which  *
*                       will be sent to the DB2 service team   *
*                       for re-creation and diagnosis.         *
*****************************************************************
* RECOMMENDATION:                                              *
*****************************************************************
PROBLEM SUMMARY:

Need a permanent replacement for DB2PLI8 and the OSC Service SQL
tool that collects user environment information as required
to diagnosis problem queries.  This tool will now be part of
the DB2 product and will be available any time when the
DB2 service team requires re-creation documents.
PROBLEM CONCLUSION:

Introducing the SYSPROC.ADMIN_INFO_SQL stored procedure
This PTF adds a new IBM supplied stored procedure called
SYSPROC.ADMIN_INFO_SQL. The ADMIN_INFO_SQL stored procedure
captures statistics about a DB2 subsystem, its objects, and
applications and returns the results in a data set or as a
result set. This information can help IBM Software Support
recreate and troubleshoot problems, like a poor performing
SQL query.

Introducing DSNADMSB program
This PTF also adds an IBM supplied program called DSNADMSB
which can be called using JCL. This program calls the
ADMIN_INFO_SQL stored procedure and can return the output
in the job stream as a result set or to a data set.

=================================================================
Deploying the SYSPROC.ADMIN_INFO_SQL stored procedure and
DSNADMSB on DB2 for z/OS
=================================================================

Installation Job
----------------
See ++HOLD text for installation information.

WLM
---
ADMIN_INFO_SQL must run in a WLM-established stored procedures
address space, where NUMTCB is a value between 40 and 60.

Authorization
-------------
To execute ADMIN_INFO_SQL and DSNADMSB, you must have the
following DB2 privileges or authorities:

    * EXECUTE authority on plan DSNADMSB
    * One of the following privileges or authorities:
```

o The EXECUTE privilege on the ADMIN_INFO_SQL stored
            procedure
          o Ownership of the ADMIN_INFO_SQL stored procedure
          o SYSADM authority
In addition, if you direct ADMIN_INFO_SQL or DSNADMSB to write
its output to data sets, you need to be authorized to
perform either of the following tasks:
     * Create data sets
     * Write to already existing data sets

Documentation

More detailed information can be found at the DB2 web site:
http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp

==
  Using the SYSPROC.ADMIN_INFO_SQL stored procedure and
  DSNADMSB on DB2 for Z/OS
==

Input parameters for ADMIN_INFO_SQL. NULLS are not allowed.

TABLE_CREATOR   VARCHAR(128)
TABLE_NAME   VARCHAR(128)
CATALOG_CREATOR   VARCHAR(128)
PLAN_INFO   VARCHAR(150)
COLLECT_DDL   CHAR(1)
COLLECT_STATS   CHAR(1)
COLLECT_COLUMN_STATS   CHAR(1)
EDIT_DDL   CHAR(1)
EDIT_VERSION_MODE   CHAR(4)
PART_ROTATION   CHAR(1)
OUTPUT_METHOD   CHAR(1)
OUTPUT_INFO   VARCHAR(1024)
PMR_INFO   VARCHAR(13)

Return code and output messages

RETURN CODE:
Provides the return code from the stored procedure. This is an
output parameter of type INTEGER. Possible values are:

  0 - The call completed successfully.
  4 - Warning. The message output parameter contains messages
      describing the warning.
  12 - The call did not complete successfully. The message
       output parameter contains messages describing the error.

OUTPUT MESSAGE:
Provides the message(s) for the above return code. This is an
output parameter of type VARCHAR(1331).

Contains messages describing the error or warning encountered
by the stored procedure. If no error occurred, the message
states "DSNADMSS completed successfully."

The first messages in this area are generated by the stored
procedure. Messages that are generated by DB2 might follow
the first messages.

Output data

Output data is determined by the input parameters OUTPUT_METHOD
and OUTPUT_INFO. It can be collected by setting OUTPUT_METHOD in
one of the following ways:

  Q - Returns dynamically created data sets with size parameters
  N - Returns the result data sets in an already existing data
        set in the WLM environment.
  D - Returns dynamically created data sets on a volume that you
        specify.
  R - Returns a result set in a predetermined format

Output data is split into several data sets or a single result
set as follows:
  DDL - The creation statements for databases, table spaces,
          tables, and indexes.
  SQL - INSERT statements for PLAN_TABLE, DSN_PROFILE_TABLE,
          DSN_PROFILE_ATTRIBUTES, SYSACCELERATORS and
          SYSACCELIPLIST if the tables exist.
  STATS - Statistical information related to the tables.
  COLST - Statistical information related to the columns.
  EXPL - Visual output of the PLAN_TABLE, DSN_PREDICAT_TABLE,
          DSN_DETCOST_TABLE, DSN_PROFILE_TABLE,
          DSN_PROFILE_ATTRIBUTES, SYSACCELERATORS and
          SYSACCELIPLIST if the tables exist.
  PARM - Subsystem parameter, service, and module information

Input parameter OUTPUT_INFO will need to also be set. Please see
the ADMIN_INFO_SQL documentation for the correct format.

More detailed information can be found at the DB2 website:
http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp

Note about disk space

Ensure that enough space is available for the output.
ADMIN_INFO_SQL might generate large amounts of data. Two to
three megabytes of space is the average, but larger workloads
might generate up to twenty megabytes of data.

To execute ADMIN_INFO_SQL using DSNADMSB

Prepare a job for running DSNADMSB. The easiest way to do that
is to customize a copy of sample job DSNTEJ6I, which is in data
set prefix.SDSNSAMP. The job prolog has detailed instructions
on how to customize the job.

To execute ADMIN_INFO_SQL from Java, here is a code snippet
----
try
    {

```java
        cstmt = conn.prepareCall("CALL SYSPROC.ADMIN_INFO_SQL(?,?,
            ?,?,?,?,?,?,?,?,?,?,?,?,?)");
                        // Create a CallableStatement object
        cstmt.setString (1, "SYSADM");
        cstmt.setString (2, "PLAN_TABLE");
        cstmt.setString (3, "DEFAULT");
        cstmt.setString (4, "APROGRAM-1-12345");
        cstmt.setString (5, "Y");
        cstmt.setString (6, "Y");
        cstmt.setString (7, "N");
        cstmt.setString (8, "Y");
        cstmt.setString (9, "NONE");
        cstmt.setString (10, "N");
        cstmt.setString (11, "R");
        cstmt.setString (12, "NONE");
        cstmt.setString (13, "12345.000.000");
                        // Set input parameters (DB2 command)
        cstmt.registerOutParameter (14, Types.INTEGER);
        cstmt.registerOutParameter (15, Types.VARCHAR);
                        // Register output parameters

        boolean resultsAvailable = cstmt.execute();
        rc = cstmt.getInt(14);  // Get the output parameter values
        errbuff = cstmt.getString(15);

        while (resultsAvailable)
        {
           ResultSet rs = cstmt.getResultSet();
           while (rs.next())
           {
              String s = rs.getString(3);
             System.out.println(s);
           }
           rs.close();
           resultsAvailable = cstmt.getMoreResults();
        }
     }
```

To execute ADMIN_INFO_SQL from C, here is a code snippet

```c
EXEC SQL CALL SYSPROC.ADMIN_INFO_SQL ('SYSADM','PLAN_TABLE'
  ,'DEFAULT', 'APROGRAM-1-12345','Y','Y','N','Y','NONE','N','R',
  'NONE','12345.000.000',:out1,:out2);
  printf( "%d CALL SQLCODE\n", SQLCODE);
  printf( "%d CALL RC\n", out1);
  printf( "%s CALL DETAILS\n", out2);

  if(SQLCODE==+466)
  {
    EXEC SQL ASSOCIATE LOCATORS (:loc1) WITH
        PROCEDURE SYSPROC.ADMIN_INFO_SQL;
    printf( "%d ASSOC SQLCODE\n", SQLCODE);

    EXEC SQL ALLOCATE C1 CURSOR FOR RESULT SET :loc1;
    printf( "%d ALLOC SQLCODE\n", SQLCODE);
```

```
        while(SQLCODE==0)
        {
           DATA.LNG = 0;
           SEQNO = 0;
           TID = 0;

           ind1 = -1;
           ind2 = -1;
           ind3 = -1;

           EXEC SQL FETCH C1 INTO :TID :ind1, :SEQNO :ind2,
             :DATA :ind3;
           memcpy(output, DATA.THEDATA, DATA.LNG);
           output??(DATA.LNG??) = '\0';
           printf( "%s\n", output);
        }
     }
     printf( "%d FETCH SQLCODE\n", SQLCODE);


   To execute ADMIN_INFO_SQL from a DB2 command window
   ---------------------------------------------------
   CALL SYSPROC.ADMIN_INFO_SQL('SYSADM','PLAN_TABLE','DEFAULT',
   'APROGRAM-1-12345','Y','Y','N','Y','NONE','N','R','NONE',
   '12345.000.000');


   Documentation
   -------------
   More detailed information can be found at the DB2 website:
   http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp



   ADDITIONAL KEYWORDS:
   SQLSP SQLSTOREDPROC
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM11941
SPECIAL CONDITIONS:
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  ACTION:
    This PTF adds a new DB2-supplied stored procedure called
    SYSPROC.ADMIN_INFO_SQL that can be used to collect DB2
    environmental service data.

    This PTF also provides a new program named DSNADMSB that can be
    used to call the SYSPROC.ADMIN_INFO_SQL routine, and a new job
    named DSNTEJ6I that can be used to execute DSNADMSB.

    ****************************************************************
    Actions for customers who are already using DB2 V9:
    ****************************************************************
    If you have already installed or migrated to DB2 Version 9 then
    after applying this PTF, you need to take the following actions:
    (1) Update private copies of the installation CLIST.
    (2) Update your customized copy of job DSNTIJSG.
    (3) Create, bind and grant access to the new stored procedure
        SYSPROC.ADMIN_INFO_SQL and its result table.
```

(4) Optionally prepare and run job DSNTEJ6I

Procedures for these actions are given below.
----
(1) Update private copies of the installation CLIST
    ****
    * All current V9 customers need to perform this step
    ****
    This PTF modifies the DB2 installation CLIST member
    DSNTINS1 in the prefix.SDSNCLST target library.
    After applying this PTF, you need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of DSNTINS1. You may also want to move them to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed
    by job DSNTIJVC reside.
----
(2) Update your customized copy of job DSNTIJSG
    ****
    * All V9 customers who maintain a private copy of DB2
    * installation job DSNTIJSG need to perform this step.
    ****
    (a) Edit your customized copy of DSNTIJSG
    (b) Add the following SQL statements under the SYSIN DD of
        job step DSNTICU. If DSNTICU is commented out then you
        should also comment out these statements:

           DROP PROCEDURE SYSPROC.ADMIN_INFO_SQL RESTRICT;
           DROP TABLE SYSIBM.SERVICE_SQL_OUTPUT;

    (c) In job step DSNTIRU:
        - add the following commands for binding the
          package and plan for program DSNADMSB

             BIND PACKAGE(DSNADM) MEM(DSNADMSB) -
                 ACTION(REPLACE) ISOLATION(CS) -
                 ENCODING(EBCDIC) -
                 LIBRARY('<prefix>.SDSNDBRM')
             BIND PLAN(DSNADMSB) -
                 PKLIST(DSNADM.DSNADMSB) -
                 ACTION(REPLACE) ISOLATION(CS) -
                 ENCODING(EBCDIC)

        where <prefix> is the data set prefix of your DB2 V9
        target libraries.

    (d) In job step DSNTIAE:
        - add the following command for binding the
          package for SYSPROC.ADMIN_INFO_SQL:

             BIND PACKAGE(DSNADM) MEMBER(DSNADMSS) -
                 ACTION(REPLACE) ISOLATION(CS) -
                 ENCODING(EBCDIC) CURRENTDATA(YES) -
                 LIBRARY('<prefix>.SDSNDBRM')

        where <prefix> is the data set prefix of your DB2 V9
        target libraries.

- add the following DDL for creating the
  SYSIBM.SERVICE_SQL_OUTPUT global temporary table:

```
CREATE GLOBAL TEMPORARY TABLE
  SYSIBM.SERVICE_SQL_OUTPUT
      ( TID                 INTEGER      NOT NULL
       ,SEQNO               INTEGER      NOT NULL
       ,TEXT                VARCHAR(4096) NOT NULL
      ) CCSID EBCDIC;
```

- add the following DDL for creating the
  SYSPROC.ADMIN_INFO_SQL stored procedure:

```
CREATE PROCEDURE SYSPROC.ADMIN_INFO_SQL
      ( IN TABLE_CREATOR          VARCHAR(128)
       ,IN TABLE_NAME             VARCHAR(128)
       ,IN CATALOG_CREATOR        VARCHAR(128)
       ,IN PLAN_INFO              VARCHAR(150)
       ,IN COLLECT_DDL            CHAR(1)
       ,IN COLLECT_STATS          CHAR(1)
       ,IN COLLECT_COLUMN_STATS   CHAR(1)
       ,IN EDIT_DDL               CHAR(1)
       ,IN EDIT_VERSION_MODE      CHAR(4)
       ,IN PART_ROTATION          CHAR(1)
       ,IN OUTPUT_METHOD          CHAR(1)
       ,IN OUTPUT_INFO            VARCHAR(1024)
       ,IN PMR_INFO               VARCHAR(13)
       ,OUT RETURN_CODE           INTEGER
       ,OUT MESSAGE               VARCHAR(1331)
      ) PARAMETER CCSID EBCDIC
       RESULT SETS 1
       EXTERNAL NAME DSNADMSS
       LANGUAGE C
       PARAMETER STYLE GENERAL
       MODIFIES SQL DATA
       WLM ENVIRONMENT <wlm-environment-name>
       STAY RESIDENT NO
       COLLID DSNADM
       PROGRAM TYPE MAIN
       RUN OPTIONS 'TRAP(OFF),STACK(,,ANY,)'
       COMMIT ON RETURN NO
       ASUTIME NO LIMIT;
```

and change <wlm-environment-name> to the name of
a WLM environment with NUMTCB of 40 to 60.

(e) Optional: In job step DSNTIJG, add the following DDL to
    grant access:
```
GRANT EXECUTE ON PLAN DSNADMSB TO PUBLIC;
GRANT ALL ON TABLE SYSIBM.SERVICE_SQL_OUTPUT
  TO PUBLIC;
GRANT EXECUTE ON PROCEDURE SYSPROC.ADMIN_INFO_SQL
  TO PUBLIC;
GRANT EXECUTE ON PACKAGE DSNADM.DSNADMSS TO PUBLIC;
```
(f) Save your changes.

```
--------------------------------------------------------------------
(3) Create, bind and grant access to the new stored procedure
    SYSPROC.ADMIN_INFO_SQL and its result table.
    ************************************************************
    * All V9 customers who want to use the stored procedure
    * SYSPROC.ADMIN_INFO_SQL need to perform this step.
    ************************************************************
    Use the following procedure to avoid disrupting your
    existing DB2-supplied stored procedures and databases:
    (a) Create and edit a copy of the DSNTIJSG job you updated
        in step (2) of this procedure
    (b) Remove all job steps except DSNTIRU, DSNTIAE and DSNTIJG
    (c) In job step DSNTIRU:
        - remove all BIND PACKAGE statements under the SYSTSIN
          DD, except for the following:
            BIND PACKAGE(DSNADM) MEMBER(DSNADMSB) - ...
            BIND PLAN(DSNADMSB) - ...
    (d) In job step DSNTIAE:
        - remove all BIND PACKAGE statements under the SYSTSIN
          DD, except for the following:
            BIND PACKAGE(DSNADM) MEMBER(DSNADMSS) - ...
        - remove all CREATE statements under the SYSIN DD,
          except for the following:
            CREATE GLOBAL TEMPORARY TABLE
              SYSIBM.SERVICE_SQL_OUTPUT ...
            CREATE PROCEDURE SYSPROC.ADMIN_INFO_SQL ...
    (e) In job step DSNTIJG, remove all GRANT statements except
        the ones you added in step (2)(e), above
    (f) Run the job to create, bind, and grant access to the
        new stored procedure SYSPROC.ADMIN_INFO_SQL and
        its input and result tables


--------------------------------------------------------------------
(4) Optionally prepare and run job DSNTEJ6I
--------------------------------------------------------------------
    ************************************************************
    * All V9 customers who want to use program DSNADMSB to call
    * the SYSPROC.ADMIN_INFO_SQL stored procedure need to
    * perform this step.
    ************************************************************
    This PTF adds job DSNTEJ6I to the SDSNSAMP library.  It
    shows how to execute program DSNADMSB to collect DDL,
    statistics, and column statistics for return by result set
    and output to the SYSPRINT DD.

    To prepare and use this job, copy it to your NEW.SDSNSAMP
    library, and then follow the directions in the job prolog
    to customize it for use on your DB2 subsystem.
.


------ COVER LETTER FOR PTF UK64595 ------------

PROBLEM DESCRIPTION(S):
  PM24812 -
    ************************************************************
```

```
* USERS AFFECTED: All DB2 for z/OS V8, DB2 9 and DB2 10 for    *
*                 z/OS users of DB2 accounting and statistics  *
*                 records (IFCID002 and IFCID003).             *
****************************************************************
* PROBLEM DESCRIPTION: The IFCID 002 and IFCID 003 record      *
*                 counters QXRWSINSRTD, QXRWSDELETD, and       *
*                 QXRWSUPDTD should not include the            *
*                 number of rows that are updated,            *
*                 deleted, or inserted because of             *
*                 internal actions performed by DB2 such      *
*                 as inserting rows to implement an           *
*                 update.                                      *
****************************************************************
* RECOMMENDATION:                                              *
****************************************************************
```

The IFCID 002 and IFCID 003 record counters QXRWSINSRTD,
QXRWSDELETD, and QXRWSUPDTD should not include the number of
rows that are updated, deleted, or inserted because of internal
actions performed by DB2 such as inserting rows to implement an
update.
Please note that for consistent performance analysis, only rows
that are updated as a direct result of user actions should be
included for the counters. So, the IFCID 002 and IFCID 003
counters QXRWSINSRTD, QXRWSDELETD, and QXRWSUPDTD are updated to
include only the number of rows that are updated, deleted, or
inserted as a direct result of user actions. Rows that DB2
updates, deletes, or inserts to implement user actions, such as
inserting rows to implement an UPDATE, are no longer counted.

The following example helps illustrate the problem.

1. Declare a Global Temporary Table.

```
 DECLARE GLOBAL TEMPORARY TABLE DGT1
  (C1 VARCHAR(10));
```


2. Insert one row into the Table.

```
 INSERT INTO SESSION.DGT1
  VALUES('C');
```


3. Check the result.

The counter QXRWSINSRTD is expected to be incremented by 1 since
1 row was inserted. The application can verify this by using
the SQLERRD(3) (or SQLERRD3) field of the SQLCA which should
show a value of 1. In the reported case QXRWSINSRTD was
incorrectly incremented by 232.

Additionally this apar changes DB2 10 for z/OS code such that
embedded selects are not considered for QXRWSFETCHD counter.
The change will make DB2 10 for z/OS behavior consistent
with DB2 for z/OS V8 and DB2 9 for z/OS.

Code has been modified to only include rows that are updated,
deleted, or inserted as a direct result of user actions when the
IFCID 002 and IFCID 003 record counters QXRWSINSRTD,
QXRWSDELETD, and QXRWSUPDTD are updated.
DB2 10 for z/OS code has been modified such that embedded
selects are not considered for QXRWSFETCHD counter.

      Additional Keywords: IFCID0002 IFCID0003
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM24812
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM24812:

    See PM24812 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM24812 changes the way IFCID 002/003 counters are updated
    such that only rows that are updated, deleted, or inserted
    as a direct result of user actions are considered.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK64683 ------------

PROBLEM DESCRIPTION(S):
  PM28835 -
    ****
    * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of   *
    *   native SQL procedures.   *
    ****
    * PROBLEM DESCRIPTION: An unexpected SQLCODE-313 could be   *
    *   issued when a native SQL procedure   *
    *   contains a SQL statement that   *
    *   references a view which has a column   *
    *   with a field procedure, and the view   *
    *   is created in DB2 8 CM(COMPAT MODE),   *
    *   DB2 7 or prior.   *
    ****
    * RECOMMENDATION: *
    ****
    An unexpected SQLCODE-313 could be issued when a native SQL
    procedure contains a SQL statement that references a view
    which has a column with a field procedure, and the view is
    created in DB2 8 CM(COMPAT MODE), DB2 7 or prior.

    DB2 is updated to handle view with field procedure in
    native SQL procedure correctly.
    Additional Keywords: SQLNATIVESQLPL SQLFIELDPROC SQLVIEW

```
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM28835
SPECIAL CONDITIONS:
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  ACTION:
    ***Action for PM28835:
    TYPE:  ACT

    PM28835 corrects a problem of an unexpected SQLCODE-313
    when a native SQL procedure contains a SQL statement that
    references a view which has a column with a field procedure,
    and the view is created in DB2 8 CM(COMPAT MODE), DB2 7 or
    prior.

    After the application of this PTF, ALTER PROCEDURE REGENERATE is
    required for each native SQL procedure that is affected.
    Review the PTF cover letter to determine which, if any, native
    SQL procedure could be affected by this change.
.


------ COVER LETTER FOR PTF UK64741 ------------

PROBLEM DESCRIPTION(S):
  PM27153 -
    ******************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS        *
    *                 users of LENGTH and XMLSERIALIZE functions.   *
    ******************************************************************
    * PROBLEM DESCRIPTION: SQLCODE904 with RESOURCE 0000090A might  *
    *                      occur when a large amount of XML         *
    *                      documents is serialized to calculate     *
    *                      the length.                              *
    ******************************************************************
    * RECOMMENDATION:                                               *
    ******************************************************************
    SQLCODE904 with RESOURCE 0000090A might occur when a large
    amount of XML documents is serialized to calculate the length.

    For example:
    The following query just needs to get the MAX of the length of
    the serialized XML documents.

    SELECT MAX(LENGTH(XMLSERIALIZE(
                      XMLELEMENT(NAME "BLOBLEN", TB.XMLDATA)
                      AS BLOB(10M))))
    FROM TB;

    With the current implementation, DB2 will keep the serialized
    XML documents in XML storage for further processing. After
    accumulating a large amount of serialized XML documents, the
    XML storage usage might reach the XML user/system limit set by
    XMLVALA/XMLVALS and get SQLCODE904.
    DB2 is modified to not keep the serialized XML documents when
    the XMLSERIALIZE function is the input argument to the LENGTH
```

function. This prevents the accumulation of XML storage usage
        and prevents the SQLCODE904.

        Additional keywords: SQLXML
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM27153
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM27153 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM27153 implements the code to not keep the serialized XML
    documents when the XMLSERIALIZE function is the input argument
    to the LENGTH function.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK64819 ------------

PROBLEM DESCRIPTION(S):
  PM25247 -
    ****
    * USERS AFFECTED: 1. DB2 9 and 10 for z/os of query   *
    *   using index on expression on varchar *
    *   key.   *
    *   2. DB2 10 for z/OS of query containing   *
    *   sideway reference table expression   *
    *   runs in parallel.   *
    *   3. DB2 9 for z/OS users of update statment *
    *   with target table containing XML column. *
    *   4. DB2 z/OS 8 and DB2 9 for z/OS users   *
    *   of query running in parallel.   *
    *   *
    ****
    * PROBLEM DESCRIPTION: 1. Incorrect output may be returned *
    *   when predicate is uing index on   *
    *   expression and the key column   *
    *   is a varchar column.   *
    *   2. Abends in DSNIPSFI :5007 may occur *
    *   when a query contains a sideway   *
    *   reference table expression running *
    *   in parallel.   *
    *   3. Abend in DSNIKESE:5005 may occur   *
    *   for update statement when target *
    *   table containing XML column, and *
    *   the XML column does not appear in *
    *   the statement.   *
    *   4. Incorrectout in dsn_sortkey_table *
    *   (unexpected column name info) may *
                              322

```
*                        occur when query runs in parallel.    *
*                                                               *
*****************************************************************
* RECOMMENDATION:                                               *
*****************************************************************
```

1. Incorrect output may be returned when predicate is using
   index on expression and the key column is a varchar column.

   Following is an example of such failing query:

   CREATE INDEX CIOE1 ON CUSTOMER(C_CUSTKEY+0,C_NATIONKEY+0,
                                   C_MKTSEGMENT||' ');

   SELECT C_CUSTKEY,C_NATIONKEY,C_MKTSEGMENT
     FROM CUSTOMER
    WHERE C_MKTSEGMENT||' ' = 'MACHINERY'
      AND C_CUSTKEY+0   = 25099
    ORDER BY 1;

2. Abends in DSNIPSFI :5007 may occur when a query contains a
   sideway reference table expression running in parallel. It
   is because the sideway reference table expression result
   work file is not registered in parallel group correctly.

   Following is an example of such failing query:
   SELECT ...
     FROM ..., PTY,
          LEFT JOIN TABLE (SELECT NM.C1, ...
                             FROM NM, ...
                            WHERE ...
                              AND NM.C1 = PTY.C1
                              AND ...) TX (C1, ...)
            ON PTY.C1 = TX.C1
     WHERE ...

3. Abend in DSNIKESE:5005 may occur for an update statement
   when update target table contains XML column, and the
   XML column does appear in the query.

   Following is an example of such failing query:

   create table TB01 (c1 int, c2 int, c3 char(2), c4 XML);

   UPDATE TB01 SET C1=2 ,C2=3
     WHERE C2 < 5 AND C3 IN ('DG', 'BB');

4. Incorrectout in DSN_SORTKEY_TABLE (unexpected column
   name information) may occur when query runs in parallel.
The bindtime code in DB2 is modified to correct the conditions
leading to the ABEND/INCORRECT OUTPUT.
Additional Keywords: PARALLELISM SQLPARALLELISM SQLTABLEEXPR
                     SQLSIDEWAY SQLSIDEWAYREF SQLXML SQLEXPLAIN
                     INCORROUT INCORRECTOUTPUT SQLINCORROUT
                     SQLINDEXONEXP SQLIOE

```
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM25247
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM25247 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PM25247 corrects problems
    1. that return incorrect output when predicate is using index on
       expression and the key column is a varchar column.
    2. that abend in DSNIKESE:5005 for an update statement when
       update target table contains XML column, and the XML column
       does appear in the query
    3. that return incorrect output in dsn_sortkey_table (unexpected
       column name information) when query runs in parallel.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PM22087 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PM22087 corrects a problem that can cause an abend being
    returned for outer join with index on expression on decimal
    key column.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.


------ COVER LETTER FOR PTF UK64833 ------------

PROBLEM DESCRIPTION(S):
  PM16023 -
    ****************************************************************
    * USERS AFFECTED: All DB2 V9 users of synonyms.              *
    ****************************************************************
    * PROBLEM DESCRIPTION: SYSSYNONYMS.CREATOR is set incorrectly *
    *                      on CREATE SYNONYM.                     *
    ****************************************************************
    * RECOMMENDATION:                                            *
    ****************************************************************
    In cases where the statement is dynamically prepared, users may
    encounter the following problems with synonyms:
    - CREATOR column in SYSIBM.SYSSYNONYMS table is set incorrectly
      to the value of the CURRENT SCHEMA special register instead of
      CURRENT SQLID.  Having the wrong value for CREATOR may also
      result in SQLCODE -601 being issued incorrectly on CREATE
      SYNONYM.
```

- If the value of the CURRENT SCHEMA special register is
  different from CURRENT SQLID when referencing a synonym, DB2
  may not locate the right synonym and may incorrectly resolve
  to a different object instead. This may result in various
  symptoms, including, but not limited to, SQLCODE -204 being
  issued incorrectly.
DB2 code has been fixed to set the SYSSYNONYMS.CREATOR column
for a synonym to the value of the CURRENT SQLID special
register on CREATE SYNONYM. When referencing a synonym, DB2
will now correctly locate a synonym using the CURRENT SQLID
special register.

This PTF does not fix existing synonyms that have an incorrect
value stored in SYSSYNONYMS.CREATOR column. The user can create
the synonym again, and the new synonym will have the CREATOR
value set correctly. If desired, the old synonym may be dropped
by setting the CURRENT SQLID special register to the value of
the incorrect CREATOR value before issuing the DROP SYNONYM
statement.

Please note that this PTF addresses the problem of synonyms
being incorrectly referenced and stored in the catalog; code has
been fixed to correctly match the documentation, but may change
the behavior of existing applications that use synonyms together
with the CURRENT SCHEMA special register (e.g. synonyms may
resolve to different tables after applying the PTF).

Rebind all packages that are dependent on a synonym and use SET
CURRENT SCHEMA. The following sample query may be used to
identify packages that have a dependency on a synonym:

SELECT BNAME, DCOLLID, DNAME
  FROM SYSIBM.SYSPACKDEP
 WHERE BTYPE = 'S';

The sample query is provided "AS IS" for reference purposes
only. It has not been tested in all environments.

ADDITIONAL KEYWORDS:
SQLCREATE
SQLDROP
SQLCODE204
SQLCODE601
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM16023
SPECIAL CONDITIONS:
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  ACTION:
  Please note that this PTF addresses the problem of synonyms
  being incorrectly referenced and stored in the catalog; code has
  been fixed to correctly match the documentation, but may change
  the behavior of existing applications that use synonyms together
  with the CURRENT SCHEMA special register (e.g. synonyms may
  resolve to different tables after applying the PTF).

Rebind all packages that are dependent on a synonym and use SET
CURRENT SCHEMA. The following sample query may be used to
identify packages that have a dependency on a synonym:

```
SELECT BNAME, DCOLLID, DNAME
  FROM SYSIBM.SYSPACKDEP
 WHERE BTYPE = 'S';
```

The sample query is provided "AS IS" for reference purposes
only. It has not been tested in all environments.
.

------ COVER LETTER FOR PTF UK64871 ------------

PROBLEM DESCRIPTION(S):
  PM23706 -
    ****
    * USERS AFFECTED: DB2 V9 and V10 users of CREATE INDEX.   *
    ****
    * PROBLEM DESCRIPTION: A key value in a padded index on   *
    *   expression is padded with the wrong   *
    *   value.   *
    ****
    * RECOMMENDATION: *
    ****
    When a user creates a padded index on expression where the
    expression includes a graphic type (graphic, vargraphic,
    DBCLOB), the key value is padded incorrectly.
    DB2 has been fixed to pad the graphic type key value in an index
    on expression correctly. Indexes that have already been created
    with the wrongly padded value need to be dropped and recreated.

    ++HOLD
    The following query could identify possible cases of incorrectly
    padded indexes:
    SELECT A.IXNAME, A.IXSCHEMA
    FROM SYSIBM.SYSKEYTARGETS A, SYSIBM.SYSINDEXES B
    WHERE (A.DATATYPEID IN (456, 457, 464, 465,
                             468, 469, 472, 473)
       OR A.SOURCETYPEID IN (456, 457, 464, 465,
                             468, 469, 472, 473))
      AND B.PADDED = 'Y'
      AND A.IXNAME = B.NAME
      AND A.IXSCHEMA = B.CREATOR;

    If these indexes were created before this ptf is applied, these
    indexes need to be dropped and recreated.

    Additional Keywords:
    SQLCREATE
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM23706
SPECIAL CONDITIONS:
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```
DB2BIND:
  A query may be used to identify if any index is affected by the
  problem described in PK86456, searching for indexes with
  index type 'D' for DPSI, unique rule specification of 'U' or
  'N', and where the index key columns does not include all
  patitioning key columns. If such an index is found, these
  indexes should be dropped, and can be modified by
  (1) creating the index as non-unique,
  (2) creating the index as a non-partitioned unique index,
  or
  (3) creating the index including all the columns of the
  partitioning key.

  For any data incorrectly inserted, users may delete the
  duplicate rows, or drop and recreate the table.
ACTION:
  The following query could identify possible cases of incorrectly
  padded indexes:
  SELECT A.IXNAME, A.IXSCHEMA
  FROM SYSIBM.SYSKEYTARGETS A, SYSIBM.SYSINDEXES B
  WHERE ( A.DATATYPEID IN (456, 457, 464, 465,
                          468, 469, 472, 473)
     OR A.SOURCETYPEID IN (456, 457, 464, 465,
                          468, 469, 472, 473))
    AND B.PADDED = 'Y'
    AND A.IXNAME = B.NAME
    AND A.IXSCHEMA = B.CREATOR;

  If these indexes were created before this ptf is applied, these
  indexes need to be dropped and recreated.
.


------ COVER LETTER FOR PTF UK64873 ------------

PROBLEM DESCRIPTION(S):
  PM27871 -
    ****************************************************************
    * USERS AFFECTED: DB2 9 and 10 for z/os of application        *
    *                 using sensitive static scrollalble          *
    *                 cursor when order by DESC on a column       *
    *                 that is not in the select list.             *
    ****************************************************************
    * PROBLEM DESCRIPTION: Incorrect output may be returned for   *
    *                 sensitive static scrollalble cursor         *
    *                 when order by DESC on a column that         *
    *                 is not in the select list.                  *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    Incorrect output may be returned for sensitive static
    scrollalble cursor when order by DESC on a column that is not in
    the select list.

    Following is an example of such failing query:
```

```
     EXEC SQL
       DECLARE CUR1 SENSITIVE STATIC SCROLL CURSOR FOR
         SELECT ID, CHAR(NAME, USA)
         FROM T1 WHERE MV_ID = 0000010742
         ORDER BY NAME DESC;
```
     The bindtime code in DB2 is modified to correct the conditions
     leading to the ABEND/INCORRECT OUTPUT.
     Additional Keywords: INCORROUT INCORRECTOUTPUT SQLINCORROUT
                          SQLORDERBY SQLSENSITIVE SQLSCROLL
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM27871
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM27871 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PM27871 corrects problems that can cause an incorrect
    output for sensitive static scroll cursor when order by
    DESC on a column that is not in the select list.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PK99196 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PK99196 corrects a problem that can cause incorrect out
    for sensitive static scrollable cursor when order by column
    is not in the select list.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PK67527 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PK67527 corrects a problem that can cause an abend for a
    query with order by and scrollable cursor.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PK62973 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PK62973 corrects a problem that can cause an abend for a
    query containing order by with sensitive scrollable cursor.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
  DB2BIND:
    See PK52344 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PK52344 corrects a bind-time problem that can cause an
    abend for a query involving DECFLOAT.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK64924 ------------

PROBLEM DESCRIPTION(S):
  PM13009 -
    ****
    * USERS AFFECTED: All DB2 V9 users when running merge   *
    *   statement with symmetric views.   *
    ****
    * PROBLEM DESCRIPTION: Incorrect output may occur when running *
    *   merge statement with symmetric views   *
    *   when the view definition contains   *
    *   stage 2 predicates.   *
    ****
    * RECOMMENDATION: *
    ****
    Incorrect output may occur when running merge statement with
    symmetric views when the view definition contains stage 2
    predicates.

    The following statements are an example of this case:

            CREATE VIEW V1 AS
                 SELECT * FROM T1
                 WHERE T1.C1 + T1.C2 > 10
            WITH CHECK OPTION
            ;

            MERGE INTO V1
              USING (VALUES(5,4)) AS TT (C1,C2)
              ON   TT.C1 = V1.C1
              WHEN MATCHED THEN UPDATE SET V1.C2 = TT.C2
              WHEN NOT MATCHED THEN INSERT (C1, C2)
              VALUES (TT.C1, TT.C2)
            ;
    Without this fix, a new row (5,4) will be inserted into the
    table T1.
    The bindtime code in DB2 is modified to correct the failing
    condition.

```
     Additional keyword: SQLVIEW SQLMERGE SQLINCORROUT
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM13009
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM13009:

    See PM13009 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM13009 corrects a problem of incorrect output may happen when
    running merge statement with symmetric views.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PM00059 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PM00059 corrects a problem that can cause an abend for
    sensitive static scrollable cursor using index on expression,
    and when it is index only.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.


------ COVER LETTER FOR PTF UK64946 ------------

PROBLEM DESCRIPTION(S):
  PM30378 -
    ****************************************************************
    * USERS AFFECTED: All users using the DB2 Web service         *
    *                 consumer functions in DB2 9 for z/OS and    *
    *                 DB2 10 for z/OS:                            *
    *                                                             *
    *                 DB2XML.SOAPHTTPNV                           *
    *                 DB2XML.SOAPHTTPNC                           *
    ****************************************************************
    * PROBLEM DESCRIPTION: THE PROBLEM THIS FIX ADDRESSES HAS THE *
    *                 FOLLOWING SYMPTOMS:                         *
    *                                                             *
    *                  S0C4 in LMOD DSNWSCCC/DSNWSCVV/            *
    *                             DSNWSCCV/DSNWSCVC               *
    *                     entry DSNWS05C                          *
    *                     for function SOAPHTTPNCICO.             *
    *                                                             *
    *                 The traceback trace for the TCB may        *
```

```
*                        show an Exception in this method:    *
*                         strcmp(const char*,const char*)      *
*                                                              *
*                        PROBLEM SCENARIO:                     *
*                                                              *
*                        The reported abend occurs             *
*                        occasionally during the invocation    *
*                        of the DB2 Web service consumer UDFs   *
*                                                              *
*                         DB2XML.SOAPHTTPNV                    *
*                         DB2XML.SOAPHTTPNC                    *
*                                                              *
*                        Chances of the problem occurring may   *
*                        increase when parallel requests are    *
*                        made to the function.                 *
*                                                              *
*                                                              *
****************************************************************
* RECOMMENDATION:                                              *
****************************************************************
SUMMARY OF THE PROBLEM:


The DNS cache lookup procedure of the DB2 Web service
consumer function is incorrectly implemented.  It does not
take into account concurrent access and the handling
of shared memory.  This can lead to memory corruption
which results in an abend.


PROBLEM CONCLUSION


The DB2 Web service consumer functions may abend when using
host names in the request URL. The logic to access the DNS
lookup table is implemented incorrectly which may result in
corrupted memory. The problem does not occur when the IP
address is used in the URL instead of the host name.
This problem is now fixed.

COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM30378
SPECIAL CONDITIONS:
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  ACTION:
    ***Actions for PM30378

    This PTF adds the STAY RESIDENT YES clause to the CREATE
    statements for the following DB2-supplied UDFs:
    * DB2XML.SOAPHTTPNC
      - specific names DB2XML.SOAPHTTPNCICO and DB2XML.SOAPHTTPNCIVO
    * DB2XML.SOAPHTTPNV
      - specific names DB2XML.SOAPHTTPNVICO and DB2XML.SOAPHTTPNVIVO

    If you have already installed or migrated to DB2 V9 then after
    applying this PTF, you need to take the following actions:
    (1) Update your customized copy of job DSNTIJSG
    (2) Alter existing instances of these UDFs to remain resident
```

```
     -----------------------------------------------------------------
     (1) Update your customized copy of job DSNTIJSG
     -----------------------------------------------------------------
     ==> This action is required for all customers

          * Edit your customized copy of DSNTIJSG.
          * In job step DSNTIWS, add the STAY RESIDENT YES clause to
            each of the CREATE FUNCTION statements
          * Save your changes


     -----------------------------------------------------------------
     (2) Alter existing instances of these UDFs to remain resident
     -----------------------------------------------------------------
     ==> This action is required for all customers who use the
         DB2 Web Services functions

          * Process the following ALTER statements to make the Web
            Services function remain resident

               ALTER SPECIFIC FUNCTION DB2XML.SOAPHTTPNCICO
                     STAY RESIDENT YES;

               ALTER SPECIFIC FUNCTION DB2XML.SOAPHTTPNCIVO
                     STAY RESIDENT YES;

               ALTER SPECIFIC FUNCTION DB2XML.SOAPHTTPNVICO
                     STAY RESIDENT YES;

               ALTER SPECIFIC FUNCTION DB2XML.SOAPHTTPNVIVO
                     STAY RESIDENT YES;
  ACTION:
    1. Refresh your WLM environment

    The WLM environment needs to be refreshed after the APAR
    was applied.


    2. Alter function definitions to enable SOAP 1.2 support

    The SOAP consumer functions will still use SOAP protocol
    version 1.1 by default. To enable SOAP 1.2 the following
    ALTER statements need to be issued:

      ALTER SPECIFIC FUNCTION DB2XML.SOAPHTTPNVIVO RUN OPTIONS
        'POSIX(ON),XPLINK(ON),ENVAR("DB2SOAP_VERSION=SOAP_12")';
      ALTER SPECIFIC FUNCTION DB2XML.SOAPHTTPNCIVO RUN OPTIONS
        'POSIX(ON),XPLINK(ON),ENVAR("DB2SOAP_VERSION=SOAP_12")';
      ALTER SPECIFIC FUNCTION DB2XML.SOAPHTTPNCICO RUN OPTIONS
        'POSIX(ON),XPLINK(ON),ENVAR("DB2SOAP_VERSION=SOAP_12")';
      ALTER SPECIFIC FUNCTION DB2XML.SOAPHTTPNVICO RUN OPTIONS
        'POSIX(ON),XPLINK(ON),ENVAR("DB2SOAP_VERSION=SOAP_12")';
  .


  ------ COVER LETTER FOR PTF UK64975 ------------
```

PROBLEM DESCRIPTION(S):
  PM17934 -
    ****
    * USERS AFFECTED: All users of DB2 9 for z/OS who use query   *
    *   accelerator support are affected by this   *
    *   change.   *
    ****
    * PROBLEM DESCRIPTION: This APAR provides DB2 installation   *
    *   modifications for query accelerator   *
    *   support: *
    *   (1) Adds a new job, DSNTEJAS, for   *
    *   creating the virtual accelerator   *
    *   database.   *
    *   (2) Updates DDL member DSNTESC with   *
    *   statements to create explain table *
    *   DSN_QUERYINFO_TABLE.   *
    ****
    * RECOMMENDATION: *
    ****
    DB2 installation job DSNTIJAS creates databases (including table
    spaces, tables, and indexes) that are needed to use a query
    accelerator for DB2. Among these objects are the following
    tables:
       DSNAQT.SYSACCELVIRTUALMARTS
       DSNAQT.SYSACCELVIRTUALMARTDEPS
    plus related indexes.

    These tables can be used only by the user who created them: If
    other users want to deploy data marts to the same virtual
    accelerator or create their own virtual accelerator they get an
    error caused by missing privileges. Therefore, to facilitate
    creating and granting access to these tables, the DDL for them
    is removed from DSNTIJAS into a new job called DSNTEJAS.

    DB2 sample member DSNTESC provides DDL for creating explain
    tables. Currently, DSNTESC does not create an explain table
    called DSN_QUERYINFO_TABLE. This table is used to show
    relevant information for an SQL statement that uses a query
    accelerator. Therefore, DSNTESC is updated with DDL to create
    DSN_QUERYINFO_TABLE.

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APARS FIXED: PM17934
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  ACTION:
    ***Actions for PM17934

    This PTF moves the DDL for creating the SQL objects required to
    use a virtual accelerator for DB2 from installation job DSNTIJAS
    to a new sample job, DSNTEJAS. It also adds DDL to sample member
    DSNTESC for creating the sample DSN_QUERYINFO_TABLE table. See
    the APAR cover letter for more information.

If you maintain a private copy of DSNTIJAS then after applying
this PTF, you need to take the following actions:
(1) Create a private copy of the new job, DSNTEJAS:
    Copy DSNTEJAS from the SDSNSAMP library to your own data set
    and follow the directions in the job prolog to customize it
    for your site. Use job as required to create and grant
    access to tables for users who want to deploy data marts to
    the same virtual accelerator or create their own virtual
    accelerator.

(2) Update your private copy of job DSNTIJAS:
    Remove DDL for the following objects that are now created
    by running job DSNTEJAS.
    - Database DSNAQTV
    - Table SYSACCELVIRTUALMARTS
    - Index SYSACCELVIRTUALMARTS_PK
    - Table SYSACCELVIRTUALMARTDEPS
    - Index SYSACCELVIRTUALMARTDEPS_PK

(3) If you have already created the DSNAQTV database and the
    tables and indexes indicated above, it is not necessary to
    drop and recreate them after applying this PTF.

If you maintain a private copy of DSNTESC then after applying
this PTF, you need to add the following DDL after the
CREATE statement for the DSN_VIRTUAL_INDEXES table:

```
  CREATE  TABLESPACE DSN8S91Q
          IN DSN8D91A
          BUFFERPOOL BP0
          CCSID UNICODE
          USING STOGROUP DSN8G910
          PRIQTY 30
          SEGSIZE 16
          CLOSE NO;
  CREATE LOB TABLESPACE DSN8L91Q
          IN DSN8D91A
          BUFFERPOOL BP8K0
          USING STOGROUP DSN8G910;
  CREATE LOB TABLESPACE DSN8L91R
          IN DSN8D91A
          BUFFERPOOL BP8K0
          USING STOGROUP DSN8G910;
  CREATE  TABLE DSN8910.DSN_QUERYINFO_TABLE
          ( "QUERYNO"       INTEGER       NOT NULL WITH DEFAULT
          , "QBLOCKNO"      SMALLINT      NOT NULL WITH DEFAULT
          , "QINAME1"       VARCHAR(128)  NOT NULL WITH DEFAULT
          , "QINAME2"       VARCHAR(128)  NOT NULL WITH DEFAULT
          , "APPLNAME"      VARCHAR(24)   NOT NULL WITH DEFAULT
          , "PROGNAME"      VARCHAR(128)  NOT NULL WITH DEFAULT
          , "VERSION"       VARCHAR(122)  NOT NULL WITH DEFAULT
          , "COLLID"        VARCHAR(128)  NOT NULL WITH DEFAULT
          , "GROUP_MEMBER"  VARCHAR(24)   NOT NULL WITH DEFAULT
          , "SECTNOI"       INTEGER       NOT NULL WITH DEFAULT
          , "SEQNO"         INTEGER       NOT NULL WITH DEFAULT
          , "EXPLAIN_TIME"  TIMESTAMP     NOT NULL WITH DEFAULT
```

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```
            , "TYPE"          CHAR(8)       NOT NULL WITH DEFAULT
            , "REASON_CODE"   SMALLINT      NOT NULL WITH DEFAULT
            , "QI_DATA"       CLOB(2M)      NOT NULL WITH DEFAULT
            , "SERVICE_INFO"  BLOB(2M)      NOT NULL WITH DEFAULT
            , "QB_INFO_ROWID" ROWID         NOT NULL
                                            GENERATED ALWAYS
            )
          IN DSN8D91A.DSN8S91Q
          CCSID UNICODE;
      CREATE AUX TABLE DSN8910.DSN_QUERYINFO_AUX
          IN DSN8D91A.DSN8L91Q
          STORES DSN8910.DSN_QUERYINFO_TABLE
          COLUMN "QI_DATA";
      CREATE INDEX DSN8910.DSN_QUERYINFO_AUXINX
          ON DSN8910.DSN_QUERYINFO_AUX;
      CREATE AUX TABLE DSN8910.DSN_QUERYINFO_AUX2
          IN DSN8D91A.DSN8L91R
          STORES DSN8910.DSN_QUERYINFO_TABLE
          COLUMN "SERVICE_INFO";
      CREATE INDEX DSN8910.DSN_QUERYINFO_AUXINX2
          ON DSN8910.DSN_QUERYINFO_AUX2;


    You can also use SPUFI or a similar dynamic SQL processing tool
    to add a DSN_QUERYINFO_TABLE using the above DDL statements.
  .



    ------ COVER LETTER FOR PTF UK65018 ------------

 PROBLEM DESCRIPTION(S):
   PM25934 -
     ****************************************************************
     * USERS AFFECTED: DB2 for z/OS users who have queries using a  *
     *                 data partitioned secondary index (DPSI) and  *
     *                 more than one partition is qualified for      *
     *                 limited partition scan.                       *
     ****************************************************************
     * PROBLEM DESCRIPTION: THE PROBLEM THIS FIX ADDRESSES HAS THE   *
     *                      FOLLOWING SYMPTOMS:                      *
     *                                                               *
     *                      When a query uses a data partitioned     *
     *                      secondary index, and more than one       *
     *                      partition qualifies for limited          *
     *                      partition scan, DB2 could                *
     *                      underestimate the index access cost      *
     *                      of the data partitioned secondary        *
     *                      index and choose a suboptimal access     *
     *                      path.                                    *
     *                                                               *
     ****************************************************************
     * RECOMMENDATION:                                              *
     ****************************************************************
     SUMMARY OF DB2 EVENTS:

     DB2 could underestimate the index access cost of a data
     partitioned secondary index when more than one partition
```

qualifies for limited partition scan and choose a suboptimal
        access path.
        DB2 will improve the estimation of index access cost of a data
        partitioned secondary index when more than one partition
        qualifies for limited partition scan, so that DB2 will be
        better able to choose a good access path.

        ADDITIONAL KEYWORDS:
        SQLPERFORMANCE SQLACCESSPATH PERFM DPSI
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APARS FIXED: PM25934
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  DB2BIND:
    ***Action for PM25934:

    See PM25934 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM25934 corrects a problem where the cost of a DPSI could be
    underestimated when multiple partitions are qualified.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM20356:

    See PM20356 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM20356 corrects a problem that an efficient multi-index access
    path may not be selected by the DB2 Optimizer because cost
    estimation of a multi-index access path could be inaccurate.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM19972:

    See PM19972 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM19972 corrects a problem that an efficient multi-index access
    path may not be selected by the DB2 Optimizer because the cost
    of an intersecting multi-index access path could be estimated
    inaccurately.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be

affected by this change.
.

------ COVER LETTER FOR PTF UK65185 ------------

PROBLEM DESCRIPTION(S):
  PM23759 -
    ****
    * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of   *
    *   native SQL Procedures, and Common Table   *
    *   Expressions containing the Intersect of data *
    *   'cast as decimal floating-point'.   *
    ****
    * PROBLEM DESCRIPTION: This apar provides the corrective fixes *
    *   for defects D133293, D133569, D143308, *
    *   and D83818. This results in correcting *
    *   the following problems.   *
    *   *
    *   DB2 can return an incorrect result set *
    *   using a native SQL procedure on 'error *
    *   condition' or when multiple calls are   *
    *   made to a procedure containing a NULL   *
    *   predicate using a NULL parameter value. *
    *   *
    *   An ABEND04E rc00E70005 can occur at   *
    *   location DSNXRNUM M135 when a Common   *
    *   Table Expression (CTE) contains an   *
    *   INTERSECT of integer columns that are   *
    *   'CAST as decimal floating-point'.   *
    ****
    * RECOMMENDATION: *
    ****
    In providing corrective fixes for the aforementioned defects,
    the following problem scenarios are being provided for
    additional information.

    Scenario ONE.

    For a SIGNAL statement that is issued from a routine, the
    DB2_MODULE_DETECTING_ERROR value in a Get Diagnostics
    statement may not be the "ROUTINE" in error.

    For example, if the following procedure is invoked via a
    procedure CALL statement, the SIGNAL statement is issued from a
    routine, and the output parameter P3="ROUTINE" was expected.
    Instead, P3 has the value "DSNXRSPL" which is incorrect.

      CREATE PROCEDURE SPERR(OUT P3 VARCHAR(32672))
      BEGIN
         DECLARE EXIT HANDLER FOR SQLEXCEPTION
           GET DIAGNOSTICS CONDITION 1
             P3 = DB2_MODULE_DETECTING_ERROR;
         SIGNAL SQLSTATE '77777';

```
  END#
  CALL SPERR(?)#

  Value of output parameters
  --------------------------
  Parameter Name : P3
  Parameter Value : DSNXRSPL
```

A value of "ROUTINE" was expected for output parameter P3.

Scenario TWO.

An incorrect result can be returned from a procedure containing
a NULL predicate if it is called with a non-NULL parameter
following a previous procedure call with a NULL parameter.

The following example shows that procedure PROC1 is called from
procedure PROC2 with the INOUT parameter having a NULL value.
Then, PROC2 is called again with a non-NULL parameter value.
But inside PROC2, the parameter value is incorrectly treated as
NULL resulting in an SQLSTATE '77000' being issued when
execution returns to PROC2. Procedure PROC2 is expected to
complete successfully with an SQLSTATE '00000'.

```
  CREATE PROCEDURE PROC1(INOUT IOP1 VARCHAR(12))
  LANGUAGE SQL
  MODIFIES SQL DATA
  WLM ENVIRONMENT FOR DEBUG MODE WLMENV3
  BEGIN
    IF UPPER(IOP1) IS NULL THEN -- incorrectly TRUE on 2nd call
        SET IOP1                -- setting out parm as NULL
        = NULL;
    END IF;
  END#

  CREATE PROCEDURE PROC2()
  LANGUAGE SQL
  MODIFIES SQL DATA
  WLM ENVIRONMENT FOR DEBUG MODE WLMENV3
  BEGIN
    DECLARE C1 VARCHAR(12) DEFAULT NULL;
    DECLARE C2 VARCHAR(12);
    SET C1=NULL;
    SET C2=VARCHAR('ABCD');
    CALL PROC1(C1);
    CALL PROC1(C2);
    IF C2 IS NULL THEN
      SIGNAL SQLSTATE '77000';
    END IF;
  END#

  CALL PROC2()#
```

sqlerr Message: SQL error: SQLCODE = -438, SQLSTATE = 77000.

No error or warning was expected on above procedure call.

Scenario THREE.

When a procedure returns with an SQLCODE that is less than zero,
the returned procedure status, DB2_RETURN_STATUS in a GET
DIAGNOSTICS statement, may not be set to a value of '-1'. This
is incorrect.

In the following example, when procedure SPERR is called, an
SQLCODE -438 is issued inside SPERR. However, the RETURN_STATUS
value on return from SPERR is 0. A value of -1 was expected.

```
CREATE PROCEDURE SPERR()
  SIGNAL SQLSTATE '77777'
#

CREATE PROCEDURE CALL_SPERR (OUT RETSTAT INT)
P1: BEGIN

DECLARE EXIT HANDLER FOR SQLEXCEPTION
  BEGIN
    GET DIAGNOSTICS RETSTAT =  DB2_RETURN_STATUS;
  END;
SET RETSTAT=1;
CALL SPERR();
END P1
#

CALL CALL_SPERR(?)#

Value of output parameters
--------------------------
Parameter Name : RETSTAT
Parameter Value : 0
```

Output parameter RETSTAT was expected to be -1 on the above
procedure call.

Scenario FOUR.

An ABEND04E rc00E70005 can occur at location DSNXRNUM M135 when
a Common Table Expression (CTE) contains an INTERSECT of integer
columns that are CAST as DECFLOAT (decimal floating-point).

A similar abend can occur with EXCEPT when other data types are
CAST as DECFLOAT.

Please reference the following example.

Step 1. Create a Table with an integer column and index and

Insert one row of data.

```
CREATE TABLE ABB(ID INT NOT NULL WITH DEFAULT);
CREATE INDEX ABBIDX ON ABB(ID);

INSERT INTO ABB VALUES(-219941);
```

Step 2. Execute the following query which is expected to
        return a single row.

```
WITH CTE(C1) AS(
(SELECT CAST (ID AS DECFLOAT(34))
FROM ABB WHERE ID = -219941 )
INTERSECT
(SELECT ID
FROM ABB WHERE ID = -219941)
)
 SELECT CHAR(C1) FROM CTE;
```

Step 3. Check the result. Instead of returning a single row, an
        ABEND04E rc00E70005 at location DSNXRNUM M135 can occur.

The code in DB2 is modified to correct the problems identified
previously .

Native SQL Stored Procedure code is modified to exhibit correct
behavior on an 'error condition' and when a procedure containing
a NULL predicate is called with a NULL parameter value.

Also, Common Table Expressions containing an INTERSECT of
integer columns 'cast as decimal floating-point or DECFLOAT' are
expected to return a correct result.

Additional Keywords : SQLPL SQLSTOREDPROC SQLNATIVESQLPL
                      SQLPROCEDURE SQLSP SQLCODE438
                      SQLCTE SQLISNULL SQLINCORROUT

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  DB2BIND:
    ***Action for PM23759:

    See PM23759 APAR/PTF text for additional information about
    why a REBIND is necessary.

    Apar PM23759 corrects the following problem.

    An ABEND04E at DSNXRNUM M135 can occur when using the INTERSECT
    or EXCEPT keyword with columns that are 'cast as decimal
    floating-point (DECFLOAT)' in a Common Table Expression.

    To make this fix effective for a static application, it must be

rebound after application of this PTF. Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
    DB2BIND:
      ***Action for PM12495:

      See PM12495 APAR/PTF text for additional information about
      why a REBIND is necessary.

      PM12495 corrects a problem of incorrect output, less row
      returned than expected, when a query has a predicate that
      compares an EBCDIC column to an expression that references an
      ASCII or Unicode column

      To make this fix effective for a static application, it must be
      rebound after application of this PTF. Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
    ACTION:
      Please note that the following action needs to be performed
      along with the application of this apar/ptf.

      Please note that the application of this apar/ptf needs to be
      applied to all DB2 members in a datasharing environment. This
      will allow all members to include both the needed bindtime and
      runtime code changes.
.

      ------ COVER LETTER FOR PTF UK65196 ------------

PROBLEM DESCRIPTION(S):
  PM28898 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS users *
    *   of queries that involve STAR JOIN and FETCH *
    *   FIRST N ROWS ONLY.   *
    ****
    * PROBLEM DESCRIPTION: An ABEND0C4 RC00000004 can occur at   *
    *   location DSNXRSJ +168E when the FETCH   *
    *   FIRST N ROWS ONLY clause is specified   *
    *   in a STAR JOIN SELECT.   *
    *   *
    *   This is a pre-conditioning APAR. The   *
    *   enabling apar PM25624 will follow   *
    *   later.   *
    ****
    * RECOMMENDATION: *
    ****
    An ABEND0C4 RC4 can occur at location DSNXRSJ offset 168E when
    the FETCH FIRST N ROWS ONLY clause is specified in a STAR JOIN
    SELECT query.

    The following example provides such a query.

       SELECT DISTINCT

```
              RT.KEY
             ,RT.LST
             ,RT.FST
       FROM
           (SELECT FACT.KEY
                   ,FACT.ADR
                   ,PHY.LST
                   ,PHY.FST
            FROM PHYSN_FACT  FACT
                ,ZIP_DIM  ADR
                ,DIM  PHY
            WHERE FACT.ADR =  ADR.ADR
            AND FACT.KEY =  PHY.KEY
            AND ADR.ST   = 'AK'
            AND LST  LIKE 'CHEN%'
            FETCH FIRST 1 ROWS ONLY
             ) AS RT,
            PHYSN_FACT FACT2
       WHERE RT.KEY  =  FACT2.KEY
       AND RT.ADR = FACT2.ADR
       ORDER BY RT.LST, RT.FST
       WITH UR;
```

The code in DB2 is modified to provide support for a STAR JOIN
query that contains the FETCH FIRST N ROWS ONLY clause.

Please note that this is the pre-conditioning apar. The enabling
apar is PM25624 which will come a little later.

Additional Keywords: SQLFFNR SQLSTARJOIN OFFSET168E
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APARS FIXED: PM28898
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  DB2BIND:
    ***Action for PM28898:

    See PM28898 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM28898 is a pre-conditioning APAR that includes changes to
    correct a problem for STAR JOIN queries that contain the FETCH
    FIRST N ROWS ONLY clause.

    All of the changes for this apar are transparent to the user.
    In a data sharing group, this pre-conditioning APAR should be
    applied to all members before the later enabling APAR PM25624 is
    applied to any member. The function is not enabled until the
    enabling APAR is applied.
.

------ COVER LETTER FOR PTF UK65255 ------------

PROBLEM DESCRIPTION(S):

```
PM27706 -
   ****************************************************************
   * USERS AFFECTED: All DB2 Users of DROP FUNCTION and trusted  *
   *                 context.                                    *
   ****************************************************************
   * PROBLEM DESCRIPTION: PM27706 is providing preconditioning   *
   *                      for another (enabling) PTF which will  *
   *                      come in the future.                    *
   ****************************************************************
   * RECOMMENDATION:                                             *
   ****************************************************************
   PM27706 is providing preconditioning for another (enabling)
   PTF which will come in the future.

   In addition, this apar also addresses the following problems:
    1. DROP FUNCTION may incorrectly drop a SYSIBM.SYSOBJROLEDEP
       record with the same DSCHEMA.DNAME for a user-defined
       function.
    2. Subsequently, DROP ROLE may successfully run instead of
       issuing an SQLCODE -478 because the SYSIBM.SYSOBJROLEDEP
       record may have been incorrectly deleted due to problem 1.
   PM27706 is providing preconditioning for another (enabling)
   PTF which will come in the future.

   In addition, DROP FUNCTION has been modified to drop the
   correct SYSIBM.SYSOBJROLEDEP record.

   ADDITIONAL KEYWORDS:
   SQLDROP
   SQLFUNCTION
   SQLCODE478
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APARS FIXED: PM27706
SPECIAL CONDITIONS:
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  MULTSYS:
    PM27706 is providing preconditioning for another (enabling) PTF
    which will come in the future.
.


------ COVER LETTER FOR PTF UK65334 ------------

PROBLEM DESCRIPTION(S):
  PM26475 -
   ****************************************************************
   * USERS AFFECTED: DB2 users that need to model CPU speed,     *
   *                 number of processors, RID pool, sort pool,  *
   *                 and bufferpool settings on a test system to *
   *                 match a production system.                  *
   ****************************************************************
   * PROBLEM DESCRIPTION: This APAR allows a test system to      *
   *                      better recreate environment settings   *
   *                      on a test system compared to a         *
   *                      production system.                     *
```

```
****************************************************************
* RECOMMENDATION:                                              *
****************************************************************
When modelling a production system on a test system, it may not
be possible to set certain enviroment settings to be the same.
The CPU speed, number of processors, sort pool, RID pool, and
bufferpools settings on the test system may have fewer
fewer resources and cannot have the same settings as the
production system.  This can cause a difference in access
paths between the test and production system even
though all other environment settings are the same.

New zparms and profile monitoring keywords values have been
added to allow modelling of CPU speed, number of processors,
sort pool, RID pool, and bufferpool settings. These new
attributes are only used when determining an access path
and are not used elsewhere. The actual values for the modelled
settings remain unchanged.

The new KEYWORDS values in SYSIBM.DSN_PROFILE_ATTRIBUTES are
the following:
SORT_POOL_SIZE: The sort pool size.
MAX_RIDBLOCKS: The RID pool size.
For bufferpools:
The KEYWORDS value is the same as the bufferpool names listed
in the DSNTIP1 panel. For example a KEYWORDS value of 'BP8K0'
corresponds to bufferpool BP8K0.


For example:

The following step is executed on the production system.

(1) Capture the CPU speed, number of processors, sort pool,
    RID pool settings on the production system by executing
    the following statements using a unique QUERYNO value and
    converting the hex value to integer.

 SET CURRENT DEGREE='ANY';
 EXPLAIN ALL SET QUERYNO=6475 FOR
 SELECT * FROM SYSIBM.SYSDUMMY1;

 SELECT HEX(SUBSTR(IBM_SERVICE_DATA,17,2)) AS CPU_COUNT,
        HEX(SUBSTR(IBM_SERVICE_DATA,69,4)) AS CPU_SPEED,
        HEX(SUBSTR(IBM_SERVICE_DATA,63,2)) AS MAX_RIDBLOCKS,
        HEX(SUBSTR(IBM_SERVICE_DATA,9,4))  AS SORT_POOL_SIZE
 FROM PLAN_TABLE WHERE QUERYNO=6475;

The following steps are executed on the test system:

(2) Explain tables PLAN_TABLE and DSN_STATEMNT_TABLE exist or
    are created.
(3) Profile monitoring is enabled by creating the necessary
    SYSIBM profile tables in sample job DSNTIJOS for steps
    DSNTPRO, DSNTRUN, and DSNTEXP.
(4) Execute the following INSERT statement.  Any unique
```

PROFILEID value can be used. The INSERT statement creates
a global profile for a single DB2 subsystem that is active
when profile monitoring is on.

```
INSERT INTO SYSIBM.DSN_PROFILE_TABLE (PROFILEID)
 VALUES (4713);
```

(5) Insert bufferpool values to model into
    DSN_PROFILE_ATTRIBUTES for the global parameter profile
    that was just defined in step 3.
    For example, BP0 will use a value of 25000 and BP8K0 will
    use a value of 2500 and override the actual bufferpool
    sizes of 20000 and 2000 when determining the access path.
    The actual bufferpool sizes are not changed. The bufferpool
    assignments for tables in your test system need to be
    consistent with bufferpool assignments in production.
    It is not important that the exact bufferpool used
    on the test system is the same as the production system.
    However, if a table is assigned to a bufferpool with
    VPSIZE 10000 in production, make sure it is also
    assigned to a bufferpool modeled at size 10000 in the
    modeled environment.
    This is also true for indexes.
(6) Using the MAX_RIDBLOCKS and SORT_POOL_SIZE values from
    step 1, insert RID pool and sort pool values to model into
    DSN_PROFILE_ATTRIBUTES for the global parameter profile
    that was defined in step 3.

```
INSERT INTO SYSIBM.DSN_PROFILE_ATTRIBUTES
 (PROFILEID,KEYWORDS,ATTRIBUTE1,ATTRIBUTE2)
 VALUES
 (4713, 'BP0',NULL, 25000);
```

```
INSERT INTO SYSIBM.DSN_PROFILE_ATTRIBUTES
 (PROFILEID,KEYWORDS,ATTRIBUTE1,ATTRIBUTE2)
 VALUES
 (4713, 'BP8K0',NULL, 2500);
```

```
INSERT INTO SYSIBM.DSN_PROFILE_ATTRIBUTES
 (PROFILEID,KEYWORDS,ATTRIBUTE1,ATTRIBUTE2)
 VALUES
 (4713, 'SORT_POOL_SIZE',NULL, 307200);
```

```
INSERT INTO SYSIBM.DSN_PROFILE_ATTRIBUTES
 (PROFILEID,KEYWORDS,ATTRIBUTE1,ATTRIBUTE2)
 VALUES
 (4713, 'MAX_RIDBLOCKS',NULL, 300);
```

(7) Using the CPU_SPEED and CPU_COUNT values from step 1,set
    parameters DSN6SPRM.SIMULATED_CPU_SPEED and
    DSN6SPRM.SIMULATED_CPU_COUNT to match the production
    system.

(8) Issue -START PROFILE so that the rows inserted in step 4
    are applied.

(9) Execute EXPLAIN. In DSN_STATEMNT_TABLE the column REASON
            will contain the value 'PROFILEID 4713' appended to
            the existing REASON value for that statement. The column
            REASON will have this value when a subsystem parameter
            exists in SYSIBM.DSN_PROFILE_ATTRIBUTES and is for an
            active global profile in SYSIBM.DSN_PROFILE_TABLE
            where PROFILE_ENABLED = 'Y'.

      Keywords:
      SQLEXPLAIN
      DSN_PROFILE_TABLE DSN_PROFILE_ATTRIBUTES DSN_STATEMNT_TABLE
      Why does this APAR contain changes for V8 and V10?

      Please note that although this is a V9 APAR, it does include
      a small change in V8 and V10. The APAR updates DSNADMIZ, the
      external module for the SYSPROC.ADMIN_INFO_SYSPARM stored
      procedure in DB2 V8, V9, and V10 so that it can report the
      setting for the new subsystem parameters added by this APAR.
      In DB2 data sharing, a SYSPROC.ADMIN_INFO_SYSPARM connection
      on any member of the group can query the subsystem, DECP and
      certain IRLM parameter settings of any other member of that
      group. In order to support V9 data sharing coexistence modes,
      the V8 and V10 SYSPROC.ADMIN_INFO_SYSPARM must recognize the
      new subsystem parameters.
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APARS FIXED: PM26475
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM25812:

    See PM25812 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM25812 corrects a problem of unexpected access path chosen when
    a query references a clone table where indexes are defined on
    both base and clone tables but the base table index is in
    pending status when the user queries the clone table.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  ACTION:
    **Actions for PM26475

    This APAR adds two new DB2 subsystem parameters,
    SIMULATED_CPU_COUNT and SIMULATED_CPU_SPEED, to DSN6SPRM in DB2
    V9.

    * SIMULATED_CPU_COUNT
      This parameter is for DB2 optimization modelling only. It
      specifies the number the of local CPUs being simulated. This
      parameter is honored only when SET CURRENT DEGREE='ANY' or

                              346

BIND/REBIND option DEGREE has a value of ANY.
          Acceptable values are OFF or an integer from 1 - 127. The
          default setting of OFF means that DB2 optimizes for the
          actual number of local CPUs on which it is running. OFF is
          recommended for DB2 production environments.

     * SIMULATED_CPU_SPEED
        This parameter is for DB2 optimization modelling only. It
        specifies the microseconds of task or service request block
        (SRB) execution time per service unit for the CPU being
        simulated. Acceptable values are OFF or an integer from 1 -
        2147483647. The default setting of OFF means that DB2
        optimizes for the actual CPU on which it is running. OFF is
        recommended for DB2 production environments.

If you have already installed or migrated to DB2 V9, you need
to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member
(4) Bind a new package for DSNTXAZP (DSNTIDxx refresh tool)

Detailed guidance for these actions follows:

----
(1) Update customized copies of DB2 installation CLIST members
----
==> This action is required for all customers

     This PTF modifies CLIST member DSNTINST in the SDSNCLST
     target library only. You need to redo any record format
     changes and reapply any tailoring you have done to your
     copies of this CLIST. You may also want to move it to the
     prefix.NEW.SDSNCLST data set, where the CLISTs processed by
     job DSNTIJVC reside.

----
(2) Update your customized copy of job DSNTIJUZ

==> This action is required for all customers

     This PTF modifies DB2 installation job DSNTIJUZ in the
     SDSNSAMP target library. After applying this PTF, you
     need to update your customized copy of this job as follows:

     * Add the keyword parameter SIMULATED_CPU_COUNT=<x>, where
        <x> is OFF or an integer from 1 - 127, to the invocation
        of the DSN6SPRM macro in your customized copy of
        installation job DSNTIJUZ. Make sure to add a continuation
        character in column 72 if needed. If you omit adding
        SIMULATED_CPU_COUNT here, the value will be set to the
        default of OFF when you assemble the DSNZPxxx module.

     * Add the keyword parameter SIMULATED_CPU_SPEED=<y>, where
        <y> is OFF or an integer from 1 - 2147483647, to the

invocation of the DSN6SPRM macro in your customized copy
of installation job DSNTIJUZ. Make sure to add a
continuation character in column 72 if needed. If you
omit adding SIMULATED_CPU_SPEED here, the value will be
set to the default of OFF when you assemble the DSNZPxxx
module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, you must either use the -SET
SYSPARM command or stop and start DB2 for the changes to
take effect.

----
(3) Update private copies of the DSNTIDxx CLIST input member

==> This action is required for all customers

This PTF adds entries for SIMULATED_CPU_COUNT and
SIMULATED_CPU_SPEED to the CLIST default input member,
DSNTIDXA, in the SDSNSAMP target library.
You need to add these entries to all private copies of your
CLIST output DSNTIDxx member. In each such copy, add the
following lines:

SIMULATED_CPU_COUNT CHARR G OFF   127   <x>
SIMULATED_CPU_SPEED CHARR G OFF 2147483647   <y>

Change <x> to the value you specified for
SIMULATED_CPU_COUNT in step (2), above.
Change <y> to the value you specified for
SIMULATED_CPU_SPEED in step (2), above.

----
(4) Bind a new package for DSNTXAZP (DSNTIDxx refresh tool)

==> This action is required for all customers who use the
DSNTXAZP to refresh input CLIST (DSNTIDxx) members from the
current DB2 settings.

Submit a job that contains the following BIND statement:

BIND PACKAGE(DSNTXAZP) MEMBER(DSNTXAZP) -
     ACTION(REPLACE) ENCODING(EBCDIC) -
     LIBRARY('prefix.SDSNDBRM')

where <prefix> is the high-level qualifier for the
target DB2 subsystem.

ACTION:
BEFORE APPLYING THIS PTF, SUCH AN OPEN STATEMENT OF STATIC SQL
THAT IS PROCESSED THROUGH INCREMENTAL REBIND COULD GET SQLCODE
+/-495 BY RLF PREDICTIVE GOVERNING.
AFTER APPLYING THIS PTF, RLF PREDICTIVE GOVERNING HANDLES ONLY
QUALIFIED DYNAMIC STATEMENTS AS SPECIFIED IN THE DOCUMENTATION,
THUS, NO SQLCODE +/-495 WOULD BE OBSERVED FOR AN OPEN STATEMENT.

.

------ COVER LETTER FOR PTF UK65376 ------------

PROBLEM DESCRIPTION(S):
  PM04606 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS users who use BIGINT   *
    *   or decimal floating point data types.   *
    ****
    * PROBLEM DESCRIPTION: 1. Incorrect data type conversion   *
    *   occurs when a floating point constant   *
    *   is being converted to BIGINT data   *
    *   type.   *
    *   2. ABEND04E at DSNXGRDS.DSNXOOS2 M700   *
    *   may occur when selecting an user   *
    *   defined scalar function that returns   *
    *   decimal floating point data type.   *
    ****
    * RECOMMENDATION: *
    ****
    1.
    DB2 performs incorrect data type conversion from floating point
    constant to BIGINT data type.
    For example:
    CREATE TABLE T1(C1 BIGINT)
    INSERT INTO T1 VALUES(-2.8E+2)
    SELECT * FROM T1
    The query returns -78812993478983680 because incorrect data is
    inserted into table T1.

    2.
    ABEND04E at DSNXGRDS.DSNXOOS2 M700 may occur when selecting an
    user defined scalar function that returns decimal floating point
    data type.
    For example:
    CREATE FUNCTION UDF1(V_NUM DECFLOAT)
    RETURNS DECFLOAT(34)
    LANGUAGE SQL
    DETERMINISTIC
    NO EXTERNAL ACTION
    CONTAINS SQL
    RETURN V_NUM

    SELECT UDF1(-9.99E6144) FROM SYSIBM.SYSDUMMY1
    ABEND occurs when the above SELECT is executed.
    DB2 is modified to process BIGINT conversion and decimal
    floating point data type in an user defined scalar function
    correctly.

    Additional keywords: SQLFLOAT SQLBIGINT SQLDECFLOAT SQLUDF
                         SQLINCORR SQLINCORROUT
  PM29053 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS users   *
    *   of OLAP specification.   *
                                349

```
     ****************************************************************
     * PROBLEM DESCRIPTION: ABEND04E RC00C90101 AT DSNGDVRT:500B    *
     *                      may occur for an SQL statement that     *
     *                      satisfies the following conditions:     *
     *                      1. The statement has an OLAP            *
     *                      specification with a window order       *
     *                      clause and the sort key of the window   *
     *                      order clause is a table expression      *
     *                      column.                                 *
     *                      2. The table expression column          *
     *                      is derived from string literal          *
     *                      constant in the subselect.              *
     ****************************************************************
     * RECOMMENDATION:                                             *
     ****************************************************************
     ABEND04E RC00C90101 AT DSNGDVRT:500B may occur for an SQL
     statement that satisfies the following conditions:
     1. The statement has an OLAP specification with a window order
     clause and the sort key of the window order clause is a
     table expression column.
     2. The table expression column is derived from string literal
     constant in the subselect

     For Example,

      SELECT  RANK() OVER (ORDER BY ROW1)
      FROM( SELECT 123 AS ROW1 FROM T1
           )TX;

     The above statement causes an abend because ORDER BY column
     ROW1 which is derived from the literal constant in the
     subselect is not processed correctly.

     DB2 was fixed to process the window order clause correctly.

     Additional KeyWords: SQLORDERBY SQLTABLEEXPR ERQUAL5008
                          SQLRANK SQLDENSERANK SQLROWNUMBER OLAP
   PM31183 -
     ****************************************************************
     * USERS AFFECTED: All DB2 users                               *
     ****************************************************************
     * PROBLEM DESCRIPTION: AE PM04606 FIX COMPLETION              *
     ****************************************************************
     * RECOMMENDATION:                                             *
     ****************************************************************
     AE PM04606 FIX COMPLETION
     AE PM04606 FIX COMPLETION
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM04606,PM29053,PM31183
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  DB2BIND:
    ***Action for PM29053:

    See PM29053 APAR/PTF text for additional information about
```

why a REBIND is necessary.

PM29053 corrects a problem of abend RC00C90101 AT DSNGDVRT:500B
for an SQL statement that references to the OLAP specifications
with the window order clause.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM04606:

See PM04606 APAR/PTF text for additional information about
why a REBIND is necessary.

PM04606 corrects a problem of incorrect conversion for
floating point constant to BIGINT data type.
For example:
CREATE TABLE T1(C1 BIGINT)
INSERT INTO T1 VALUES(-2.8E+2)
SELECT * FROM T1
The query returns -78812993478983680 because incorrect data is
inserted into table T1.

To make this fix effective for a static application with such
INSERT statements, it must be rebound after application of
this PTF.
Review the PTF cover letter to determine which, if any,
applications could be affected by this change.
ACTION:
PM04606 corrects a problem of incorrect conversion for
floating point constant to BIGINT data type.
For example:
CREATE TABLE T1(C1 BIGINT)
INSERT INTO T1 VALUES(-2.8E+2)
SELECT * FROM T1
The query returns -78812993478983680 because incorrect data is
inserted into table T1.

In order to correct the data in table T1, the data should be
deleted and reinserted after application of this PTF.
.

------ COVER LETTER FOR PTF UK65384 ------------

PROBLEM DESCRIPTION(S):
  PM27855 -
    ****
    * USERS AFFECTED: All Distributed Data Facility (DDF) users. *
    *   Specifically those that exploit the use   *
    *   of SQL HOLD LOCATOR, in conjunction with   *
    *   those where DB2 is configured with   *
    *   DDF THREADS=INACTIVE specified (DSN6FAC   *
    *   CMTSTAT INACTIVE) or those with remote   *

```
*                    client systems (such as DB2/LUW or JCC)     *
*                    that pool/re-use connections among          *
*                    numerous client applications.               *
******************************************************************
* PROBLEM DESCRIPTION: A VALUES SQL statement intermittently     *
*                    receives SQLCODE -423 after commit          *
*                    processing even though the LOB host         *
*                    variable value should have been             *
*                    maintained as a result of executing a       *
*                    HOLD LOCATOR SQL statement.                 *
*                    The problem only occurs when the            *
*                    application accesses a remote DB2 z/OS      *
*                    system that is configured with DDF          *
*                    Inactive Thread support.                    *
******************************************************************
* RECOMMENDATION:                                                *
******************************************************************
```

A remote application accesses a DB2 for z/OS server. In
anticipation that it must commit its SQL activity so far,
the application executes an SQL HOLD LOCATOR statement in
order to capture a LOB column value so that it can be
referenced once the application continues processing after
the commit. The application then commits but intermittently
receives SQLCODE -423 when trying to reference the held LOB
locator value. The problem only occurs when remotely accessing
a DB2 for z/OS system that is configured with DDF Inactive
Thread support (DSNZPARM DSN6FAC CMTSTAT=INACTIVE), or when
the remote client system environment allows the application
to be pooled away from its (network) connection to the remote
server.
The condition occurs because DB2 (DDF) incorrectly inactivates
the application's (network) connection to DB2 and hence "pools"
the application environment away from the DB2 thread that owns
the locator value, or incorrectly gives a remote client system
permission to "pool" the application away from its connection
to the server (hence, again, the DB2 thread that owns the
locator value). The condition can be circumvented by applying
other currently supported techniques that prevent this
"pooling" behavior, such as defining a WITH HOLD cursor.

DB2 has been changed to recognize that the presence of a held
locator requires DB2 to maintain the remote application's
association to the DB2 thread that owns the locator value.
Effectively, DB2 is changed to apply the same behavior to held
LOB locators that currently exists for WITH HOLD cursors.
WARNING WARNING WARNING
Users should be aware that there MAY be operational issues as
a result of this change because more remote application
environments will have to stay active, after commit processing,
IF the application, perhaps erroneously, has established held
locators. Basically, the operational impact of this change
occurs as a result of requiring an increased number of DB2
threads (DBATs) and remote client system network connections
(to the DB2 server) in order to service the same amount of
remote application work.
Possible symptoms may include:

. Reduced number of IFCID 3 accounting records are written.
. Increased storage utilization symptoms due to additional
  threads (DBATs) that may now be required.
. Performance degradation, perhaps due to the queuing that may
  occur as a result of reaching or approaching the MAXDBAT
  resource limit.
. High rate of unexpected "Idle Thread Time-out" conditions
  (message DSNL030I with reason code 00D3003B) that may result
  in unexpected remote application failures.
. Remote client "connection concentrator" environments may also
  be adversely affected as a result of their inability to pool
  connections on a transaction (commit) boundary.
Before applying this APAR/PTF change, users are advised to
evaluate their exposure by researching their enterprise use of
held LOB locators.
It is difficult to evaluate the use of held LOB locators in
Dynamic SQL, ODBC, or JDBC environments, but the use of static
SQL HOLD LOCATOR statements can be determined by a query of the
DB2 for z/OS SYSIBM.SYSPACKSTMT catalog table.
   DB2 10 for z/OS:
     SELECT *
       FROM SYSIBM.SYSPACKSTMT
       WHERE STATEMENT LIKE '%HOLD%LOCATOR%'
       ORDER BY COLLID,NAME;
   DB2 9 for z/OS:
     SELECT *
       FROM SYSIBM.SYSPACKSTMT
       WHERE STMT   LIKE '%HOLD%LOCATOR%'
       ORDER BY COLLID,NAME;
Evaluation of IFCID 0003 accounting trace information, with
respect to non zero DSNDQXST.QXHOLDL values, in conjunction
with IFCID 0239 package accounting information, can also be
used to help identify packages that utilize held LOB locators.
Erroneous or unintentional use of held LOB locators, or the
packages that contain them, should be eliminated. Proper or
intentional use of held LOB locators will now behave correctly
but may also result in operational issues that users should be
prepared to detect and accommodate. Users can also consider
using the FREE LOCATOR SQL statement when the held locator is
no longer needed.
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APARS FIXED: PM27855
SPECIAL CONDITIONS:
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  ACTION:
    *** Action for PM27855 (DB2 9 for z/OS):
    DB2 has been changed to recognize that the presence of a held
    locator requires DB2 to maintain the remote application's
    association to the DB2 thread that owns the locator value.
    Effectively, DB2 is changed to apply the same behavior to held
    LOB locators that currently exists for WITH HOLD cursors.

    Users should be aware that there MAY be operational issues as
    a result of this change because more remote application
    environments will have to stay active, after commit processing,

IF the application, perhaps erroneously, has established held
locators. Basically, the operational impact of this change
occurs as a result of requiring an increased number of DB2
threads (DBATs) and remote client system network connections
(to the DB2 server) in order to service the same amount of
remote application work.
Possible symptoms may include:
. Reduced number of IFCID 3 accounting records are written.
. Increased storage utilization symptoms due to additional
  threads (DBATs) that may now be required.
. Performance degradation, perhaps due to the queuing that may
  occur as a result of reaching or approaching the MAXDBAT
  resource limit.
. High rate of unexpected "Idle Thread Time-out" conditions
  (message DSNL030I with reason code 00D3003B) that may result
  in unexpected remote application failures.
. Remote client "connection concentrator" environments may also
  be adversely affected as a result of their inability to pool
  connections on a transaction (commit) boundary.
Before applying this APAR/PTF change, users are advised to
evaluate their exposure by researching their enterprise use of
held LOB locators.
It is difficult to evaluate the use of held LOB locators in
Dynamic SQL, ODBC, or JDBC environments, but the use of static
SQL HOLD LOCATOR statements can be determined by a query of the
DB2 for z/OS SYSIBM.SYSPACKSTMT catalog table.
      SELECT *
        FROM SYSIBM.SYSPACKSTMT
        WHERE STMT   LIKE '%HOLD%LOCATOR%'
        ORDER BY COLLID,NAME;
Evaluation of IFCID 0003 accounting trace information, with
respect to non zero DSNDQXST.QXHOLDL values, in conjunction
with IFCID 0239 package accounting information, can also be
used to help identify packages that utilize held LOB locators.
Erroneous or unintentional use of held LOB locators, or the
packages that contain them, should be eliminated. Proper or
intentional use of held LOB locators will now behave correctly
but may also result in operational issues that users should be
prepared to detect and accommodate. Users can also consider
using the FREE LOCATOR SQL statement when the held locator is
no longer needed.
.

------ COVER LETTER FOR PTF UK65413 ------------

PROBLEM DESCRIPTION(S):
  PM30318 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS users who use Query   *
    *   Annotation of Optimization Service   *
    *   Center(OSC), Optim Query Tuner(OQT) or Data *
    *   Studio for a query with a subquery   *
    *   predicate.   *
    ****
    * PROBLEM DESCRIPTION: Incorrect transformed query may be   *

```
*                         generated by Query Annotation of       *
*                         Optimization Service Center, Query      *
*                         Tuner or Data Studio for a query with a *
*                         subquery predicate.                     *
****************************************************************
* RECOMMENDATION:                                              *
****************************************************************
Incorrect transformed query may be generated by Query Annotation
of Optimization Service Center, Query Tuner or Data Studio for a
query with a subquery predicate.

An example query is below:

SELECT 1
FROM SYSIBM.SYSTABLES
WHERE NAME IN ( SELECT SYSIBM.SYSTABLES.NAME
                FROM SYSIBM.SYSTABLES
                WHERE ( CARDF = 1.0
                        AND NAME = 'ABC'
                      )
              )

The predicate CARDF = 1.0 may be missing in the transformed
query in Query Annotation of Optimization Service Center, Query
Tuner or Data Studio.

DB2 didn't transform the query with a subquery predicate
correctly, which may cause the above problem.
DB2 is modified to transform the query with a subquery
predicate correctly, so the correct transformed query will be
generated by Query Annotation of Optimization Service Center,
Query Tuner or Data Studio.

Additional keywords: SQLSUBQUERY SQLINSUBQ SQLGLOBALOPT
                     OSC OQT DATA STUDIO
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM30318
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM28102:

    See PM28102 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM28102 corrects a problem of possible poor performance because
    the transitive closure predicate is not generated if the
    original predicates involve a UNICODE or ASCII FOR BIT DATA
    column.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  .
```

```
------ COVER LETTER FOR PTF UK65418 ------------

PROBLEM DESCRIPTION(S):
  PM25373 -
      ****************************************************************
      * USERS AFFECTED: All DB2 users of WLM managed user-defined   *
      *                 functions and stored procedures.            *
      ****************************************************************
      * PROBLEM DESCRIPTION: WLM manages the number of server tasks *
      *                      in the WLM Stored Procedure Address     *
      *                      Space used to execute WLM-managed       *
      *                      stored procedures and user-defined      *
      *                      functions.                              *
      *                      Under certain conditions WLM may        *
      *                      increase or decrease the number of      *
      *                      server tasks in the address space.      *
      *                      However, in a certain case the number   *
      *                      of server tasks are not increased       *
      *                      even when the workload warrants it.     *
      ****************************************************************
      * RECOMMENDATION:                                             *
      ****************************************************************
      DB2 code incorrectly interprets the WLM notification to reduce
      the number of server tasks and goes to the path where the number
      of server tasks cannot be increased again on that address
      space.
      DB2 code is modified to correctly handle notification to
      reduce the number of server tasks from WLM.

      Additional keywords: SQLSP SQLSTOREDPROC SQLUDF
COMPONENT:   5740-XYR00-HDB9910
APARS FIXED: PM25373
SPECIAL CONDITIONS:
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  ACTION:
      This APAR needs application of z/OS PTFs for APARs OA33344 and
      OA33406 to get the intended behavior. Without the PTFs for
      OA33344 and OA33406 installed, the problem being corrected
      still exists but DB2 functions as before.
.


------ COVER LETTER FOR PTF UK65586 ------------

PROBLEM DESCRIPTION(S):
  PM25451 -
      ****************************************************************
      * USERS AFFECTED: All DB2 for z/OS parallelism users.         *
      ****************************************************************
      * PROBLEM DESCRIPTION: Incorrect output when query is         *
      *                      run in parallelism with key            *
      *                      range partitioning on IN-list.         *
      *                                                             *
```

```
     ****************************************************************
     * RECOMMENDATION:                                              *
     ****************************************************************
     Incorrect output could happen when a query
     is run in IN LIST parallelism and there
     exist duplicated or invalid IN LIST elements
     passed in through hostvars, or parameter markers,
     or special registers, or mismatched data types.

     Examples:

     1. VARCHAR_COLUMN IN (USER, CURRENT SQLID, 'USER01').

        IN LIST elements contain special registers.
        USER and CURRENT SQLID contain the same value.

     2. INTEGER_COLUMN IN (10, 20.1, 30, 30.0).

        IN LIST elements contain a mismatched data type for
        20.1 and 30.0.  20.1 is an invalid element
        considering the column is an integer column.
        30.0 is a duplicate of 30.


     Additional Keywords:
     SQLCPUP  SQLPARALLELISM  SET CURRENT DEGREE ANY
     SQLIN  SQLSPECIALREG  SQLHOSTVAR  SQLPMARKER
     PARAMETERMARKER  SQLPMK
     SQLINCORR INCORROUT SQLINCORROUT
     Code is enhanced to handle duplicates or invalid
     IN-list elements properly in parallelism.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM25451
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM25451 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM25451 fixes an incorrect output problem when a query
    is run in parallelism with key range partitioning on a column
    with an IN-list predicate.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PM22749 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM22749 fixes an abend case at execution time when
    IN-list parallelism is on a descending order index.

    To make this fix effective for a static application, it must be
```

rebound after application of this PTF. Review the PTF cover
       letter to determine which, if any, applications could be
       affected by this change.
    DB2BIND:
       ***Action for PM08604:

       See PM08604 APAR/PTF text for additional information about
       why a REBIND is necessary.

       PM08604 corrects a problem of incorrect output on in-list
       scan with parallelism.

       To make this fix effective for a static application, it must be
       rebound after application of this PTF. Review the PTF cover
       letter to determine which, if any, applications could be
       affected by this change.
.

------ COVER LETTER FOR PTF UK65597 ------------

PROBLEM DESCRIPTION(S):
  PK62467 -
     ****
     * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users who use *
     *   an SQL statement containing an expression in *
     *   the ORDER BY clause of a table expression.   *
     ****
     * PROBLEM DESCRIPTION: An INCORROUT or an SQLCODE -206 could   *
     *   happen if an SQL statement satisfies   *
     *   all of the following conditions.   *
     *   *
     *   1. It contains a table expression with *
     *   an ORDER BY clause.   *
     *   2. The ORDER BY clause contains an   *
     *   expression referencing an AS name   *
     *   from the SELECT clause.   *
     ****
     * RECOMMENDATION: *
     ****
     An INCORROUT or an SQLCODE -206 could happen if an SQL statement
     satisfies all of the following conditions.

     1. It contains a table expression with an ORDER BY clause.
     2. The ORDER BY clause contains an expression referencing an
        AS name from the SELECT clause.

     An example SQL statement causing the INCORROUT is:

     CREATE TABLE T1 (C1 INT, C2 INT);
     INSERT INTO T1 VALUES(1,1);
     INSERT INTO T1 VALUES(2,0);

     SELECT * FROM (SELECT C1 AS C2
                    FROM T1
                    ORDER BY C2+1) TX(COL1);

It returns 2 rows in the wrong order.

An example SQL statement causing the SQLCODE -206 is:

```
SELECT * FROM (SELECT C1 AS C3
               FROM T1
               ORDER BY C3+1) TX(COL1);
```

DB2 incorrectly processes the ORDER BY expression, which causes
the incorrect output or the SQLCODE -206.
DB2 is modified to process the ORDER BY expression correctly so
to return the correct result and avoid the SQLCODE -206 for the
aforementioned SQL statements.

Additional Keywords: SQLINCORR INCORROUT SQLINCORROUT SQLCODE206
                     SQLTABLEEXPR SQLORDERBY
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PK62467
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM25737:

    See PM25737 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM25737 corrects a problem of ABEND04E RC00E20005 at
    DSNIDALC.DSNSVBK +0994 for a SELECT statement that contains
    an ORDER BY clause in aggregate functions and the PARTITION
    clause in OLAP functions.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PK62467:

    See PK62467 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PK62467 corrects a problem that an INCORROUT or an SQLCODE -206
    could happen if an SQL statement satisfies all of the following
    conditions.

    1. It contains a table expression with an ORDER BY clause.
    2. The ORDER BY clause contains an expression referencing an
       AS name from the SELECT clause.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

```
------ COVER LETTER FOR PTF UK65856 ------------

PROBLEM DESCRIPTION(S):
  PM25826 -
      *****************************************************************
      * USERS AFFECTED: All DB2 V9 Users of the -DISPLAY DATABASE    *
      *                 LOCKS command                                *
      *****************************************************************
      * PROBLEM DESCRIPTION: The -DISPLAY DATABASE LOCKS command     *
      *                      had INCORROUT and did not show lock     *
      *                      information for Universal Table         *
      *                      Spaces.                                 *
      *****************************************************************
      * RECOMMENDATION:                                              *
      *****************************************************************
      The -DISPLAY DATABASE LOCKS command had INCORROUT and did not
      show lock information for Universal Table Spaces due to the
      inconsistent processing of partitioned spaces and system
      databases.
      The -DISPLAY DATABASE command was changed to provide consistent
      processing of partitioned spaces and system database objects.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM25826
SPECIAL CONDITIONS:
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  ACTION:
    Before this PTF is applied in a data sharing environment, if a
    DB2 member tries to DISPLAY an object and is not the castout
    owner of the object, it may not take advantage of the -THRU
    option when different partitions of the object have the same
    USERID.  Also, if a user uses different parts of the same
    object on different members, the displayed output may
    incorrectly omit MEMBER NAME details.

    Below is an example of what the output may look like before
    this PTF is applied and when the different parts are used by
    the same USERID (NOTE: The output has been slightly altered
    to fit the width of this ++HOLD text):

    DSNT360I    V91B **********************************
    DSNT361I    V91B *  DISPLAY DATABASE SUMMARY
                     *    GLOBAL USE
    DSNT360I    V91B **********************************
    DSNT362I    V91B     DATABASE = EXISTDB  STATUS = RW
                     DBD LENGTH = 4028
    DSNT397I    V91B
    NAME     TYPE PART  STATUS            CONNID   CORRID    USERID
    -------- ---- ----- ----------------- -------- --------- -------
    EXIST1   TS   0001 RW                 BATCH    CREATE    SYSADM
       -                 MEMBER NAME V91A
    EXIST1   TS   0002 RW                 BATCH    CREATE    SYSADM
    EXIST1   TS   0003 RW                 BATCH    CREATE    SYSADM
    ******* DISPLAY OF DATABASE EXISTDB  ENDED      **************
```

```
DSN9022I   V91B DSNTDDIS 'DISPLAY DATABASE' NORMAL COMPLETION

Below is an example of what the output may look like before
this PTF is applied and when the different parts are used by
the same USERID on different members (NOTE: The output has
been slightly altered to fit the width of this ++HOLD text):

DSNT360I    ********************************
DSNT361I    *  DISPLAY DATABASE SUMMARY
            *    GLOBAL USE
DSNT360I    ********************************
DSNT362I        DATABASE = EXISTDB  STATUS = RW
            DBD LENGTH = 4028
DSNT397I
NAME     TYPE PART  STATUS            CONNID   CORRID    USERID
-------- ---- ----- ----------------- -------- --------- -------
EXIST1   TS   0001 RW                 BATCH    T4111002  SYSADM
   -              MEMBER NAME V91A
   -THRU      0002
EXIST1   TS   0003 RW                 BATCH    T4111003  SYSADM
EXIST1   TS   0004 RW                 BATCH    T4111003  SYSADM
******* DISPLAY OF DATABASE EXISTDB  ENDED    ***************
DSN9022I   DSNTDDIS 'DISPLAY DATABASE' NORMAL COMPLETION

After this PTF is applied in a data sharing environment, if a
DB2 member tries to DISPLAY an object and is not the castout
owner of the object, it will take advantage of the -THRU
option when different partitions of the object have the same
USERID.  Also, if a user uses different parts of the same
object on different members, the displayed output will show
the MEMBER NAME for the different members.

Below is an example of what the output will look like after
this PTF is applied and when the different parts are used by
the same USERID (NOTE: The output has been slightly altered
to fit the width of this ++HOLD text):

DSNT360I   V91B ********************************
DSNT361I   V91B *  DISPLAY DATABASE SUMMARY
                *    GLOBAL USE
DSNT360I   V91B ********************************
DSNT362I   V91B    DATABASE = EXISTDB  STATUS = RW
            DBD LENGTH = 4028
DSNT397I   V91B
NAME     TYPE PART  STATUS            CONNID   CORRID    USERID
-------- ---- ----- ----------------- -------- --------- -------
EXIST1   TS   0001 RW                 BATCH    CREATE    SYSADM
   -              MEMBER NAME V91A
   -THRU      0003
******* DISPLAY OF DATABASE EXISTDB  ENDED    ***************
DSN9022I   V91B DSNTDDIS 'DISPLAY DATABASE' NORMAL COMPLETION

Below is an example of what the output may look like after
this PTF is applied and when the different parts are used by
the same USERID on different members (NOTE: The output has
been slightly altered to fit the width of this ++HOLD text):
```

```
DSNT360I    *******************************
DSNT361I    *  DISPLAY DATABASE SUMMARY
            *    GLOBAL USE
DSNT360I    *******************************
DSNT362I       DATABASE = EXISTDB  STATUS = RW
            DBD LENGTH = 4028
DSNT397I
NAME      TYPE PART  STATUS            CONNID   CORRID    USERID
--------  ---- ----- ----------------- -------- --------- -------
EXIST1    TS   0001 RW                 BATCH    T3Y11002  SYSADM
   -                MEMBER NAME V91A
   -THRU      0002
EXIST1    TS   0003 RW                 BATCH    T3Y11003  SYSADM
   -                MEMBER NAME V91D
   -THRU      0004
******* DISPLAY OF DATABASE EXISTDB  ENDED     ***************
DSN9022I    DSNTDDIS 'DISPLAY DATABASE' NORMAL COMPLETION
```

Because the output of the DISPLAY command may look different
after this PTF is applied. Any kind of output checking which
relies on the DISPLAY command may need to be modified before
applying this PTF.
.

------ COVER LETTER FOR PTF UK65901 ------------

PROBLEM DESCRIPTION(S):
  PM27201 -
    ****
    * USERS AFFECTED: All DB2 for z/OS users who exploit a   *
    *   Data Partitioned Secondary Index (DPSI) with *
    *   Index-On-Expression (IOE).   *
    ****
    * PROBLEM DESCRIPTION: Incorrect output may be returned by   *
    *   a query if DPSI IOE is used to return   *
    *   rows in order without sorting when   *
    *   screening predicates are involved.   *
    ****
    * RECOMMENDATION: *
    ****
    A DPSI IOE may return rows out of order if screening predicates
    exist.

    Example,

       SELECT   C1, C2, C1 + C2
         FROM   T1
         WHERE   C1 + C2 > 5 AND C3 + C4 > 100
         ORDER BY C1 + C2, C3 + C4

    Suppose the chosen plan is using a DPSI index with index on
    expressions C1 + C2 and C3 + C4. The presence of a screening
    predicate C3 + C4 causes rows to be returned out of order.

                              362
```

The problem is fixed by deferring the evaluation of screening
predicates when rows are to be returned in order and a DPSI IOE
index is chosen. Such predicates will be evaluated with the
rest of residual predicates.

Additional Keywords:
INCORROUT SQLINCORR SQLINCORROUT SQLINDEXONEXP
DB2 query optimization will not choose any predicates for
screening if index access is using DPSI IOE and the result
is expected to be returned in the order of the index keys.
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APARS FIXED: PM27201
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM27201:

    See PM27201 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM27201 corrects an access path problem, which, without the fix,
    might result in possible incorrect output when a DPSI index
    with Index-on-Expression is used for the access path.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM25554:

    See PM25554 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM25554 corrects a problem that DB2 may overestimate cost of an
    index access on a partition table if the index is a partitioning
    index and its first column matches an IN-list predicate.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM24833:

    See PM24833 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM24833 corrects a problem that DB2 may choose a poorly
    performing index with list prefetch when other highly selective
    indexes exist.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be

affected by this change.
.

------ COVER LETTER FOR PTF UK65971 ------------

PROBLEM DESCRIPTION(S):
  PM17665 -
    ****
    * USERS AFFECTED: All Distributed Data Facility (DDF) users.   *
    *   Specifically where DB2 z/OS is accessed as   *
    *   a server, via DRDA protocols, from remote   *
    *   DB2 for z/OS client applications.   *
    ****
    * PROBLEM DESCRIPTION: With the elimination of DB2 Private   *
    *   Protocol in DB2 10 for z/OS, the   *
    *   current DB2 server authorization   *
    *   behavior relative to DB2 for z/OS   *
    *   clients is no longer applicable.   *
    ****
    * RECOMMENDATION: *
    ****
    When a DB2 for z/OS server is accessed via DRDA protocols, the
    authorization behavior relative to remote DB2 for z/OS client
    applications is different than the authorization behavior
    relative to remote non DB2 for z/OS client applications.
    The authorization behavior for a DB2 for z/OS DRDA client
    application was treated differently because it was associated
    to a DB2 for z/OS Plan, and thus DB2 for z/OS server processing
    wanted to apply the same authorization behavior that users
    were accustom to with DB2 Private Protocol. That is, remote
    DB2 for z/OS DRDA, like Private Protocol, client application
    privileges are also inherited from the associated DB2 for z/OS
    Plan owner ID and this privilege inheritance has historically
    been honored by DB2 for z/OS servers relative to remote
    DB2 for z/OS client applications only.
    Now that DB2 Private Protocol is being eliminated, this
    DB2 for z/OS server privilege inheritance behavior (relative
    to remote DB2 for z/OS DRDA client applications) is no
    longer applicable and is being eliminated for the benefit of
    consistent authorization behavior with respect to non
    DB2 for z/OS client applications.
     NOTE:
       This APAR changes DB2 for z/OS server authorization behavior
       with respect to remote DRDA client applications.
       . Non DB2 for z/OS clients are not affected by this change.
       . DB2 for z/OS DRDA clients that access a DB2 for z/OS V8
         or DB2 9 for z/OS server (with Private Protocol disabled),
         or a DB2 10 for z/OS server (where Private Protocol has
         been eliminated), MAY be affected by this change.

    DB2 for z/OS server authorization processing, relative to
    remote (via DRDA) DB2 for z/OS client applications only, has
    been changed to behave consistently with the current behavior
    relative to remote non DB2 for z/OS clients. This new server
    authorization behavior essentially represents more stringent

authorization requirements that must now be met.
ATTENTION
After applying this APAR/PTF, access from remote DB2 for z/OS
client applications, via DRDA, MAY now fail with SQLCODE
-551. This will likely occur during the process of converting
remote DB2 for z/OS applications from Private Protocol to DRDA
protocol, but it may also occur if existing DRDA related
application environments relied on the authorization behavior
that has been eliminated. Authorization adjustments must be
made to satisfy the condition described by the -551 SQLCODE.
It is extremely difficult to predict in advance any potential
remote DB2 z/OS applications that may be affected by this
change in DB2 server authorization behavior. As a result,
users must be aware of the potential that -551 SQLCODE
conditions can result from this APAR/PTF and be prepared to
make the necessary authorization adjustments.
  . DB2 for z/OS V8 and DB2 9 for z/OS users:
    If the DSN6FAC PRIVATE_PROTOCOL subsystem parameter (see
    APAR PK92339 for more information) is set to NO, to prevent
    Private Protocol usage, and DB2 for z/OS client applications
    unexpectedly receive SQLCODE -551 (after the APAR/PTF is
    applied), you also have the alternative to temporarily set
    the PRIVATE_PROTOCOL subsystem parameter to YES to restore
    authorization processing to the old behavior. This technique
    can be used to prevent further application outages while the
    authorization condition is being resolved. Once the problem
    is resolved, you can set the PRIVATE_PROTOCOL subsystem
    parameter back to NO.
  . DB2 10 for z/OS users:
    Other than potentially removing the APAR/PTF, if possible,
    there is no technique to restore old authorization
    behavior since DB2 10 for z/OS does not support Private
    Protocol. Users must make the necessary authorization
    adjustments to satisfy the condition described by the -551
    SQLCODE.

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APARS FIXED: PM17665
SPECIAL CONDITIONS:
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  ACTION:
    ***Action for PM17665 - DB2 9 for z/OS:

    This APAR/PTF changes DB2 for z/OS server authorization
    behavior with respect to remote DB2 for z/OS client
    applications that access the DB2 for z/OS server via DRDA
    protocols.
    After applying this APAR/PTF, access from remote DB2 for z/OS
    client applications, via DRDA, MAY now fail with SQLCODE
    -551. This will likely occur during the process of converting
    remote DB2 for z/OS applications from Private Protocol to DRDA
    protocol, but it may also occur if existing DRDA related
    application environments relied on the authorization behavior
    that has been eliminated. Authorization adjustments must be
    made to satisfy the condition described by the -551 SQLCODE.

It is extremely difficult to predict in advance any potential
remote DB2 z/OS applications that may be affected by this
change in DB2 server authorization behavior. As a result,
users must be aware of the potential that -551 SQLCODE
conditions can result from this APAR/PTF and be prepared to
make the necessary authorization adjustments.

If the DSN6FAC PRIVATE_PROTOCOL subsystem parameter (see
APAR PK92339 for more information) is set to NO, to prevent
Private Protocol usage, and DB2 for z/OS client applications
unexpectedly receive SQLCODE -551 (after the APAR/PTF is
applied), you also have the alternative to temporarily set
the PRIVATE_PROTOCOL subsystem parameter to YES to restore
authorization processing to the old behavior. This technique
can be used to prevent further application outages while the
authorization condition is being resolved. Once the problem
is resolved, you can set the PRIVATE_PROTOCOL subsystem
parameter back to NO.

See PM17665 APAR/PTF text for additional information.
.

------ COVER LETTER FOR PTF UK65975 ------------

PROBLEM DESCRIPTION(S):
  PM22091 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
    *   users   *
    ****
    * PROBLEM DESCRIPTION: This PTF ships a new DB2-supplied   *
    *   stored procedure,   *
    *   SYSPROC.ADMIN_INFO_SYSLOG.   *
    ****
    * RECOMMENDATION: APPLY PTF   *
    ****
    The ADMIN_INFO_SYSLOG stored procedure returns system log
    entries as is. Filters, such as search string, system name,
    begin date and time, end date and time, and maximum number
    of entries are supplied that can limit the system log
    entries returned. It returns one result set that contains
    the system log entries in the created global temporary table
    SYSIBM.SYSLOG.

    This stored procedure is only supported for z/OS Version 1.12
    or higher.
    ADMIN_INFO_SYSLOG

    The ADMIN_INFO_SYSLOG stored procedure returns system log
    entries as is. Filters, such as search string, system name,
    begin date and time, end date and time, and maximum number
    of entries are supplied that can limit the system log
    entries returned.

    This stored procedure is only supported for z/OS Version 1.12

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or higher.

The following syntax diagram shows the SQL CALL statement for
invoking this stored procedure:

```
-----------------------------------------------------------------
| >>__CALL__SYSPROC.ADMIN_INFO_SYSLOG__(__search-filter,____> |
|                                                               |
| >__system-name,__start-date,__start-time,__end-date,_____> |
|                                                               |
| >__end-time,__max-entries,__message__)_____>< |
-----------------------------------------------------------------
```

Option Descriptions:
o search_filter
  Specifies a logical expression that will be used to filter
  the SYSLOG records. If this parameter is set to NULL or it
  is empty, no filtering will be done.

  A logical expression is composed of one or more operands
  separated by operators, as follows:
  operand operator operand operator operand ... operator operand

  where
    o operator is one of the following logical operators:
      AND, and, OR, or
    o operand is a string of characters or a string of
      characters enclosed in double quotes

  The operand string of characters will be used, as is, to
  search and locate a system log record. Therefore, characters
  such as '*', '%', or '?' will not be handled as masking
  characters.

  If an operand string of characters is enclosed in double
  quotes, and you want to include a double quote in the
  operand, use two double quotes. If an operand string of
  characters includes one or more blanks or the logical
  operators (AND, and, OR, or), enclose the string of
  characters in double quotes.

  For a multi-line message, each string of characters (operand)
  in the search_filter parameter is checked against each line
  of the multi-line message. A match is found if the operand
  is found in at least one line of the multi-line message.
  If the operand is instead split over several lines, then
  there is no match. If the whole message satisfies the
  search_filter, the whole message is returned.

  JES3 DLOG does not have a column to indicate
  whether a line is a continuation of a previous line.
  Therefore, for a multi-line message, the specified filter
  will be applied separately on each line in the message and
  only matching lines (not the whole message) will be
  returned.

This is an input parameter of type VARCHAR(1300).

o system_name
  Specifies the system in the sysplex whose system log entries
  will be processed or searched. Specify NULL for this
  parameter if you are retrieving the SYSLOG records of
  the z/OS system where the stored procedure is running.

  Specify an "*" if you want all the systems in a sysplex to
  be processed, subject to the following restrictions:

  o If the stored procedure is running in a JES2 system,
    specifying an "*" will cause the procedure to process
    only the logical SYSLOG of every active JES2 system
    in the sysplex.

  o If the stored procedure is running in a JES3 system,
    specifying an "*" will cause the procedure to process
    the logical SYSLOG of every active JES3 system in the
    sysplex. All DLOG entries in the global SYSLOG that are
    within the specified time interval, which can contain
    messages from every JES2 and JES3 system in the sysplex,
    will also be returned.

  This is an input parameter of type VARCHAR(8).

o start_date
  Specifies the starting date for system log records to be
  processed. If this parameter is set to NULL, the default is
  the current day.

  This is an input parameter of type DATE.

o start_time
  Specifies the starting time for system log records to be
  processed. If this parameter is set to NULL,
  the default time is 00:00:00.

  This is an input parameter of type TIME.

o end_date
  Specifies the ending date for system log records to be
  processed. If this parameter is set to NULL, the
  default is the current day.

  This is an input parameter of type DATE.

o end_time
  Specifies the ending time for system log records to be
  processed. If this parameter is set to NULL, the default
  time is 23:59:59.

  This is an input parameter of type TIME.

Together, start_date, start_time, end_date, and end_time
define the date and time range for the SYSLOG records to be

processed. The starting date and starting time must be less
than ending date and ending time.

SDSF positions the SYSLOG as near as possible to the
requested record. However, due to the precision used for
time stamps and the time the record is actually
written to SYSLOG, it is possible that this may be several
lines away from the desired record. Therefore, SYSLOG
records before a specified time interval may be returned,
while SYSLOG records closer to a specified end date and time
may not be returned.

o max_entries
   Specifies a limit on the number of SYSLOG records to be
   processed per system. If this parameter is set to NULL, the
   default is 500. Valid values are 1 to 99999999 and
   -1 to -99999999.

   If max_entries is positive, then only the oldest max_entries
   records will be processed by the procedure for a specified
   time interval. If the limit happens to occur in the middle
   of a message, then this message, if returned by the
   procedure, will be a truncated message.

   If max_entries is negative, then only the most current
   max_entries records will be processed by the procedure for a
   specified time interval. If the limit happens to occur in
   the middle of a message, then this message, if returned by
   the procedure, will be a truncated message.

   Note:
   The number specified in max_entries is not the maximum
   number of result set rows returned for a system if
   search_filter is specified. The number of rows returned in
   the result set for a system will always be less than or
   equal to max_entries.

   This is an input parameter of type INTEGER.

o message
   Contains messages if an error occurs during stored procedure
   execution. The first messages in this area are generated by
   the stored procedure. Messages that are generated by ISFEXEC
   or ISFLOG might follow the first messages.

   An empty message means the stored procedure completed
   successfully.

   This is an output parameter of type VARCHAR(1331).

ADMIN_INFO_SYSLOG Result Set Row

This stored procedure returns one result set that contains
the system log records requested. Table 1 shows the

format of the result set that is returned in the created
global temporary table SYSIBM.SYSLOG. The result set
rows are returned in ascending order by ROWNUM. The system
log records returned are grouped by system. Within each system,
the system log records are returned in the same order as they
appear in the SDSF system log.

Table 1. Result set row for ADMIN_INFO_SYSLOG result set

Column name	Data type	Contents
ROWNUM	INTEGER NOT NULL	Sequence number of the table row (1,...,n)
TEXT	VARCHAR(130) NOT NULL	A system log entry. For multi-line messages, a row is returned for each line in the message.

ADMIN_INFO_SYSLOG Environment

ADMIN_INFO_SYSLOG runs in a WLM-established stored procedures
address space. TCB=1 is also required.

ADMIN_INFO_SYSLOG Authorization

Syslog is retrieved under the security context of the user
executing the stored procedure. Since this stored procedure
reads the SYSLOG using the SDSF ISFLOG host command, SDSF
determines the user command authority in the same way that
it does when the user issues the system command in an
interactive mode.

This stored procedure also uses the SDSF ISFEXEC host
command to execute the panel command MAS.

The following steps can be taken by the RACF security
administrator to give the caller of this stored procedure
(eg. USER001) access to the logical log, MAS and SYSLOG
commands (assuming that the resources listed below
were previously defined):

PERMIT nodeid.+MASTER+.SYSLOG.SYSTEM.sysname CLASS(JESSPOOL)
  ID (USER001) ACCESS(READ)
PERMIT ISFCMD.ODSP.SYSLOG.jesx CLASS(SDSF) ID(USER001)
  ACCESS(READ)
PERMIT ISFCMD.ODSP.MAS.jesx CLASS(SDSF) ID(USER001)
  ACCESS(READ)

For more information on granting access to SDSF commands,
refer to the SDSF Operation and Customization manual.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM22091
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM

```
ACTION:
  This PTF adds a new DB2-supplied stored procedure called
  SYSPROC.ADMIN_INFO_SYSLOG that returns system log entries.

  **************************************************************
  Actions for customers who are already using DB2 V9:
  **************************************************************
  If you have already installed or migrated to DB2 Version 9 then
  after applying this PTF, you need to take the following actions:
  (1) Update private copies of the installation CLIST.
  (2) Update your customized copy of job DSNTIJSG.
  (3) Create and grant access to the new stored procedure
      SYSPROC.ADMIN_INFO_SYSLOG and its result table.

  Procedures for these actions are given below.
  ------------------------------------------------------------------
  (1) Update private copies of the installation CLIST
      ********************************************************
      * All current V9 customers need to perform this step
      ********************************************************
      This PTF modifies the DB2 installation CLIST member
      DSNTINS1 in the prefix.SDSNCLST target library.
      After applying this PTF, you need to redo any record format
      changes and reapply any tailoring you have done to your
      private copies of DSNTINS1.  You may also want to move
      them to the prefix.NEW.SDSNCLST data set, where the CLISTs
      processed by job DSNTIJVC reside.
  ------------------------------------------------------------------
  (2) Update your customized copy of job DSNTIJSG
      ********************************************************
      * All V9 customers who maintain a private copy of DB2
      * installation job DSNTIJSG need to perform this step.
      ********************************************************
      (a) Edit your customized copy of DSNTIJSG
      (b) Add the following SQL statements under the SYSIN DD of
          job step DSNTICU. If DSNTICU is commented out then you
          should also comment out these statements:

            DROP PROCEDURE SYSPROC.ADMIN_INFO_SYSLOG RESTRICT;
            DROP TABLE SYSIBM.SYSLOG;

      (c) In job step DSNTIAE:
          - add the following DDL statement for creating the
            SYSIBM.SYSLOG global temporary table:

              CREATE GLOBAL TEMPORARY TABLE SYSIBM.SYSLOG
                    ( ROWNUM              INTEGER      NOT NULL
                     ,TEXT                VARCHAR(130) NOT NULL
                    ) CCSID EBCDIC;

          - add the following DDL statement for creating the
            SYSPROC.ADMIN_INFO_SYSLOG stored procedure:

              CREATE PROCEDURE SYSPROC.ADMIN_INFO_SYSLOG
                    ( IN      SEARCH_FILTER       VARCHAR(1300)
                     ,IN      SYSTEM_NAME         VARCHAR(8)
```

```
              ,IN     START_DATE          DATE
              ,IN     START_TIME          TIME
              ,IN     END_DATE            DATE
              ,IN     END_TIME            TIME
              ,IN     MAX_ENTRIES         INTEGER
              ,OUT    MSG                 VARCHAR(1331)
            ) PARAMETER CCSID EBCDIC
              EXTERNAL NAME DSNADMIL
              RESULT SETS 1
              LANGUAGE REXX
              PARAMETER STYLE GENERAL WITH NULLS
              COLLID DSNREXCS
              WLM ENVIRONMENT <wlm-environment-name>
              ASUTIME NO LIMIT
              STAY RESIDENT NO
              PROGRAM TYPE MAIN
              SECURITY USER
              COMMIT ON RETURN NO;
```

and change <wlm-environment-name> to the name of
a DB2 REXX WLM environment.

(d) In job step DSNTIJG, add the following DDL statements
    to grant access:
      GRANT ALL ON TABLE SYSIBM.SYSLOG TO <name>;
      GRANT EXECUTE ON PROCEDURE SYSPROC.ADMIN_INFO_SYSLOG
        TO <name>;
     and replace <name> with an authorization ID that needs
     access to the new stored procedure
     SYSPROC.ADMIN_INFO_SYSLOG.
(e) Save your changes.
----
(3) Create and grant access to the new stored procedure
    SYSPROC.ADMIN_INFO_SYSLOG and its result table
    ****
    * All V9 customers who want to use the stored procedures
    * SYSPROC.ADMIN_INFO_SYSLOG need to perform this step.
    ****
    Use the following procedure to avoid disrupting your
    existing DB2-supplied stored procedures and databases:
    (a) Create and edit a copy of the DSNTIJSG job you updated
        in step (2) of this procedure
    (b) Remove all job steps except DSNTIAE and DSNTIJG
    (c) In job step DSNTIAE:
        - remove all BIND PACKAGE statements under the SYSTSIN
          DD
        - remove all CREATE statements under the SYSIN DD,
          except for the following:
            CREATE GLOBAL TEMPORARY TABLE SYSIBM.SYSLOG ...
            CREATE PROCEDURE SYSPROC.ADMIN_INFO_SYSLOG ...
    (d) In job step DSNTIJG, remove all GRANT statements except
        the ones you added in step (2)(d), above
    (e) Run the job to create and grant access to the
        new stored procedure SYSPROC.ADMIN_INFO_SYSLOG and
        its result table

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```

```
        ------------------------------------------------------------
.


------ COVER LETTER FOR PTF UK66003 ------------

PROBLEM DESCRIPTION(S):
  PM33973 -
    ****************************************************************
    * USERS AFFECTED: DB2 for z/OS users attempting an EXPLAIN    *
    *                 on an INSERT statement using DSNAEXPL       *
    *                 stored procedure.                           *
    ****************************************************************
    * PROBLEM DESCRIPTION: THE PROBLEM THIS FIX ADDRESSES HAS THE *
    *                      FOLLOWING SYMPTOMS:                     *
    *                                                             *
    *                      SQLCODE -104 returned from DSNAEXPL    *
    *                                                             *
    *                      PROBLEM SCENARIO:                      *
    *                                                             *
    *                      DSNAEXPL returned a DB2 SQLCODE -104   *
    *                      when explaining a qualified INSERT     *
    *                      statement. The VALUES part of the      *
    *                      statement can get corrupted and the    *
    *                      output returned is not what is         *
    *                      expected.                              *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    SUMMARY OF DB2 EVENTS:

    DSNAEXPL was not qualifying the VALUES
    part of the INSERT statement correctly.

    For example:
    This did not work:
    INSERT INTO T1 VALUES(1,
      XMLPARSE(DOCUMENT '.....'));

    This worked:
    INSERT INTO T1 VALUES (1,
      XMLPARSE(DOCUMENT '.....'));

    Notice the space after VALUES!!
    PROBLEM CONCLUSION:

    DSNAEXPL is now fixed to handle the VALUES part of an INSERT
    statement.


    ADDITIONAL KEYWORDS:
    SQLCODE104 SQLINSERT
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM33973
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
```

ACTION:
  This PTF updates the external module for the SYSPROC.DSNAEXP
  stored procedure (DSNAEXPL). If you have already installed or
  migrated to DB2 V9, use the following procedure to refresh the
  DSNAEXPL package and refresh the WLM environment for
  SYSPROC.DSNAEXP.
  ----
  (1) Process the following DB2 command to refresh the package for
      DSNAEXPL:
      ****
      * All DB2 V9 customers who use the DSNAEXP stored procedure
      * need to take this action after
      * applying the PTF
      ****
      BIND PACKAGE(DSNAEXPL) MEMBER(DSNAEXPL) -
           ACTION(REPLACE) ISOLATION(RR) -
           ENCODING(EBCDIC) CURRENTDATA(YES) -
           DYNAMICRULES(BIND) -
           OWNER(!dsnaexp-owner!) -
           LIBRARY('!prefix!.SDSNDBRM')

      where !dsnaexp-owner! is the owner of the package for the
      SYSPROC.DSNAEXP stored procedure and !prefix! is the data
      set prefix of your DB2 V9 SDSNDBRM target library.

  (2) Refresh the WLM environment
      ****
      * All DB2 V9 customers who use the DSNAEXP stored procedure
      * need to take this action after
      * applying the PTF
      ****
      Issue the following VARY MVS command from the console to
      refresh the WLM application environment:

          VARY WLM,APPLENV=!wlmenv!,REFRESH

      where !wlmenv! is the name of the WLM application
      environment for running the SYSPROC.DSNAEXP stored
      procedure.

ACTION:
  This PTF updates the external module for the SYSPROC.DSNAEXP
  stored procedure (DSNAEXPL). If you have already installed or
  migrated to DB2 V9, use the following procedure to refresh the
  DSNAEXPL package and refresh the WLM environment for
  SYSPROC.DSNAEXP.
  ----
  (1) Process the following DB2 command to refresh the package for
      DSNAEXPL:
      ****
      * All DB2 V9 customers who use the DSNAEXP stored procedure
      * need to take this action after
      * applying the PTF
      ****
      BIND PACKAGE(DSNAEXPL) MEMBER(DSNAEXPL) -

```
              ACTION(REPLACE) ISOLATION(RR) -
              ENCODING(EBCDIC) CURRENTDATA(YES) -
              DYNAMICRULES(BIND) -
              OWNER(!dsnaexp-owner!) -
              LIBRARY('!prefix!.SDSNDBRM')
```

        where !dsnaexp-owner! is the owner of the package for the
        SYSPROC.DSNAEXP stored procedure and !prefix! is the data
        set prefix of your DB2 V9 SDSNDBRM target library.

   (2) Refresh the WLM environment
       ****
       * All DB2 V9 customers who use the DSNAEXP stored procedure
       * need to take this action after
       * applying the PTF
       ****
       Issue the following VARY MVS command from the console to
       refresh the WLM application environment:

            VARY WLM,APPLENV=!wlmenv!,REFRESH

       where !wlmenv! is the name of the WLM application
       environment for running the SYSPROC.DSNAEXP stored
       procedure.
ACTION:
  This PTF updates the external module for the SYSPROC.DSNAEXP
  stored procedure (DSNAEXPL). If you have already installed or
  migrated to DB2 V9, use the following procedure to refresh the
  DSNAEXPL package and refresh the WLM environment for
  SYSPROC.DSNAEXP.
  ----
  (1) Process the following DB2 command to refresh the package for
      DSNAEXPL:
      ****
      * All DB2 V9 customers who use the DSNAEXP stored procedure
      * need to take this action after
      * applying the PTF
      ****
      BIND PACKAGE(DSNAEXPL) MEMBER(DSNAEXPL) -
           ACTION(REPLACE) ISOLATION(RR) -
           ENCODING(EBCDIC) CURRENTDATA(YES) -
           DYNAMICRULES(BIND) -
           OWNER(!dsnaexp-owner!) -
           LIBRARY('!prefix!.SDSNDBRM')

      where !dsnaexp-owner! is the owner of the package for the
      SYSPROC.DSNAEXP stored procedure and !prefix! is the data
      set prefix of your DB2 V9 SDSNDBRM target library.

  (2) Refresh the WLM environment
      ****
      * All DB2 V9 customers who use the DSNAEXP stored procedure
      * need to take this action after
      * applying the PTF
      ****
      Issue the following VARY MVS command from the console to
```

```
        refresh the WLM application environment:

               VARY WLM,APPLENV=!wlmenv!,REFRESH

        where !wlmenv! is the name of the WLM application
        environment for running the SYSPROC.DSNAEXP stored
        procedure.
     -----------------------------------------------------------------
  ACTION:
     ** Action for PK95359 (V9) **

     This PTF updates the external module for the SYSPROC.DSNAEXP
     stored procedure (DSNAEXPL).  If you have already installed or
     migrated to DB2 V9, use the following procedure to refresh the
     DSNAEXPL package and refresh the WLM environment for
     SYSPROC.DSNAEXP.
     -----------------------------------------------------------------
     (1) Process the following DB2 command to refresh the package for
         DSNAEXPL:
         ***********************************************************
         * All DB2 V9 customers who use the DSNAEXP stored procedure
         * need to take this action after applying the PTF
         ***********************************************************
         BIND PACKAGE(DSNAEXPL) MEMBER(DSNAEXPL) -
               ACTION(REPLACE) ISOLATION(RR) -
               ENCODING(EBCDIC) CURRENTDATA(YES) -
               DYNAMICRULES(BIND) -
               OWNER(!dsnaexp-owner!) -
               LIBRARY('prefix.SDSNDBRM')

         where !dsnaexp-owner! is the owner of the package for the
         SYSPROC.DSNAEXP stored procedure and !prefix! is the data
         set prefix of your DB2 V9 SDSNDBRM target library.

     (2) Refresh the WLM environment
         ***********************************************************
         * All DB2 V9 customers who use the DSNAEXP stored procedure
         * need to take this action after applying the PTF
         ***********************************************************
         Issue the following VARY MVS command from the console to
         refresh the WLM application environment:

               VARY WLM,APPLENV=!wlmenv!,REFRESH

         where !wlmenv! is the name of the WLM application
         environment for running the SYSPROC.DSNAEXP stored
         procedure.
     -----------------------------------------------------------------
  .


------ COVER LETTER FOR PTF UK66069 ------------

PROBLEM DESCRIPTION(S):
  PK43028 -
     ***********************************************************
```

```
* USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS users *
*                 of queries containing non-boolean term        *
*                 predicates.                                    *
*****************************************************************
* PROBLEM DESCRIPTION: PRECONDITIONING APAR to set up the       *
*                      infrastructure needed for DB2 to         *
*                      correct the problem of an incorrect      *
*                      result set being returned for            *
*                      queries containing non-boolean           *
*                      predicates in row-generating expression  *
*                      of XMLTABLE function.                     *
*****************************************************************
* RECOMMENDATION:                                                *
*****************************************************************
```

PK43028 and PM34673 will address the problem of an incorrect
result set being returned for queries containing non-boolean
term XPath predicates in a row-generating expression of the
XMLTABLE function. PK43028 is the preconditioning APAR and
PM34673 is the enabling APAR.

The following example helps illustrate the problem:

 Create a table containing XML column with XMLPATTERN indexes
 and insert one row.

```
   CREATE TABLE T1 ( C3 XML);
   CREATE INDEX IDX1   ON T1(C3) GENERATE KEYS USING
         XMLPATTERN '/a/b'  AS SQL DECFLOAT;
   CREATE INDEX IDX2   ON T1(C3) GENERATE KEYS USING
         XMLPATTERN '/a/b'  AS SQL VARCHAR(10);
   CREATE INDEX IDX3   ON T1(C3) GENERATE KEYS USING
         XMLPATTERN '/a/c'  AS SQL DECFLOAT;
   CREATE INDEX IDX4   ON T1(C3) GENERATE KEYS USING
         XMLPATTERN '/a/c'  AS SQL VARCHAR(10);
   INSERT INTO T1 VALUES ('<a><b>1</b><c>3</c></a>');
```

 The query below is expected to return one row as the second OR
 predicate a[b=1] is true. But no rows are returned as the
 non-boolean term predicate execution incorrectly terminates
 due to first expression i.e. a[c>=$y] being false.

```
   SELECT DISTINCT X.* FROM T1,
   XMLTABLE('/a[c>=$y or b=1]'
   PASSING  T1.C3
         ,CAST(NULL as VARCHAR(2))  as "y"
        COLUMNS D1 VARCHAR(2) PATH 'c') X;

   D1
   --

     0 record(s) selected.
```

ONE row is expected to be returned for above query.
DB2 is modified to set up the needed infrastructure to correct
the problem of an incorrect result set being returned for
queries containing non-boolean term predicates.

PK43028 is the preconditioning APAR and PM34673 is the enabling
APAR. In a data sharing environment, PK43028 must be applied to
all members before PM34673 can be applied. When a statement is
prepared or bound on a member that has both PK43028 and PM34673
and the statement is executed on a member that does not have
PK43028, a statement with non-boolean term predicates that
utilizes the new infrastructure will result in an SQLCODE -20249
being issued at run time.

Additional Keywords : SQLINCORROUT SQLINCORR XMLINCORR
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PK43028
SPECIAL CONDITIONS:
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           LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  MULTSYS:
    ***Action for PK43028:

    PK43028 sets up the infrastructure needed for correcting a
    problem with non-boolean term XPath predicates in
    row-generating expression of XMLTABLE function.
    PK43028 is the preconditioning APAR and PM34673 is the enabling
    APAR. In a data sharing environment, PK43028 must be applied to
    all members before PM34673 can be applied. When a statement is
    prepared or bound in a member that has both PK43028 and PM34673
    and the statement is executed on a member that does not have
    PK43028, if the statement contains non-boolean term predicates
    that utilize the new infrastructure, SQLCODE -20249 is issued
    at run time.
.

------ COVER LETTER FOR PTF UK66082 ------------

PROBLEM DESCRIPTION(S):
  PM30587 -
    ****
    * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of   *
    *   SELECT statement referenced multiple views *
    *   where UNION ALL and scalar-fullselet are   *
    *   contained.   *
    ****
    * PROBLEM DESCRIPTION: An ABEND0C4 RC00000038 at location   *
    *   DSNXGRDS.DSNXOCT+0A6C may occur when a   *
    *   SQL statement satisfies all of the   *
    *   following conditions: *
    *   *
    *   1. A SQL statement references multiple   *
    *   views or table expressions;   *
    *   2. One of the view or table expression   *
    *   contains UNION ALL;   *
    *   3. One of the view or table expression   *
    *   is materialized and contains scalar-   *
    *   fullselect in the SELECT list;   *
    *   4. A predicate in the SQL statement   *

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```
*                        references a column from a view or    *
*                        a table expressions which contains     *
*                        scalar-fullselect in SELECT list.      *
****************************************************************
* RECOMMENDATION:                                              *
****************************************************************
An ABEND0C4 RC00000038 at location DSNXGRDS.DSNXOCT+0A6C may
occur when a SQL statement satisfies all of the following
conditions:

1. A SQL statement references multiple views or table
   expressions;
2. One of the view or table expression contains UNION ALL;
3. One of the view or table expression is materialized and
   contains scalar-fullselect in the SELECT list;
4. A predicate in the SQL statement references a column from
   a view or a table expression which contains scalar-fullselect
   in the SELECT list.

The following example help to illustrate the problem:
1) CREATE TABLE TEST.T1 (T1C1 CHAR(10), T1C2 CHAR(5));
   CREATE TABLE TEST.T2 (T2C1 CHAR(10), T2C2 CHAR(5));

2) CREATE VIEW TEST.V1 (V1C1, V1C2) AS
   (SELECT (SELECT T1C1
             FROM TEST.T1) AS V1C1,
          T1C2

    FROM TEST.T1);

   CREATE VIEW TEST.V2 (V2C1, V2C2) AS
   (SELECT T2C1, T2C2
    FROM TEST.T2
    WHERE T2C2 = 'A'
       UNION ALL
    SELECT T2C1, T2C2
    FROM TEST.T2
    WHERE T2C2 = 'B');

3) SELECT VB.V2C2
   FROM TEST.V1 AS VA,
        TEST.V2 as VB
   WHERE VA.V1C1 = 'ABC';

DB2 didn't handle the aforementioned query correctly which
results in the ABEND.
The code in DB2 has been modified correctly to process a SQL
statement which references multiple views or table expressions
where UNION ALL and scalar-fullselect are contained.

Additional keywords: SQLVIEW SQLSCALAR SQLFULLSELECT
                     SQLPREDPUSHDOWN SQLUNIONALL
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM30587
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
```

DB2BIND:
    ***Action for PM30064:

    See PM30064 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM30064 made an performance enhancement for a query satisfying
    all of the following conditions:

    1. The query contains host variables or parameter markers.
    2. The query references a view or table expression which
       contains UNION ALL and returns a LOB column.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK66117 ------------

PROBLEM DESCRIPTION(S):
  PM27127 -
    ****
    * USERS AFFECTED: All users of DB2 for z/OS V9 and V10, that   *
    *   are using index compression with indexes   *
    *   defined as UNIQUE WHERE NOT NULL.   *
    ****
    * PROBLEM DESCRIPTION: The index compression module DSNKPGCM   *
    *   detected an inconsistent index page   *
    *   and issued an ABEND04E RC00C90101   *
    *   with ERQUAL5008.   *
    ****
    * RECOMMENDATION: *
    ****
    During the compression of an index page for an index that was
    created as UNIQUE WHERE NOT NULL, the module DSNKPGCM
    detected an inconsistent page. The inconsistency on the page
    occurred when at least 1 key on the page represented more than
    127 rows.
    Compression routines within macro DSNKCFRE, have been modified
    to correctly account for more than 127 rows being represented by
    a single key, where the index is created as UNIQUE WHERE NOT
    NULL.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM27127
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    PK83683 has modified LOAD/REORG behavior as follows:

    When LOAD PART REPLACE is run on a partitioned table space,
    leaf pages of a non-partitioned secondary index (NPSI) can

become empty due to the replace processing. With PK83683
applied, LOAD PART REPLACE will no longer physically delete
these empty NPSI leaf pages - which contributes to the extended
elapsed time and increased logging per the index structural
modifications.

The aforementioned behavior only takes place for LOAD PART
REPLACE when new data rows are being loaded. For LOAD PART
REPLACE with dummy/empty input, the existing behavior is not
changed by PK83683.

PK83683 also changes REORG TABLESPACE PART SHRLEVEL NONE
behavior similarly, when some but not all data rows are
DISCARDed or when NPSI is in rebuild pending (RBDP) prior to
REORG.
.

------ COVER LETTER FOR PTF UK66186 ------------

PROBLEM DESCRIPTION(S):
  PM25624 -
     ****
     * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
     *   users of queries that involve STAR JOIN   *
     *   and FETCH FIRST N ROWS ONLY.   *
     ****
     * PROBLEM DESCRIPTION: An ABEND0C4 RC00000004 can occur at   *
     *   location DSNXRSJ +168E when the FETCH   *
     *   FIRST N ROWS ONLY clause is specified   *
     *   for a STAR JOIN SELECT.   *
     *   *
     *   The complete fix consists of the pre- *
     *   conditioning apar PM28898 and this   *
     *   enabling apar.   *
     ****
     * RECOMMENDATION: *
     ****
     An ABEND0C4 RC4 can occur at location DSNXRSJ +168E (or offset
     168E) when the FETCH FIRST N ROWS ONLY clause is specified for a
     STAR JOIN SELECT query.

     The following example is such a query.

        SELECT DISTINCT
          RT.KEY,
          RT.LST,
          RT.FST
        FROM
          (SELECT FACT.KEY,
           FACT.ADR,
           PHY.LST,
           PHY.FST
           FROM PHYSN_FACT FACT, ZIP_DIM ADR, DIM PHY
           WHERE FACT.ADR = ADR.ADR
           AND FACT.KEY = PHY.KEY
                            381

```
                AND ADR.ST = 'AK'
                AND LST LIKE 'CHEN%'
                FETCH FIRST 1 ROWS ONLY ) AS RT, PHYSN_FACT FACT2
             WHERE RT.KEY = FACT2.KEY
             AND RT.ADR = FACT2.ADR
             ORDER BY RT.LST, RT.FST
             WITH UR;
```

The code in DB2 is modified to provide support for a STAR JOIN
query that contains the FETCH FIRST N ROWS ONLY clause.

The complete solution is to apply the pre-conditioning
apar PM28898 followed by this apar, the enabling apar.

Additional Keywords: SQLSTARJOIN SQLFFNR
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM25624
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM25624:

Apar PM25624 corrects an ABEND0C4 RC00000004 that can occur at
location DSNXRSJ offset 168E when the FETCH FIRST N ROWS ONLY
clause is specified for a STAR JOIN SELECT kind of query.

PM25624 is the enabling APAR that completes the fix for an
earlier pre-conditioning APAR PM28898. In a data sharing group,
this pre-conditioning APAR should be applied to all members
before applying this ENABLING APAR to any member.

The fix will be enabled once this ENABLING APAR is applied.
.

------ COVER LETTER FOR PTF UK66226 ------------

PROBLEM DESCRIPTION(S):
  PM04570 -
    ****
    * USERS AFFECTED: All DB2 V9 for z/OS users of scrollable   *
    *   SENSITIVE and ASENSITIVE cursor with IN   *
    *   predicate or EXIST predicate.   *
    ****
    * PROBLEM DESCRIPTION: An incorrect output or infinite loop   *
    *   may occur when a cursor is declared as *
    *   SENSITIVE DYNAMIC, SENSITIVE STATIC or *
    *   ASENSITIVE scrollable and also has IN   *
    *   predicate or EXIST predicate.   *
    ****
    * RECOMMENDATION: *
    ****
    An incorrect output or infinite loop may occur when a cursor is
```

declared as SENSITIVE DYNAMIC, SENSITIVE STATIC or ASENSITIVE
scrollable and also has IN predicate or EXIST predicate.

The following example helps to illustrate the problem:

EXEC SQL DECLARE C21 SENSITIVE DYNAMIC SCROLL CURSOR FOR
SELECT A.ORDER_ID
FROM TEST.ORDERLINE AS A
WHERE EXISTS (SELECT 1
              FROM TEST.ORDER_TB AS B
              WHERE A.ORDER_ID = B.ORDERLINE_ORDER_ID
                 AND B.ORDER_DISTRICT_ID = 'WA');
The code in DB2 has been modified correctly to handle SENSITIVE
and ASENSITIVE scrollable cursor with IN predicate or EXIST
predicate.

Additional Keywords:  SQLSENSITIVE SQLSCROLL
                      SQLASENSITIVE SQLSCROLL
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM04570
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM04570:

    See PM04570 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM04570 corrects a problem of incorrect output or infinite loop
    when cursor is declared as SENSITIVE STATIC, SENSITIVE DYNAMIC
    or ASENSITIVE scrollable, and also has IN predicate or EXIST
    predicate.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM00661 ***

    See PM00661 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM00661 corrects a problem of incorrect out for an SQL statement
    that contains an IN predicate. One side of the IN predicate
    contains a CASE expression and the other side contains string
    constants and the CASE expression references to a column which
    is defined with field procedure.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PK92309:

See PK92309 APAR/PTF text for additional information about
why a REBIND is necessary.

PK92309 corrects a problem of INCORROUT on a SELECT with
DISTINCT in a subquery that also contains a FETCH FIRST n ROWS
clause.

To make this fix effective for a static application, it must be
rebound after application of this PTF.  Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
  DB2BIND:
    ***Action for PK69426:

See PK69426 APAR/PTF text for additional information about
why a REBIND is necessary.

PK69426 corrects a problem of possible SQLCODE406 when a basic
predicate contains a fullselect which returns decimal result.

To make this fix effective for a static application, it must be
rebound after application of this PTF.  Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.


------ COVER LETTER FOR PTF UK66235 ------------

PROBLEM DESCRIPTION(S):
  PM34291 -
    ****************************************************************
    * USERS AFFECTED: All DB2 for z/OS v8, DB2 9 for z/OS, and DB2 *
    *                 10 for z/OS users with queries where the     *
    *                 PLAN_TABLE ACCESSTYPE column is 'V'.         *
    ****************************************************************
    * PROBLEM DESCRIPTION: An SQLCODE327 may be issued from        *
    *                      DSNXRINS for a query where the input    *
    *                      to sort contains an ACCESSTYPE of       *
    *                      'V'.                                    *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    An SQLCODE327 may be issued from DSNXRINS for a query where the
    input to sort contains an ACCESSTYPE of 'V'.

    This problem can occur because the INSERT WITH VIEW is
    considered part of the MERGE statement.  However, it should be
    noted that the problem could also occur in another way.  This
    can result in the SQLCODE327 following multiple SQLCODE254 (or
    -254) errors which occur from DSNXRMRG during MERGE processing.

    The following example illustrates a MERGE statement with a
    VALUES clause inserting with a view.

384

```
     MERGE INTO ADMF001.VW_NEWORDERLEVEL2  AS VW_NEW2
     USING (VALUES(CAST(300 AS INTEGER)
           ,CAST('30' AS CHAR(2))
           ,CAST('0000003000' AS CHAR(10))) FOR 5 ROWS)
      AS VW_NEW2A (NEWORDER_ORDER_ID_011
                , NEWORDER_DISTRICT_ID
                , NEWORDER_WAREHOUSE_ID)
      ON VW_NEW2A.NEWORDER_ORDER_ID_011 =
         VW_NEW2.NEWORDER_ORDER_ID_011
      AND
         (SUBSTR(VW_NEW2A.NEWORDER_WAREHOUSE_ID,7,4)
         BETWEEN '0050' AND '0100'
      OR
         SUBSTR(VW_NEW2A.NEWORDER_WAREHOUSE_ID,7,4)
         BETWEEN '1900' AND '2000' )
     WHEN MATCHED THEN
     UPDATE
        SET  NEWORDER_DISTRICT_ID='33'
     WHEN NOT MATCHED THEN
     INSERT (NEWORDER_ORDER_ID_011, NEWORDER_DISTRICT_ID,
             NEWORDER_WAREHOUSE_ID)
      VALUES
      (VW_NEW2A.NEWORDER_ORDER_ID_011, VW_NEW2A.NEWORDER_DISTRICT_ID,
       CHAR(VW_NEW2A.NEWORDER_ORDER_ID_011))
       NOT ATOMIC CONTINUE ON SQLEXCEPTION;
```

DB2 has been modified to make sure the appropriate code is
called when ACCESSTYPE = 'V'. This will prevent the
SQLCODE327 and possibly other errors from occuring during
MERGE processing.

Additional Keywords: SQLBETWEEN SQLINSERT SQLVIEW SQLINCORR
                     DB2INCORR/K SQLINCORROUT
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APARS FIXED: PM34291
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM34291:

    See PM34291 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM34291 corrects a problem that can result in an SQLCODE -327 on
    behalf of MERGE processing because of an invalid sort input.
    This error may follow numerous SQLCODE -254 errors.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

```
------ COVER LETTER FOR PTF UK66261 ------------


PROBLEM DESCRIPTION(S):
  PM26573 -
     ****************************************************************
     * USERS AFFECTED: All DB2 users who use REBIND PACKAGE,       *
     *                 REBIND TRIGGER PACKAGE, and FREE PACKAGE    *
     *                 commands.                                   *
     ****************************************************************
     * PROBLEM DESCRIPTION: REBIND PACKAGE, REBIND TRIGGER PACKAGE, *
     *                  or FREE PACKAGE with a lower case          *
     *                  collection ID or package ID may result    *
     *                  in REBIND or FREE failures like the       *
     *                  following examples:                       *
     *                   REBIND PACKAGE(COLLXYZ.Simple1)          *
     *                  DSNT238I REBIND ERROR                     *
     *                          USING SYSADM AUTHORITY            *
     *                     PACKAGE = STLEC1.COLLXYZ.SIMPLE1.() *
     *                          DOES NOT EXIST                    *
     *                  DSNT233I UNSUCCESSFUL REBIND FOR          *
     *                      PACKAGE = STLEC1.COLLXYZ.SIMPLE1.() *
     *                                                            *
     *                   FREE PACKAGE (COLLXYZ.Simple1)          *
     *                  DSNT238I FREE ERROR                       *
     *                          USING SYSADM AUTHORITY            *
     *                     PACKAGE = STLEC1.COLLXYZ.SIMPLE1.() *
     *                           DOES NOT EXIST                   *
     *                  DSNT233I UNSUCCESSFUL FREE FOR            *
     *                      PACKAGE = STLEC1.COLLXYZ.SIMPLE1.() *
     *                                                            *
     *                  or possibly wrong packages being         *
     *                  rebound or freed from the catalog.       *
     ****************************************************************
     * RECOMMENDATION:                                            *
     ****************************************************************
     When using the traditional 3GL pre-compiler approach to create
     packages via a DBRM, it is not possible to create a DB2 static
     package with anything other than upper case EBCDIC characters,
     as the name must follow PDS member name rules.
     However it is possible to create package names in DB2 that
     contain mixed case characters using one of the following
     methods:
     1. Any DRDA based remote bind command can send a mixed case
        name. Although possible from DB2 Connect for a C language, or
        other embedded SQL program, the common ways this happens is
        from binding
          a. an SQL package from the JDBC / SQLJ Driver.
          b. a pureQuery package from the pure Query Binder.
     2. A native Stored Procedure created using a delimited name will
        create a package of the same name which may contain lower
        case characters.
     3. A trigger created with a delimited name will also create a
        package using the same name, and may contain lower case
        characters.
     The problem arises when a site wants to administer these
     existing packages using the tools build up around the DSN
```

Command Processor-based utilities. This is primarily the REBIND
command, but also the FREE PACKAGE command.
These commands currently fold any alphabetic characters in the
input package name to upper case before validating the name, and
processing the bind request. This results in the DSNT238I error
message during REBIND or FREE PACKAGE due to package not found,
or wrong packages being rebound or freed if there are packages
in the catalog with matching upper case names.
DB2 has been changed to allow REBIND PACKAGE, REBIND TRIGGER
PACKAGE, and FREE PACKAGE commands to accept delimited
identifiers for the input package name parameter. The delimiter
is double quotes ("), and when such a delimited name is
received, DB2 will not fold the alphabetic characters to upper
case, but will only do parsing to validate the structure of the
name.
Processing of existing uses of commands with un-delimited names
will NOT be affected by this change.
Using REBIND as an example, the following forms of delimited
identifiers will be permitted as-is:
  REBIND PACKAGE (COLLID."PackageId");
  REBIND PACKAGE ("COllid"."PackageId");
  REBIND PACKAGE ("Collid"."Packid1","collid1"."packid2")
Similar delimited names are also supported in the REBIND
TRIGGER PACKAGE, and FREE PACKAGE commands.
For additional details, refer to the product documentation.

    Keywords: MSGDSNT238I, MSGDSNT233I.
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APARS FIXED: PM26573
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  DB2BIND:
    PM26573 allows REBIND PACKAGE, REBIND TRIGGER PACKAGE, and FREE
    PACKAGE commands to accept delimited identifiers for the input
    package name parameter. When such a delimited name is received,
    DB2 will not fold the alphabetic characters to upper case.

    To make this fix effective for packages that are already created
    with mixed case collection IDs or package IDs. A REBIND PACKAGE,
    REBIND TRIGGER PACKAGE or FREE PACKAGE command with the
    delimited package parameter input is required after application
    of this PTF. Review the PTF cover letter to determine which, if
    any, packages could be affected by this change.
.

------ COVER LETTER FOR PTF UK66307 ------------

PROBLEM DESCRIPTION(S):
  PM31839 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS users of the COVARIANCE   *
    *   or the CORRELATION function.   *
    *   All DB2 10 for z/OS users of the XMLAGG   *
    *   function.   *

```
    ****************************************************************
    * PROBLEM DESCRIPTION: DB2 can return an incorrect result set  *
    *                      for the CORRELATION, COVARIANCE, or the *
    *                      XMLAGG function when NULL values are     *
    *                      used for their parameters.              *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    An incorrect result can be returned from a query that uses the
    Correlation or the Covariance function with a NULL value in the
    second parameter.

    The following example helps to illustrate the problem.

    This query is expected to return a NULL value but returns
    a value equivalent to 0 instead.

       SELECT CORRELATION(1,NULLIF(1,1)) FROM SYSIBM.SYSDUMMY1;

         +0.00000000000000E+000


    Additionally, an incorrect result set can also be returned from
    the XMLAGG function when a NULL value is used.
    Code in DB2 is modified to handle NULL values correctly when
    used in parameters of the COVARIANCE, CORRELATION, or XMLAGG
    functions.

    Additional Keywords: SQLSETFUNCTION SQLINCORR SQLINCORROUT
                         XMLINCORR SQLNULL SQLXML
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APARS FIXED: PM31839
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  DB2BIND:
    ***Action for PM31839:

    See PM31839 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM31839 corrects a problem of incorrect output when correlation
    or covariance function is used with NULL value in second
    parameter.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM13333:

    See PM13333 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM13333 corrects a bindtime problem that can cause DB2 to return
```

an incorrect result set for the VARIANCE function and cause an
ABEND for the STDDEV and COVARIANCE functions.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK66328 ------------

PROBLEM DESCRIPTION(S):
  PM25033 -
    ****
    * USERS AFFECTED: All users of DB2 Explain who use MIXED DATA *
    ****
    * PROBLEM DESCRIPTION: ABEND04E 00E70005 in DSNXEFDA M500 on   *
    *   Explain due to a CCSID translation   *
    *   error (internal code 00C90606 or   *
    *   00C90607)   *
    ****
    * RECOMMENDATION: *
    ****
    ABEND04E RC00E70005 in DSNXEFDA M500 on Explain due to a CCSID
    conversion error. The abend can occur when doing Explain on
    SQL that contains mixed data characters. When this error
    occurs, one or more of the following modules are in the calling
    chain:
    DSNXOLX1
    DSNXOLX2
    DSNXOPRW
    DSNXOD1
    DSNXOD2
    DSNXOD3
    DSNXOD4
    DSNXOD5
    DSNXOD6
    DSNXOD7
    DSNXOD7U
    DSNXOD8
    DSNXOD9
    DSNXOD10
    DSNXOD11
    DSNXOD12
    DSNXOD13
    DSNXOD14
    DSNXOD15

    Additional Keywords:
    SQLEXPLAIN RC00C90606 RC00C90607 SQLCODE220
    Code is added to issue an SQL code -220 instead of abending when
    DB2 encounters mixed data characters during Explain. Explain
    will terminate. Upon receiving SQL code -220, consider
    converting your Explain tables to CCSID UNICODE. Mixed data
    characters are not supported for Explain tables defined with

```
     CCSID EBCDIC.
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APARS FIXED: PM25033
SPECIAL CONDITIONS:
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  DOCUMENTATION:
      Text is added to the DB2 Codes manual for existing SQL code
      -220 to indicate when Explain tables need to be dropped
      and re-created as CCSID UNICODE as a result of a CCSID
      conversion error caused by mixed data.  The added text
      is indicated by the change bars in the left-hand column.
      The text below is approximate and is subject to change.

      -220
      THE COLUMN column-name IN EXPLANATION TABLE table-name IS
      NOT DEFINED PROPERLY

      Explanation
      An error occurred during the insertion of a row into the
      explanation table. The table is improperly defined for
      the following reasons:
      - A column is missing.
      - Columns are defined in the wrong order.
      - The table contains an extra column.
      - A column description is invalid because of its name,
        data type, length, or null attributes.
    | - The SQL statement being explained contains mixed data
    |   and the explanation table was defined as CCSID EBCDIC.
    | If the column definition is incorrect, column-name is
    | the name of the column in error.  Otherwise, *N is
    | returned for column-name because the column name is not
    | applicable.

      System action
      The statement cannot be processed. The explanation
      information is not generated.

      Programmer response
      Correct the definition of the required explanation
      table.  Refer to chapter 2 of SQL Reference for
    | information on defining an explanation table.  If the
    | SQL statement being explained contains mixed data and
    | the explanation table is defined as CCSID EBCDIC, you
    | can copy your data from the explanation table, drop
    | the table, re-create the table with CCSID UNICODE, and
    | copy the data back into the table.

      SQLSTATE
      55002
.


------ COVER LETTER FOR PTF UK66366 ------------

PROBLEM DESCRIPTION(S):
```

```
   PM32276 -
      ****************************************************************
      * USERS AFFECTED: ALL DB2 9 FOR z/OS USERS OF MODIFY          *
      *                 RECOVERY UTILITY OR COPY UTILITY            *
      *                 WITH DSNUM N ON PARTITION-BY-GROWTH         *
      *                 TABLE SPACES                                *
      ****************************************************************
      * PROBLEM DESCRIPTION: MSGDSNU180I ON MODIFY RECOVERY         *
      *                      UTILITY OF A SINGLE PARTITION OF A     *
      *                      PARTITION-BY-GROWTH (PBG) TABLE        *
      *                      SPACE WHEN A COPY UTILITY JOB IS       *
      *                      RUNNING ON A DIFFERENT PARTITION OF    *
      *                      THE SAME OBJECT AT THE SAME TIME.      *
      ****************************************************************
      * RECOMMENDATION:                                            *
      ****************************************************************
         User ran a MODIFY RECOVERY job and an image COPY job on
      different partitions of the same partition-by-growth (PBG)
      table space at the same time.
         Although these jobs should be able to run together, the
      second job to start received MSGDSNU180I (UTILITY NOT
      COMPATIBLE) and ended with rc8.
         This occurred due to incorrect logic in utility
      serialization code for PBG objects.
         Code was added to MODIFY RECOVERY utility to allow
      appropriate concurrency when run on a partition
      of a partition-by-growth table space.
         Note that this problem does not occur on DB2 10 for z/OS.
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APARS FIXED: PM32276
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  ACTION:
    With the PTF for APAR PM24237 the MODIFY RECOVERY utility is
    changed to check whether a table space is recoverable from
    records in SYSCOPY or from system-level backups. If this is not
    the case, it is placed in COPY-pending status.
.


------ COVER LETTER FOR PTF UK66496 ------------

PROBLEM DESCRIPTION(S):
  PM30096 -
      ****************************************************************
      * USERS AFFECTED: All DB2  9 and DB2 10 for z/OS users        *
      *                 who use SELECT FROM MERGE statement         *
      *                 INCLUDE columns.                            *
      ****************************************************************
      * PROBLEM DESCRIPTION: ABEND04E 00C90101 DSNILREP:5014 may    *
      *                      occur for a SELECT FROM MERGE          *
      *                      statement that contains a reference    *
      *                      to a fully qualified name of an        *
      *                      INCLUDE column.                        *
      ****************************************************************
```

```
     * RECOMMENDATION:                                          *
     ***************************************************************
     ABEND04E 00C90101 DSNILREP:5014 may occur for a SELECT FROM
     MERGE statement that contains a reference to a fully qualified
     name of an INCLUDE column.

     For Example,

     SELECT *
       FROM FINAL TABLE(
        MERGE INTO TEST.TB AS T INCLUDE (CINC CHAR(5))
         USING (VALUES ('A2')) AS S(C1)
         ON 1 = 0
         WHEN NOT MATCHED THEN INSERT (C1,T.CINC) VALUES('A1','B1'));

     The above statement may cause an abend because the include
     column T.CINC is not handled correctly.
     DB2 was fixed to handle the INCLUDE column correctly.

     Additional KeyWords: SQLMERGE SQLABEND  SQLINCLUDE

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   DB2BIND:
     ***Action for PM30096:

     See PM30096 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM30096 corrects a problem of ABEND04E 00C90101 DSNILREP:5014
     for a SELECT FROM MERGE statement that contains an INCLUDE
     column and the INCLUDE column name is fully qualified with
     table  name.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF.  Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
   DB2BIND:
     Action for PM26434:

     See PM26434 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM26434 corrects a problem that
     INCORROUT may occur when all of below conditions are
     satisfied:

     1.Merge statement is used in the query.

     2.NULL value is used in USING clause, and the NULL
       value is correlated to Date, Time or Timestamp data type
       column in the source table.
```

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  See PM21439 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM21439 corrects an INCORROUT from the XMLTABLE function with
  XML index access.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PM05077:

  See PM05077 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM05077 corrects a problem of ABEND0C7 at DSNXGRDS.DSNXRINT+4F3C
  when a MERGE statement contains a scalar fullselect in the
  source table.
  The scalar fullselect contains an UNION or an UNION ALL.

  The following SQL statements can recreate the ABEND.

```
CREATE TABLE T1(C1 SMALLINT);
CREATE TABLE T2(C1 DECIMAL(4,0));
CREATE TABLE T3(C1 NUMERIC(5,1));
COMMIT;
INSERT INTO T1 VALUES(1);
INSERT INTO T1 VALUES(2);
INSERT INTO T2 VALUES(3);
INSERT INTO T2 VALUES(2);
INSERT INTO T3 VALUES(1);
INSERT INTO T3 VALUES(2);
COMMIT;
MERGE INTO T1 A
     USING(VALUES(SELECT C1 FROM T2 WHERE C1=1
                 UNION ALL
                 SELECT C1 FROM T3 WHERE C1=1
                 )) AS B(C1)
 ON A.C1=B.C1
  WHEN MATCHED
THEN UPDATE SET (C1) = B.C1+3
WHEN NOT MATCHED
THEN INSERT(C1) VALUES(B.C1);
```

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be

affected by this change.
  ACTION:
    ***Action for PM11062:

    PM11062 corrects a problem that the search condition in WHEN
    clause is not applied for a trigger that satisfies the
    following conditions:
    1. One or more transition variable or transition table
       correlation name is defined.
    2. The original table name instead of the transition variable
       or transition table correlation name is used in the WHEN
       clause search condition.

    To make this fix effective, the related triggers must be
    DROPPED and RECREATED after application of this PTF. Review
    the PTF cover letter to determine which, if any, triggers
    could be affected by this change.
  ACTION:
    PK67706 allows a ROW CHANGE TIMESTAMP expression to be
    referenced in a subselect of an outer join when the table
    designator identifies a base table that contains a row change
    timestamp column. The specification of a ROW CHANGE TIMESTAMP
    in these contexts can be within the definition of a view or in a
    table expression.

    Before PK67706, DB2 returned SQL code -270.
.

    ------ COVER LETTER FOR PTF UK66571 ------------

PROBLEM DESCRIPTION(S):
  PM34474 -
    ****
    * USERS AFFECTED: All DB2 version 9 data sharing users   *
    ****
    * PROBLEM DESCRIPTION: This DCR adds additional options to   *
    *   the LIMIT BACKOUT (LBACKOUT) ZPARM   *
    ****
    * RECOMMENDATION: *
    ****
    When starting DB2 with parameter LIGHT(YES) or
    LIGHT(NOINDOUBTS) the LBACKOUT subsystem parameter(ZPARM) is
    ignored which causes DB2 to process all postponed abort units
    of recovery (URs) before completing restart and releasing
    retained locks. To honor DB2 restart with LIGHT(YES/NOINDOUBTS),
    two new options are introduced for the LBACKOUT ZPARM: LIGHT
    and LIGHTAUTO.
    When LIGHT is in effect, DB2 creates postponed abort URs when
    started with LIGHT(YES) or LIGHT(NOINDOUBTS). The URs are not
    processed until the RECOVER POSTPONED command is issued on a
    normal DB2 restart.
    When LIGHTAUTO is in effect, DB2 has the same behavior as
    LBACKOUT(AUTO) but will not process postponed abort URs if
    started with LIGHT(YES) or LIGHT(NOINDOUBTS). The postponed
    abort URS will be automatically processed on the next normal

DB2 restart.
DB2 has been changed to accept new options on LBACKOUT ZPARM to
support DB2 restart with LIGHT(YES/NOINDOUBT) without processing
postponed abort units of recovery.

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APARS FIXED: PM34474
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  DB2BIND:
    This APAR adds additional options LIGHT and LIGHTAUTO to the
    existing LBACKOUT subsystem paramter(ZPARM). These options will
    allow DB2 to create postponed abort units of recovery during a
    DB2 restart with either LIGHT(YES) or LIGHT(NOINDOUBTS) instead
    of completing abort processing before terminating. LBACKOUT
    settings YES and AUTO are ignored during a restart with
    LIGHT(YES) or LIGHT(INDOUBTS).

    LIGHTAUTO - Creates postponed abort units of recovery based on
    the BACKODUR parameter setting. Processing of threads in
    postponed abort status is skipped during DB2 restart with
    option LIGHT(YES/NOINDOUBTS). These postponed abort threads
    will not be processed until after a normal DB2 restart. At the
    end of the next DB2 normal restart, the -RECOVER POSTPONED
    command is automatically issued. Postponed Abort processing
    acts the same as LBACKOUT(AUTO) when DB2 is started normally.

    LIGHT - Creates postponed abort units of recovery based on the
    BACKODUR parameter setting. Processing of threads in postponed
    abort status is skipped during DB2 restart with option
    LIGHT(YES/NOINDOUBTS). These postponed abort threads will not
    be processed until after a normal DB2 restart. Postponed Abort
    threads can be recovered by issuing the -RECOVER POSTPONED
    command. Postponed Abort processing acts the same as
    LBACKOUT(YES) when DB2 is started normally.

    This APAR is for DB2 Version 9 only. See APAR PM35113 for the
    same functionality in DB2 Version 10.

    If you have already installed or migrated to DB2 V9, you need
    to take the following actions after applying this PTF:

    ----
    (1) Copy updated DB2 installation panels to alternate libraries
    ----
    ==> This action is required for all V9 customers who maintain
        copies of the DB2 installation panels outside of SMP/E:

        This PTF modifies DB2 installation panel DSNTIPL in the
        prefix.SDSNSPFP target library. If you keep the DB2
        installation panels in a different library then after
        applying this PTF, you need to copy the updated panel to
        that library.

    ----

(2) Update your customized copy of job DSNTIJUZ

       ==> This action is required only for customers who want to
           change LBACKOUT parameter setting to LIGHT or LIGHTAUTO:

           Modify your customized copy of DSNTIJUZ as follows:
           * In job step DSNTIZA, under the invocation of the DSN6SYSP
             macro, locate the entry for LBACKOUT and change the
             setting to LIGHT or LIGHTAUTO, making sure to add a
             continuation character in column 72 if needed.
           * Run the first two steps of the DSNTIJUZ job you modified,
             to assemble and link the load module.
           * After the job completes, you need to stop and start DB2 in
             order for the changes to take effect.

       ----
       (3) Update private copies of the DSNTIDxx CLIST input member
       ----
       ==> This action is required only for customers who changed the
           LBACKOUT option in step (2)

           Edit your private copy of the V9 DSNTIDxx member and locate
           the entry for LBACKOUT. Change the rightmost column to the
           setting you specified in step (2), above.
 .

 ------ COVER LETTER FOR PTF UK66592 ------------

PROBLEM DESCRIPTION(S):
   PM15233 -
      ****
      * USERS AFFECTED: All DB2 9 for z/OS utility users of LOAD   *
      *   of a NOT LOGGED table space   *
      ****
      * PROBLEM DESCRIPTION: Duplicate key error during LOAD INTO   *
      *   TABLE SHRLEVEL CHANGE of a partitioned   *
      *   table space defined as NOT LOGGED   *
      *   leaves the partition in LPL (Logical   *
      *   Page List) but not RECP (RECover   *
      *   Pending)   *
      ****
      * RECOMMENDATION: Apply corrective PTF when available   *
      ****
      LOAD INTO TABLE SHRLEVEL CHANGE was run on a NOT LOGGED
      partitioned table space. A duplicate key error occurred and the
      partition was placed into LPL and RECP status. However, when
      the LOAD utility ended, that partition was only in LPL status.

      This was the result of LOAD resetting the RECP status as a
      normal procedure at the end of the utility. However in an
      error situation as this, (duplicate key error during LOAD
      SHRLEVEL CHANGE of a NOT LOGGED table space) the RECP status
      needs to remain on the partition and the LOAD should end with
      RC8. Also, any partitions that have had at least one row loaded
      during this LOAD must also be placed into LPL and RECP status

because of the uncertainty of the status of those partitions.
LOAD code has been changed to end the utility with RC8 when a
duplicate key error occurs and the LOAD was for a table space
defined as NOT LOGGED. When the table space is partitioned,
each partition that had at least one row loaded into it during
that LOAD will be placed into LPL and RECP status.

The System Action and Return Code severity have been modified
for messages MSGDSNU1117I and MSGDSNU1124I. Those changes are
as follows:

 DSNU1117I csect-name - UNIQUE INDEX KEY DUPLICATES KEY OF
           INDEXED RECORD AT RID rrrr INDEX = index-name TABLE =
           table-name RECNO = input-dataset-record-number

  Explanation:
  The input data set record was loaded into table table-name at
  RID duprid, but it causes a unique index violation for index
  index-name. It duplicates the key value of a record already in
  the table at RID rrrr.

  System action:
| Processing stops if LOAD SHRLEVEL CHANGE of a table space
| defined with the NOT LOGGED attribute. If a partitioned
| table space, all partitions having had at least 1 row loaded
| during the current LOAD utility will be placed into the RECP
| (Recover Pending) and LPL (Logical Page List) states.

| Otherwise processing continues. No index entry is created for
  the record at RID duprid.

  Severity:
  4 (warning)
| 8 (error)

 DSNU1124I csect-name - UNIQUE INDEX KEY DUPLICATES KEY OF
           INDEXED RECORD AT RID rrrr INDEX = index-name TABLE =
           table-name RECNO = input-dataset-record-number FOR
           PART = m

  Explanation:
  The input data set record indicated for PART m of table
  table-name causes a unique index violation for index
  index-name. It duplicates the key value of a record already in
  the table at RID rrrr. The record was not loaded.

  System action:
| Processing stops if LOAD SHRLEVEL CHANGE of a table space
| defined with the NOT LOGGED attribute. All partitions having
| had at least 1 row loaded during the current LOAD utility will
| will be placed into the RECP (RECover Pending) and LPL
| Logical Page List (LPL) states.

| Otherwise processing continues. No index entry is created for

the record at RID duprid.

        Severity:
        4 (warning)
      | 8 (error)
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM15233
SPECIAL CONDITIONS:
   COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
              LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
   DOCUMENTATION:
      With the inclusion of this apar, PM15233, the System Action
      and Return Code severity have been modified for messages
      DSNU1117I and DSNU1124I. The changes are as follows:

       DSNU1117I csect-name - UNIQUE INDEX KEY DUPLICATES KEY OF
                 INDEXED RECORD AT RID rrrr INDEX = index-name TABLE =
                 table-name RECNO = input-dataset-record-number

         Explanation:
         The input data set record was loaded into table table-name at
         RID duprid, but it causes a unique index violation for index
         index-name. It duplicates the key value of a record already in
         the table at RID rrrr.

         System action:
       | Processing stops if LOAD SHRLEVEL CHANGE of a table space
       | defined with the NOT LOGGED attribute. If a partitioned
       | table space, all partitions having had at least 1 row loaded
       | during the current LOAD utility will be placed into the RECP
       | (RECover Pending) and LPL (Logical Page List) states.

       | Otherwise processing continues. No index entry is created for
         the record at RID duprid.

         Severity:
         4 (warning)
       | 8 (error)

       DSNU1124I csect-name - UNIQUE INDEX KEY DUPLICATES KEY OF
                 INDEXED RECORD AT RID rrrr INDEX = index-name TABLE =
                 table-name RECNO = input-dataset-record-number FOR
                 PART = m

         Explanation:
         The input data set record indicated for PART m of table
         table-name causes a unique index violation for index
         index-name. It duplicates the key value of a record already in
         the table at RID rrrr. The record was not loaded.

         System action:
       | Processing stops if LOAD SHRLEVEL CHANGE of a table space
       | defined with the NOT LOGGED attribute. All partitions having

```
     | had at least 1 row loaded during the current LOAD utility will
     | will be placed into the RECP (RECover Pending) and LPL
     | Logical Page List (LPL) states.

     | Otherwise processing continues. No index entry is created for
       the record at RID duprid.

       Severity:
       4 (warning)
     | 8 (error)
   ACTION:
     The PTF for APAR PM15233 has modified CSECTs in both the
     DSNUT910 and DSNUTILA load modules, affecting the utility
     batch and DB2 DBM1 address spaces.  After the PTF has been
     applied, it will become active in the utility batch address
     space immediately upon job submission, while it will not take
     effect in the DB2 DBM1 address space until DB2 is stopped and
     started.

     The PTF does not have to be applied to all members in a data
     sharing environment simultaneously, and may be staged across
     each member.  However, until the fix is active in both the
     utility batch and DB2 DBM1 address spaces, the problem the PTF
     addresses will not be resolved.
.


------ COVER LETTER FOR PTF UK66600 ------------

PROBLEM DESCRIPTION(S):
  PM28626 -
    ****************************************************************
    * USERS AFFECTED: All Distributed Data Facility (DDF) users.  *
    *                 Specifically where remote clients access    *
    *                 DB2 via DRDA over TCP/IP.                    *
    ****************************************************************
    * PROBLEM DESCRIPTION: DRDA TCP/IP zIIP related changes.      *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    1. In cases where DRDA applications create extended duration
       work threads in DB2, for example through extensive use of
       held cursors, the zIIP utilization levels can become more
       variable after applying the PTF for APAR PM12256.
    2. For customers running on System z complexes where the
       processor speed of the zIIP processors differ from that
       of the general purpose processors, after applying the PTF
       for APAR PM12256:
       a. the execution time of DRDA threads with multiple SQL
          statements can be more variable, particularly in cases
          where DRDA applications create extended duration work
          threads in DB2, for example through the use of held
          cursors.
       b. the performance of a single DRDA SQL statement can
          experience more variation from one execution to the
          next, especially for longer running SQL statements.
```

3. Enclaves with associated control structures not established
          by DB2 can result in unauthorized processor utilization.

       This APAR alone addresses problems 1, 2a and 3 listed above.

       For problem 2b, this APAR must work in conjunction with z/OS
       APAR OA35146.

       For problem 3, if DB2 detects an unauthorized control
       structure, it will delete the identified enclave and execute
       the DRDA request under a pre-emptable SRB, outside of its
       normal WLM enclave service class, on a general purpose
       processor and not on a zIIP. This could cause some changes
       in customer established dispatching priorities for this work,
       and it could cause changes in WLM service class reporting.
       A new indicator is provided in the DB2 Accounting record
       (IFCID 003) that will indicate that these actions have been
       taken with regard to the affected DRDA request.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM28626
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM25701:

    See PM25701 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM25701 corrects a problem that DB2 may select an inefficient
    index to access a table in a subquery when subsystem parameter
    OPTXQB = ON.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  ACTION:
    *** Action for PM28626 ***
    Users encountering problem 2b described in this APAR should be
    aware that companion maintenance, the PTF for MVS APAR OA35146,
    is also required in order to correct the condition.
    Please see PTF cover letter for more information.
.

------ COVER LETTER FOR PTF UK66727 ------------

PROBLEM DESCRIPTION(S):
  PM35034 -
    ****
    * USERS AFFECTED: All DB2 for z/OS V8, DB2 9 for z/OS and   *
    *   DB2 10 for z/OS users of the DB2 scheduler *
    *   for administrative tasks   *
    ****
    * PROBLEM DESCRIPTION: A task is executed by the DB2 scheduler *

                                400

```
*                                on the wrong date if it is scheduled    *
*                                to execute on a specific day of the      *
*                                week and its execution date is not in    *
*                                the same month as the task's last        *
*                                execution date or creation date.         *
*                                In DB2 9 for z/OS and DB2 10 for z/OS,    *
*                                the DB2 scheduler UDF function            *
*                                DSNADM.ADMIN_TASK_OUTPUT does not         *
*                                return any values from the result set    *
*                                of a stored procedure execution if the   *
*                                result set has more than 128 columns.     *
****************************************************************
* RECOMMENDATION: Apply this PTF.                                         *
****************************************************************
This PTF fixes two errors in the DB2 scheduler.
(1) The DB2 scheduler executes a task on the wrong day when:
    - the task is scheduled to execute on a specific day of the
      week, and
    - the task's next scheduled execution date is not in the
      same month as the task's creation date or the task's
      last execution date.

(2) In DB2 9 for z/OS and DB2 10 for z/OS, when the DB2
    scheduler executes a stored procedure that returns a result
    set with more than 128 columns, it does not store the result
    set values due to an internal SQL error. As a result, the
    DB2 scheduler UDF DSNADM.ADMIN_TASK_OUTPUT does not return
    any values from this result set.
This PTF fixes the DB2 scheduler so that it will execute a task
on the correct date when the task is scheduled to execute on a
specific day of the week and its next scheduled execution date
is not in the same month as its creation date or its last
execution date.

This PTF also fixes the DB2 9 for z/OS and the DB2 10 for z/OS
scheduler to allow the UDF DSNADM.ADMIN_TASK_OUTPUT to return
values from the result set of a stored procedure when the
result set has more than 128 columns.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM35034
SPECIAL CONDITIONS:
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  ACTION:
    After applying this PTF on DB2 9 for z/OS
    ======================================

    The following post-apply actions are required of all current
    V9 customers to activate the changes in this PTF:
    (1) Stop the DB2 scheduler for administrative tasks.
    (2) Refresh the DB2 scheduler package.
    (3) Start the DB2 scheduler for administrative tasks.

    Each of these actions is detailed below. Note that DB2 must
    be running.
```

```
    (1) Stop the DB2 scheduler for administrative tasks.
        If the DB2 scheduler is running, stop it first by executing
        the following console command:
        MODIFY DSNADMT,APPL=SHUTDOWN
        where DSNADMT is the name of the scheduler.

    (2) Refresh the DB2 scheduler package.
        Use the following procedure to avoid disrupting your
        existing DB2-supplied stored procedures and databases:
        (a) Create a work copy of your customized DSNTIJSG job.
        (b) Remove all job steps except DSNTIAS.
        (c) In job step DSNTIAS:
             - remove all CREATE statements under the SYSIN DD
             - remove all BIND PACKAGE commands under the SYSTSIN DD
               except for the following:
               BIND PACKAGE(DSNADM) MEMBER(DSNA6THP) -
               ...
        (d) Run the modified job to bind the DB2 scheduler package.
        (e) When finished, you can delete the work copy created in
            step (2)(a), above.

    (3) Start the DB2 scheduler for administrative tasks.
        To start the DB2 scheduler again, execute the following
        console command:
        START DSNADMT
        where DSNADMT is the name of the scheduler.
.


    ------ COVER LETTER FOR PTF UK66788 ------------

PROBLEM DESCRIPTION(S):
  PM06036 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users who use  *
    *                 SELECT FROM MERGE statement with a          *
    *                 GRAPHIC INCLUDE column and all DB2 9 and     *
    *                 DB2 10 for z/OS users who use               *
    *                 INSERT statement.                           *
    ****************************************************************
    * PROBLEM DESCRIPTION: 1. Incorrect output may occur for a    *
    *                         SELECT from MERGE SQL statement      *
    *                         that satisfying the following        *
    *                         conditions:                         *
    *                             a. The MERGE statement contains an *
    *                                INCLUDE column with GRAPHIC    *
    *                                data type.                     *
    *                             b. The value of the INCLUDE column *
    *                                is set using the INSERT or UPDATE *
    *                                clause.                        *
    *                             c. The INCLUDE column is selected out *
    *                                from the FINAL table           *
    *                                                              *
    *                         2. Incorrect SQLCODE -270 may be issued *
    *                            for an INSERT SQL statement that   *
    *                            contains a column list.           *
```

```
     **************************************************************
     * RECOMMENDATION:                                            *
     **************************************************************
     1. Incorrect output may occur for a SELECT from MERGE SQL
     statement that satisfies the following conditions:
        a. The MERGE statement contains an INCLUDE column with GRAPHIC
           data type.
        b. The value of the INCLUDE column is set using the INSERT
           or UPDATE clause.
        c. The INCLUDE column is selected out from the FINAL table

     For Example,
        CREATE TABLE T1 (C1 CHAR(10), C2 INT);

        SELECT NEW_VARGRAPHIC FROM FINAL TABLE
          (MERGE INTO T1 INCLUDE(NEW_VARGRAPHIC VARGRAPHIC(5))
             USING(VALUES(1)) AS T2(C2)
             ON T1.C2=T2.C2
             WHEN MATCHED THEN UPDATE SET (T1.C1,NEW_VARGRAPHIC)
                =('AB','ABC'));

        Incorrect out occurs for the SELECT statement above because
     DB2 did not handle the include column with GRAPHIC column
     correctly.

     2. Incorrect SQLCODE -270 may be issued for an INSERT SQL
     statement that contains a column list.

     For Example,
        INSERT INTO T (C1,C2) VALUES (1,2);


     DB2 was fixed to handle the GRAPHIC data type INCLUDE column
     correctly in SELECT from MERGE statements. DB2 was also
     fixed to not issue SQLCODE -270 incorrectly for INSERT
     statements.

     Additional Keywords: SQLMERGE SQLINSERT
                          SQLINCORR  SQLINCORROUT
                          INCORROUT DB2INCORR/K

COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM06036
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for  PM06036

    See PM06036 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM06036 corrects the problems of incorrect output
    for a SELECT FROM MERGE statement contains a GRAPHIC
    INCLUDE column and incorrect SQLCODE -270 is issued for
    an INSERT statement.
```

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK66871 ------------

PROBLEM DESCRIPTION(S):
  PM35180 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
    *   users of UNLOAD FROMCOPY on a multi-table   *
    *   table space.   *
    ****
    * PROBLEM DESCRIPTION: RC4 and DSNU1408I was issued for an   *
    *   UNLOAD FROMCOPY from an empty table of   *
    *   a multi-table table space.   *
    ****
    * RECOMMENDATION: Apply corrective PTF when available.   *
    ****
    An UNLOAD from an image copy got RC4 with MSGDSNU1408I - SOURCE
    DATA SET ICOPY DOES NOT MATCH TABLESPACE for an empty table of
    a multi-table table space even though the image copy contained
    valid data for other tables in the table space. The UNLOAD
    utility should not have issued the DSNU1408I message when there
    is valid data for any table in the table space, even when those
    tables are not being unloaded.
    The UNLOAD utility code has been modified to not issue DSNU1408I
    if the image copy contains valid data for any table in the
    table space even though no rows were unloaded due to FROM TABLE
    specifications that may have filtered rows from other tables
    in the table space.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM35180
SPECIAL CONDITIONS:
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  ACTION:
    The PTF for APAR PM35180 has modified CSECTs in both the
    DSNUT910 and DSNUTILA load modules, affecting the
    utility batch and DB2 DBM1 address spaces. After the PTF has
    been applied, it will become active in the utility batch address
    space immediately upon job submission, while it will not take
    effect in the DB2 DBM1 address space until DB2 is stopped and
    started.

    The PTF does not have to be applied to all members in a data
    sharing environment simultaneously, and may be staged across
    each member. However, until the fix is active in both the
    utility batch and DB2 DBM1 address spaces, the problem the PTF
    addresses will not be resolved.
.

404

```
------ COVER LETTER FOR PTF UK66903 ------------

PROBLEM DESCRIPTION(S):
  PM35505 -
    ****************************************************************
    * USERS AFFECTED: DB2 for z/OS users preparing and           *
    *                 explaining a statement in Optim Query Tuner *
    *                 or Optimization Service Center that includes *
    *                 host variables, or users of the stored      *
    *                 procedure DSNAHVPM.                         *
    ****************************************************************
    * PROBLEM DESCRIPTION: THE PROBLEM THIS FIX ADDRESSES HAS THE *
    *                 FOLLOWING SYMPTOMS:                         *
    *                                                             *
    *                    SQLCODE -804                            *
    *                                                             *
    *                                                             *
    *                    PROBLEM SCENARIO:                        *
    *                                                             *
    *                    Executing DSNAHVPM can occasionally     *
    *                    return -804 errors as a result of not   *
    *                    declaring a cursor and preparing        *
    *                    it correctly when running an internal   *
    *                    query to extract DBRM information       *
    *                    from the SYSPACKSTMT table.             *
    ****************************************************************
    * RECOMMENDATION:                                            *
    ****************************************************************
    DSNAHVPM had a problem with the DECLARE and PREPARE
    of an internal cursor. These statements were not in the
    correct order and could cause SQLCODE -804 reason code 01.
    DSNAHVPM has been corrected to handle the internal cursor
    DECLARE and PREPARE in the proper order.


    ADDTIONAL KEYWORDS:
    DSNAHVPM SQLSP SQLCODE804
    SQLHOSTVAR PARAMETERMARKER SQLPMARKER SQLPMK
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM35505
SPECIAL CONDITIONS:
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  ACTION:
    This PTF updates the external module for the SYSPROC.DSNAHVPM
    stored procedure (DSNAHVPM).  If you have already installed or
    migrated to DB2 V9, use the following procedure to refresh the
    DSNAHVPM package and refresh the WLM environment for
    SYSPROC.DSNAHVPM.
    ----------------------------------------------------------------
    (1) Process the following DB2 command to refresh the package for
        DSNAHVPM:
        ********************************************************
        * All DB2 V9 customers who use the DSNAHVPM stored procedure
        * need to take this action after
        * applying the PTF
```

```
        **********************************************************
        BIND PACKAGE(DSNAHVPM) MEMBER(DSNAHVPM) -
            ACTION(REPLACE) ISOLATION(RR) -
            ENCODING(EBCDIC) CURRENTDATA(YES) -
            DYNAMICRULES(BIND) -
            OWNER(!dsnahvpm-owner!) -
            LIBRARY('!prefix!.SDSNDBRM')

        where !dsnahvpm-owner! is the owner of the package for the
        SYSPROC.DSNAHVPM stored procedure and !prefix! is the data
        set prefix of your DB2 V9 SDSNDBRM target library.

   (2) Refresh the WLM environment
        **********************************************************
        * All DB2 V9 customers who use the DSNAHVPM stored procedure
        * need to take this action after
        * applying the PTF
        **********************************************************
        Issue the following VARY MVS command from the console to
        refresh the WLM application environment:

            VARY WLM,APPLENV=!wlmenv!,REFRESH

        where !wlmenv! is the name of the WLM application
        environment for running the SYSPROC.DSNAHVPM stored
        procedure.
   ----------------------------------------------------------------
ACTION:
   This PTF updates the external module for the SYSPROC.DSNAHVPM
   stored procedure (DSNAHVPM).  If you have already installed or
   migrated to DB2 V9, use the following procedure to refresh the
   DSNAHVPM package and refresh the WLM environment for
   SYSPROC.DSNAHVPM.
   ----------------------------------------------------------------
   (1) Process the following DB2 command to refresh the package for
       DSNAHVPM:
        **********************************************************
        * All DB2 V9 customers who use the DSNAHVPM stored procedure
        * need to take this action after applying the PTF
        **********************************************************
        BIND PACKAGE(DSNAHVPM) MEMBER(DSNAHVPM) -
            ACTION(REPLACE) ISOLATION(RR) -
            ENCODING(EBCDIC) CURRENTDATA(YES) -
            DYNAMICRULES(BIND) -
            OWNER(!dsnahvpm-owner!) -
            LIBRARY('!prefix!.SDSNDBRM')

        where !dsnahvpm-owner! is the owner of the package for the
        SYSPROC.DSNAHVPM stored procedure and !prefix! is the data
        set prefix of your DB2 V9 SDSNDBRM target library.

   (2) Refresh the WLM environment
        **********************************************************
        * All DB2 V9 customers who use the DSNAHVPM stored procedure
        * need to take this action after applying the PTF
        **********************************************************
```

Issue the following VARY MVS command from the console to
refresh the WLM application environment:

        VARY WLM,APPLENV=!wlmenv!,REFRESH

where !wlmenv! is the name of the WLM application
environment for running the SYSPROC.DSNAHVPM stored
procedure.

ACTION:
  This PTF updates the external module for the SYSPROC.DSNAHVPM
  stored procedure (DSNAHVPM). If you have already installed or
  migrated to DB2 V9, use the following procedure to refresh the
  DSNAHVPM package and refresh the WLM environment for
  SYSPROC.DSNAHVPM.
  ----
  (1) Process the following DB2 command to refresh the package for
       DSNAHVPM:
       ****
       * All DB2 V9 customers who use the DSNAHVPM stored procedure
       * need to take this action after
       * applying the PTF
       ****
       BIND PACKAGE(DSNAHVPM) MEMBER(DSNAHVPM) -
            ACTION(REPLACE) ISOLATION(RR) -
            ENCODING(EBCDIC) CURRENTDATA(YES) -
            DYNAMICRULES(BIND) -

            OWNER(!dsnahvpm-owner!) -
            LIBRARY('!prefix!.SDSNDBRM')

       where !dsnahvpm-owner! is the owner of the package for the
       SYSPROC.DSNAHVPM stored procedure and !prefix! is the data
       set prefix of your DB2 V9 SDSNDBRM target library.

  (2) Refresh the WLM environment
       ****
       * All DB2 V9 customers who use the DSNAHVPM stored procedure
       * need to take this action after
       * applying the PTF
       ****
       Issue the following VARY MVS command from the console to
       refresh the WLM application environment:

            VARY WLM,APPLENV=!wlmenv!,REFRESH

       where !wlmenv! is the name of the WLM application
       environment for running the SYSPROC.DSNAHVPM stored
       procedure.
ACTION:
  This PTF updates the external module for the SYSPROC.DSNAHVPM
  stored procedure (DSNAHVPM). If you have already installed or
  migrated to DB2 V9, use the following procedure to refresh the
  DSNAHVPM package and refresh the WLM environment for
  SYSPROC.DSNAHVPM.

```
(1) Process the following DB2 command to refresh the package for
    DSNAHVPM:
    ************************************************************
    * All DB2 V9 customers who use the DSNAHVPM stored procedure
    * need to take this action after
    * applying the PTF
    ************************************************************
    BIND PACKAGE(DSNAHVPM) MEMBER(DSNAHVPM) -
         ACTION(REPLACE) ISOLATION(RR) -
         ENCODING(EBCDIC) CURRENTDATA(YES) -
         DYNAMICRULES(BIND) -
         OWNER(!dsnahvpm-owner!) -
         LIBRARY('!prefix!.SDSNDBRM')

    where !dsnahvpm-owner! is the owner of the package for the
    SYSPROC.DSNAHVPM stored procedure and !prefix! is the data
    set prefix of your DB2 V9 SDSNDBRM target library.

(2) Refresh the WLM environment
    ************************************************************
    * All DB2 V9 customers who use the DSNAHVPM stored procedure
    * need to take this action after
    * applying the PTF
    ************************************************************
    Issue the following VARY MVS command from the console to
    refresh the WLM application environment:

        VARY WLM,APPLENV=!wlmenv!,REFRESH

    where !wlmenv! is the name of the WLM application
    environment for running the SYSPROC.DSNAHVPM stored
    procedure.
    ----------------------------------------------------------------
.


------ COVER LETTER FOR PTF UK66947 ------------

PROBLEM DESCRIPTION(S):
  PM36175 -
    ****************************************************************
    * USERS AFFECTED: All users of DB2 9 for z/OS who are applying *
    *                 PM07067/UK65381                              *
    ****************************************************************
    * PROBLEM DESCRIPTION: 'Unresolved reference' messages may     *
    *                      occur for csects DSNXGAQT and DSNXGSMM  *
    *                      when UK65381 is applied                 *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    'Unresolved reference' messages may occur for csects DSNXGAQT
    and DSNXGSMM when UK65381 is applied.  These parts were missing
    from the V9 JCLIN file.
    HDB9910J JCLIN has been updated to include DSNXGAQT and
    DSNXGSMM.
COMPONENT:  5740-XYR00-HDB9910
```

```
APARS FIXED: PM36175
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM25957 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM25957 corrects a problem where a query can have slow
    performance when sparse index is used (PRIMARY_ACCESSTYPE='T'
    in PLAN_TABLE output) and this performance problem
    can be circumvented by increasing subsystem parameter
    MXDTCACH to allow more memory to be used for data caching.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM07067:

    See PM07067 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM07067 corrects a problem of DB2 not picking up some
    optimization hints that were transferred from DB2 V7 or earlier
    when there is a mismatch in the Query Block Numbers (QBLOCKNO)
    from the PLAN_TABLE.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.


------ COVER LETTER FOR PTF UK66967 ------------

PROBLEM DESCRIPTION(S):
  PM31838 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS users of the DECIMAL     *
    *                 scalar function with a UNICODE string as    *
    *                 the first parameter.                        *
    *                                                             *
    *                 All DB2 9 for z/OS users of queries         *
    *                 containing the HAVING clause with an        *
    *                 XMLEXISTS predicate.                        *
    *                                                             *
    *                 All DB2 10 for z/OS users of the NULLIF     *
    *                 scalar function.                            *
    ****************************************************************
    * PROBLEM DESCRIPTION: This APAR provides the corrective fixes *
    *                 in DB2 9 for z/OS for following             *
    *                 problems.                                   *
    *                                                             *
```

```
*                           An SQLCODE -420 is not issued when the  *
*                           DECIMAL scalar function is supplied     *
*                           with a UNICODE string containing no     *
*                           numerals for the first parameter.       *
*                                                                   *
*                           An incorrect result can be returned for *
*                           a query that contains a HAVING clause   *
*                           with an XMLEXISTS predicate.            *
*                                                                   *
*                           In addition, a fix is also provided in  *
*                           DB2 10 for z/OS for following problem.  *
*                                                                   *
*                           An incorrect result set can be returned *
*                           by the NULLIF scalar function when      *
*                           equivalent string arguments have        *
*                           different lengths because of padding.   *
*********************************************************************
* RECOMMENDATION:                                                   *
*********************************************************************
```

In providing corrective fixes for the aforementioned defects,
the following three problem scenarios are being included for
additional information.

Scenario ONE.

An incorrect result can be returned from a query when a DECIMAL
function is used with a UNICODE string expression containing
only one character from {'+','-','.'}.

The following query is expected to return an SQLCODE -420.
Instead a value of .00000 is returned.

```
 SELECT DECIMAL('.',5,5) FROM  SYSIBM.SYSDUMMYU;
```


Scenario TWO.

An incorrect result can be returned from a query containing a
HAVING clause with an XMLEXISTS predicate.

The following query is expected to return 'B01' because of the
XMLEXISTS predicate. However, DB2 incorrectly returns 'A00'
from the previous group value.

```
  SELECT WORKDEPT
  FROM EMP
  GROUP BY  WORKDEPT
  HAVING XMLEXISTS('/Department[@name="B01"]' passing
          XMLDOCUMENT (
          XMLELEMENT(NAME "Department",
          XMLATTRIBUTES (WORKDEPT AS "name" ),
          XMLAGG( XMLELEMENT(NAME "emp", FIRSTNME)))));
```


Scenario THREE.

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An incorrect result set can be returned from the NULLIF function
when using an equivalent string argument with a different length
because of padding.

This following query is expected to return a NULL value but
returns the value 'A' instead.

SELECT NULLIF('A', 'A ') RESULT FROM SYSIBM.SYSDUMMY1;

The code in DB2 9 for z/OS has been modified to return a
correct result set when using the DECIMAL function with a
UNICODE string.

The code in DB2 9 for z/OS has been modified to return a
correct result set when query contains a HAVING clause with
an XMLEXISTS predicate.

The code in DB2 10 for z/OS has been modified to return a
correct result set when using the NULLIF function with an
equivalent string having a different length padding.

Additional Keywords: SQLISNULL SQLINCORROUT SQLNULL SQLNULLIF
                     SQLCODE420 SQLINCORR DB2INCORR/K
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM31838
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM31838:

    See PM31838 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM31838 corrects a problem of incorrect result set being
    returned when a query contains a HAVING clause with XMLEXISTS
    predicate.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM18858:

    See PM18858 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM18858 corrects an ABEND04E rc00E20004 at DSNXEAB.DSNSVSVB+0446
    problem when running a query that contains a group by expression
    that uses an index on expression.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be

affected by this change.
DB2BIND:
  ***Action for PK77382

  See PK77382 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK77382 corrects a problem that can result in incorrect output
  (expected rows not ordered properly) for an INSERT query with a
  subselect that has a GROUP BY. The data type of the GROUP BY
  column in the SUBSELECT is DATE and a data type conversion from
  DATE to CHAR is required.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PK67769:

  See PK67769 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  PK67769 corrects a problem of incorrect output or an ABEND04E
  rc00E20016 at DSNSVSTK +05B8 failure when executing a query that
  contains a correlated subquery within a scalar fullselect. The
  ABEND can occur when running it from an INSENSITIVE SCROLLABLE
  CURSOR.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DOCUMENTATION:
  Along with this apar, the following publication change will be
  made to the DB2 Version 9.1 for z/OS SQL Reference to replace
  the examples using a proper DATE format.

  In Section 3.2.79 MONTHS_BETWEEN, the following change is being
  made. The two examples presented following this heading

    "Examples: The following examples calculate the months between
               two dates:"

  will be changed.

  The first example will be changed to the following.

        SELECT MONTHS_BETWEEN ('2008-01-17','2008-02-17')
           AS MONTHS_BETWEEN
           FROM SYSIBM.SYSDUMMY1;

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The second example will be changed to the following.
```
----------------------------------------------------------------

        SELECT MONTHS_BETWEEN ('2008-02-20','2008-01-17')
            AS MONTHS_BETWEEN
            FROM SYSIBM.SYSDUMMY1;
```

The results of this statement are similar to the following
results:

```
    MONTHS_BETWEEN
    ---------------------------
    1.096774193548387
```

```
----------------------------------------------------------------
```
.

------ COVER LETTER FOR PTF UK66972 ------------

PROBLEM DESCRIPTION(S):
  PM28344 -
    ****
    * USERS AFFECTED: All DB2 for z/OS users who bind packages or *
    *   plans with bind option REOPT(AUTO)   *
    ****
    * PROBLEM DESCRIPTION: An ABEND0CF RC0000000F in DSNXOGCX   *
    *   OFFSET 78C8 / OFFSET 778A may occur   *
    *   when binding a package or a plan with   *
    *   bind option REOPT(AUTO) and the package *
    *   or plan contains a query with LEFT   *
    *   OUTER JOIN.   *
    ****
    * RECOMMENDATION: *
    ****
    An ABEND0CF RC0000000F in DSNXOGCX OFFSET 78C8 / OFFSET 778A may
    occur when binding a package or plan with bind option
    REOPT(AUTO) and the package or plan contains a query with LEFT
    OUTER JOIN.

    The ABEND occurs because DB2 Optimizer may produce an incorrect
    composite cardinality estimation for a MQB (Materialized Query
    Block). MQB is generated for LEFT OUTER JOIN.

    Additional Keywords:
    ABEND0CF SQLLEFTJOIN SQLLEFT REOPT
    Code has been modified to solve the problem described as above.
    Meanwhile, the APAR also fixed the problem that composite
    cardinality estimation of a MQB may be inaccurate.
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APARS FIXED: PM28344
SPECIAL CONDITIONS:
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  DB2BIND:

```
      ***Action for PM28344:

      See PM28344 APAR/PTF text for additional information about
      why a REBIND is necessary.

      PM28344 corrects a problem that an ABEND0CF RC0000000F in
      DSNXOGCX OFFSET 78C8 / OFFSET 778A may occur when binding a
      a package or plan with bind option REOPT(AUTO) and the package
      or plan contains a query with LEFT OUTER JOIN.

      To make this fix effective for a static application, it must be
      rebound after application of this PTF.  Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
   DB2BIND:
      ***Action for PM27685:

      See PM27685 APAR/PTF text for additional information about
      why a REBIND is necessary.

      PM27685 corrects a problem of incorrect output that can occur
      when a query contains a FETCH FIRST n ROWS ONLY clause, and
      there is a PREPARE ATTRIBUTE that also specifies FETCH FIRST
      n ROWS ONLY but uses a different value for n.

      To make this fix effective for a static application, it must be
      rebound after application of this PTF.  Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
   .


   ------ COVER LETTER FOR PTF UK67202 ------------

PROBLEM DESCRIPTION(S):
   PM24979 -
      ****************************************************************
      * USERS AFFECTED: All DB2 users.                              *
      ****************************************************************
      * PROBLEM DESCRIPTION: The EXPLSITE parameter in the DSNDEXPL *
      *                      macro is not long enough to contain    *
      *                      IPv6 TCPIP addresses.  EXPLSITE is     *
      *                      defined as 16 characters but the new   *
      *                      TCPIP address may be greater than 16   *
      *                      characters, so the IPv6 TCPIP address  *
      *                      is truncated to fit into EXPLSITE.     *
      ****************************************************************
      * RECOMMENDATION:                                             *
      ****************************************************************
      The EXPLSITE parameter in the DSNDEXPL macro is not long enough
      to contain IPv6 TCPIP addresses.  EXPLSITE is defined as 16
      characters but the new TCPIP address may be greater than 16
      characters, so the IPv6 TCPIP address is truncated to fit into
      EXPLSITE.
      A EXPLSITE_OFF pointer to the expanded EXPLSITE DSECT will be
      provided via the EXPL that is passed to the connection and
```

sign-on exits.
The EXPL and DB2 code that supports the EXPL parameter list have
been updated in this APAR to accomodate IPv6 TCPIP addresses in
and expanded EXPLSITE.
.
The DB2 Version 9.1 for z/OS Administration Guide and the
DB2 Version 10.1 for z/OS Administration Guide will be updated
to document changes to the EXPL.
Appendix A - EXPL for connection and sign-on routines
   The parameter list diagram EXPL will have an Extended
location name added.
   The EXPL mapping will be updated to add the EXPLSITE.

```
   Name             Hex offset  Data type   Description
   -----------------------------------------------------------
   EXPLSITE_OFF  56             Un-signed   Offset from EXPL to the
                                2-byte      extended location name
                                integer     of the DB2 site which
                                            originated the work
                                            request.
.
```
The following fields have been added to the DSNDEXPL.
.
```
EXPLSITE_OFF DS   H          OFFSET FROM EXPL TO THE EXTENDED
*                            LOCATION NAME OF THE DB2 SITE WHICH
*                            ORIGINATED THE WORK REQUEST.
.
.
EXPLLEN_AUTH EQU  *-EXPL+130 LENGTH OF EXPL AND EXPLSITE_EXT
*
EXPLSITE_EXT DSECT          USE IF EXPLS_OFF IS NOT 0
EXPLSITE_LEN DS   H         LENGTH OF THE FOLLOWING FIELD
EXPLSITE_CHAR DS  CL128     LOCATION NAME OF THE DB2 SITE WHICH
*                           ORIGINATED THE WORK REQUEST. THIS
*                           MAY BE PADDED WITH BLANKS.
```
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APARS FIXED: PM24979
SPECIAL CONDITIONS:
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  ACTION:
    ***Action for PM24292:
  APAR PM24292 provides the DB2 for z/OS portion of a solution
  that provides a non disruptive DB2 for z/OS data sharing group
  migration where remote Sysplex workload balancing client
  application environments are involved.
  To allow for a smooth, seamless, migration of a DB2 for z/OS
  V8 data sharing group, with respect to remote Sysplex workload
  balancing client systems, users are advised to first apply
  this change to all members of their DB2 for z/OS data sharing
  group, specifically as it relates to the target version that
  is being migrated to. That is, all the DB2 V9 CM members
  are required to apply this change before attempting a migration
  to DB2 V9 NFM for users who have remote Sysplex workload
  balancing clients running during the migration process.
  Also, in order for remote Sysplex workload balancing clients

to support a seamless migration to DB2 V9 NFM, companion
IBM Data Server client Driver support is also required. The
necessary IBM Data Server client Driver maintenance is planned
to be included in V9.7 FixPak 3A, but users should reference
Informational APAR II14619 for more current information on this
maintenance. This informational APAR also contains additional
information related to DB2 for z/OS data sharing group
forward/backward migration with respect to remote Sysplex
workload balancing client environments.
See PTF cover letter for more information.
.

------ COVER LETTER FOR PTF UK67268 ------------

PROBLEM DESCRIPTION(S):
  PM13525 -
    ****
    * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of the   *
    *   BIND PACKAGE DEPLOY command or REBIND   *
    *   PACKAGE for a native SQL Procedure or CALL   *
    *   statement of a native SQLPL Procedure.   *
    ****
    * PROBLEM DESCRIPTION: DB2 10 for z/OS introduced new runtime *
    *   structures that differ from DB2 9   *
    *   systems for section 1 (logic) of native   *
    *   SQL procedues. This affects coexistence   *
    *   as well as fallback/migration paths if   *
    *   a native SQL procedure is created,   *
    *   rebound and/or regenerated in different   *
    *   system levels.   *
    *   .   *
    *   The following examples show some cases   *
    *   where this may happen. Other possible   *
    *   symptoms may occur.   *
    *   .   *
    *   1. SQLCODE -992 when deploying a native   *
    *   stored procedure created, rebound,   *
    *   regenerated from DB2 10 to DB2 9.   *
    *   .   *
    *   2. DSNT246I message when REBINDING on   *
    *   DB2 9 a native SQL procedure that was   *
    *   created or regenerated on DB2 10.   *
    *   .   *
    *   3. SQLCODE -904 on DB2 9 when trying to   *
    *   run a native SQL procedure that was   *
    *   created or regenerated on DB2 10.   *
    ****
    * RECOMMENDATION: *
    ****
    1. When a native SQL procedure has been created or regenerated
       on DB2 10 and is deployed to a DB2 9 system, the
       section 1 (logic) will be in DB2 10 format. Therefore the
       DB2 9 system will not be able to use the runtime structures
       resulting in BIND DEPLOY issuing an SQLCODE -992.

    .

DB2 code has been changed to implicitly regenerate the
procedure on DB2 9 as a DB2 9 native SQL procedure. A warning
message DSNT227I will be issued if a regeneration of the
procedure has been started.
.

2. When a native SQL procedure has been created or regenerated
   on DB2 10, the native SQL procedure is marked with a DB2 10
   release dependency marker because section 1 (logic) is
   created in a DB2 10 format. Therefore when a DB2 9 system
   tries to REBIND the native SQL procedure DB2 issues
   a DSNT246I message.
.

   DB2 code has been changed to no longer mark the native SQL
   procedure as DB2 10 dependent. When the REBIND command
   is executed on DB2 9, the package will be rebound while
   leaving section 1 intact.
.

3. When a native SQL procedure has been created or regenerated
   on DB2 10, the native SQL procedure is marked with a DB2 10
   release dependency marker because section 1 (logic) is
   created in a DB2 10 format. Therefore, an invoking package
   bound on DB2 9 calling the version 10 procedure would result
   in an SQLCODE -904 RC00E7009E.
.

   DB2 code has been changed to no longer mark the native SQL
   procedure as DB2 10 dependent. When the CALL statement
   is executed on DB2 9, the native SQL procedure will now be
   implicitly regenerated.
.   .

   Additional Keywords: MSGDSNT227I MSGDSNT246I SQLCODE992
                           SQLCODE904 RC00E7009E SQLPL SQLNATIVESQLPL
.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM13525
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PK94175:

    See PK94175 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PK94175 corrects a problem of ABEND0C4 RC00000004 DSNXRSFN
    (at various offsets) when running an application that was
    originally remotely bound as DBPROTOCOL(DRDA).

    To make this fix effective for the failing application, it must
    be rebound after application of this PTF. Review the PTF cover
    letter to determine which applications could be affected by
    this change.
  ACTION:
    This APAR/PTF introduces a new BIND DEPLOY warning message
    on DB2 10 to notify that an implicit regeneration process
    of the native SQL procedure has started on DB2 9 (server).
.

```
DSNT227I:
bind-action WARNING FOR SQL PROCEDURE PACKAGE:
location-name.collection-id.package-id.(version-id)
THE TARGET SERVER WAS NOT ABLE TO RESOLVE STRUCTURE
INFORMATION IN THE SOURCE PACKAGE. ADDITIONAL AUTOMATIC
REGENERATION PROCESSING WILL OCCUR ON THE TARGET SERVER.
.
If the BIND DEPLOY command is to be issued from a
DB2 10 system to a distributed DB2 9 system, this APAR/PTF
requires distributed systems to apply the DB2 9 PTF of
APAR PM13525 to the DB2 9 distributed system prior to
applying the DB2 10 PTF of APAR PM13525 to the DB2 10 system.
Otherwise, unexpected abend symptoms may occur similar to
the following.
.
ABEND0C4 RC00000010 at DSNXELX+4934
.
See PM13525 APAR/PTF text for additional information.
ACTION:
This PTF fixes the processing of Native SQL PL Procedure during
ALTER ADD VERSION to inherit the SYSROUTINES.OWNER value
correctly.  However, this will not fix the existing procedures
that already have the problem.  User needs to drop and recreate
all procedures that have this problem before running any more
ALTER PROCEDURE ADD VERSION.  User should use a query to
identify the procedures that have this problem.  The query
should identify all procedures where the SYSIBM.SYSROUTINES.
OWNER and SYSIBM.SYSROUTINES.OWNERTYPE of any versions of the
procedure not matching the SYSIBM.SYSROUTINEAUTH.GRANTOR and
SYSIBM.SYSROUTINEAUTH.GRANTORTYPE, and the SYSIBM.
SYSROUTINEAUTH.GRANTEE and SYSIBM.SYSROUTINEAUTH.GRANTEETYPE.

For all of the procedures identified, all versions of the
procedure should be dropped using the DROP PROCEDURE statement.
Do not use ALTER PROCEDURE DROP VERSION as it will not resolve
the situation.

The following is a sample query that can be used to
identify the Native SQL PL procedures that have this problem:

SELECT ROU.SCHEMA, ROU.NAME, ROU.SPECIFICNAME,
       ROU.ROUTINETYPE,
       ROU.OWNER AS ROUTINE_OWNER,
       ROU.OWNERTYPE AS ROUTINE_OWNERTYPE,
       RAU.GRANTOR AS CORRECT_OWNER,
       RAU.GRANTORTYPE AS CORRECT_OWNERTYPE,
       ROU.ORIGIN, ROU.VERSION, ROU.ACTIVE
  FROM SYSIBM.SYSROUTINES ROU, SYSIBM.SYSROUTINEAUTH RAU
 WHERE ROU.SCHEMA = RAU.SCHEMA
   AND ROU.SPECIFICNAME = RAU.SPECIFICNAME
   AND ROU.ORIGIN = 'N'
   AND RAU.GRANTOR = RAU.GRANTEE
   AND RAU.GRANTORTYPE = RAU.GRANTEETYPE
   AND ( RAU.GRANTOR <> ROU.OWNER
       OR RAU.GRANTORTYPE <> ROU.OWNERTYPE )
   AND RAU.ROUTINETYPE = ROU.ROUTINETYPE
```

```
   ACTION:
     This PTF is for the problem where customer is running into
     orphan SYSPACKAGE records after BIND DEPLOYMENT of a Native
     SQL PL Procedure.

     1. Customer can use the following sample query to identify
        if there are any existing orphan SYSPACKAGE record relating
        to Native SQL PL Procedure:

        SELECT P.COLLID, P.NAME, P.TYPE
          FROM SYSIBM.SYSPACKAGE P
         WHERE P.TYPE = 'N'
           AND NOT EXISTS (SELECT R.COLLID, R.NAME
                             FROM SYSIBM.SYSROUTINES R
                            WHERE P.COLLID = R.COLLID
                              AND P.NAME = R.NAME
                              AND P.TYPE = 'N'
                              AND R.ORIGIN = 'N');

     2. Customer would then need to contact DB2 Support to obtain
        a job to clean up their catalog system.
   .


   ------ COVER LETTER FOR PTF UK67273 ------------

PROBLEM DESCRIPTION(S):
  PM29911 -
     ****************************************************************
     * USERS AFFECTED: All DB2 users who use INSTEAD OF triggers   *
     *                 on views that contain a ROWID column or     *
     *                 a view column that is mapped directly or    *
     *                 indirectly to any of the following:         *
     *                                                             *
     *                 1. ROW CHANGE TIMESTAMP                     *
     *                 2. SECURITY LABEL                           *
     *                 3. ROW BEGIN                                *
     *                 4. ROW END                                  *
     *                 5. TRANSACTION START ID                     *
     *                 6. an expression or a set operation result *
     *                                                             *
     *                 or all DB2 users who use the table locator  *
     *                 with the LIKE view-name in the FROM clause. *
     ****************************************************************
     * PROBLEM DESCRIPTION: When a view contains a ROWID column or *
     *                      a view column that is mapped directly  *
     *                      or indirectly to any of the following: *
     *                                                             *
     *                      1. ROW CHANGE TIMESTAMP                *
     *                      2. SECURITY LABEL                      *
     *                      3. ROW BEGIN (DB2 10)                  *
     *                      4. ROW END (DB2 10)                    *
     *                      5. TRANSACTION START ID (DB2 10)       *
     *                                                             *
     *                      the CREATE TRIGGER INSTEAD OF statement *
     *                      on such a view may succeed but later   *
```

```
*                          an INSERT or UPDATE statement on this    *
*                          view may receive the following errors:   *
*                                                                    *
*                              1. 04E abend at DSNGDVRT:500C when    *
*                                 INSERT into the view with a ROWID  *
*                                 column                             *
*                                                                    *
*                              2. 04E abend at DSNIBNRF:501E when    *
*                                 INSERT into the view with a view   *
*                                 column that is mapped directly or  *
*                                 indirectly to a ROW CHANGE         *
*                                 TIMESTAMP column, a ROW BEGIN,     *
*                                 ROW END, or TRANSACTION START ID   *
*                                 column                             *
*                                                                    *
*                              3. SQLCODE -151 DSNXOST when UPDATE   *
*                                 with the DEFAULT keyword on a      *
*                                 view column that is mapped         *
*                                 directly or indirectly to an       *
*                                 AS GENERATED ALWAYS ROW CHANGE     *
*                                 TIMESTAMP column                   *
*                                                                    *
*                          Currently SQL Reference states that if    *
*                          a view column is mapped directly or       *
*                          indirectly to an expression or a set      *
*                          operation result, the CREATE TRIGGER      *
*                          INSTEAD OF statement is not allowed on     *
*                          such a view. But this restriction is      *
*                          not enforced and the INSTEAD OF trigger   *
*                          can be created successfully. However,     *
*                          if such a view column is not nullable,    *
*                          when the INSTEAD OF trigger is            *
*                          activated, the INSERT or UPDATE           *
*                          statement may receive SQLCODE -407.       *
*                                                                    *
*                          If a view name is specified after the     *
*                          LIKE keyword of a table locator in a      *
*                          FROM clause, SQLCODE -159 should have      *
*                          been issued. But instead the table        *
*                          locator attribute is lost and the view    *
*                          is used directly in the FROM clause.      *
*                          A query with such a FROM clause most      *
*                          likely receive an incorrect result.       *
**********************************************************************
* RECOMMENDATION:                                                    *
**********************************************************************
When a view contains a ROWID column or a view column that is
mapped directly or indirectly to any of the following:

   1. ROW CHANGE TIMESTAMP
   2. SECURITY LABEL
   3. ROW BEGIN (DB2 10)
   4. ROW END (DB2 10)
   5. TRANSACTION START ID (DB2 10)

the CREATE TRIGGER INSTEAD OF statement on such a view may
```

succeed but later the INSERT or UPDATE statement on this view may receive the following errors:

1. 04E abend at DSNGDVRT:500C when INSERT into the view with a ROWID column

2. 04E abend at DSNIBNRF:501E when INSERT into the view with a view column that is mapped directly or indirectly to a ROW CHANGE TIMESTAMP column, a ROW BEGIN, ROW END, or TRANSACTION START ID column

3. SQLCODE -151 from DSNXOST when UPDATE with the DEFAULT keyword on a view column that is mapped directly or indirectly to an AS GENERATED ALWAYS ROW CHANGE column

For example:

```
CREATE TABLE T1(C1 INT,
                ROWID1 ROWID GENERATED ALWAYS NOT NULL)?

CREATE TABLE T2 LIKE T1?

CREATE VIEW V1 AS SELECT * FROM T1?

CREATE VIEW V2 AS
  WITH CTE1 AS (SELECT * FROM T1)
  SELECT Y.* FROM CTE1 X, CTE1 Y?


CREATE TRIGGER IOT1 INSTEAD OF INSERT ON V1
  REFERENCING NEW AS NEWROW
  FOR EACH ROW MODE DB2SQL
  BEGIN ATOMIC
    INSERT INTO T2 VALUES(NEWROW.C1,
                          NEWROW.ROWID1);
END?


CREATE TRIGGER IOT2 INSTEAD OF INSERT ON V2
  REFERENCING NEW AS NEWROW
  FOR EACH ROW MODE DB2SQL
  BEGIN ATOMIC
    INSERT INTO T2 VALUES(NEWROW.C1,
                          NEWROW.ROWID1);
END?

INSERT INTO V1(C1) VALUES(1)?

INSERT INTO V2(C1) VALUES(1)?
```

The INSTEAD OF trigger IOT1 and IOT2 are created successfully but the INSERT statement on V1 and V2 fail with 04E abend at DSNGDVRT:500C because DB2 cannot generate the ROWID value correctly when the trigger IOT1 and IOT2 are activated.

Currently SQL Reference states that if a view column is mapped
directly or indirectly to an expression or a set operation
result, the CREATE TRIGGER INSTEAD OF statement is not allowed
on such a view. But this restriction is not enforced and the
INSTEAD OF trigger can be created successfully. However, if
such a view column is not nullable, when the INSTEAD OF trigger
is activated, the INSERT or UPDATE statement may receive
SQLCODE -407.

If a view name is specified after the LIKE keyword of a table
locator in a FROM clause, SQLCODE -159 should have been issued.
But instead the table locator attribute is lost and the view
is used directly in the FROM clause. A query with such a FROM
clause most likely receive an incorrect result.

For example:

  Trigger TRIG1 definition contains the following:

    DELETE FROM T1 WHERE UDF1(TABLE T1_OLD)=1;

  UDF1 program contains the following:

    DECLARE TRG_TBL_OLD SQL TYPE IS TABLE LIKE T2 AS LOCATOR;

    SELECT COUNT(*) INTO :RINT
      FROM TABLE(:TRG_TBL_OLD LIKE V1);

When DB2 processes view V1 after the LIKE keyword in the above
FROM clause, it mistakenly ignores the table locator attribute
and processes the view V1 directly. As the consequence, the
query most likely receives an incorrect result.
DB2 has been modified to conform to the following updated
descriptions in the SQL Reference for the INSTEAD OF trigger:

  Chapter 5. Statements

    CREATE TRIGGER

      ON view-name

        Identifies the subject view of the INSTEAD OF trigger
        definition. The name must identify a view that exists
        at the current server.

        view-name must not specify a view where any of the
        following conditions are true:

        1. The view is defined with the WITH CASCADED CHECK
           option (a symmetric view)

        2. The view on which a symmetric view has been defined

        3. The view references data that is encoded with
           different encoding schemes or CCSID values

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4. The view has a column that is a LOB or XML (or a distinct type that is defined as one of these types)

5. The view has a column that is a ROWID column (or a distinct type that is defined on ROWID) or is based on an underlying column that is defined as a security label column, a row change timestamp column, a ROW BEGIN column (DB2 10 only), a ROW END column (DB2 10 only), or a transaction start ID column (DB2 10 only)

6. The view has columns that have field procedures

7. All of the underlying tables of the view are catalog tables or created global temporary tables

8. The view has other views that are dependent on it

Notes

Considerations for INSTEAD OF triggers

.....

The initial values for new transition variables or new transition table columns that are visible in an INSTEAD OF INSERT trigger are set as follows:

1. If a value is explicitly specified for a column in the insert operation, the corresponding new transition variable is that explicitly specified value.

2. If a value is not explicitly specified for a column in the insert operation or the DEFAULT clause is specified, the corresponding new transition variable is:

   - the default value of the underlying table column if the view column is updatable (without the INSTEAD OF trigger)

   - otherwise, the null value

If a view column is not nullable and does not have a default, the value must be explicitly specified in in the insert operation.

Notice that the last paragraph above, a new restriction, is also added to the INSTEAD OF UPDATE trigger in the same section under Notes.

For a view name that is specified after the LIKE keyword of a table locator in a FROM clause, SQLCODE -159 is now issued.

```
     Additional keywords: 04EABEND SQLCODE151 SQLCODE151 SQLCODE407
                          SQLTRIGGER SQLINSTEADOF SQLVIEW SQLROWID
                          SQLROWCHANGE SQLROWBEGIN SQLROWEND
                          SQLTRANSACTIOn SQLSECURITYLABEL
                          SQLCODE270 SQLINCORR SQLINCORROUT DB2INCORR
                          SQLCODE20100
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM29911
SPECIAL CONDITIONS:
   COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
              LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
   DB2BIND:
     ***Action for PM29911:


     See PM29911 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM29911 corrects a problem of possible incorrect output from
     using a view name after the LIKE keyword with a table locator
     in a FROM clause.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF.  The rebind will allow
     SQLCODE -159 to be issued for such a view.

     Review the PTF cover letter to determine which, if any,
     applications could be affected by this change.
   DB2BIND:
     See PM12497 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM12497 corrects a problem of unexpected SQLCODE -330 when
     calling a stored procedure in an INSTEAD OF TRIGGER.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF. Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
   ACTION:
     This PTF enforces the following INSTEAD OF TRIGGER rules:

        Chapter 5. Statements

          CREATE TRIGGER

            ON view-name

               Identifies the subject view of the INSTEAD OF trigger
               definition. The name must identify a view that exists
               at the current server.

               view-name must not specify a view where any of the
               following conditions are true:

               1. The view is defined with the WITH CASCADED CHECK
```

option (a symmetric view)

2. The view on which a symmetric view has been defined

3. The view references data that is encoded with different encoding schemes or CCSID values

4. The view has a column that is a LOB or XML (or a distinct type that is defined as one of these types)

5. The view has a column that is a ROWID column (or a distinct type that is defined on ROWID) or is based on an underlying column that is defined as a security label column or row change timestamp column

6. The view has columns that have field procedures

7. All of the underlying tables of the view are catalog tables or created global temporary tables

8. The view has other views that are dependent on it

Notes

Considerations for INSTEAD OF triggers

.....

The initial values for new transition variables or new transition table columns that are visible in an INSTEAD OF INSERT trigger are set as follows:

1. If a value is explicitly specified for a column in the insert operation, the corresponding new transition variable is that explicitly specified value.

2. If a value is not explicitly specified for a column in the insert operation or the DEFAULT clause is specified, the corresponding new transition variable is:

    – the default value of the underlying table column if the view column is updatable (without the INSTEAD OF trigger)

    – otherwise, the null value

If a view column is not nullable and does not have a default, the value must be explicitly specified in in the insert operation.

Notice that the last paragraph above, a new restriction, is also added to the INSTEAD OF UPDATE trigger in the same section under Notes.

If an INSTEAD OF trigger is based on a view with a ROWID
    column or with a column that can be mapped directly or
    indirectly to any of the following columns:

        1. security label
        2. row change timestamp

    the INSTEAD OF trigger should be dropped, then drop, modify,
    and recreate the view to avoid the above columns, then recreate
    the trigger. This is to avoid the possible 04E abend or SQLCODE
    during the INSERT and UPDATE statement. See the closing text
    for the abends and SQLCODEs.

    The following steps may help to identify those triggers:

        1. Use catalog table SYSTRIGGERS to identify the INSTEAD OF
           triggers

        2. Use catalog table SYSCOLUMNS to identify the above view
           columns

        3. If necessary, use catalog table SYSVIEWDEP and SYSCOLUMNS
           to identify the mappings of the above view columns

        or

        1. Use SYSTRIGGERS and SYSPACKAGES to identify INSTEAD OF
           trigger packages

        2. Rebind the INSTEAD OF trigger package

        3. If rebind fails, verify if the cause is SQLCODE -20100 with
           -270 token in it. If yes, the view has the above problems.
   ACTION:
    Since the problem that occurred could leave orphaned triggers,
    that is, a trigger with an entry in the SYSTRIGGERS catalog
    table and no corresponding entry for that trigger in the
    SYSPACKAGE table, you will need to manually delete the
    residual SYSTRIGGERS records. If you find there are
    residual records in SYSTRIGGERS with no corresponding
    entry in the SYSPACKAGE table as a result of this problem,
    contact IBM Service for assistance in deleting those records.
 .

------ COVER LETTER FOR PTF UK67277 ------------

PROBLEM DESCRIPTION(S):
  PM34519 -
    ****
    * USERS AFFECTED: All DB2 8, DB2 9 and DB2 10 for z/OS users   *
    *   of recursive common table expression and   *
    *   LOB data type.   *
    ****
    * PROBLEM DESCRIPTION: Unexpected SQLCODE -904 could be issued *

```
*                              when a sql statement satisfies the      *
*                              following conditions:                   *
*                              1. A recursive common table expression  *
*                                 is referenced ,                      *
*                              2. LOB data type is used in it.         *
*                                                                      *
************************************************************************
* RECOMMENDATION:                                                      *
************************************************************************
```
Unexpected SQLCODE -904 could be issued when a sql statement
satisfies the following conditions:
1. A recursive common table expression is referenced,
2. LOB data type is referenced.

The following example could recreate the problem:

```
 WITH  RPL (MYC1, MYC2, MYC3) AS
  (SELECT C1, CAST (C2 AS CLOB (64K)), 1 MYC3
   FROM MYTEST1
   WHERE C1 > 'A'
   UNION ALL
   SELECT CHILD.C1, PARENT.MYC2 || CAST (CHILD.C2 AS CLOB(64K)),
          PARENT.MYC3+1
   FROM RPL PARENT, MYTEST1 CHILD
   WHERE  CHILD.C1 = PARENT.MYC1 AND PARENT.MYC3<10000)
  SELECT * FROM RPL;
```

DB2 is updated to handle the LOB data in recursive common table
expression correctly.
Additional keywords: SQLCTE SQLLOB SQLCODE904

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM34519
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM34519:

    See PM34519 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM34519 corrects a problem of unexpect sqlcode -904 issued when
    a sql statement references a recursive common table expression
    and LOB data type in it.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK67286 ------------

PROBLEM DESCRIPTION(S):
```

PM25953 -
```
 ****************************************************************
 *  USERS AFFECTED: All DB2 z/OS 9 and DB2 10 for z/OS users   *
 *                  who have applications using index on       *
 *                  expressions (IOE) and                      *
 *                                                             *
 *                  1. the query contains the GROUP BY clause.  *
 *                     The expression(s) in the SELECT list is *
 *                     matched to a key in an IOE, but the     *
 *                     GROUP BY list is not matched to the key *
 *                     in the IOE.                             *
 *                                                             *
 *                  2. the query contains multiple GROUP BY    *
 *                     expressions. Only some of the GROUP BY  *
 *                     expressions can be matched to a key     *
 *                     expression in an IOE.                   *
 *                                                             *
 *                  3. the query contains an ORDER BY expression *
 *                     where the ORDER BY expression references *
 *                     an AS name in the SELECT list and that  *
 *                     AS name in the SELECT list is for an    *
 *                     expression to which a key expression in *
 *                     an IOE can be matched.                  *
 *                                                             *
 *                  4. the query contains a VARCHAR or         *
 *                     VARGRAPHIC item in the SELECT list that *
 *                     can be matched to a key expression in   *
 *                     an IOE and the IOE is defined with      *
 *                     the PADDED clause.                      *
 *                                                             *
 *                  or the users who have the applications that *
 *                  use the indexes defined for a clone table.  *
 ****************************************************************
 *  PROBLEM DESCRIPTION: 1.Incorrect output, abend            *
 *                         04E-E70005 at DSNXGMVE M101, or abend *
 *                         04E-E70005 at DSNXGDT2 M111 may     *
 *                         occur to a query that meets the     *
 *                         following conditions:               *
 *                                                             *
 *                            (a)The table has indexes that are *
 *                               defined on expressions (IOE). *
 *                                                             *
 *                            (b)The query that references the  *
 *                               above table contains a GROUP BY *
 *                               clause.  The expression in the *
 *                               select list is matched to a key *
 *                               in an IOE, but the GROUP BY or *
 *                               HAVING is not matched to the key. *
 *                               This breaks the semantic      *
 *                               relationship among the SELECT, *
 *                               GROUP BY, and HAVING clauses.  *
 *                                                             *
 *                         2.Incorrect output may be returned to *
 *                           a query that meets the following  *
 *                           conditions:                       *
 *                                                             *
```
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```
*                        (a)The table has indexes that are      *
*                           defined on expressions (IOE).       *
*                                                               *
*                        (b)The query that references the above *
*                           table contains multiple GROUP BY    *
*                           expressions.                        *
*                                                               *
*                        (c)Part of the GROUP BY lists are      *
*                           matched to the key of an IOE,       *
*                           and the rest of the GROUP BY        *
*                           expressions contain the same base   *
*                           table columns as in the IOE key     *
*                           that are matched to the previous    *
*                           GROUP BY expressions.               *
*                                                               *
*                     3.Incorrect output may be returned to     *
*                        a query that meets the following       *
*                        conditions:                            *
*                                                               *
*                        (a)The table has indexes that are      *
*                           defined on expressions (IOE).       *
*                                                               *
*                        (b)The query that references the above *
*                           table contains an ORDER BY          *
*                           expression where the ORDER BY       *
*                           expression references an AS name in *
*                           the SELECT list and that AS name in *
*                           the SELECT list is for an           *
*                           expression to which a key           *
*                           expression in an IOE can be         *
*                           matched.                            *
*                                                               *
*                     4.Incorrect length may be returned to     *
*                        a query that meets the following       *
*                        conditions:                            *
*                                                               *
*                        (a)The table has indexes that are      *
*                           defined on expressions (IOE) and    *
*                           the IOE is defined as PADDED.       *
*                                                               *
*                        (b)The query that references the above *
*                           table has one or more references    *
*                           to a key expression in SELECT list, *
*                           and that key expression is of       *
*                           either VARCHAR of VARGRAPHIC type.  *
*                                                               *
*                     5.Incorrect output or abend               *
*                        04E-00C90110 at DSNIFPSC:5011 may      *
*                        occur to a query or a utility that     *
*                        involves an index defined for a        *
*                        cloned table.                          *
*****************************************************************
* RECOMMENDATION:                                               *
*****************************************************************
1.Incorrect output or abend 04E-E70005 at DSNXGMVE M101 or abend
  04E-E70005 at DSNXGDT2 M111 may occur to a query that meets
```

the following conditions:

(a)The table has indexes that are defined on expressions (IOE).

(b)The query that references the above table contains a
    GROUP BY clause. The expression in the SELECT list is
    matched to a key in the IOE, but the column or expression
    in the GROUP BY (and HAVING) clause is not matched to the
    key. This breaks the semantic relationship among the
    SELECT, GROUP BY, and HAVING clauses.

Following is an example of such failing query:

CREATE INDEX IOE1 ON T1 (C1+1);

SELECT C1+1
FROM T1
GROUP BY C1 HAVING C1>3;

In this example, if C1+1 is matched to the first key in
index IOE1, C1+1 will be replaced with Key #1, but the
column in GROUP BY (and HAVING) clause is only part of
the key expression, and can not be matched to the key, so
the SELECT list is not part of the GROUP BY list anymore.
The query becomes:

SELECT Key#1 FROM T1 GROUP BY C1 HAVING C1>3;

This breaks the semantic relationship among the SELECT,
GROUP BY, and HAVING clauses.

2.Incorrect output may be returned for a query that meets the
  following conditions:

(a)The table has indexes that are defined on expressions (IOE).

(b)The query that references the above table contains multiple
    GROUP BY expressions.

(c)Part of the GROUP BY lists are matched to the key of an
    IOE, and the rest of the GROUP BY expression contains the
    same base table columns as in the IOE key that is matched
    to the previous GROUP BY expressions.

Following is an example of such failing query:

CREATE INDEX IOE2 ON T1(C1+0, C2+0)

SELECT MAX(C3)
FROM T1
GROUP BY C1+0, C2+0, C1+C2;

In this example, the first two GROUP BY lists C1+0 and C2+0
are matched to the key in index IOE2: key #1 and Key #2.
The last GROUP BY expression C1+C2 contains base column C1 and

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C2 which are the same base columns as in the IOE key that are matched to the first and second expressions in the GROUP BY list.

3. Incorrect output may be returned to a query that meets the following conditions:

   (a) The table has indexes that are defined on expressions (IOE).

   (b) The query that references the above table contains an ORDER BY expression where the ORDER BY expression references an AS name in the SELECT list and that AS name in the SELECT list is for an expression to which a key expression in an IOE can be matched.

   Following is an example of such failing query:

   CREATE TABLE T1 (C7 VARCHAR(7));

   CREATE INDEX IX ON T1 (CHAR(C7));

   SELECT CHAR(C7) AS XX FROM T1 ORDER BY VARCHAR(XX);

4. Incorrect length may be returned to a query that meets the following conditions:

   (a) The table has indexes that are defined on expressions (IOE) and the IOE is defined as PADDED.

   (b) The query that references the above table has one or more references to a key expression in SELECT list, and that key expression is of VARCHAR or VARGRAPHIC type.

   Following is an example of such failing query:

   CREATE TABLE T1 (C7 VARCHAR(7), C8 CHAR(8));

   CREATE INDEX IX ON T1 (UPPER(C7,'En_US')) PADDED;

   SELECT XX, YY, LENGTH(XX) FROM
   (SELECT UPPER(C7,'En_US'), C8 FROM T1
    WHERE UPPER(C7,'En_US') = 'NULL') AS TX(XX,YY);

   The value returned from LENGTH(XX) may be incorrect.

5. Incorrect output or abend 04E-00C90110 at DSNIFPSC:5011 may occur to a query or a utility that involves an index defined for a cloned table.

   The following describes a scenario that such failure may occur

   (a) the statement that references the clone table is dynamic, or static with REOPT(ALWAYS) being in effect
   (b) the real-time stats for the index from the catalog table indicates the table is empty, or the table is defined with VOLATILE keyword

When DB2 tries to retrieve real-time stats for the index,
DB2 incorrectly identifies the index, which can cause an
incorrect output or an abend.
DB2 has been modified to ensure those identified problems
are working.

Additional Keywords: INCORROUT INCORRECTOUTPUT SQLINCORROUT
DB2INCORR/K RC00E70005 RC00C90110
SQLINDEXONEXP SQLIOE ABEND04E SQLORDERBY
SQLGROUPBY SQLHAVING SQLAS SQLSELECT
SQLMATCHING SQLCLONE SQLCLONED
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM25953
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
              LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM30390:

    See PM30390 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM30390 corrects a problem of incorrect output from a query that
    satisfies all of the following conditions:

    1. A table expression is used in a full outer join.
    2. A minus expression is used in the SELECT list of the table
       expression.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM26356:

    See PM26356 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM26356 corrects a problem of ABEND04E RC00E70005 DSNXOMB M020
    when a duplicate of the same join predicate exists in the query.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM25953:

    See PM25953 APAR/PTF text for additional information about
    why a REBIND is necessary.

    APAR PM25953 corrects problems on index on expressions (IOE):

    1. that return incorrect output or abend when query contains

GROUP BY clause. The expression in the SELECT list is matched
to a key in an IOE, but the GROUP BY list is not.

2. that return incorrect output when query contains multiple
   GROUP BY expressions and only some of the GROUP BY
   expressions can be matched to a key in an IOE.

3. that return incorrect output when query contains an ORDER BY
   expression where the ORDER BY expression references an AS
   name in the SELECT list and that AS name in the SELECT list
   is for an expression to which a key expression in an IOE
   can be matched.

4. that return an incorrect length for a SELECT list expression
   when that expression is matched to a key in an IOE and the
   IOE is defined as PADDED and that key of IOE is either a
   VARCHAR or a VARGRAPHIC type.

APAR PM25953 also corrects a problem that an incorrect output
or abend may be returned to a query or a utility that involves
an index defined for a clone table.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM08578:

See PM08578 APAR/PTF text for additional information about
why a REBIND is necessary.

PM08578 corrects a performance problem of not exploring an
index defined on expressions if the query meets the following
conditions:

   1. a table expression involves in an outer join operation
      and the table expression is merged
   2. the table expression contains a predicate where the
      operands in the predicate match to key expressions in
      the index

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM01323:

See PM01323 APAR/PTF text for additional information about
why a REBIND is necessary.

PM01323 corrects a problem of INCORROUT on a SELECT with
ORDER BY with the ordering of a scalar fullselect.

To make this fix effective for a static application, it must be

```
        rebound after application of this PTF.  Review the PTF cover
        letter to determine which, if any, applications could be
        affected by this change.
      ACTION:
        ***Action for PM01323:

        See PM01323 APAR/PTF text for additional information about
        why a DROP VIEW might be necessary.

        PM01323 corrects a problem of INCORROUT on a SELECT with
        ORDER BY when one of the orderings requested is a
        scalar fullselect.

        It may be necessary to do a DROP VIEW for views that meet
        the failing criteria.  However, this scenario should be
        extremely rare as ORDER BY is not supported at the top level
        of a CREATE VIEW.
.


      ------ COVER LETTER FOR PTF UK67291 ------------


PROBLEM DESCRIPTION(S):
  PM33955 -
      ***************************************************************
      * USERS AFFECTED: All DB2 for z/OS V8, DB2 9 and DB2 10 for   *
      *                 z/OS users who have PM25187 applied         *
      *                 (UK63515 for V8, UK63516 for V9 and UK63514 *
      *                 for V10) and use SQL statement             *
      *                 containing multiple Table Expressions and  *
      *                 OUTER JOINs.                               *
      ***************************************************************
      * PROBLEM DESCRIPTION: After applying PM25187,              *
      *                     1. ABEND04E RC00E70005 at DSNXOADJ M444 *
      *                        may occur only in V8 when a SQL     *
      *                        statement contains multiple table   *
      *                        expressions, OUTER JOINs and old    *
      *                        VIEWs.                              *
      *                                                           *
      *                        1.1 One VIEW is created in V7 or    *
      *                            even in much earlier version;   *
      *                        1.2 Another VIEW contains multiple  *
      *                            OUTER JOINs and multiple common *
      *                            table expressions which are     *
      *                            defined with UNION ALL;         *
      *                        1.3 Both of two VIEWs are referenced *
      *                            in a SQL statement containing   *
      *                            multiple table expressions and  *
      *                            OUTER JOINs.                    *
      *                                                           *
      *                     2. An incorrect output may occur in V8, *
      *                        V9 and V10 when an OUTER JOIN       *
      *                        contains a table expression where a *
      *                        non-correlated sub-query is involved *
      *                        in WHERE clause.                    *
      *                                                           *
```

```
*                           2.1 The query contains two table    *
*                               expressions connected with INNER *
*                               JOIN;                            *
*                           2.2 Both of the table expressions    *
*                               contain multiple OUTER JOINs;    *
*                           2.3 The null padded side of OUTER    *
*                               JOIN in condition #2.2, is also  *
*                               defined with table expression    *
*                               where a non-correlated sub-query *
*                               predicate is involved.           *
****************************************************************
* RECOMMENDATION:                                               *
****************************************************************
```

1. After applying PM25187, ABEND04E RC00E70005 at DSNXOADJ M444
   may occur only in V8 when an SQL statement contains multiple
   table expressions, OUTER JOINs and old views;

   1.1 One view is created in V7 or even in much earlier
       version;
   1.2 Another view contains multiple OUTER JOINs and multiple
       common table expressions which are defined with UNION
       ALL;
   1.3 Both of two views are referenced in a SQL statement
       containing multiple table expressions and OUTER JOINs.

```
A SQL with following pattern helps to illustrate above ABEND:
Create VIEW V1 (VC1 ...  VCn) AS (
  WITH CTE1 (C11 ...  C1n) AS (SELECT ...
                                  UNION ALL
                                  SELECT ...),
       CTE2 (C21 ...  C2n) AS (SELECT ...
                                  UNION ALL
                                  SELECT ...)
  SELECT ...
  FROM T1 LEFT OUTER JOIN T2
                     ON ...
                   LEFT OUTER JOIN T3
                     ON...            );

 Create VIEW OLD_VIEW (...) AS (...);

Query:
SELECT ...
FROM TABLE ( SELECT ...
             FROM T2 INNER JOIN V1
                     ON ...
                   LEFT OUTER JOIN OLD_VIEW
                     ON ...            ) AS TE1 (...)
     LEFT OUTER JOIN TABLE (...) AS TE2 (...)
             ON ...
WHERE ...;
```

2 An incorrect output may occur in V8, V9 and V10 when an OUTER
  JOIN contains a table expression where a non-correlated
  sub-query is involved in WHERE clause.

```
       2.1 The query contains two table expressions connected with
           INNER JOIN;
       2.2 Both of the table expressions contain multiple OUTER
           JOINs;
       2.3 The null padded side of OUTER JOIN in condition #2.2, is
           also defined with table expression where a non-correlated
           sub-query predicate is involved.

    The following query helps to illustrate above incorrect output:
    SELECT TE1.TEC1, TE2.TEC2
    FROM TABLE (SELECT A.T1C1
                FROM TEST.T1 AS A
                    LEFT OUTER JOIN TEST.T1 AS B
                      ON A.T1C2 = B.T1C2
                    FULL OUTER JOIN (SELECT C.T2C1
                                     FROM TEST.T2 AS C
                                     WHERE C.T2C2 =
                                       (SELECT MAX(D.T2C2)
                                        FROM TEST.T2 AS D
                                        WHERE D.T2C1 = 'ABC'))
                                            AS TE4 (T2C1)
                      ON A.T1C1 = TE4.T2C1) AS TE1 (TEC1),
         TABLE (SELECT A.T1C1
                FROM TEST.T1 AS A
                    LEFT OUTER JOIN TEST.T1 AS B
                      ON A.T1C2 = B.T1C2
                    FULL OUTER JOIN TABLE (SELECT C.T2C1
                                           FROM TEST.T2 AS C
                                           WHERE C.T2C2 =
                                             (SELECT MAX(D.T2C2)
                                              FROM TEST.T2 AS D
                                            WHERE D.T2C1 = C.T2C1))
                                              AS TE3(T2C1)
                      ON A.T1C1 = TE3.T2C1) AS TE2 (TEC2)
    WHERE TE1.TEC1 = TE2.TEC2;

    DB2 is modified to handle a SQL statement containing multiple
    Table Expressions and OUTER JOINs correctly.

    Additional keywords: SQLOUTERJOIN SQLTABLEEXPR SQLVIEW
                         SQLCTE SQLINCORR  SQLSUBQUERY
                         SQLINCORROUT INCORROUT
                         DB2INCORR/K
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM33955
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM33955:


    PM33955 corrects a problem of applying PM25187, an incorrect
    output may occur when a SQL statement contains multipletable
    expressions and OUTER JOINs.
```

After applying PM25187:
1. An incorrect output may occur when an OUTER JOIN contains
   table expression where a non-correlated sub-query is involved
   in WHERE clause.

   1.1 The query contains two table expressions connected with
       INNER JOIN;
   1.2 Both of the table expressions contain multiple OUTER
       JOINs;
   1.3 The null padded side of OUTER JOIN in condition #1.2, is
       also defined with table expression where a non-correlated
       sub-query predicate is involved.

   To make this fix effective for a static application, it must be
   rebound after application of this PTF. Review the PTF cover
   letter to determine which, if any, applications could be
   affected by this change.
DB2BIND:
   See PM17437 APAR/PTF text in the PTF cover letter for
   additional information about why a REBIND is necessary.

   APAR PM17437 corrects a problem that can cause an abend
   for multi-level nested subqueries.

   To make this fix effective for a static application, it must be
   rebound after application of this PTF. Review the PTF cover
   letter to determine which, if any, applications could be
   affected by this change.
DB2BIND:
   See PM08436 APAR/PTF text in the PTF cover letter for
   additional information about why a REBIND is necessary.

   APAR PM08436 corrects a problem that can cause an abend for a
   MERGE statement with a UNION ALL in view involved in a subquery.

   To make this fix effective for a static application, it must be
   rebound after application of this PTF. Review the PTF cover
   letter to determine which, if any, applications could be
   affected by this change.
.

------ COVER LETTER FOR PTF UK67426 ------------

PROBLEM DESCRIPTION(S):
  PM31303 -
    ****
    * USERS AFFECTED: Users of DB2 for z/OS who need to send   *
    *   environment re-creation information to the   *
    *   DB2 service team when requested for a   *
    *   problem related to DB2 query processing.   *
    ****
    * PROBLEM DESCRIPTION: THIS FIX ADDRESSES SEVERAL ISSUES   *
    *   RELATED TO DDL AND STATS OUTPUT FILES   *
    *   GENERATED FROM THE   *
    *   SYSPROC.ADMIN_INFO_SQL STORED   *

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```
*                      PROCEDURE.                              *
*                      THE SYMPTOMS USUALLY ARE INCORRECT      *
*                      OUTPUT WHEN BUILDING THE DDL AND        *
*                      STATS OUTPUT FILES.                     *
******************************************************************
* RECOMMENDATION:                                              *
******************************************************************
```

SUMMARY OF ADMIN_INFO_SQL EVENTS:

The ADMIN_INFO_SQL stored procedure captures statistics
about a DB2 subsystem, its objects, and applications and
returns the results in a data set or as a result set.
This information can help IBM Software Support recreate
and troubleshoot problems, like a poorly performing SQL query.

ADMIN_INFO_SQL was sometimes not producing the correct output
when creating the DDL and STATS output files that are used
by DB2 service to re-create a problem related to query
processing. Here are a list of reported issues:

- ADMIN_INFO_SQL syntax problem with newline causing problems
  with Java result sets.

- ADMIN_INFO_SQL not closing the cursors when calling
  ADMIN_COMMAND_DB2 stored procedure.

- ADMIN_INFO_SQL formatted STATS_FORMAT in SYSKEYTARGETS
  incorrectly.

- Reduced code and data segment size for ADMIN_INFO_SQL.

- Several array sizes were incorrect and could cause an
  overlay.

- Wrapping EXPLAIN information when using job DSNTEJ6I
  to call DSNADMSB. Added DCB=(RECFM=VB,LRECL=4096) to
  SYSPRINT.

ADMIN_INFO_SQL had several new features added:

- Get foreign key dependencies.

- Index probing and real-time statistics (RTS) collection.

- Production modeling.

- DSN_QUERYINFO_TABLE collection.

- Now gets MEPL information.

PROBLEM CONCLUSION:

The reported ADMIN_INFO_SQL DDL and STATS problems
are now corrected.

```
    ADDITIONAL KEYWORDS:
    SQLSP SQLSTOREDPROC ADMININFOSQL
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM31303
SPECIAL CONDITIONS:
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  ACTION:
    This PTF modifies DSNADMSS, the external module for
    SYSPROC.ADMIN_INFO_SQL, a DB2-supplied routine that can be used
    to collect DB2 environmental service data.  It also modifies
    DSNADMSB, a program that can be used to call
    SYSPROC.ADMIN_INFO_SQL. This PTF also adds a DCB clause to the
    SYSPRINT DD in job step DSNADMSB of job DSNTEJ6I.

    **************************************************************
    Actions for customers who are already using DB2 V9:
    **************************************************************
    If you have already installed or migrated to DB2 Version 9 then
    after applying this PTF, you need to take the following actions:
    (1) Rebind DBRMs DSNADMSS and DSNADMSB
    (2) Refresh the WLM environment for SYSPROC.ADMIN_INFO_SQL
    (3) Update SYSPRINT DD in job step DSNADMSB of job DSNTEJ6I

    Procedures for these actions are given below.
    ------------------------------------------------------------------
    (1) Rebind DBRMs DSNADMSS and DSNADMSB
    ------------------------------------------------------------------
    ==> All DB2 V9 customers who use the SYSPROC.ADMIN_INFO_SQL
        stored procedure need to take this action after applying
        the PTF.

        Submit a job that contains the following BIND statements:

                BIND PACKAGE(DSNADM) MEM(DSNADMSB) -
                    ACTION(REPLACE) ISOLATION(CS) -
                    ENCODING(EBCDIC) -
                    LIBRARY('<prefix>.SDSNDBRM')
                BIND PACKAGE(DSNADM) MEMBER(DSNADMSS) -
                    ACTION(REPLACE) ISOLATION(CS) -
                    ENCODING(EBCDIC) CURRENTDATA(YES) -
                    LIBRARY('<prefix>.SDSNDBRM')

        where <prefix> is the data set prefix of your DB2 V9 target
        libraries.
    ------------------------------------------------------------------
    (2) Refresh the WLM environment for SYSPROC.ADMIN_INFO_SQL
    ------------------------------------------------------------------
    ==> All DB2 V9 customers who use the SYSPROC.ADMIN_INFO_SQL
        stored procedure need to take this action after applying
        the PTF.

        Issue the following VARY MVS command from the console to
        refresh the WLM application environment:

          VARY WLM,APPLENV=!wlmenv!,REFRESH
```

```
        where !wlmenv! is the name of the WLM application
        environment for running the SYSPROC.ADMIN_INFO_SQL stored
        procedure.
        ----------------------------------------------------------------
        (3) Update SYSPRINT DD in job step DSNADMSB of job DSNTEJ6I
        ----------------------------------------------------------------
        ==> All DB2 V9 customers who use the job DSNTEJ6I to call
            DSNADMSB need to take this action after applying the PTF.

            If you have already installed or migrated to DB2 V9 and
            you maintain a customized copy of the DSNTEJ6I job,
            edit your copy, locate the SYSPRINT DD statement,
            and add DCB=(RECFM=VB,LRECL=4096).

            For example:

            //SYSPRINT DD    SYSOUT=*,DCB=(RECFM=VB,LRECL=4096)
.


------ COVER LETTER FOR PTF UK67592 ------------

PROBLEM DESCRIPTION(S):
  PM29470 -
    ****************************************************************
    * USERS AFFECTED: All users of DB2 for z/OS V8 and DB2 9      *
    *                 for z/OS who are using the DB2-supplied     *
    *                 stored procedure                           *
    *                 SYSPROC.ADMIN_INFO_HOST                     *
    ****************************************************************
    * PROBLEM DESCRIPTION: (a) If IPv6 is disabled, DB2 9 for z/OS *
    *                          SYSPROC.ADMIN_INFO_HOST returns      *
    *                          the following error message:        *
    *                              DSNA626I DSNADMIH THE            *
    *                              getaddrinfo() FUNCTION CALL      *
    *                              IS UNSUCCESSFUL,                 *
    *                              NODENAME=node-name,              *
    *                              EDC9501I The name does not       *
    *                              resolve for the supplied         *
    *                              parameters.                      *
    *                          where node-name is an IPv4-          *
    *                          compatible IPv6 address.             *
    *                                                               *
    *                      (b) In a data sharing environment,       *
    *                          when SYSPROC.ADMIN_INFO_HOST is      *
    *                          executing in a DB2 for z/OS V8       *
    *                          member and it is processing the      *
    *                          IP address of another DB2 member     *
    *                          with a DB2 release higher than 8,    *
    *                          it returns the following error       *
    *                          message:                             *
    *                              DSNA626I DSNADMIH THE            *
    *                              inet_addr() FUNCTION CALL        *
    *                              IS UNSUCCESSFUL,                 *
    *                              HOST ADDRESS=host-addr,          *
```

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```
*                          EDC5121I Invalid argument.        *
*                          where host-addr is an IPv4-       *
*                          compatible IPv6 address.          *
*                                                            *
*                  (c) In a data sharing environment,        *
*                      SYSPROC.ADMIN_INFO_HOST is not        *
*                      using the member IP address in        *
*                      message DSNL089I of the -DISPLAY      *
*                      DDF command report to determine the   *
*                      host name of a DB2 member. Instead,   *
*                      it is always using the location       *
*                      (group) IP address in DSNL085I. If    *
*                      the member IP address is not the      *
*                      same as the location (group)          *
*                      IP address, then the host name        *
*                      returned by ADMIN_INFO_HOST           *
*                      is incorrect for the DB2              *
*                      member.                               *
****************************************************************
* RECOMMENDATION: APPLY PTF                                  *
****************************************************************
```

(a) SYSPROC.ADMIN_INFO_HOST V9 extracts the IP address from
    the DSNL085I message of the -DISPLAY DDF command report
    and passes it to getaddrinfo(). If IPv6 is disabled
    and an IPv4-compatible IPv6 address is extracted from
    DSNL085I and passed to getaddrinfo(), getaddrinfo()
    will fail with the error description "EDC9501I The name
    does not resolve for the supplied parameters.".
(b) SYSPROC.ADMIN_INFO_HOST V8 extracts the IP address from
    the DSNL085I message of the -DISPLAY DDF command report
    and passes it to inet_addr(). If the IP address extracted
    from the DSNL085I message is an IPv4-compatible IPv6
    address, inet_addr() will fail with the error description
    "EDC5121I Invalid argument.".
(c) In a data sharing environment, SYSPROC.ADMIN_INFO_HOST
    is not using the member IP address provided in DSNL089I
    of the -DISPLAY DDF command report to determine the
    host name of the DB2 data sharing member. Instead, it
    is using the location (group) IP address provided in
    DSNL085I.
ADMIN_INFO_HOST is modified as follows:
(a) To fix the getaddrinfo() failure, the double colon
    at the beginning of an IPv4-compatible IPv6 address
    is removed before it is passed to getaddrinfo().
    This is done for each IPv4-compatible IPv6 address
    extracted from the DSNL085I or DSNL089I message.
(b) To fix the inet_addr() failure, the double colon
    at the beginning of an IPv4-compatible IPv6 address
    is removed before it is passed to inet_addr().
    This is done for each IPv4-compatible IPv6 address
    extracted from the DSNL085I or DSNL089I message.
(c) To ensure that the correct IP address is used to
    determine the host name of a DB2 subsystem or member,
    ADMIN_INFO_HOST will pass the member IP address to
    getaddrinfo() or inet_addr() if the member IP address
    is present. Otherwise, ADMIN_INFO_HOST will pass

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```
            the location (group) IP address to getaddrinfo() or
            inet_addr().
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM29470
SPECIAL CONDITIONS:
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  ACTION:
    This PTF modifies the DB2 stored procedure
    SYSPROC.ADMIN_INFO_HOST to successfully determine the host
    name of a DB2 subsystem that is part of a data sharing group
    or is installed in a system where IPv6 is disabled.

    ****************************************************************
    Actions for customers who are already using DB2 9 for z/OS:
    ****************************************************************
    If you have already installed or migrated to DB2 9 for z/OS
    then after applying this PTF, you need to take the following
    actions:
    (1) Bind the DBRM for the stored procedure
        SYSPROC.ADMIN_INFO_HOST.

    Procedures for these actions are given below.
    ----------------------------------------------------------------
    (1) Bind the DBRM for the stored procedure
        SYSPROC.ADMIN_INFO_HOST.
        **********************************************************
        * All V9 customers who want to use the stored procedure
        * SYSPROC.ADMIN_INFO_HOST need to perform this step.
        **********************************************************
        Use the following procedure to avoid disrupting your
        existing DB2-supplied stored procedures and databases:
        (a) Create and edit a copy of your customized DSNTIJSG job
        (b) Remove all job steps except DSNTIAE
        (c) In job step DSNTIAE:
            - remove all BIND PACKAGE statements under the SYSTSIN
              DD, except for the following:
                BIND PACKAGE(DSNADM) MEMBER(DSNADMIH) - ...
            - remove all CREATE statements under the SYSIN DD
        (d) Run the job to bind the DBRM for the stored
            procedure SYSPROC.ADMIN_INFO_HOST
        (e) Delete the copy of your customized DSNTIJSG job created
            in step (1)(a)
    ----------------------------------------------------------------
.


------ COVER LETTER FOR PTF UK67608 ------------

PROBLEM DESCRIPTION(S):
  PM33879 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS      *
    *                 users of the stored procedure              *
    *                 SYSPROC.ADMIN_COMMAND_DB2                    *
    ****************************************************************
```

```
* PROBLEM DESCRIPTION: ADMIN_COMMAND_DB2 does not return the  *
*                      setting of the AUTOSIZE buffer pool    *
*                      parameter if the stored procedure is   *
*                      called to issue -DISPLAY BUFFERPOOL    *
*                      with parse-type BP.                    *
**************************************************************
* RECOMMENDATION: APPLY PTF                                   *
**************************************************************
```

ADMIN_COMMAND_DB2 does not return the setting of the
AUTOSIZE buffer pool parameter if the stored procedure is
called to issue -DISPLAY BUFFERPOOL with parse-type BP.
ADMIN_COMMAND_DB2 is enhanced to return the setting of the
AUTOSIZE buffer pool parameter if the stored procedure is
called to issue -DISPLAY BUFFERPOOL with parse-type BP.

In order to return the AUTOSIZE setting, a new column
AUTOSIZE is added to the result table
SYSIBM.BUFFERPOOL_STATUS to hold the AUTOSIZE setting.
This new column is described in Table 1 below. The value
of AUTOSIZE is either YES or NO.

Table 1. SYSIBM.BUFFERPOOL_STATUS new column

Column Name	Data Type	Content
AUTOSIZE	VARCHAR(3)	The buffer pool AUTOSIZE attribute that is applicable to the current allocation of the buffer pool.

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APARS FIXED: PM33879
SPECIAL CONDITIONS:
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  ACTION:
    This PTF enhances the DB2-supplied stored procedure
    SYSPROC.ADMIN_COMMAND_DB2 to return the setting of the
    AUTOSIZE buffer pool parameter when the stored procedure
    is called to issue -DISPLAY BUFFERPOOL with parse-type BP.

    See the PTF cover letter for more information.

    ****
    Actions for customers who are already using DB2 V9:
    ****
    If you have already installed or migrated to DB2 9 for z/OS
    then after applying this PTF, you need to take the following
    actions:
    (1) Update your customized copy of job DSNTIJSG.
    (2) Alter the table definition for SYSIBM.BUFFERPOOL_STATUS
        and bind the DBRMs for the stored procedure
        SYSPROC.ADMIN_COMMAND_DB2.

Procedures for these actions are given below.
```
-----------------------------------------------------------------
(1) Update your customized copy of job DSNTIJSG
    *************************************************************
    * All V9 customers who maintain a private copy of DB2
    * installation job DSNTIJSG need to perform this step.
    *************************************************************
    This PTF modifies DB2 installation job DSNTIJSG in the
    prefix.SDSNSAMP target library. It modifies the definition
    of table SYSIBM.BUFFERPOOL_STATUS.
    (a) Edit your customized copy of DSNTIJSG
    (b) In job step DSNTIAS:
        - replace the following sql statement:
            CREATE GLOBAL TEMPORARY TABLE
              SYSIBM.BUFFERPOOL_STATUS
              ( ROWNUM           INTEGER    NOT NULL
               ,BPNAME           CHAR(6)    NOT NULL
               ,VPSIZE           INTEGER    NOT NULL
               ,VPSEQT           INTEGER    NOT NULL
               ,VPPSEQT          INTEGER    NOT NULL
               ,VPXPSEQT         INTEGER    NOT NULL
               ,DWQT             INTEGER    NOT NULL
               ,PCT_VDWQT        INTEGER    NOT NULL
               ,ABS_VDWQT        INTEGER    NOT NULL
               ,PGSTEAL          CHAR(4)    NOT NULL
               ,ID               INTEGER    NOT NULL
               ,USE_COUNT        INTEGER    NOT NULL
               ,PGFIX            CHAR(3)    NOT NULL
              ) CCSID EBCDIC;
          with:
            CREATE GLOBAL TEMPORARY TABLE
              SYSIBM.BUFFERPOOL_STATUS
              ( ROWNUM           INTEGER    NOT NULL
               ,BPNAME           CHAR(6)    NOT NULL
               ,VPSIZE           INTEGER    NOT NULL
               ,VPSEQT           INTEGER    NOT NULL
               ,VPPSEQT          INTEGER    NOT NULL
               ,VPXPSEQT         INTEGER    NOT NULL
               ,DWQT             INTEGER    NOT NULL
               ,PCT_VDWQT        INTEGER    NOT NULL
               ,ABS_VDWQT        INTEGER    NOT NULL
               ,PGSTEAL          CHAR(4)    NOT NULL
               ,ID               INTEGER    NOT NULL
               ,USE_COUNT        INTEGER    NOT NULL
               ,PGFIX            CHAR(3)    NOT NULL
               ,AUTOSIZE         VARCHAR(3)
              ) CCSID EBCDIC;
    (c) Save your changes.
-----------------------------------------------------------------
(2) Alter the table definition for SYSIBM.BUFFERPOOL_STATUS
    and bind the DBRMs for the stored procedure
    SYSPROC.ADMIN_COMMAND_DB2.
    *************************************************************
    * All V9 customers who want to use the stored procedure
    * SYSPROC.ADMIN_COMMAND_DB2 need to perform this step.
    *************************************************************
```

Use the following procedure to avoid disrupting your
existing DB2-supplied stored procedures and databases:
(a) Create and edit a copy of the DSNTIJSG job you updated
    in step (1) of this procedure
(b) Remove all job steps except DSNTIAS
(c) In job step DSNTIAS:
    - remove all BIND PACKAGE statements under the SYSTSIN
      DD, except for the following:
        BIND PACKAGE(DSNADM) MEMBER(DSNADMCD) - ...
        BIND PACKAGE(DSNADM) MEMBER(DSNADMCW) - ...
    - remove all CREATE statements under the SYSIN DD,
      and add the following:
        ALTER TABLE SYSIBM.BUFFERPOOL_STATUS
            ADD COLUMN AUTOSIZE VARCHAR(3);
(d) Run the job to alter the table definition for
    SYSIBM.BUFFERPOOL_STATUS, and bind the DBRMs
    for the stored procedure SYSPROC.ADMIN_COMMAND_DB2

.

------ COVER LETTER FOR PTF UK67625 ------------

PROBLEM DESCRIPTION(S):
  PM28960 -
    ****
    * USERS AFFECTED: Users of DB2 for z/OS who use   *
    *   partitioned table spaces.   *
    ****
    * PROBLEM DESCRIPTION: DB2 was writing dummy log records   *
    *   without the partition number   *
    *   specified, which was interpreted as   *
    *   partition 1 by default.   *
    ****
    * RECOMMENDATION: *
    ****
    Because log records were being written without the part number
    specified, we would mark erroneous states on partition 1 along
    with the correct states on the actual affected partitions.
    Dummy log records are now written with the correct partition
    numbers specified if the object is partitioned.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM28960
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    This fix corrects an SQLCODE20356 error when a TRUNCATE TABLE
    operation is run on a parent table that is defined with an
    informational referential constraint by use of the NOT ENFORCED
    keywords on the references-clause of the CREATE or ALTER TABLE
    statement.

    Note that if TRUNCATE TABLE is run on parent tables for which
    all constraints are informational (NOT ENFORCED), the TRUNCATE
    will no longer be blocked. Such a condition should have been

ignored by TRUNCATE TABLE.

Customers making use of TRUNCATE TABLE can verify whether an
object has only informational constraints defined by examining
the ENFORCED column of the DB2 Catalog table SYSIBM.SYSRELS for
the object being truncated.

The DB2 Version 9 for z/OS SQL REFERENCE manual under TRUNCATE
statement "NOTES Rules and restrictions" will be changed
approximately as follows:
"Rules and Restrictions: The truncate operation cannot be
executed if the table is a parent table in an enforced
referential constraint".
.

------ COVER LETTER FOR PTF UK67636 ------------

PROBLEM DESCRIPTION(S):
  PM31008 -
    ****
    * USERS AFFECTED: All DB2 for z/OS users whose queries contain *
    *   join predicates between columns with   *
    *   mismatched data types.   *
    ****
    * PROBLEM DESCRIPTION: DB2 may select an inefficient join   *
    *   sequence for a query if the query   *
    *   contains a join predicate between   *
    *   columns with mismatched data types.   *
    ****
    * RECOMMENDATION: *
    ****
    DB2 may select an inefficient join sequence for a query if the
    query contains a join predicate between columns with mismatched
    data types.

    For example,

    SELECT *
      FROM T1, T2, T3, T4
     WHERE T1.C1 = ?
       AND T1.C2 = T2.C2
       AND T1.C3 = T3.C3
       AND T1.C4 = T4.C4
       AND T2.C5 = T3.C5;

    If data type of T1.C2 is VARCHAR, data type of T2.C2 is DECIMAL,
    data types of T1.C2 and T2.C2 are mismatched so an implicit CAST
    needs to be done for T1.C2 = T2.C2 by DB2.

    DB2 may select an inefficient join sequence for the case above.

    ADDITIONAL KEYWORDS:
    SQLACCESSPATH SQLPERFORMANCE
    Code is fixed to solve the problem described as above.
COMPONENT: 5740-XYR00-HDB9910

```
APARS FIXED: PM31008
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM31008:

    See PM31008 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM31008 corrects a problem that DB2 may select an inefficient
    join sequence for a query if the query contains a join predicate
    between columns with mismatched data types.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.


------ COVER LETTER FOR PTF UK67638 ------------

PROBLEM DESCRIPTION(S):
  PM30425 -
    ****************************************************************
    * USERS AFFECTED: DB2 for z/OS users of optimization hints.   *
    ****************************************************************
    * PROBLEM DESCRIPTION: Introduces new optimization            *
    *                      enhancements so that more access paths  *
    *                      can be reused for optimization hints.   *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    This APAR introduces three optimization enhancements so that
    more access paths can be reused through optimization hints:

      1. Include a record for a virtual table in PLAN_TABLE output.
         This enables access paths that contain virtual tables to
         be reused by optimization hints. This fix is for V9.

      2. This APAR also includes a fix for the PLAN_TABLE column
         COLUMN_FN_EVAL. This column could be incorrectly set to 'S'
         when the value should be blank. This fix is for V9.

      3. Internal serviceability enhancement for V10.


    Additional Keywords:
    SQLEXPLAIN  OPTHINT  OPTHINTS  HINTS  OPTIMIZATION HINT
    More access paths will be eligible for reuse by optimization
    hints.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM30425
SPECIAL CONDITIONS:
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```

LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
DB2BIND:
  ***Action for PM30425:
  See PM30425 APAR/PTF text for additional information about why
  a REBIND is necessary.

  PM30425 corrects failures to apply optimization hints properly
  when virtual tables exist, or when COLUMN_FN_EVAL in the
  PLAN_TABLE is incorrectly shown with a value of 'S'.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could
  be affected by this change.
DB2BIND:
  ***Action for PM24353:

  See PM24353 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM24353 corrects a problem of ABEND04E RC00E70005 in
  DSNXGINL M100 that may occur when executing a query using
  an optimization hint which contains hybrid join.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
.

------ COVER LETTER FOR PTF UK67872 ------------

PROBLEM DESCRIPTION(S):
  PM34593 -
    ****
    * USERS AFFECTED: All DB2 z/OS v9 and v10 users of   *
    *   LOAD and REORG utilities on   *
    *   compressed table spaces.   *
    ****
    * PROBLEM DESCRIPTION: LOAD or REORG utility job running on a *
    *   compressed table space ran into   *
    *   problems and abended with SDC2   *
    *   RC4A001620. There is a very tiny   *
    *   timing window in the recovery code   *
    *   where it is possible that if the LOAD *
    *   or REORG job gets cancelled by the   *
    *   user, DB2 would issue the DSNIZLDL   *
    *   ERQUAL53BB abend followed by a DB2   *
    *   crash with RC00F30801 due to BMC   *
    *   EXCLUSIVE LATCH#2 not released.   *
    ****
    * RECOMMENDATION: *
    ****
    Recovery routine to handle the abend did not handle the
    case for user CANCEL. That caused the BMC latch not being

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released and an incorrect RETRY on the recovery caused
DB2 to crash.
DB2 recovery routine in DSNIZLDL is fixed to correctly
handle the release of the BMC latch and removed the
unneeded RETRY.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM34593
SPECIAL CONDITIONS:
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  ACTION:
    If you use a Partition By Growth table space with COMPRESSION
    and you take FULL and INCREMENTAL IMAGE copies, then after
    applying this PTF a FULL IMAGE COPY should be taken to
    establish a new recovery base.

    Before this PTF is applied, if dictionary pages were not
    modified and marked dirty after they were first copied over
    from a prior partition, INCREMENTAL IMAGE copies may not have
    copied dictionary pages for new partitions that were created
    after the FULL IMAGE COPY was taken.

    After this PTF is applied and a FULL IMAGE COPY is taken,
    INCREMENTAL IMAGE copies will contain the dictionary pages
    from any new partitions created after the FULL IMAGE COPY
    was taken.

    Applying this PTF and taking an INCREMENTAL IMAGE COPY without
    taking the FULL IMAGE COPY will not ensure the INCREMENTAL IMAGE
    COPY is complete.
.

------ COVER LETTER FOR PTF UK67941 ------------

PROBLEM DESCRIPTION(S):
  PM36311 -
    ****
    * USERS AFFECTED: All DB2 for z/OS V8, DB2 9 for z/OS and   *
    *   DB2 10 for z/OS users of the DB2 scheduler *
    *   for administrative tasks   *
    ****
    * PROBLEM DESCRIPTION: When the DB2 scheduler name is less   *
    *   than 8 characters long, abend 282-05C *
    *   occurs during RACHECK and IRRSPK00   *
    *   processing when a task is executed   *
    *   or when a task is added with a user ID *
    *   and a PassTicket.   *
    ****
    * RECOMMENDATION: Apply this PTF.   *
    ****

    The DB2 scheduler uses its name as the PassTicket application ID
    when it invokes the callable service IRRSPK00 either to generate
    a PassTicket for the execution user of a task being run by the
    DB2 scheduler or to check the PassTicket of the execution user
    of a task being added. If the scheduler name is less than 8

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characters long, the application ID is padded on the right with
         blanks to a length of 8. When IRRSPK00 encounters a blank in the
         application ID, it generates the following abends:
             ICH409I 282-05C ABEND DURING RACHECK PROCESSING
             ICH409I 282-05C ABEND DURING IRRSPK00 PROCESSING.
         This PTF corrects the DB2 scheduler by trimming blanks from the
         application ID that is passed to the callable service IRRSPK00
         to generate or to check the PassTicket for the execution user
         of a task.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM36311
SPECIAL CONDITIONS:
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  ACTION:
     After applying this PTF on DB2 9 for z/OS
     =======================================

     The following post-apply actions are required of all current
     V9 customers to activate the changes in this PTF:
     (1) Stop the DB2 scheduler for administrative tasks.
     (2) Start the DB2 scheduler for administrative tasks.

     Each of these actions is detailed below.

     (1) Stop the DB2 scheduler for administrative tasks.
         If the DB2 scheduler is running, stop it first by executing
         the following console command:
         MODIFY DSNADMT,APPL=SHUTDOWN
         where DSNADMT is the name of the scheduler.

     (2) Start the DB2 scheduler for administrative tasks.
         To start the DB2 scheduler again, execute the following
         console command:
         START DSNADMT
         where DSNADMT is the name of the scheduler.
.

------ COVER LETTER FOR PTF UK68099 ------------

PROBLEM DESCRIPTION(S):
  PM19584 -
     ****
     * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
     *   utility users of LOAD and UNLOAD   *
     ****
     * PROBLEM DESCRIPTION: New function to enable LOAD PRESORTED *
     *   option to tell LOAD to bypass the sort *
     *   of the clustering index when the input *
     *   data is already in clustering key order *
     *   to improve performance   *
     *   *
     *   New function to enable UNLOAD FORMAT   *
     *   INTERNAL option to unload data in   *
     *   internal format without any conversions *
                                   450

```
*                              to improve performance                 *
*                                                                     *
*                              New function to enable LOAD FORMAT      *
*                              INTERNAL option to load input data in   *
*                              internal format without any conversions *
*                              to improve performance                 *
*********************************************************************
* RECOMMENDATION: Apply corrective PTF when available                *
*********************************************************************
```

The new LOAD option, PRESORTED YES, indicates to LOAD that the
input data is sorted in clustering key order and as a result
the LOAD utility can skip the sort for the clustering index
to improve the performance of the LOAD utility.

The new UNLOAD option, FORMAT INTERNAL, indicates to the
UNLOAD utility that the data should be unloaded into DB2
internal format as is without any conversion to improve the
performance of the UNLOAD utility.

The new LOAD option, FORMAT INTERNAL, indicates to the LOAD
utility that the data is already in DB2 internal format
and no additional coversions are needed to load the data.
This option provides a performance benefit for the LOAD
utility as all conversions and data type checking are bypassed
for an efficient load.
Code has been changed to enable the new LOAD PRESORTED YES
option and the new FORMAT INTERNAL option for both the UNLOAD
and LOAD utilities.

Please refer to flat file DSNDFINT PM19584 for
documentation on the new LOAD PRESORTED option and
UNLOAD/LOAD FORMAT INTERNAL option. The DB2
Utility Guide and Reference, SQL Reference, and
Messages manuals will be updated with the
information contained in that file.

DSNDFINT contains the following information:
-Syntax for LOAD PRESORTED and UNLOAD/LOAD FORMAT
INTERNAL with option descriptions.
-Updates on LOAD restartability for PRESORTED
-Information on the FORMAT INTERNAL data format.
-Message description for DSNU188I-DSNU192I
-Updates to SYSIBM.SYSCOPY TTYPE for FORMAT
INTERNAL

The fix for APAR PM19584 is a companion fix. It requires the
fix for APAR PM35284, for FMID JDB991K to be applied.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM19584
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    The Utility Guide and Reference, Messages book, and SQL
    Reference will be updated for PM19584 as follows:

Utility Guide and Reference Changes for DB2 9 and DB2 10 for
z/OS.

_____

LOAD Section updated for PRESORTED:
_____
A change is needed to add the PRESORTED keyword to the LOAD
utility syntax diagram in the Utilities Guide and Reference
document. The keyword will be added following the last
level 1 keyword , as shown below with change bars "|".

```
           .-DATA-.   .-INDDN--SYSREC---------.
>>-LOAD--+------+--+---------------------+-+----------+->
                   +-INDDN--ddname---------+ '-PREFORMAT-'
                   '-INCURSOR--cursor-name-'
>--+--------------------------+------------------------->
   |                  .-1------. |
   '-COPYDICTIONARY--+-integer-+-'

|    .-PRESORTED NO--.
|>--+--------------+------------------------------------->
|    +-PRESORTED YES-+
```

In addition, the following text will be added to the
"Option descriptions" section of the LOAD Utility chapter of
the Utility Guide and Reference document describing the
PRESORTED keyword.

PRESORTED
Specifies whether the input data set has already been sorted
by clustering key order to allow the LOAD utility to execute
the RELOAD and BUILD phases in parallel and skip the sorting
of the clustering index to help optimize the run time of the
LOAD utility.

NO
Indicates that the clustering key should be sorted by the
LOAD utility.

YES
Indicates that the input data is already sorted in
clustering key order and the sort of the clustering index
should be skipped.

The following requirements apply to the input data set when
using the PRESORTED keyword:
  1. For partitioned table spaces with a clustering
partitioned index, the presorted order of the data rows
should be by key ordering of the clustering index.
When the partition limit keys are not the same as the
clustering index, sorting the data in clustering order
could potentially degrade RELOAD phase performance.
  2. For partitioned table spaces with a clustering
non-partitioned index, or non-partitioned table space
with single table, the presorted order of the data rows

should be by key ordering of the clustering index.
When the partition limit keys are not the same as the
clustering index, sorting the data in clustering order
could potentially degrade RELOAD phase performance.
   3. For simple and segmented table spaces the presorted
order of the data rows should be (1) by key ordering of
the clustering index within the table and (2) there can
only be one INTO TABLE clause.

The following restrictions apply when using the PRESORTED
 keyword:
 1. The PRESORTED keyword will be ignored when used with
LOAD SHRLEVEL CHANGE, LOAD partition parallelism, and when
executed on tables with no indexes. In this case,
processing will continue, but the LOAD utility will operate
as if PRESORTED was not specified. A warning message
DSNU188I will be issued in the utility job output
indicating that the PRESORTED keyword was ignored.
 2. Restarting the load utility in the RELOAD or SORTBLD
phase requires a phase restart in the RELOAD phase for
 LOAD REPLACE. LOAD RESUME YES/NO with PRESORTED YES cannot
be restarted in the RELOAD phase, and will require the
utility to be terminated and recovery of objects as needed.
 3. If PRESORTED YES has been specified, and it is
determined that the input data set is not sorted in clustering
key order, but INLINE STATISTICS will not be collected for
the clustering index and real-time statistics will be
invalidated for the clustering index. Performance
may be degraded if the data is not sorted in clustering
key order, so PRESORTED YES should only be specified
when the data is actually sorted in clustering
key order.

When PRESORTED YES is specified, parallel index build
will also need to be activated so SORTKEYS NO is not
allowed. So PRESORTED YES will be ignored if SORTKEYS NO
is specified. Additionally, all data sets
that are needed for parallel index build need to be
available as discussed in the "Building indexes in
parallel for LOAD" section.

Update the "Restart of LOAD" section of the Utility Guide
and Reference as shown below with change bars, "|".

The following restrictions apply to restarting LOAD jobs:
.....
|If LOAD RESUME YES PRESORTED abnormally terminates or a
|system failure occurs while LOAD is in the RELOAD phase,
|you cannot restart the LOAD utility. The table space
|and indexes affected should be recovered.
...

|11. A LOAD RESUME YES/NO PRESORTED YES job cannot be
restarted in the RELOAD phase.

LOAD Section updated for FORMAT INTERNAL:

The format-spec syntax diagram will be modified to add
the FORMAT INTERNAL option for the LOAD utility as shown
below with change bars "|":
```
>>-+-------------------------------------------------+->< 
   '-FORMAT-+-UNLOAD--------------------------------+-'
           +-SQL/DS---------------------------------+
   |       +-INTERNAL-------------------------------+
   |       |               .-COLDEL--', ......      |
   |       '-DELIMITED--+---------------+-- .......-'
                        '-COLDEL--coldel-'   ......  '
```

FORMAT
|Identifies the format of the input record. If you use
|FORMAT INTERNAL, FORMAT UNLOAD or FORMAT SQL/DS, it
|uniquely determines the format of the input, and no
|field specifications are allowed in an INTO TABLE option.
If you omit FORMAT, the format of the input data is
determined by the rules for field specifications. If
you specify FORMAT DELIMITED, the format of the input
data is determined by the rules that are described in
Delimited file format.

|INTERNAL

|Specifies that the input record format is in DB2
|internal format. (The DB2 internal format is the
|result of UNLOAD with the FORMAT INTERNAL option).
|No validation of the data is done against
|the format internal rows and the input needs to
|be in decompressed format.

|LOAD will ignore any field specification specified
|in the LOAD control statement when the FORMAT INTERNAL
|option is used and avoid any data conversion.

|LOAD will only be able to load to one table at a
|time when the FORMAT INTERNAL option is specified.

|The FORMAT INTERNAL option does not populate
|the LOB or XML columns and will leave the table
|space in ACHKP.

|If you specify the FORMAT INTERNAL option, you
|cannot use any of the following options: CONTINUEIF,
|INCURSOR, and SHRLEVEL CHANGE, CCSID, FLOAT, EBCDIC,
|ASCII, UNICODE, NOSUBS, DECFLOAT_ROUNDMODE,
|IDENTITYOVERIDE, IGNOREFIELDS, and WHEN.

UNLOAD Section updated for FORMAT INTERNAL:

The unload-spec syntax diagram will be modified
to add the FORMAT INTERNAL option as shown below
with change bars "|":

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```
>--+------------------------------------+-->
   |  +-FORMAT INTERNAL---------------------+
   |             .-COLDEL--','----.  ....    |
   '-DELIMITED--+---------------+--....  -'
                '-COLDEL--coldel-'  ....  -'
```

| FORMAT INTERNAL
|Specifies that the output data file is in DB2
|internal format. No field processing, data
|conversion, or CCSID conversions will be
|done. Specifying a field specification in
|the UNLOAD statement will be ignored.

|FORMAT INTERNAL is allowed for tables with LOB or
|XML columns, however the LOB and XML data will
|not be unloaded and a warning message, DSNU191I
|will be issued.
| If you specify the FORMAT INTERNAL option,
|you cannot specify the following keywords:
|EBCDIC, ASCII, UNICODE, CCSID, NOPAD, DELIMITED,
|NOSUBS, FLOAT, DECLOAT_ROUNDMODE, and HEADER.
|Also, UNLOAD ignores any field specification
|within the UNLOAD utility control statement.
| For internal format output, UNLOAD does not
|add trailing padded blanks to variable-length
|columns, even if you do not specify the NOPAD
|option.

| Data unloaded using the FORMAT INTERNAL option
|should only be loaded back into the same table
|or into a table that exactly matches the
|unloaded table definition including the same
|FIELDPROCs. The data unloaded will be
|decompressed and editproc decoded.

New FORMAT INTERNAL usage section.

For records in FORMAT INTERNAL, the seventh bit of
the first byte in each record indicates whether
the record is in basic row format or reordered
row format. A value of 0 (off) in the seventh bit
of the first byte indicates that the record is in
basic row format (BRF). A value of 1 (on) indicates
that the record is in reordered row format(rrf).

If your input records are in FORMAT INTERNAL, and
you did not use the UNLOAD FORMAT INTERNAL utility
to generate the input data, you need to set the
seventh bit of the first byte of each record to
indicate the row format of the record.

The LOAD utility will use this bit to determine if
the row needs to be converted from BRF to RRF, or
RRF to BRF before loading into the table.
To optimize performance, data rows should be in
the row format of the target table space or

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partition to avoid extra conversions.

Additional information regarding FORMAT INTERNAL,
the DB2 representation of data record, can be found
in the Diagnosis Guide and Reference.

The Messages manual will be updated as follows to add
messages DSNU188I, DSNU189I, DSNU190I, DSNU191I, and
DSNU192I.

_____

DSNU188I csect-name OPTION PRESORTED YES IS NOT VALID
WHEN USED WITH LOAD reason.   OPTION IS IGNORED.

Explanation: User attempted to
execute the LOAD utility using the PRESORTED YES option
when used with LOAD for the following reasons:
- PARTITION PARALLELISM ACTIVE
- WITHOUT PARALLEL INDEX BUILD ACTIVE
- SHRLEVEL CHANGE
- SORTKEYS NO
- ON A TABLE WITH NO INDEXES
- ON A HASH TABLE SPACE
Severity: 4 (warning)
System Action: Utility processing continues, however,
the PRESORTED YES option is ignored. No BUILD subtask
will be initiated by RELOAD, and keys will be sorted
and indexes built after RELOAD completes, as if
PRESORTED NO was specified.

User Response: The PRESORTED YES option should not
be used in the above scenarios.

System Programmer Response: None.
Problem Determination: None.

DSNU189I csect-name OPTION PRESORTED YES WAS SPECIFIED,
BUT THE LOAD UTILITY INPUT DATA SET KEYS WERE FOUND TO
BE OUT OF SEQUENCE IN THE INPUT DATA.   STATISTICS WILL
NOT BE COLLECTED OR INVALIDATED FOR INDEX creator.ixname

Explanation: User attempted to execute the LOAD utility
using the PRESORTED YES option with an input data which
had keys out of sequence.
Severity: 4 (warning)
System Action: Utility processing continues. Inline
statistics are not collected and/or real-time statistics
are invalidated for the index because of out of order keys.
Real-time statistics are only invalidated for LOAD
REPLACE or LOAD PART REPLACE when keys are found out of
order.

User Response: Run the RUNSTATS utility on the object.
RTS will be updated on next REORG or LOAD REPLACE.
System Programmer Response: None.
Problem Determination: None.

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DSNU190I csect-name UNABLE TO RESTART LOAD RESUME WITH
THE PRESORTED YES OPTION SPECIFIED

Explanation: Restarting in the RELOAD phase of the LOAD
utility with the RESUME and PRESORTED YES option is not
permitted. Only LOAD REPLACE PRESORTED YES can be
restarted in the RELOAD phase
System action: Utility processing is abended. Abend
reason code 00E40018 or 00E40310 might be issued.
User response: Recover the table space loaded and all
indexes within the table space which were left in a
rebuild pending state when the LOAD utility failed.

Problem determination: Refer to Utility Guide and
Reference for a discussion of LOAD restarting
constraints.

DSNU191I csect-name LOB AND/OR XML COLUMN DATA WILL
BE OMITTED WHEN USING THE FORMAT INTERNAL OPTION
FOR TABLE creator.table-name

Explanation: User attempted to execute the LOAD or
UNLOAD utility using the FORMAT INTERNAL option on
a table with LOB and/or XML columns. The XML and/or
LOB data will be omitted as they are not supported
in the FORMAT INTERNAL format. For UNLOAD, the base
row data will be unloaded in internal format and LOB
and/or XMLs will not be unloaded. For LOAD, the LOB
or XML table spaces will be omitted and the base
table space will be left in ACHKP if data is loaded
so it can be corrected after the LOAD execution.
Severity: 4 (warning)
System Action: Utility processing continues.
System Programmer Response: None.
User Response: Specify FORMAT INTERNAL only if not
interested in the LOB and/or XML data.
Problem Determination: None.

DSNU192I csect-name OPTION option-name IS NOT
VALID WHEN USED WITH MORE THAN ONE TABLE FOR THE
utility-name UTILITY

Explanation: An attempt was made to use the LOAD
or UNLOAD utility for multiple tables with an
option that can be used against only one table.
csect-name
    The name of the control section that issued the
message.
option-name
    The name of the option.
    LOAD utility
       FORMAT INTERNAL or PRESORTED YES
    UNLOAD utility
       FORMAT INTERNAL
utility-name

The name of the utility.

System action: Utility processing terminates.
User response: Specify the option that is indicated
by option-name for only one table.
Severity: 8 (error)

SQL Reference Catalog Tables Section:
_____
A new TTYPE value will be added in SYSIBM.SYSCOPY
catalog table. LOAD processing will append the 'I'
character to the TTYPE of the existing SYSCOPY
record that is inserted by the LOAD utility when
the FORMAT INTERNAL option is specified. The
changes are below with change bars "|"

Name
Data Type
Description
TTYPE
 CHAR(8)
NOT NULL WITH
DEFAULT
RRF
Indicates that the row format is the reordered row
format
BRF
Indicates that the row format is the basic
row format

|RRF I
|Indicates that the row format is the reordered
|row format and the FORMAT INTERNAL option
|was specified

|BRF I
|Indicates that the row format is the basic row
|format and the FORMAT INTERNAL option
| was specified

...

|When ICTYPE = Y, Z this column indicates if the

|object was loaded with the FORMAT INTERNAL
|option specified:

|blank
|Indicates that data was loaded without the
|FORMAT INTERNAL option specified

|I
|Indicates that data was loaded with the LOAD
|FORMAT INTERNAL option specified
ACTION:
  The PTF for APAR PM19584 has modified CSECTs in both the

DSNUT910 and DSNUTILA load modules, affecting the
utility batch and DB2 DBM1 address spaces. After the PTF has
been applied, it will become active in the utility batch address
space immediately upon job submission, while it will not take
effect in the DB2 DBM1 address space until DB2 is stopped and
started.

The PTF does not have to be applied to all members in a data
sharing environment simultaneously, and may be staged across
each member. However, until the fix is active in both the
utility batch and DB2 DBM1 address spaces, the problem the PTF
addresses will not be resolved.

The fix for APAR PM19584 is a companion fix. It requires the
fix for APAR PM35284, for FMID JDB991K to be applied.
.

------ COVER LETTER FOR PTF UK68149 ------------

PROBLEM DESCRIPTION(S):
  PM38120 -
      ****
      * USERS AFFECTED: All DB2 for z/OS V8, DB2 9 for z/OS, and   *
      *   DB2 10 for z/OS users of RECOVER   *
      *   utility or DB2 10 COPY utility with the   *
      *   FLASHCOPY option.   *
      ****
      * PROBLEM DESCRIPTION: This APAR addresses these problems: *
      *   .   *
      *   (1) ABEND04E RC00C90101 DSNKINSL   *
      *   ERQUAL5003 due to mismatches between   *
      *   the index and the data after point   *
      *   in time recovery.   *
      *   .   *
      *   (2) In DB2 10, ABEND04E RC00E4010A   *
      *   RC00C200E2 DSNUCALZ during COPY   *
      *   with FLASHCOPY CONSISTENT.   *
      ****
      * RECOMMENDATION: *
      ****
      These are the two problems addressed by this APAR:
      (1) ABEND04E RC00C90101 DSNKINSL ERQUAL5003 or other abends
      due to mismatches between an index and the data after a
      point in time recovery. The point in time recovery included
      the non-partitioning index and the table space partitions, but
      some of the table space partitions could not be recovered
      due to a prior ALTER TABLE ROTATE. In this case, RECOVER
      should not allow the index to be recovered.
         An example of a point in time RECOVER statement that could
      have this problem:
        RECOVER
          TABLESPACE db1.ts1 DSNUM(1)
          TABLESPACE db1.ts1 DSNUM(2)
          TABLESPACE db1.ts1 DSNUM(3)
          INDEXSPACE db1.ix1 DSNUM(ALL)

```
        TOLOGPOINT X'...'
    (2) In DB2 10, ABEND04E RC00E4010A in DSNUCALZ during COPY
    with FLASHCOPY CONSISTENT can occur on a partitioned
    table space when a partition had been rotated and a REORG
    at the partition level had been executed.  These messages can
    be seen in the job output:
      msgADR383W DATA SET ... NOT SELECTED
      msgDSNT500I RC00C200E2 TYPE 220 (for the FlashCopy image
        copy data set name)
    This problem occurs because the IPREFIX for the table space
    was not handled correctly.  This problem can also:
    -occur during COPY of indexes
    -cause an incorrect VCAT alias to be used if the partitions
     have different VCAT aliases defined
    -occur when FLASHCOPY YES has been specified for COPY
    -occur when FLASHCOPY YES or CONSISTENT has been specified
    for LOAD SHRLEVEL CHANGE on a partitioned tablespace.
       In addition, a related problem has been fixed where a non
    zero return code was not being properly set after the
    ADR383W message was issued.
    (1) The RECOVER utility has been corrected to prevent an
    index from being recovered if one of its underlying table
    space partitions has been rotated.  In this case, msgDSNU556I
    (RECOVER CANNOT PROCEED ... ) with RC8 will be issued.  In
    addition, RECOVER will check to ensure that all underlying
    table space partitions have been successfully recovered.  If
    this is not the case, the index will be left in CHKP (check
    pending) status.
    (2) The COPY and LOAD utilities have been corrected to use
    the logical partition number instead of the physical partition
    number when retrieving information from the OBD to build the
    source data set name for the FlashCopy.  In addition, the
    code has been corrected to set a non zero return code after
    the ADR383W message has been issued and for FLASHCOPY
    CONSISTENT requests to avoid log processing on an object
    that received a FlashCopy warning or error.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM38120
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    With the fix to PM21568,
    DB2 Message MSGDSNU512I will be enhanced with wording similar
    to the following:
    DSNU512I
    Explanation is changed to:
      "Recovery was requested for an entire object. However, there
      is an image copy made for a specific data set associated with
    | the object, or a system-level backup was to be restored which
    | was created prior to partitions being added to the object.
      Hence, the object must be recovered by data set."
.
```

```
PROBLEM DESCRIPTION(S):
  PM34673 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS users of queries         *
    *                 containing non-boolean term predicates.     *
    ****************************************************************
    * PROBLEM DESCRIPTION: ENABLING APAR to set up the            *
    *                      infrastructure needed for DB2 to       *
    *                      correct the problem of an incorrect    *
    *                      result set being returned for          *
    *                      queries containing non-boolean         *
    *                      predicates in row-generating expression *
    *                      of XMLTABLE function.                  *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    PK43028 and PM34673 will address the problem of an incorrect
    result set being returned for queries containing non-boolean
    term XPath predicates in a row-generating expression of the
    XMLTABLE function.  PK43028 is the preconditioning APAR and
    PM34673 is the enabling APAR.

    The following example helps illustrate the problem:

     Create a table containing XML column with XMLPATTERN indexes
     and insert one row.

        CREATE TABLE T1 ( C3 XML);
        CREATE INDEX IDX1  ON T1(C3) GENERATE KEYS USING
               XMLPATTERN '/a/b'  AS SQL DECFLOAT;
        CREATE INDEX IDX2  ON T1(C3) GENERATE KEYS USING
               XMLPATTERN '/a/b'  AS SQL VARCHAR(10);
        CREATE INDEX IDX3  ON T1(C3) GENERATE KEYS USING
               XMLPATTERN '/a/c'  AS SQL DECFLOAT;
        CREATE INDEX IDX4  ON T1(C3) GENERATE KEYS USING
               XMLPATTERN '/a/c'  AS SQL VARCHAR(10);
        INSERT  INTO T1 VALUES ('<a><b>1</b><c>3</c></a>');

     The query below is expected to return one row as the second OR
     predicate a[b=1] is true. But no rows are returned as the
     non-boolean term predicate execution incorrectly terminates
     due to first expression i.e. a[c>=$y] being false.

        SELECT DISTINCT X.* FROM T1,
        XMLTABLE('/a[c>=$y or b=1]'
        PASSING  T1.C3
              ,CAST(NULL as VARCHAR(2))  as "y"
           COLUMNS D1 VARCHAR(2) PATH 'c') X;

        D1
        --

           0 record(s) selected.

    ONE row is expected to be returned for above query.
```

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DB2 is modified to set up the needed infrastructure to correct
the problem of an incorrect result set being returned for
queries containing non-boolean term predicates.

PK43028 is the preconditioning APAR and PM34673 is the enabling
APAR. In a data sharing environment, PK43028 must be applied to
all members before PM34673 can be applied. When a statement is
prepared or bound on a member that has both PK43028 and PM34673
and the statement is executed on a member that does not have
PK43028, a statement with non-boolean term predicates that
utilizes the new infrastructure will result in an SQLCODE -20249
being issued at run time.

Additional Keywords : SQLINCORROUT SQLINCORR XMLINCORR
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM34673
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
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  DB2BIND:
    ***Action for PM34673:

    See PM34673 APAR text for additional information about
    why a REBIND is necessary.

    PM34673 corrects a problem of incorrect output result set being
    returned for non-boolean term predicates.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM31524:

    See PM31524 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM31524 corrects a problem of incorrect data may be inserted
    into DB2 when insert null value into a column with
    FIELD PROCEDURE

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  MULTSYS:
    PM34673 provides the enabling fix needed for correcting a
    problem with non-boolean term XPath predicates in
    row-generating expression of XMLTABLE function.
    PK43028 is the preconditioning APAR and PM34673 is the enabling
    APAR. In a data sharing environment, PK43028 must be applied to
    all members before PM34673 can be applied. When a statement is
    prepared or bound in a member that has both PK43028 and PM34673
    and the statement is executed on a member that does not have
    PK43028, if the statement contains non-boolean term predicates

that utilize the new infrastructure, SQLCODE -20249 is issued
at run time.
.

------ COVER LETTER FOR PTF UK68422 ------------

PROBLEM DESCRIPTION(S):
  PM35948 -
    ****
    * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of   *
    *   the REORG TABLESPACE utility.   *
    ****
    * PROBLEM DESCRIPTION: ABENDSB37 for inline copy data set   *
    *   during REORG TABLESPACE   *
    ****
    * RECOMMENDATION: *
    ****
    An ABENDB37 was received writing to the inline copy
    data set for a REORG TABLESPACE on a table space with
    one hundred twenty two partitions, but only the last
    partition had data.

    When there is a mixture of partitions, some which have
    data and others which have no rows, the size allocated for
    the inline copy data set is based only on the estimated
    pages needed for partitions with data rows in them. When
    there are many empty partitions, the estimate is too small.
    Change the estimation technique to add the total number
    of pages needed for both empty and non-empty partitions.
    Also, in order to get the best estimates, Real Time Statistics
    are now always used when they are available to get the number
    of data pages. If RTS is not available, then the High Used
    RBA of the original tablespace partitions is used to estimate
    the number of pages.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM35948
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    The PTF for APAR PM35948 has modified CSECTs in both the
    DSNUT910 and DSNUTILA load modules, affecting the
    utility batch and DB2 DBM1 address spaces. After the PTF has
    been applied, it will become active in the utility batch address
    space immediately upon job submission, while it will not take
    effect in the DB2 DBM1 address space until DB2 is stopped and
    started.

    The PTF does not have to be applied to all members in a data
    sharing environment simultaneously, and may be staged across
    each member. However, until the fix is active in both the
    utility batch and DB2 DBM1 address spaces, the problem the PTF
    addresses will not be resolved.
.

```
------ COVER LETTER FOR PTF UK68468 ------------

PROBLEM DESCRIPTION(S):
  PM34876 -
    ******************************************************************
    * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users          *
    *                 of the functions modified by APAR PM16327,   *
    *                 the enabling apar.                           *
    ******************************************************************
    * PROBLEM DESCRIPTION: This apar is the pre-conditioning apar  *
    *                      for apar PM16327, the enabling apar.    *
    ******************************************************************
    * RECOMMENDATION:                                             *
    ******************************************************************
    This APAR (PM34876) provides the necessary pre-conditioning code
    for the functional changes provided by APAR PM16327.  APAR
    PM16327 modifies the support for the following list of built-in
    functions.

    1. SUM
    2. AVG
    3. CORRELATION
    4. COVARIANCE
    5. VARIANCE
    6. STDDEV

    This APAR is the needed pre-conditioning apar for PM16327.
    Please reference both apars.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM34876
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  MULTSYS:
    PM34876 is a pre-conditioning APAR that includes changes to
    enhance existing functions that will be enabled via another
    APAR PM16327.

    At this time, all of the changes are transparent
    to the user.  In a data sharing group, this
    pre-conditioning APAR should be applied to all members
    before the later enabling APAR is applied to any member.
    The changes for existing functions are not enabled
    until the enabling APAR is applied.
.


------ COVER LETTER FOR PTF UK68474 ------------

PROBLEM DESCRIPTION(S):
  PM32921 -
    ******************************************************************
    * USERS AFFECTED: All users of DB2 9 for z/OS                  *
    ******************************************************************
    * PROBLEM DESCRIPTION: User receives SQLCODE -904 RC00E70010   *
```

```
*                       on ALTER TABLE ROTATE PARTITION FIRST   *
*                       TO LAST                                 *
*****************************************************************
* RECOMMENDATION:                                               *
*****************************************************************
User receives SQLCODE904 RC00E70010 on ALTER TABLE ROTATE
PARTITION FIRST TO LAST due to an insufficient IRLM timeout
value.
This fix is an enhancement to allow a user more control on the
wait time for a resource during the processing of a DDL
statement before a timeout is encountered.

This PTF adds a new DB2 subsystem parameter in DSN6SPRM named
DDLTOX that allows you to specify how long, in number of
resource values, that a request for SQL data definition will
wait for a resource.  The actual time out value is the product
of this value and the standard IRLM time out value specified for
DSN6SPRM.IRLMRWT.  The DDLTOX setting is an integer that can
range from 1 to 254.  The default setting of 1 means that only
the IRLM time out value should be used.

Additional Keywords:
SQLCREATE
SQLDROP
SQLALTER
SQLCODE904

++HOLD Action for PM32921

If you have already installed or migrated to this version of DB2
you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

------------------------------------------------------------------
(1) Update customized copies of DB2 installation CLIST members
------------------------------------------------------------------
==> This action is required for all customers

    This PTF modifies CLIST member DSNTINST in the SDSNCLST
    target library only. You need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of this CLIST. You may also want to move it to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed by
    job DSNTIJVC reside.


------------------------------------------------------------------
(2) Update your customized copy of job DSNTIJUZ
------------------------------------------------------------------
==> This action is required for all customers

    This PTF modifies DB2 installation job DSNTIJUZ in the
```

SDSNSAMP target library. After applying this PTF, you
need to update your customized copy of this job as follows:

* Add the keyword parameter DDLTOX=<n>, where <n> is an
  integer ranging from 1 to 254, to the invocation of the
  DSN6SPRM macro. Make sure to add a continuation character
  in column 72 if needed. If you omit adding DDLTOX here,
  the value will be set to the default of NO when you
  assemble the DSNZPxxx module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, you must either use the -SET
  SYSPARM command or stop and restart DB2 for the change to
   take effect.

       ----
       (3) Update private copies of the DSNTIDxx CLIST input member
       ----
       ==> This action is required for all customers

           This PTF adds an entry for DDLTOX
           to the CLIST default input members,
           DSNTIDXA and DSNTIDXB, in the SDSNSAMP target library. You
           need to add these entries to all private copies of your
           CLIST output DSNTIDxx member. In each such copy, add the
           following lines:

        DDLTOX   NUM   M 1   254   <n>

           Change <n> to the value you specified for
           DDLTOX in step (2), above.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM32921
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
           LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    ***Actions for PM32921

    If you have already installed or migrated to this version of DB2
    you need to take the following actions after applying this PTF:

    (1) Update customized copies of DB2 installation CLIST members
    (2) Update your customized copy of job DSNTIJUZ
    (3) Update private copies of the DSNTIDxx CLIST input member

    Detailed guidance for these actions follows:

       ----
       (1) Update customized copies of DB2 installation CLIST members
       ----
       ==> This action is required for all customers

           This PTF modifies CLIST member DSNTINST in the SDSNCLST
           target library only. You need to redo any record format

changes and reapply any tailoring you have done to your
copies of this CLIST. You may also want to move it to the
prefix.NEW.SDSNCLST data set, where the CLISTs processed by
job DSNTIJVC reside.

----
(2) Update your customized copy of job DSNTIJUZ

==> This action is required for all customers

This PTF modifies DB2 installation job DSNTIJUZ in the
SDSNSAMP target library. After applying this PTF, you
need to update your customized copy of this job as follows:

* Add the keyword parameter DDLTOX=<n>, where <n> is an
  integer ranging from 1 to 254, to the invocation of the
  DSN6SPRM macro. Make sure to add a continuation character
  in column 72 if needed. If you omit adding DDLTOX here,
  the value will be set to the default of NO when you
  assemble the DSNZPxxx module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, you must either use the -SET
  SYSPARM command or stop and restart DB2 for the change to
  take effect.

----
(3) Update private copies of the DSNTIDxx CLIST input member

==> This action is required for all customers

This PTF adds an entry for DDLTOX
to the CLIST default input members,
DSNTIDXA and DSNTIDXB, in the SDSNSAMP target library. You
need to add these entries to all private copies of your
CLIST output DSNTIDxx member. In each such copy, add the
following lines:

DDLTOX   NUM   M 1   254   <n>

Change <n> to the value you specified for
DDLTOX in step (2), above.
.

------ COVER LETTER FOR PTF UK68590 ------------

PROBLEM DESCRIPTION(S):
  PM38893 -
     ****
     * USERS AFFECTED: All DB2 users who use SQL PL Procedures.   *
     ****
     * PROBLEM DESCRIPTION: Executing SQL PL Procedure on DB2 9   *
     *   system in V10 and DB2 9 data sharing   *
     *   coexistence mode may cause   *

```
*                         SQLCODE904 RC00E30305 and the following *
*                         DB2 abend:                              *
*                            ABEND DSNXGRDS.DSNXISB2 P942          *
******************************************************************
* RECOMMENDATION:                                                *
******************************************************************
In DB2 V10 and DB2 9 data sharing coexistence mode, if a native
SQL PL procedure is created in V10, and executed on DB2 9, DB2
implicitly regenerates the SQL PL procedure. However, if then
DSNHDECP DYNRULS is set to NO (the default is DYNRULS=YES), DB2
fails to set up an internal pointer which causes SQLCODE904
with reason code RC00E30305 and the following abend:
ABEND04E RC00E70100 in DSNXGRDS.DSNXISB2 P942
DB2 has been fixed to set the internal pointer correctly during
implicit regenerate process so that the SQL PL procedure runs
successfully.
```
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM38893
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
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  ACTION:
    This PTF changes the default QUALIFIER for the CREATE
    PROCEDURE statement for native SQL procedures.
    The previous default was SQLID. It has been corrected
    to use the SCHEMA value.

    If you have native SQL procedures that were already created
    using DB2 V9 you might want to take one the following actions
    after applying this PTF:

    (1) Drop and create your native SQL procedure(s).
    or
    (2) Rebind your native SQL procedure(s) with the QUALIFIER
        value set.
.

------ COVER LETTER FOR PTF UK68905 ------------

PROBLEM DESCRIPTION(S):
  PM35428 -
```
    ******************************************************************
    * USERS AFFECTED: All DB2 9 for z/os and DB2 10 for z/os users *
    *                 of -TERM UTILITY command, RECOVER utility,    *
    *                 and REPORT RECOVERY utility.                  *
    ******************************************************************
    * PROBLEM DESCRIPTION: 1.-TERM UTILITY and RECOVER UTILITY      *
    *                        insert wrong values for LOGICAL_PART   *
    *                        and OLDEST_VERSION in SYSIBM.SYSCOPY.  *
    *                      2.REPORT RECOVERY incorrectly displays   *
    *                        0001 for OLDEST_VERSION when the       *
    *                        actual value is -1.                    *
    ******************************************************************
    * RECOMMENDATION: Apply corrective PTF when available.          *
    ******************************************************************
```

```
         -TERM UTILITY command and RECOVER utility were not properly
      setting default values for the OLDEST_VERSION and LOGICAL_PART
      fields in the SYSCOPY records they created.
         For SYSCOPY records created by the -TERM UTILITY command and
      by RECOVER utility, the default values for OLDEST_VERSION
      and LOGICAL_PART should be -1 and 0, respectively.
         Also, REPORT RECOVERY utility was incorrectly displaying
      0001 for OLDEST_VERSION in cases where the actual value
      was -1.

      1. -TERM UTILITY and RECOVER UTILITY are modified to set correct
         default values for OLDEST_VERSION and LOGICAL_PART for
         records they insert into SYSIBM.SYSCOPY.
      2. REPORT RECOVERY is modified to display -1 when OLDEST_VERSION
         is -1.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM35428
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
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  ACTION:
    The PTF for APAR PM35428 has changed to print -1 instead of 0001
    for OLDEST VERSION in the output for REPORT RECOVERY when the
    real value of OLDEST VERSION is -1.
    Customer applications which are sensitive to those values should
    be aware of the changes.
    For more information of the changes, please refer to the closing
    text of APAR.
.


------ COVER LETTER FOR PTF UK69144 ------------

PROBLEM DESCRIPTION(S):
  PM36069 -
     ****************************************************************
     * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of an    *
     *                 SQL statement that contains a table function *
     *                 with a CARDINALITY option.                   *
     ****************************************************************
     * PROBLEM DESCRIPTION: ABEND0C4 RC00000004 at following        *
     *                      locations could happen when an SQL      *
     *                      statement directly or indirectly        *
     *                      references a table function with a      *
     *                      CARDINALITY option.                     *
     *                                                              *
     *                      For V9:                                 *
     *                      1. DSNXGRDS.DSNXOV1:+7CC6               *
     *                      2. DSNXGRDS.DSNXOVC:+9BEA               *
     *                      3. DSNXGRDS.DSNXOCPT:+4642              *
     *                                                              *
     *                      For V10:                                *
     *                      1. DSNXGRDS.DSNXOV1:+83E0               *
     *                      2. DSNXGRDS.DSNXOVC:+6B98               *
     *                      4. DSNXGRDS.DSNXOCPT:+513A              *
     ****************************************************************
```

```
* RECOMMENDATION:                                                   *
****************************************************************
ABEND0C4 RC00000004 at following locations could happen when an
SQL statement directly or indirectly references a table function
with a CARDINALITY option.

For V9:
1. DSNXGRDS.DSNXOV1:+7CC6
2. DSNXGRDS.DSNXOVC:+9BEA
3. DSNXGRDS.DSNXOCPT:+4642

For V10:
1. DSNXGRDS.DSNXOV1:+83E0
2. DSNXGRDS.DSNXOVC:+6B98
4. DSNXGRDS.DSNXOCPT:+513A


An example is shown below (TAB_FUN is a table function):

CREATE VIEW V1 AS
  SELECT *
    FROM TABLE(TAB_FUN() CARDINALITY 100) AS T ;

SELECT * FROM V1;


DB2 didn't process a table function with a CARDINALITY option
correctly, which caused the ABEND0C4.
DB2 has been modified to correctly process a table function with
a CARDINALITY option, and the aforementioned SQL statement can
now run successfully.

Additional keywords: SQLTUDF SQLTABLEUDF
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM36069
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
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  DB2BIND:
   PM36069 corrects a problem that an ABEND0C4 RC00000004 at
   following locations could happen when an SQL statement directly
   or indirectly references a table function with a CARDINALITY
   option.

   1. DSNXGRDS.DSNXOV1:+7CC6
   2. DSNXGRDS.DSNXOVC:+9BEA
   3. DSNXGRDS.DSNXOCPT:+4642

   To make this fix effective for any view that references a table
   function with a CARDINALITY option, the view must be dropped and
   recreated after application of this PTF.
.


------ COVER LETTER FOR PTF UK69152 ------------
```

```
PROBLEM DESCRIPTION(S):
  PM35321 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS users with a query       *
    *                 containing an IN list predicate and a join   *
    *                 predicate on the same column.                *
    ****************************************************************
    * PROBLEM DESCRIPTION: IN list predicate transitive closure   *
    *                      is enabled when the query satisfies     *
    *                      all of below conditions:                *
    *                                                              *
    *                      1, INLIST_PTC zparm is set to 'Yes'.    *
    *                                                              *
    *                      2, INLISTP zparm is set to positive     *
    *                         integer value, also the number of    *
    *                         elements in the list on the right    *
    *                         side of the IN keyword of IN         *
    *                         predicate are not more than the      *
    *                         value of the INLISTPs' value.        *
    *                                                              *
    *                      3, No correlated column is referenced   *
    *                         in the IN predicate.                 *
    *                                                              *
    *                      4, The column in IN predicate is not    *
    *                         defined with a field procedure.      *
    *                                                              *
    *                      5, All of values in the list on the     *
    *                         right side of IN keyword are simple  *
    *                         constants (no expression involving   *
    *                         constants, no parameter markers, no  *
    *                         host variables, and no subselects).  *
    *                                                              *
    *                      6, No IN predicate already exists on    *
    *                         the column that would be referenced  *
    *                         in the predicate generated by        *
    *                         predicate transitive closure.        *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    IN list predicate transitive closure is enabled when the query
    satisfies all of below conditions:

    1, INLIST_PTC zparm is set to 'Yes'.

    2, INLISTP zparm is set to positive integer value, also the
       number of elements in the list on the right side of the IN
       keyword of IN predicate are not more than the value of the
       INLISTPs' value.

    3, No correlated column is referenced in the IN predicate.

    4, The column in IN predicate is not defined with a field
       procedure.

    5, All of values in the list on the right side of IN keyword
       are simple constants (no expression involving constants,
```

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no parameter markers, no host variables, and no subselects).

6, No IN predicate already exists on the column that would be
   referenced in the predicate generated by predicate
   transitive closure.

Example:
==
Original Query:
1,
SELECT *
FROM T1, T2
WHERE T1.C1 = T2.C1 AND T1.C1 IN ('A', 'B', 'C');

2,
SELECT *
FROM T1, (SELECT C1 FROM T2
          UNION
          SELECT C1 FROM T3) TX(C1)
WHERE T1.C1 = TX.C1 AND T1.C1 IN ('A', 'B', 'C');

3,
SELECT *
FROM T1, T2
WHERE T1.C1 = T2.C1 AND T1.C1 IN ('A', 'B', 'C');
      AND T2.C1 IN ('D', 'E')
The PTC will not occur for this query, because of number 6
condition's restriction.

After Predicate transitive closure:
SELECT *
FROM T1, T2
WHERE T1.C1 = T2.C1 AND T1.C1 IN ('A', 'B', 'C')
AND T2.C1 IN ('A', 'B', 'C');

SELECT *
FROM T1, (SELECT C1 FROM T2
          WHERE T2.C1 IN ('A', 'B', 'C')
          UNION
          SELECT C1 FROM T3
          WHERE T3.C1 IN ('A', 'B', 'C')
) TX(C1)
WHERE T1.C1 = TX.C1 AND T1.C1 IN ('A', 'B', 'C');
AND TX.C1 IN ('A', 'B', 'C');

After enable IN predicate transitive closure, query performance
may get enhancement.

Now DB2 can do Predicate transitive closure for IN list
predicate.

Additional keywords: SQLIN SQLNONCORRSUBQ SQLHOSTVAR
                     PARAMETERMARKER SQLPMARKER SQLPMK
                     SQLTRANSITIVE SQLPERFORMANCE
                     SQLACCESSPATH

```
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM35321
SPECIAL CONDITIONS:
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             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM35321:

    See PM35321 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM35321 corrects a problem of IN list predicate transitive
    closure is enabled when the query satisfies all of below
    conditions:

    1, INLIST_PTC zparm is set to 'Yes'.

    2, INLISTP zparm is set to positive integer value, also the
       number of elements in the list on the right side of the IN
       keyword of IN predicate are not more than the value of the
       INLISTPs' value.

    3, No correlated column is referenced in the IN predicate.

    4, The column in IN predicate is not defined with a field
       procedure.

    5, All of values in the list on the right side of IN keyword
       are simple constants (no expression involving constants,
       no parameter markers, no host variables, and no subselects).

    6, No IN predicate is referenced in query, that predicate
       contains the same column as that transitive closure
       be generate.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM24430:

    See PM24430 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM24430 corrects an inaccurate cost estimate for a query
    satisfying both of the following conditions.

      1. Sparse index is being considered on the inner table
         of a nested loop join.

      2. There exists a subquery referencing only the inner
         table of the join.

    The inaccurate cost could lead to an inefficient access path
    choice and result in poor performance.
```

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To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM05030:

  See PM05030 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM05030 corrects a problem of inconsistent sequential
  I/O, CPU and total cost estimates when the inner table of a
  nested loop join refers to a subquery. The inconsistent
  cost estimation can lead to a poorly performing access path
  when the query is run with parallelism.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
ACTION:
  ***Actions for PM35321

  This PTF adds a new DB2 subsystem parameter in DSN6SPRM named
  INLIST_PTC that allows you to specify whether DB2 should
  consider predicate transitive closure for an IN predicate.
  Valid choice are:
  * NO : Predicate transitive closure will not be considered for
         an IN predicate.
         ==> This is the default and recommended setting.
  * YES: Predicate transitive closure will be considered for an
         IN predicate under these conditions:
          - The INLISTP parameter is set to positive integer value,
            also the number of elements in the list on the right
            side of the IN keyword of IN predicate are not more
            than the value of the INLISTPs' value.
          - No correlated column is referenced in the IN predicate.
          - The column in IN predicate is not defined with a field
            procedure.
          - All of values in the list on the right side of IN
            keyword are simple constants (no expression involving
            constants, no parameter markers, no host variables, and
            no subselects).
          - No IN predicate already exists on the column that would
            be referenced in the predicate generated by predicate
            transitive closure.

  INLIST_PTC is deprecated in DB2 V9 and eliminated in V10.

  If you have already installed or migrated to this version of DB2
  you need to take the following actions after applying this PTF:

  (1) Update customized copies of DB2 installation CLIST members
  (2) Optionally update your customized copy of job DSNTIJUZ
  (3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

```
----------------------------------------------------------------------
(1) Update customized copies of DB2 installation CLIST members
----------------------------------------------------------------------
==> This action is required for all customers

    This PTF modifies CLIST member DSNTINST in the SDSNCLST
    target library only. You need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of this CLIST. You may also want to move it to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed by
    job DSNTIJVC reside.


----------------------------------------------------------------------
(2) Optionally update your customized copy of job DSNTIJUZ
----------------------------------------------------------------------
==> This action is required only if you want to set
    INLIST_PTC=YES

    This PTF modifies DB2 installation job DSNTIJUZ in the
    SDSNSAMP target library. After applying this PTF, if you
    want to set INLIST_PTC=YES, you
    need to update your customized copy of this job as follows:

    * Add the keyword parameter INLIST_PTC=YES, to the invocatio
      of the DSN6SPRM macro.  Make sure to add a continuation
      character in column 72 if needed. If you omit adding
      INLIST_PTC here, the value will be set to the
      default of NO when you assemble the DSNZPxxx module.

    * Run the first two steps of the DSNTIJUZ job you modified.

    * After the job completes, you must either use the -SET
      SYSPARM command or stop and restart DB2 for the change to
      take effect.


----------------------------------------------------------------------
(3) Update private copies of the DSNTIDxx CLIST input member
----------------------------------------------------------------------
==> This action is required for all customers

     This PTF adds an entry for INLIST_PTC to the CLIST default
     input member, DSNTIDXA, in the SDSNSAMP target library.
     You need to add these entries to all private copies of your
     CLIST output DSNTIDxx member. In each such copy, add the
     following lines:

INLIST_PTC  CHAR  M  NO           YES            NO

     Change the rightmost NO to YES if you specified
     INLIST_PTC=YES in step (2), above.
 .
```

```
------ COVER LETTER FOR PTF UK69265 ------------

PROBLEM DESCRIPTION(S):
  PM33871 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS     *
    *                 users of the following stored procedures:  *
    *                  - SYSPROC.ADMIN_JOB_CANCEL                 *
    *                  - SYSPROC.ADMIN_JOB_FETCH                  *
    *                  - SYSPROC.ADMIN_JOB_QUERY                  *
    *                  - SYSPROC.ADMIN_JOB_SUBMIT                 *
    *                  - SYSPROC.ADMIN_COMMAND_UNIX               *
    ****************************************************************
    * PROBLEM DESCRIPTION: This PTF enhances the following       *
    *                  DB2-supplied stored procedures:           *
    *                   - SYSPROC.ADMIN_JOB_CANCEL               *
    *                   - SYSPROC.ADMIN_JOB_FETCH                *
    *                   - SYSPROC.ADMIN_JOB_QUERY                *
    *                   - SYSPROC.ADMIN_JOB_SUBMIT               *
    *                   - SYSPROC.ADMIN_COMMAND_UNIX             *
    *                  to be called with a null user ID and      *
    *                  password to indicate that the primary     *
    *                  authorization ID of the stored            *
    *                  procedure should be used instead.         *
    ****************************************************************
    * RECOMMENDATION: APPLY PTF                                  *
    ****************************************************************
    This PTF enhances the DB2-supplied stored procedures
    SYSPROC.ADMIN_JOB_CANCEL, SYSPROC.ADMIN_JOB_FETCH,
    SYSPROC.ADMIN_JOB_QUERY, SYSPROC.ADMIN_JOB_SUBMIT,
    and SYSPROC.ADMIN_COMMAND_UNIX to be called with a
    null user ID and password to indicate that the primary
    authorization ID of the stored procedure should be used
    instead.
    The stored procedures ADMIN_JOB_CANCEL, ADMIN_JOB_FETCH,
    ADMIN_JOB_QUERY, ADMIN_JOB_SUBMIT, and ADMIN_COMMAND_UNIX
    are enhanced to allow these stored procedures to be called
    with a null user ID and password which would then indicate
    the primary authorization ID of the stored procedure
    should be used instead.

    These stored procedures will continue to support non-null
    user ID and password.

    In z/OS 1.12 and earlier, the authorization ID associated with
    the stored procedure address space must have daemon authority
    if these stored procedures are called with a null user ID
    and password.

    In z/OS 1.13 and higher, if these stored procedures are called
    with a null user ID and password, the authorization ID
    associated with the stored procedure address space must either
    have daemon authority or must be authorized to the
    'BPX.SRV.userid' SURROGATE profile, where 'userid' is the
    primary authorization ID of the stored procedure. For z/OS
    1.13, you must install APAR OA36062 when the authorization ID
```

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associated with the stored procedure address space does not
have daemon authority.

The following steps can be taken by the RACF security
administrator to authorize SYSDSP to the SURROGATE profile
BPX.SRV.USER01 (assuming that the resources listed below
were previously defined):
```
     PERMIT BPX.SRV.USER01 ID(SYSDSP) ACCESS(READ)
           CLASS(SURROGAT)
     SETROPTS RACLIST(SURROGAT) REFRESH
```
where
  o SYSDSP is the authorization ID associated with the stored
    procedure address space
  o USER01 is the primary authorization ID of the stored
    procedure

Note: Daemon authority is given to any superuser that is also
permitted to the BPX.DAEMON FACILITY class profile.
If BPX.DAEMON FACILITY class profile is not defined then
all superusers are considered to have daemon authority.

Due to this enhancement, these stored procedures will no longer
return 12 in the RETURN_CODE output parameter, nor message
DSNA601I in the MSG output parameter when they are called with
a null user ID and password. Therefore, any application calling
these stored procedures with null user ID and password and
expecting these stored procedures to return an error must be
modified to screen for null user ID and password before calling
these stored procedures.
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APARS FIXED: PM33871
SPECIAL CONDITIONS:
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  ACTION:
    This PTF enhances the DB2-supplied stored procedures
    SYSPROC.ADMIN_JOB_CANCEL, SYSPROC.ADMIN_JOB_FETCH,
    SYSPROC.ADMIN_JOB_QUERY, SYSPROC.ADMIN_JOB_SUBMIT,
    and SYSPROC.ADMIN_COMMAND_UNIX to be called with a
    null user ID and password to indicate that the primary
    authorization ID of the stored procedure should be used
    instead.

    Due to this enhancement, these stored procedures will no longer
    return 12 in the RETURN_CODE output parameter, nor message
    DSNA601I in the MSG output parameter when they are called with
    a null user ID and password. Therefore, any application calling
    these stored procedures with null user ID and password and
    expecting these stored procedures to return an error must be
    modified to screen for null user ID and password before calling
    these stored procedures.

    To exploit this enhancement in z/OS 1.13 when the authorization
    ID associated with the stored procedure address space does
    not have daemon authority, APAR OA36062 must be installed, and
    the authorization ID associated with the stored procedure

address space must be authorized to the correct SURROGATE
profile. See the PTF cover letter for more information on
how to authorize the authorization ID associated with the
stored procedure address space to the correct SURROGATE
profile.

See the PTF cover letter for more information regarding this
PTF.


```
****************************************************************
Actions for customers who are already using DB2 V9:
****************************************************************
```
If you have already installed or migrated to DB2 Version 9 then
after applying this PTF, you need to take the following actions:
(1) Update private copies of the installation CLIST.
(2) Update your customized copy of job DSNTIJSG.
(3) Bind the stored procedures packages and grant access to the
    new SYSPROC.ADMIN_JOB_CANCEL and SYSPROC.ADMIN_JOB_QUERY
    packages.

Procedures for these actions are given below.
```
-----------------------------------------------------------------
```
(1) Update private copies of the installation CLIST
```
    **********************************************************
    * All current V9 customers need to perform this step
    **********************************************************
```
    This PTF modifies the DB2 installation CLIST member
    DSNTINS1 in the prefix.SDSNCLST target library.
    After applying this PTF, you need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of DSNTINS1. You may also want to move them to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed
    by job DSNTIJVC reside.
```
-----------------------------------------------------------------
```
(2) Update your customized copy of job DSNTIJSG
```
    **********************************************************
    * All V9 customers who maintain a private copy of DB2
    * installation job DSNTIJSG need to perform this step.
    **********************************************************
```
    (a) Edit your customized copy of DSNTIJSG
    (b) In job step DSNTIAE:
        - add the following commands for binding the
          package for SYSPROC.ADMIN_JOB_CANCEL and the
          package for SYSPROC.ADMIN_JOB_QUERY under the
          SYSTSIN DD of job step DSNTIAE:

            BIND PACKAGE(DSNADM) MEMBER(DSNADMJP) -
                 ISO(CS) CURRENTDATA(YES) -
                 ENCODING(EBCDIC) ACT(REPLACE) -
                 LIBRARY('<prefix>.SDSNDBRM')

            BIND PACKAGE(DSNADM) MEMBER(DSNADMJQ) -
                 ISO(CS) CURRENTDATA(YES) -
                 ENCODING(EBCDIC) ACT(REPLACE) -
                 LIBRARY('<prefix>.SDSNDBRM')
```

where <prefix> is the data set prefix of your DB2 V9
                    target libraries.
          (c) In job step DSNTIJG, add the following DDL to grant
              access:
                  GRANT EXECUTE ON PACKAGE DSNADM.DSNADMJP TO <name>;
                  GRANT EXECUTE ON PACKAGE DSNADM.DSNADMJQ TO <name>;
              and replace <name> with an authorization ID that needs
              access to ADMIN_JOB_CANCEL and ADMIN_JOB_QUERY.
          (d) Save your changes.
       ----------------------------------------------------------------
       (3) Bind the stored procedures packages and grant access to the
           new SYSPROC.ADMIN_JOB_CANCEL and SYSPROC.ADMIN_JOB_QUERY
           packages
           ************************************************************
           * All V9 customers who want to use the stored procedures
           * SYSPROC.ADMIN_JOB_CANCEL, SYSPROC.ADMIN_JOB_FETCH,
           * SYSPROC.ADMIN_JOB_QUERY, SYSPROC.ADMIN_JOB_SUBMIT,
           * and SYSPROC.ADMIN_COMMAND_UNIX need to perform this step.
           ************************************************************
           Use the following procedure to avoid disrupting your
           existing DB2-supplied stored procedures and databases:
           (a) Create and edit a copy of the DSNTIJSG job you updated
               in step (2) of this procedure
           (b) Remove all job steps except DSNTIAE and DSNTIJG
           (c) In job step DSNTIAE:
               - remove all BIND PACKAGE statements under the SYSTSIN
                 DD, except for the following:
                    BIND PACKAGE(DSNADM) MEMBER(DSNADMCU) - ...
                    BIND PACKAGE(DSNADM) MEMBER(DSNADMJF) - ...
                    BIND PACKAGE(DSNADM) MEMBER(DSNADMJP) - ...
                    BIND PACKAGE(DSNADM) MEMBER(DSNADMJQ) - ...
                    BIND PACKAGE(DSNADM) MEMBER(DSNADMJS) - ...
           (d) In job step DSNTIJG, remove all GRANT statements except
               the ones you added in step (2)(c), above
           (e) Run the job to bind the stored procedures packages
               and grant access to the new packages for
               SYSPROC.ADMIN_JOB_CANCEL and SYSPROC.ADMIN_JOB_QUERY
       ----------------------------------------------------------------
    .



    ------ COVER LETTER FOR PTF UK69282 ------------

PROBLEM DESCRIPTION(S):
  PM34992 -
    ****************************************************************
    * USERS AFFECTED: All DB2 V8 and DB2 9 for z/OS users          *
    *                      of SENSITIVE DYNAMIC cursor             *
    *                      with FETCH FIRST n ROWS ONLY clause     *
    ****************************************************************
    * PROBLEM DESCRIPTION: Rows fetched are not limited            *
    *                      for a SENSITIVE DYNAMIC cursor with     *
    *                      FETCH FIRST n ROWS ONLY clause, and     *
    *                      the 'n+1' FETCH does not receive        *
    *                      the expected SQLCODE +100.              *
    ****************************************************************
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```
* RECOMMENDATION:                                                    *
*******************************************************************
When a cursor is defined with FETCH FIRST n ROWS ONLY
for a query, DB2 limits the the number of rows that can
be FETCHed for the query to the 'n' value specified in
the FETCH FIRST clause. If the number of FETCHes attempted
exceeds the specified 'n' value, then DB2 issues SQLCODE
+100 for that 'n+1' FETCH request.
                                                              .
However, for a FETCH FIRST n ROWS ONLY clause defined in a
outermost fullselect for SENSITIVE DYNAMIC cursor, DB2 did
not limit the number of rows that can be FETCHed. As a result,
more than the 'n' rows were FETCHed without SQLCODE +100 on
the 'n+1' FETCH request for both dynamic and static SQL
statements.
                                                              .
This is due to the sensitivity of the cursor, where 'n'th
position of the cursor can be affected by the changes of
the base table the cursor references to during the FETCH
of the cursor.
                                                              .
DB2 correctly limits the number of rows to be FETCHed for
a sub query that defines a FETCH FIRST n ROWS ONLY clause
along with SENSITIVE DYNAMIC cursor for outermost
fullselect.                                                   .

Additional Keywords:
SQLCODE100 SQLFFNR INCORROUT SQLINCORR
SQLINCORROUT DB2INCORR/K
DB2 has been changed to issue SQLCODE -243 for ON DECLARE
statement and SQLCODE -20186 for PREPARE statement when
those statements define a SENSITIVE DYNAMIC cursor and
a FETCH FIRST n ROWS ONLY clause in the outermost full-
select. Both static and dynamic statements that have such
combination are not allowed to be executed.
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APARS FIXED: PM34992
SPECIAL CONDITIONS:
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  ACTION:
    9
    BEFORE APPLYING THIS PTF, A QUERY THAT DEFINES FETCH FIRST N
    ROWS ONLY CLAUSE WITH SENSITIVE DYNAMIC CURSOR WAS ALLOWED TO
    BE EXECUTED AND COULD FETCH MORE THAN N ROWS WITHOUT GETTING
    SQLCODE +100 ON N+1 FETCH REQUEST.
                                                              .
    AFTER APPLYING THIS PTR, FETCH FIRST N ROWS ONLY CLAUSE IS NOT
    ALLOWED IN THE OUTERMOST FULLSELECT FOR SENSITIVE DYNAMIC
    CURSOR. SQLCODE -243 IS ISSUED FOR ON DECLARE STATEMENT AND
    SQLCODE -20186 FOR PREPARE STATEMENT WHEN THOSE STATEMENTS
    DEFINE SUCH COMBINATION. IF AN APPLICATION DOES NOT HANDLE HOW
    MANY ROWS ARE FETCHED BY SENSITIVE DYNAMIC CURSOR WITH FETCH
    FIRST N ROWS ONLY CLAUSE DEFINED IN AN ON DECLARE STATEMENT,
    THE APPLICATION PACKAGE NEEDS TO BE REBOUND TO AVOID THE
    INCORRECT OUTPUT.
```

.

PROBLEM DESCRIPTION(S):
  PM36521 -
    ****
    * USERS AFFECTED: All DB2 users of   *
    *   RLF reactive governing to govern   *
    *   a dynamic statement with a UDF   *
    ****
    * PROBLEM DESCRIPTION: A dynamic SQL statement with a UDF was *
    *   not properly governed (delayed or no   *
    *   SQLCODE -905) by RLF reactive governing   *
    ****
    * RECOMMENDATION: *
    ****
    When RLF is activated for reactive governing, only qualified
    dynamic SQL statements for RLF governing are controlled by
    RLF. This means static SQL statements are not controlled by
    RLF.
                                                                .

    In the reported case, a dynamic SELECT statement that
    contains a UDF was reactively governed by RLF. During the UDF
    execution invoked by the dynamic statement, static statements
    from the external module of the UDF were executed. Affected by
    the static statements, which were not governable by RLF, the
    dynamic statement that invoked UDF was not promptly back to
    governable state when it gets the control for execution back
    from the UDF. As a result, issuing SQLCODE -905 for the
    dynamic statement was delayed when the statement's execution
    time exceeded its ASUTime limit after the UDF execution. This
    also could lead the dynamic statement to end its execution
    without SQLCODE -905.
                                                                .

    Note: For a dynamic statement that contains an external UDF,
    the ASUTime used by the UDF is not counted for the ASUTime
    limit that is applied to the dynamic statement.
                                                                .

    ADDITIONAL KEYWORDS:
    ASUTIMELIMIT TIMEUSEDSOFAR SQLCODE905
    DB2 has been modified to get a dynamic statement promptly
    back to its original governing or non-governing state when
    the statement gets the control for the execution back from
    a UDF after the UDF invocation.
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APARS FIXED: PM36521
SPECIAL CONDITIONS:
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  ACTION:
    BEFORE APPLYING THIS PTF, A GOVERNABLE DYNAMIC STATEMENT THAT
    CONTAINS A UDF COULD BE EXECUTED WITHOUT GETTING SQLCODE -905
    EVEN WHEN THE STATEMENT WAS GOVERNED BY RLF REACTIVE GOVERNING
    BEFORE THE UDF INVOCATION AND THE STATEMENT EXCEEDED ITS

ASUTIME LIMIT AFTER GETTING THE CONTROL FOR EXECUTION BACK
        FROM THE UDF.

        AFTER APPLYING THIS PTF, SUCH A GOVERNABLE DYNAMIC STATEMENT
        GETS BACK TO ITS ORIGINAL GOVERNING OR NON-GOVERNING STATE
        PROMPTLY AFTER GETTING THE CONTROL FOR EXECUTION BACK FROM THE
        UDF. THUS, SQLCODE -905 WOULD BE OBSERVED IF THE DYNAMIC
        STATEMENT IS IN GOVERNING STATE AND EXCEEDS ITS ASUTIME LIMIT
        AFTER GETTING THE CONTROL BACK FROM THE UDF.
.

------ COVER LETTER FOR PTF UK69336 ------------

PROBLEM DESCRIPTION(S):
  PM37038 -
    ****
    * USERS AFFECTED: DB2 9 for z/OS and DB2 10 for z/OS users   *
    *   executing queries with row expression   *
    *   predicates.   *
    ****
    * PROBLEM DESCRIPTION: DB2 may incorrectly estimate the   *
    *   filtering of an index matching on   *
    *   a row expression predicate.   *
    ****
    * RECOMMENDATION: *
    ****
    DB2 may incorrectly estimate the filtering of an index matching
    on a row expression predicate. This can occur if the index
    can only match on a subset of the columns in the row expression.

    For example...

       UPDATE T1
         SET C5=3
       WHERE (C1,C2,C3,C4) IN (
         SELECT D1,D2,D3,D4
         FROM T2
)

    An index on T1(C1,C2) can match on the row expression predicate.
    Since it can only match on two of the four columns, the
    index filtering estimate for this index could be incorrect.

    As a result of this incorrect index filtering estimate, DB2 may
    select a suboptimal access path resulting in poor query
    performance.

    Additional Keywords:
    SQLPERFORMANCE SQLACCESSPATH SQLIN SQLSUBQUERY SQLROWEXPR
    DB2 has been corrected to correctly estimate index filtering
    for row expression predicates.
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APARS FIXED: PM37038
SPECIAL CONDITIONS:
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DB2BIND:
  ***Action for PM37038:

  A rebind is necessary for static applications to rebuild
  access paths based on the changes in this APAR.

  PM37038 corrects a problem in which DB2 may choose a poor
  access path for a query with a row expression predicate.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PM35585:

  See PM35585 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM35585 corrects a problem that a compound filter factor may be
  underestimated if multi-column histogram statistics exist.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PM32936 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM32936 corrects a problem of incorrect output when using sort
  merge join on SQL that contains a view with UNION or UNION ALL.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PM27699 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  PM27699 corrects a problem where an inefficient access path can
  be chosen when a compound predicate filter factor is
  underestimated. It usually happens when column group frequency
  statistics can be used to estimate compound predicate filter
  factor.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PM22539 APAR/PTF text for additional information about
  why a REBIND is necessary.

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PM22539 corrects an access path selection problem. The problem
occurs when a table has both multi-column frequency statistics
and multi-column histogram statistics on the same multi-column
group. DB2 may overestimate compound predicate selectivity.
Therefore, DB2 may choose an undesirable access path.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM22182:

  See PM22182 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM22182 corrects a problem of overestimation of composite
  size of a join for a query with OR predicates. This can
  lead to poor query performance.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PM07130 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  PM07130 corrects a problem where an inefficient access path can
  be chosen when a compound predicate filter factor is
  underestimated. It usually happens when the filtering column of
  an individual predicate has column distribution statistics.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PM06942:

  See PM06942 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM06942 corrects a problem of inaccurate filter factor
  estimation of a compound predicate containing an IN list
  predicate and an equal join predicate.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
  .

------ COVER LETTER FOR PTF UK69494 ------------

```
PROBLEM DESCRIPTION(S):
  PM37293 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS users of REORG TABLESPACE *
    *                 utility with LISTDEF.                        *
    ****************************************************************
    * PROBLEM DESCRIPTION: Introduction of a new zParm to control  *
    *                      the default behavior of REORG           *
    *                      TABLESPACE LIST partition processing.    *
    ****************************************************************
    * RECOMMENDATION: Apply PTF when available.                     *
    ****************************************************************
    Currently by default behavior, REORG TABLESPACE LIST on a
    partitioned table space will result in a single REORG execution
    including all the adjacently specified partitions in the
    LISTDEF statement.

    For example:

    LISTDEF L INCLUDE TABLESPACE DBB.TSS PARTLEVEL 3
              INCLUDE TABLESPACE DBB.TSS PARTLEVEL 4
              INCLUDE TABLESPACE DBB.TSS PARTLEVEL 8
    REORG TABLESPACE LIST L

    The above will result in a single REORG exeuction reorganizing
    data partition 3, 4 and 8 in the same utility operation, as if
    REORG TABLESPACE PART (3,4,8) is specified.

    While a new PARALLEL keyword is introduced via APAR PM25525 /
    PTF UK64590 to override this default behavior in a case by case
    basis, many users find this option limiting as they prefer the
    behavior of reorganizing LISTDEF partitions one at a time
    serially (e.g. due to DASD resource constraint) and they cannot
    modify a large number of utility jobs to specify the overriding
    PARALLEL keyword.

    As a result, this APAR introduces a new DB2 subsystem parameter
    ( zParm ) named REORG_LIST_PROCESSING.  This allows the user to
    specify the default setting of the PARALLEL option
    when deciding whether REORG would process the LISTDEF partitions
    in parallel or serially.
    Code has been modified to implement the aforementioned
    system zParm for REORG TABLESPACE LIST processing.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM37293
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    ***Actions for PM37293

    This PTF adds a new DB2 subsystem parameter in DSN6SPRM named
    REORG_LIST_PROCESSING that allows you to specify the default
    setting for the PARALLEL option of the DB2 REORG TABLESPACE
    utility.  The PARALLEL option indicates whether REORG TABLESPACE
    will process all partitions specified in the input LISTDEF
```

statement in a single utility execution (PARALLEL YES) or
process each in a separate utility execution (PARALLEL NO).
Valid options for DSN6SPRM.REORG_LIST_PROCESSING are:
* PARALLEL: REORG TABLESPACE will assume PARALLEL
            YES when the PARALLEL keyword is not
            specified in the utility control
            statement.
            ==> This is the default setting
* SERIAL : REORG TABLESPACE will assume PARALLEL
            NO when the PARALLEL keyword is not
            specified in the utility control

If you have already installed or migrated to this version of DB2
you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

----
(1) Update customized copies of DB2 installation CLIST members
----
==> This action is required for all customers

    This PTF modifies CLIST member DSNTINST in the SDSNCLST
    target library only. You need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of this CLIST. You may also want to move it to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed by
    job DSNTIJVC reside.

----
(2) Update your customized copy of job DSNTIJUZ

==> This action is required for all customers

    This PTF modifies DB2 installation job DSNTIJUZ in the
    SDSNSAMP target library. After applying this PTF, you
    need to update your customized copy of this job as follows:

    * Add the keyword parameter REORG_LIST_PROCESSING=<x>,
      where <x> is PARALLEL or SERIAL, to the invocation of the
      DSN6SPRM macro. Make sure to add a continuation character
      in column 72 if needed. If you omit adding
      REORG_LIST_PROCESSING here, the value will be set to the
      default of PARALLEL when you assemble the DSNZPxxx module.

    * Run the first two steps of the DSNTIJUZ job you modified.

    * After the job completes, you must either use the -SET
      SYSPARM command or stop and restart DB2 for the change to
      take effect.

----

(3) Update private copies of the DSNTIDxx CLIST input member

        ==> This action is required for all customers

                This PTF adds an entry for REORG_LIST_PROCESSING to the
                CLIST default input member, DSNTIDXA, in the SDSNSAMP
                target library.
                You need to add these entries to all private copies of your
                CLIST output DSNTIDxx member. In each such copy, add the
                following lines:

        REORG_LIST_PROCESSING CHAR M NONE   NONE   PARALLEL

                Change <x> to the value you specified for
                REORG_LIST_PROCESSING in step (2), above.
.

------ COVER LETTER FOR PTF UK69502 ------------

PROBLEM DESCRIPTION(S):
  PM36504 -
     ****
     * USERS AFFECTED: All DB2 z/OS 9 users who has   *
     *   applications with query contains   *
     *   select distinct and fetch first   *
     *   N row inside a table expression.   *
     *   *
     *   *
     *   All DB2 z/OS 10 users who has   *
     *   applications with query contains   *
     *   (1) select distinct and order by   *
     *   (2) select distinct and fetch first   *
     *   N row inside a table expression   *
     ****
     * PROBLEM DESCRIPTION: (1) V9 and V10:   *
     *   More rows may be returned for   *
     *   query that contains select distinct and *
     *   fetch first N rows inside a table   *
     *   expression.   *
     *   *
     *   The following example illustrates an   *
     *   error case.   *
     *   SELECT * FROM (*
     *   SELECT DISTINCT C1_VARCHAR256,   *
     *   C2_VARCHAR256, C3_VARCHAR256   *
     *   FROM T1   *
     *   ORDER BY C1_VARCHAR256,   *
     *   C2_VARCHAR256, C3_VARCHAR256   *
     *   FETCH FIRST 2000 ONLY) X;   *
     *   *
     *   *
     *   *
     *   (2) V10 only   *
     *   *
     *   Abend 0C4 RC00000038 at DSNXOD8+2508   *
                                    487

```
*                     may ocur for explain when query      *
*                     contains select distinct on the table *
*                     expression, and when order by exists  *
*                     for select from this table expression. *
*                                                           *
*                     The following example illustrates an  *
*                                                           *
*                        SELECT RTIM(C1)                    *
*                        FROM (SELECT DISTINCT C1           *
*                              FROM T) TX                   *
*                        ORDER BY TX.C1;                    *
****************************************************************
* RECOMMENDATION:                                           *
****************************************************************
(1) V9 and V10:
More rows may be returned for query that contains select
distinct and fetch first N rows inside a table expression.

The following example illustrates an
error case.
  SELECT * FROM (
     SELECT DISTINCT C1_VARCHAR256,
        C2_VARCHAR256, C3_VARCHAR256
     FROM T1
     ORDER BY C1_VARCHAR256,
        C2_VARCHAR256, C3_VARCHAR256
     FETCH FIRST 2000 ONLY) X;


(2) V10 only
Abend 0C4 RC00000038 at DSNXOD8+2508 may ocur for explain when
query contains select distinct on the table expression, and
when order by exists for select from this table expression.

The following example illustrates an

      SELECT RTIM(C1)
      FROM (SELECT DISTINCT C1
            FROM T) TX
      ORDER BY TX.C1;
DB2 has been modified to ensure those identified problems
are working.

Additional Keywords: INCORROUT DB2INCORR/K SQLINCORROUT
                     ABEND04C SQLORDERBY SQLFFNR
                     SQLDISTINCT SQLTABLEEXPR SQLVIEW
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM36504
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:

  See PM36504 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.
```

APAR PM36504 corrects problems that can cause incorrect output
on query with fetch first N row inside a table expresssion.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK69608 ------------

PROBLEM DESCRIPTION(S):
  PM17336 -
    ****
    * USERS AFFECTED: All users of the DB2 Version 9.1 for z/OS   *
    *   and DB2 10 for z/OS installation and   *
    *   migration jobs and CLIST are affected by   *
    *   this change.   *
    ****
    * PROBLEM DESCRIPTION: This APAR enhances the process for   *
    *   creating workfile table spaces during   *
    *   installation and migration of DB2 for   *
    *   z/OS.   *
    ****
    * RECOMMENDATION: *
    ****
    Beginning in DB2 Version 9.1 for z/OS, the WORKFILE database
    was extended to support declared global temporary tables (DGTT)
    in addition to its traditional support for sort work files,
    created global temporary tables (CGTT), trigger transition
    tables, etc. DGTTs previously required a separate database
    called the TEMP database for temporary (DGTT) tables.

    The DB2 installation process provides a DB2 REXX exec called
    DSNTWFG that can be used to create specified numbers of 4-KB
    type and 32-KB type table spaces in the WORKFILE database, each
    having a specified primary space quantity, segment size, and DB2
    storage group. DSNTWFG is executed by installation jobs DSNTIJTM
    and (for data sharing only) DSNTIJFT, and the DSNTWFG calls in
    these jobs are customized according to WORKFILE preferences
    entered on installation panel DSNTIP9.

    Since general availability of DB2 V9.1 for z/OS, the DB2 work
    file implementation has evolved to provide for better management
    of system resource:
    * PK70060 alleviates the problem of DGTTs running out of space
      due to competition for space with SORT work files in the work
      file database, by causing:
      - Sort work processing to avoid table spaces that grow into
        secondary extents
      - Temp work (DGTT) processing to prefer table spaces that can
        grow into secondary extents since DGTTs cannot span table
        spaces
    * PM02528 subsequently added the DSN6SPRM.WFDBSEP parameter for
      enforcing separation of work file table space types:

- WFDBSEP=NO : Uses prefer/avoid behavior described above
          - WFDBSEP=YES: Strict table space type requirement according
            to use (else SQLCODE -904)
              * Temp work (DGTT) processing requires work file table
                spaces with a non-0 SECQTY on DB2-managed storage
              * Sort work processing requires work file table spaces on
                DB2-managed storage with SECQTY 0 or on user-managed
                storage.
DSNTWFG has not kept pace with these changes. Currently, it
creates only table spaces that have a non-0 SECQTY and it
creates them on DB2-managed storage. Such work file table
spaces are appropriate for temp work (DGTT) processing but not
preferred for sort work processing (when WFDBSEP=NO) or
allowed for sort work processing (when WFDBSEP=YES).
This APAR enhances DB2 installation and migration support for
creating table spaces in the work file database:
(1) The DSNTWFG exec can now create sort work file table spaces
    as well as temporary (DGTT) work file table spaces. Prior
    to this APAR, it could create only the latter.
(2) DSNTWFG now accepts its input either from keyword parameters
    or from positional parameters. Prior to this APAR, it
    accepted input only from positional parameters. Use of
    keyword parameters is now preferred and is required in order
    to use DSNTWFG to create sort work file table spaces.
(3) Installation jobs DSNTIJFT and DSNTIJTM are modified to
    use the keyword parameter format of DSNTWFG.
(4) On installation panel DSNTIP9, new fields are provided for
    gathering preferences for sort work file table spaces to
    be created. Prior to this APAR, DSNTIP9 gathered only
    preferences for creating temporary (DGTT) work file table
    spaces.
==
(1) DSNTWFG is enhanced to create sort work file table spaces
==
Prior to this APAR, all work file table spaces created by
DSNTWFG have a non-0 secondary space quantity, meaning that
they grow via secondary extents. Such table spaces are suitable
for temporary work (DGTT) processing but not for sort work
processing. This APAR adds the capability for DSNTWFG to also
create work file table spaces that have a zero secondary space
quantity and are thus suitable for sort work processing. Details
on how to use DSNTWFG to create sort work table spaces are given
in the next section. In DB2 V10, DSNTWFG can create temp (DGTT)
work file table spaces as either segmented or partitioned by
growth (PBG). However, it creates sort work file table spaces
only as segmented because sort work file table spaces are not
intended to grow.
==
(2) DSNTWFG is enhanced to accept input via keyword parameters
==
Prior to this APAR, all input was passed to DSNTWFG by means of
positional parameters. The DSNTWFG positional parameters are
unchanged and continue to work as previously (see the DSNTWFG
prolog for a description of its positional parameters). This
APAR introduces keyword parameters for DSNTWFG. Keyword
parameters, unlike positional parameters, indicate their purpose

and can be specified to DSNTWFG in any order. Like positional
parameters, all keyword parameters (except as noted below) must
be specified when calling DSNTWFG. DSNTWFG does not permit
mixing of positional and keyword parameters. Temp (DGTT) work
file table spaces can be created using either keyword or
positional parameters. However, sort work table spaces can be
created only by using keyword parameters. The DSNTWFG keyword
parameters are as follows:
```
   -------------------------------------------------------------
   * General parameters                                        *
   -------------------------------------------------------------
```
- DB2SSN: Local DB2 SSID.
    Example: DB2SSN(DSN)
- AUTHID: Authorization ID to perform the work.
    Example: AUTHID(ME)
- WFDBNAME: Name of the DB2 work file database
    Example: AUTHID(DSNDB07)
```
   -------------------------------------------------------------
   * Parameters for 4-KB type temp (DGTT) work table spaces    *
   -------------------------------------------------------------
```
- TEMP4K_QTY: The number of 4-KB type table spaces to be
  created for temporary (DGTT) work
    Example: TEMP4K_QTY(10)
- TEMP4K_MAXPARTS (V10 only): The MAXPARTITIONS of each 4-KB
  type temp work file table space to be created.
    Example: TEMP4K_MAXPARTS(10), TEMP4K_MAXPARTS()
  When TEMP4K_MAXPARTS is specified and set to a non-null, non-0
  value, the TEMP4K_DSSIZE parameter must also be specified with
  a non-null, non-0 value; and the TEMP4K_PRIQTY parameter
  either must not be specified or must be set to null or 0. If
  these conditions are met then DSNTWFG will create the
  specified number of 4-KB type temp work file table spaces as
  partition by growth (PBG).
- TEMP4K_DSSIZE (V10 only): The maximum GB per partition
  (DSSIZE) of each 4-KB type temp work file table space to be
  created.
    Example: TEMP4K_DSSIZE(4), TEMP4K_DSSIZE(0), TEMP4K_DSSIZE()
  When TEMP4K_DSSIZE is specified and set to a non-null, non-0
  value, the TEMP4K_MAXPARTS parameter must also be specified
  with a non-null, non-0 value; and the TEMP4K_PRIQTY parameter
  either must not be specified or must be set to null or 0. If
  these conditions are met then DSNTWFG will create the
  specified number of 4-KB type temp work file table spaces as
  partition by growth (PBG).
- TEMP4K_PRIQTY: The primary space in MB for each 4-KB type
  temp work file table space.
    Example: TEMP4K_PRIQTY(20)
  ==> The following considerations apply only in DB2 V10:
    When TEMP4K_PRIQTY is specified and set to a non-null,
    non-0 value, the TEMP4K_MAXPARTS and TEMP4K_DSSIZE
    parameters must either not be specified or must be set to
    null or 0. If these conditions are met then DSNTWFG will
    create the specified number of 4-KB type temp work file
    table spaces as segmented.
- TEMP4K_SEGSIZE: The segment type for each 4-KB type temp
  work table space to be created.

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```
        Example: TEMP4K_SEGSIZE(16)
 - TEMP4K_BPOOL: The name of the DB2 buffer pool for each 4-KB
   type temp work table spaces to be created
        Example: TEMP4K_BPOOL(BP0)
 - TEMP4K_STOGROUP: The DB2 STOGROUP for 4-KB type temp work
   table spaces
        Example: TEMP4K_STOGROUP(SYSDEFLT)
        ------------------------------------------------------------
        * Parameters for 32-KB type temp (DGTT) work table spaces    *
        ------------------------------------------------------------
 - TEMP32K_QTY: The number of 32-KB type table spaces to be
   created for temporary (DGTT) work
        Example: TEMP32K_QTY(10)
 - TEMP32K_MAXPARTS (V10 only): The MAXPARTITIONS of each 32-KB
   type temp work file table space to be created.
        Examples: TEMP32K_MAXPARTS(0), TEMP32K_MAXPARTS()
   When TEMP32K_MAXPARTS is specified and set to a non-null,
   non-0 value, the TEMP32K_DSSIZE parameter must also be
   specified with a non-null, non-0 value; and the TEMP32K_PRIQTY
   parameter either must not be specified or must be set to null
   or 0.  If these conditions are met then DSNTWFG will create
   the specified number of 32-KB type temp work file table spaces
   as partition by growth (PBG).
 - TEMP32K_DSSIZE (V10 only): The maximum GB per partition
   (DSSIZE) of each 32-KB type temp work file table space to be
    created.
        Examples: TEMP32K_DSSIZE(0), TEMP32K_DSSIZE()
   When TEMP32K_DSSIZE is specified and set to a non-null, non-0
   value, the TEMP32K_MAXPARTS parameter must also be specified
   with a non-null, non-0 value; and the TEMP32K_PRIQTY parameter
   either must not be specified or must be set to null or 0.  If
   these conditions are met then DSNTWFG will create the
   specified number of 32-KB type temp work file table spaces as
   partition by growth (PBG).
 - TEMP32K_PRIQTY: The primary space in MB for each 32-KB type
   temp work file table space.
        Example: TEMP32K_PRIQTY(20)
        ==> The following considerations apply only in DB2 V10:
        When TEMP32K_PRIQTY is specified and set to a non-null,
        non-0 value, the TEMP32K_MAXPARTS and TEMP32K_DSSIZE
        parameters must either not be specified or must be set to
        null or 0.  If these conditions are met then DSNTWFG will
        create the specified number of 32-KB type temp work file
        table spaces as segmented.
 - TEMP32K_SEGSIZE: The segment type for each 32-KB type temp
   work  table space to be created.
        Example: TEMP32K_SEGSIZE(16)
 - TEMP32K_BPOOL: The name of the DB2 buffer pool for each 32-KB
   type temp work table spaces to be created
        Example: TEMP32K_BPOOL(BP0)
 - TEMP32K_STOGROUP: The DB2 STOGROUP for 32-KB type temp work
   table spaces
        Example: TEMP32K_STOGROUP(SYSDEFLT)
        ------------------------------------------------------------
        * Parameters for 4-KB type sort work table spaces          *
        ------------------------------------------------------------
```

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- SORT4K_QTY: The number of 4-KB type table spaces to be
  created for sort work
    Example: SORT4K_QTY(10)
- SORT4K_PRIQTY: The primary space in MB for each 4-KB type
  sort work file table space.
    Examples: SORT4K_PRIQTY(20)
   Note: DSNTWFG support creating sort work table spaces only
         as segmented table spaces, thus there are no
         parameters for specifying the MAXPARTITIONS and
         DSSIZE settings for sort work table spaces.
- SORT4K_SEGSIZE: The segment type for each 4-KB type sort
  work table space to be created.
    Example: SORT4K_SEGSIZE(16)
- SORT4K_BPOOL: The name of the DB2 buffer pool for each 4-KB
  type sort work table spaces to be created
    Example: SORT4K_BPOOL(BP0)
- SORT4K_STOGROUP: The DB2 STOGROUP for 4-KB type sort work
  table spaces
    Example: SORT4K_STOGROUP(SYSDEFLT)
    ----
    * Parameters for 32-KB type sort work table spaces   *

- SORT32K_QTY: The number of 32-KB type table spaces to be
  created for sort work
    Example: SORT32K_QTY(10)
- SORT32K_PRIQTY: The primary space in MB for each 32-KB type
  sort work file table space.
    Examples: SORT32K_PRIQTY(20)
  Note: DSNTWFG support creating sort work table spaces only
        as segmented table spaces, thus there are no
        parameters for specifying the MAXPARTITIONS and
        DSSIZE settings for sort work table spaces.
- SORT32K_SEGSIZE: The segment type for each 32-KB type sort
  work table space to be created.
    Example: SORT32K_SEGSIZE(16)
- SORT32K_BPOOL: The name of the DB2 buffer pool for each 32-KB
  type sort work table spaces to be created
    Example: SORT32K_BPOOL(BP0)
- SORT32K_STOGROUP: The DB2 STOGROUP for 32-KB type sort work
  table spaces
    Example: SORT32K_STOGROUP(SYSDEFLT)
==
(3) Installation jobs DSNTIJFT and DSNTIJTM are modified
==
Prior to this APAR, DSNTIJFT and DSNTIJTM executed DSNTWFG
passing input by means of positional parameters. This APAR
modifies these jobs to use the keyword parameters discussed
above. The keyword parameter format is required in order to
use DSNTWFG to create sort work file table spaces. Example:
  DSNTWFG DB2SSN(DSN) AUTHID(SYSADM) WFDBNAME(DSNDB07) +
       SORT4K_QTY(1)   SORT4K_SEGSIZE(16) +
       SORT4K_PRIQTY(20) +
       SORT4K_BPOOL(BP0) SORT4K_STOGROUP(SYSDEFLT) +
       SORT32K_QTY(1)   SORT32K_SEGSIZE(16) +
       SORT32K_PRIQTY(20) +
       SORT32K_BPOOL(BP0) SORT32K_STOGROUP(SYSDEFLT) +

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```
       TEMP4K_QTY(1)       TEMP4K_SEGSIZE(16) +
       TEMP4K_PRIQTY(20)  TEMP4K_MAXPARTS()  TEMP4K_DSSIZE() +
       TEMP4K_BPOOL(BP0)   TEMP4K_STOGROUP(SYSDEFLT) +
       TEMP32K_QTY(1)      TEMP32K_SEGSIZE(16) +
       TEMP32K_PRIQTY(20) TEMP32K_MAXPARTS() TEMP32K_DSSIZE() +
       TEMP32K_BPOOL(BP0) TEMP32K_STOGROUP(SYSDEFLT)
```
==
(4) Installation panel DSNTIP9 is modified
==
Prior to this APAR, DSNTIP9 gathered only preferences for
creating temporary (DGTT) work file table spaces. This APAR adds
six fields for gathering sort work file criteria:

4K SORT PRIMARY SPACE: The value of the 4K SORT PRIMARY SPACE
field specifies the total amount of space for all 4 KB sort work
table spaces in the work file database. This value is specified
in MB but you can enter the value in GB by specifying a suffix
of G, for example 1024G. Sort work table spaces are always
segmented table spaces and, unlike temporary (DGTT) work table
spaces, can not increase in size.
- Range: 1 - 32,702,464 (for installation) or 0 - 32,702,464
  (for migration)
- Default: 20 (for installation) or 0 (for migration)
The value of 4K SORT PRIMARY SPACE is divided by the value of
the 4K SORT WORK TS'S field to obtain the primary space quantity
(PRIQTY) for creating each 4 KB type sort work file table space.

4K SORT WORK TS'S: The value of the 4K SORT WORK TS'S field
specifies the number of 4 KB sort work file table spaces that
are to be created.
- Range: 1 to 500 (for installation) or 0 to 500 (for migration)
- Default: 1 (for installation) or 0 (for migration)

4K SORT WORK SEG SIZE: The value of the 4K SORT WORK SEG SIZE
field specifies the segment size that is to be used for 4 KB
sort work file table spaces. The value must be a multiple of 4,
from 4 to 64.
  Range: 4, 8, 12, ..., 60, 64 (multiples of 4)
  Default: 16

32K SORT PRIMARY SPACE: The value of the 32K SORT PRIMARY SPACE
field specifies the total amount of space for all 32 KB sort
work table spaces in the work file database. This value is
specified in MB but you can enter the value in GB by specifying
a suffix of G, for example 1024G. Sort work table spaces are
always segmented table spaces and, unlike temporary (DGTT) work
table spaces, can not increase in size.
- Range: 1 - 32,702,464 (for installation) or 0 - 32,702,464
  (for migration)
- Default: 20 (for installation) or 0 (for migration)
The value of 32K SORT PRIMARY SPACE is divided by the value of
the 32K SORT WORK TS'S field to obtain the primary space
quantity (PRIQTY) for creating each 32 KB type sort work file.

32K SORT WORK TS'S: The value of the 32K SORT WORK TS'S field
specifies the number of 32 KB sort work file table spaces that

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```
       are to be created.
       - Range: 1 to 500 (for installation) or 0 to 500 (for migration)
       - Default: 1 (for installation) or 0 (for migration)
       ----------------------------------------------------------------
       32K SORT WORK SEG SIZE: The value of the 32K SORT WORK SEG SIZE
       field specifies the segment size that is to be used for 32 KB
       sort work file table spaces. The value must be a multiple of 4,
       from 4 to 64.
       - Range: 4, 8, 12, ..., 60, 64 (multiples of 4)
       - Default: 16
       ----------------------------------------------------------------
       In addition, these existing DSNTIP9 are renamed as follows:
         TEMP 4K SPACE       is renamed    4K TEMP PRIMARY SPACE
         TEMP 4K TBL SPACES  is renamed    4K TEMP WORK TS'S
         TEMP 4K SEG SIZE    is renamed    4K TEMP WORK SEG SIZE
         TEMP 32K SPACE      is renamed    32K TEMP PRIMARY SPACE
         TEMP 32K TBL SPACES is renamed    32K TEMP WORK TS'S
         TEMP 32K SEG SIZE   is renamed    32K TEMP WORK SEG SIZE
COMPONENT:   5740-XYR00-HDB9910
APARS FIXED: PM17336
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    ***Actions for PM17336 (V9)

    This PTF enhances DB2 installation and migration support for
    creating table spaces in the work file database:
     * The DSNTWFG exec can now create work file table spaces that
       are suitable for sort work processing, that is which can
       not grow into secondary extents.  Prior to this PTF, DSNTWFG
       could create only work file table spaces suitable for
       temporary (DGTT) processing, that is which can grow into
       secondary extents.
     * DSNTWFG now accepts its input either from keyword parameters
       or from positional parameters.  Prior to this PTF, it
       accepted input only from positional parameters.  Use of
       keyword parameters is now preferred and is required in order
       to use DSNTWFG to create sort work file table spaces.
     * Installation jobs DSNTIJFT and DSNTIJTM are modified to
       use the keyword parameter format of DSNTWFG.
     * On installation panel DSNTIP9, new fields are provided for
       gathering preferences for sort work file table spaces to
       be created.  Prior to this APAR, DSNTIP9 gathered only
       preferences for creating temporary (DGTT) work file table
       spaces.

    If you have already installed or migrated to DB2 V9, you need
    to take the following actions after applying this PTF:
    (1) Update customized copies of DB2 installation CLIST members
    (2) Copy updated DB2 installation panels to alternate libraries
    (3) Copy updated DB2 installation messages into alternate
         libraries
    (4) Update private copies of the DSNTIDxx CLIST input member
    (5) Optionally update customized copies of job DSNTIJTM
    (6) Optionally update customized copies of job DSNTIJFT
```

```
      Detail for these actions follows:
      ----------------------------------------------------------------
      (1) Update customized copies of DB2 installation CLIST members
      ----------------------------------------------------------------
      ==> This action is required for all V9 customers

          This PTF modifies CLIST members DSNTINST, DSNTINS1,
          DSNTINS2, DSNTINS3, and DSNTCALC in the SDSNCLST target
          library only.
          You need to redo any record format changes and reapply any
          tailoring you have done to your copies of these CLISTs.
          You may also want to move them to the prefix.NEW.SDSNCLST
          data set, where the CLISTs processed by job DSNTIJVC reside.


          ----------------------------------------------------------------
      (2) Copy updated DB2 installation panels to alternate libraries
      ----------------------------------------------------------------
      ==> This action is required for all V9 customers who maintain
          copies of the DB2 installation panels outside of SMP/E:

          This PTF modifies DB2 installation panel DSNTIP9 in the
          prefix.SDSNSPFP target library.  If you maintain the DB2
          installation panels in a different library then after
          applying this PTF, you need to copy the updated panel to
          that library.


          ----------------------------------------------------------------
      (3) Copy updated DB2 installation messages into alternate
          libraries
      ----------------------------------------------------------------
      ==> This action is required for all V9 customers who maintain
          copies of the DB2 installation messages outside of SMP/E:

          This PTF modifies DB2 installation message member DSNT55
          in the SDSNSPFM target library.  If you keep the DB2
          installation message members in a different library, after
          applying this PTF, you need to copy the updated DSNT55
          member to that library.


          ----------------------------------------------------------------
      (4) Update private copies of the DSNTIDxx CLIST input member
      ----------------------------------------------------------------
      ==> This action is required for all V9 customers

          This PTF adds entries for new field names on panel DSNTIP9
          to the CLIST default input member, DSNTIDXA,
          in the SDSNSAMP target library. You
          need to add these entries to all private copies of your
          CLIST output DSNTIDxx member. In each such copy, add the
          following lines:

      S32KNOTS NUM   M  0              499            1
      S32KSGSZ NUM   M  4              64             16
      S32KSPAC CHARR M  NONE           NONE           20
      S4KNOTS  NUM   M  0              499            1
```

```
S4KSGSZ  NUM   M  4             64            16
S4KSPAC  CHARR M  NONE          NONE          20
```

  where
  * S32KNOTS corresponds to field 5, 32K SORT WORK TS'S, the
       number of 32K sort work table spaces to create
  * S32KSGSZ corresponds to field 6, 32K SORT WORK SEG SIZE,
       the segment size for 32K sort work table spaces
  * S32KSPAC corresponds to field 4, 32K SORT PRIMARY SPACE,
       the amount of 32K-page work space in megabytes

  * S4KNOTS corresponds to field 2, 4K SORT WORK TS'S, the
       number of 4K sort work table spaces to create
  * S4KSGSZ corresponds to field 3, 4K SORT WORK SEG SIZE,
       the segment size for 4K sort work table spaces
  * S4KSPAC corresponds to field 1, 4K SORT PRIMARY SPACE,
       the amount of 4K-page work space in megabytes

```
-----------------------------------------------------------------
(5) Optionally update customized copies of job DSNTIJTM
-----------------------------------------------------------------
```

==> This action is optional but is recommended for V9 customers
  who use DSNTIJTM to create table spaces in the work file
  database.

  This PTF modifies the DSNTWFG call in job step DSNTIST by
  replacing the positional parameter list with a keyword
  parameter list. Use of positional parameters for DSNTWFG
  remains supported and is unchanged by this PTF. However,
  use of keyword parameters is preferred, and is required in
  order to use DSNTWFG to create sort work file table spaces.

  To modify the DSNTWFG call in DSNTIJTM, proceed as follows:
  (a) Edit your customized copy of DSNTIJTM
  (b) In job step DSNTIST, under the SYSTSIN DD statement,
    replace the existing DSNTWFG call with following

```
        DSNTWFG +
          DB2SSN( ssid ) +
          AUTHID( authid ) +
          WFDBNAME( work-file-database-name ) +
          +
          TEMP4K_QTY( 4-kb-temp-quantity ) +
          TEMP4K_PRIQTY( 4-kb-temp-primary-megabytes ) +
          TEMP4K_SEGSIZE( 4-kb-temp-segment-size ) +
          TEMP4K_BPOOL( 4-kb-temp-buffer-pool-name ) +
          TEMP4K_STOGROUP( 4-kb-temp-stogroup-name ) +
          +
          TEMP32K_QTY( 32-kb-temp-quantity ) +
          TEMP32K_PRIQTY( 32-kb-temp-primary-megabytes ) +
          TEMP32K_SEGSIZE( 32-kb-temp-segment-size ) +
          TEMP32K_BPOOL( 32-kb-temp-buffer-pool-name ) +
          TEMP32K_STOGROUP( 32-kb-temp-stogroup-name ) +
          +
          SORT4K_QTY( 4-kb-sort-quantity ) +
          SORT4K_PRIQTY( 4-kb-sort-primary-megabytes ) +
```

```
           SORT4K_SEGSIZE( 4-kb-sort-segment-size ) +
           SORT4K_BPOOL( 4-kb-sort-buffer-pool-name ) +
           SORT4K_STOGROUP( 4-kb-sort-stogroup-name ) +
           +
           SORT32K_QTY( 32-kb-sort-quantity ) +
           SORT32K_PRIQTY( 32-kb-sort-primary-megabytes ) +
           SORT32K_SEGSIZE( 32-kb-sort-segment-size ) +
           SORT32K_BPOOL( 32-kb-sort-buffer-pool-name ) +
           SORT32K_STOGROUP( 32-kb-sort-stogroup-name ) +
```

where:
- DB2SSN(ssid)
    'ssid' is the name of the DB2 subsystem where
    DSNTWFG is to run.
- AUTHID(authid)
    'authid' is the authorization ID to use to
    create the table spaces
- WFDBNAME(work-file-database-name)
    'work-file-database-name' is the name of the work
    file database

- TEMP4K_QTY(4-kb-temp-quantity)
    '4-kb-temp-quantity' is the number of 4-KB page
    size temporary (DGTT) work file table spaces to be
    created. Specify 0 here to bypass creating this
    type of table space.
- TEMP4K_PRIQTY(4-kb-temp-primary-megabytes)
    '4-kb-temp-primary-megabytes' is the primary space
    allocation in megabytes for each 4-KB page size
    temporary (DGTT) work file table space to be
    created.
- TEMP4K_SEGSIZE(4-kb-temp-segment-size)
    '4-kb-temp-segment-size' is the segment size for
    each 4-KB page size temporary (DGTT) work file
    table space to be created.
- TEMP4K_BPOOL(4-kb-temp-buffer-pool-name)
    '4-kb-temp-buffer-pool-name' is the name of the
    buffer pool for each 4-KB page size temporary
    (DGTT) work file table space to be created.
- TEMP4K_STOGROUP(4-kb-temp-stogroup-name)
    '4-kb-temp-stogroup-name' is the name of the DB2
    storage group in which to create each 4-KB page
    size temporary (DGTT) work file table space.

- TEMP32K_QTY(32-kb-temp-quantity)
    '32-kb-temp-quantity' is the number of 32-KB page
    size temporary (DGTT) work file table spaces to be
    created. Specify 0 here to bypass creating this
    type of table space.
- TEMP32K_PRIQTY(32-kb-temp-primary-megabytes)
    '32-kb-temp-primary-megabytes' is the primary space
    allocation in megabytes for each 32-KB page size
    temporary (DGTT) work file table space to be
    created.
- TEMP32K_SEGSIZE(32-kb-temp-segment-size)
    '32-kb-temp-segment-size' is the segment size for

each 32-KB page size temporary (DGTT) work file
                    table space to be created.
              - TEMP32K_BPOOL(32-kb-temp-buffer-pool-name)
                    '32-kb-temp-buffer-pool-name' is the name of the
                    buffer pool for each 32-KB page size temporary
                    (DGTT) work file table space to be created.
              - TEMP32K_STOGROUP(32-kb-temp-stogroup-name)
                    '32-kb-temp-stogroup-name' is the name of the DB2
                    storage group in which to create each 32-KB page
                    size temporary (DGTT) work file table space.

              - SORT4K_QTY(4-kb-sort-quantity)
                    '4-kb-sort-quantity' is the number of 4-KB page
                    size sort work file table spaces to be created.
                    Specify 0 here to bypass creating this type of
                    table space.
              - SORT4K_PRIQTY(4-kb-sort-primary-megabytes)
                    '4-kb-sort-primary-megabytes' is the primary space
                    allocation in megabytes for each 4-KB page size
                    sort work file table space to be created.
              - SORT4K_SEGSIZE(4-kb-sort-segment-size)
                    '4-kb-sort-segment-size' is the segment size for
                    each 4-KB page size sort work file
                    table space to be created.
              - SORT4K_BPOOL(4-kb-sort-buffer-pool-name)
                    '4-kb-sort-buffer-pool-name' is the name of the
                    buffer pool for each 4-KB page size sort
                    work file table space to be created.
              - SORT4K_STOGROUP(4-kb-sort-stogroup-name)
                    '4-kb-sort-stogroup-name' is the name of the DB2
                    storage group in which to create each 4-KB page
                    size sort work file table space.

              - SORT32K_QTY(32-kb-sort-quantity)
                    '32-kb-sort-quantity' is the number of 32-KB page
                    size sort work file table spaces to be created.
                    Specify 0 here to bypass creating this type of
                    table space.
              - SORT32K_PRIQTY(32-kb-sort-primary-megabytes)
                    '32-kb-sort-primary-megabytes' is the primary space
                    allocation in megabytes for each 32-KB page size
                    sort work file table space to be created.
              - SORT32K_SEGSIZE(32-kb-sort-segment-size)
                    '32-kb-sort-segment-size' is the segment size for
                    each 32-KB page size sort work file
                    table space to be created.
              - SORT32K_BPOOL(32-kb-sort-buffer-pool-name)
                    '32-kb-sort-buffer-pool-name' is the name of the
                    buffer pool for each 32-KB page size sort
                    work file table space to be created.
              - SORT32K_STOGROUP(32-kb-sort-stogroup-name)
                    '32-kb-sort-stogroup-name' is the name of the DB2
                    storage group in which to create each 32-KB page
                    size sort work file table space.

    ----

(6) Optionally update customized copies of job DSNTIJFT

        ==> This action is optional but is recommended for V9 customers
            who use DSNTIJFT to create table spaces in the work file
            database.

            This PTF modifies the DSNTWFG call in job step DSNTIST by
            replacing the positional parameter list with a keyword
            parameter list. Use of positional parameters for DSNTWFG
            remains supported and is unchanged by this PTF. However,
            use of keyword parameters is preferred, and is required in
            order to use DSNTWFG to create sort work file table spaces.

            To modify the DSNTWFG call in DSNTIJFT, proceed as follows:
            (a) Edit your customized copy of DSNTIJFT
            (b) In job step DSNTIST, under the DISABLE DD statement,
                replace the existing DSNTWFG call as described in the
                previous action, (5).   Repeat for the DSNTWFG call
                under the REENABLE DD.
.

       ------ COVER LETTER FOR PTF UK69737 ------------

PROBLEM DESCRIPTION(S):
  PM33991 -
     ****
     * USERS AFFECTED: All users of DB2 installation in DB2 UDB for *
     *   z/OS Version 8, DB2 V9 for z/OS, and DB2 10 *
     *   for z/OS are affected by this change.   *
     ****
     * PROBLEM DESCRIPTION: Customers using the DB2 for z/OS   *
     *   installation process can encounter one *
     *   or more of the following issues: *
     *   (1) V8, V9, V10: Installation jobs   *
     *   DSNTIJPM (V10) and DSNTIJPA (V8   *
     *   and V9) can encounter these   *
     *   errors: *
     *   - REPORT4 incorrectly includes   *
     *   native SQL procedures as   *
     *   stored procedures that are   *
     *   defined to run in a DB2-managed   *
     *   stored procedures address space   *
     *   - Job step DSNTPMQ ends with   *
     *   return code 8 and this message   *
     *   when processing REPORT10:   *
     *   I/O error occurred in   *
     *   "Write_source_dsn". Event: *
     *   EXECIO DISKW REPORT10 rc= 1   *
     *   (2) V8, V9, V10: Job DSNTIJXZ, program   *
     *   DSNTXAZP, outputs an incorrect   *
     *   value for the DSNTIDxx.OPTRCSIZ   *
     *   (DSN6SYSP.TRACTBL) entry   *
     *   (3) V8, V9: Job DSNTIJXZ, program   *
     *   DSNTXAZP, does not output an entry *
     *   for DSNTIDxx.LOGOUTPT   *

                                500

```
*                        (DSN6LOGP.OUTBUFF)              *
*               (4) V9: Job DSNTIJXZ, program           *
*                   DSNTXAZP, outputs an incorrect      *
*                   value, SEQUENTIAL, for              *
*                   DSNTIDxx.SEQCACH when               *
*                   DSN6SPRM.SEQCACH is set to SEQ      *
*               (5) V9, V10: The message text for       *
*                   SQLCODE -440 is corrected           *
*               (6) V10: The message text for SQLCODE   *
*                   -20497 is corrected                 *
*               (7) V9, V10: SQL queries in DSNTESP     *
*                   do not match those documented in    *
*                   the topic entitled "Modeling your   *
*                   production system statistics in a   *
*                   test subsystem" in the Monitoring   *
*                   and Tuning DB2 Performance guide.    *
*               (8) V10: Installation job DSNTIJMV      *
*                   generates WLM address space procs   *
*                   for each member when a DB2 data     *
*                   sharing group is installed or       *
*                   migrated.  It should do so only     *
*                   for the first member.               *
*               (9) V10: Installation job DSNTIJRT      *
*                   job step DSNTRIN ends with return   *
*                   code 12 due to SQLCODE -104         *
*                   messages when the options           *
*                   specified in the DB2OPT DD input    *
*                   have no leading blanks.             *
*              (10) V10: Installation job DSNTIJRV      *
*                   job step DSNTRVFY ends with return  *
*                   code 4 and the message:            *
*                    DSNT018I DSNTRVFY - A WARNING       *
*                    WAS ENCOUNTERED DURING CALL TO      *
*                    ROUTINE, WARNING = DSNT541I WLM     *
*                    REFRESH REQUEST FAILED. RESOURCE    *
*                    PROFILE                             *
*                       ssid.WLM_REFRESH.ssidWLMG        *
*                    IS UNDEFINED                        *
*                   when validating stored procedure    *
*                   SYSPROC.WLM_REFRESH on a DB2 data    *
*                   sharing system                       *
****************************************************************
* RECOMMENDATION:                                             *
****************************************************************
This APAR concerns the following DB2 for z/OS installation
issues:
(1) Jobs DSNTIJPA (V8 and V9) and DSNTIJPM (V10)
    * REPORT4 can contain errors
    * REPORT10 processing can halt processing because of an
      output error.

    These identical jobs constitute the DB2 V10 premigration
    health check.
    * REPORT4 identifies stored procedures that are configured
      to run in the DB2-managed stored procedures address space,
      which was deprecated in V8 and eliminated in subsequent
```

releases. Currently, an error in the DB2 catalog query
for REPORT4 causes it to misidentify native SQL procedures
as stored procedures that run in the DB2 SPAS.
* REPORT10 identifies occurrences of explain table
DSN_PTASK_TABLE with column names that contain a hashmark
character. Support for this format of DSN_PTASK_TABLE
was deprecated by APAR PK65772 and eliminated by APAR
PK70423. Currently, processing of REPORT10 can terminate
with return code 8 and the message
   I/O error occurred in "Write_source_dsn". Event: EXECIO
   DISKW REPORT10 rc= 1
when running on a DB2 in which content of SYSIBM.SYSTABLES
column DBNAME, column TSNAME, or both contains trailing
blanks.

(2) Job DSNTIJXZ (program DSNTXAZP) outputs an incorrect value
for the OPTRCSIZ entry of the DSNTIDxx member being
refreshed (V8, V9, V10)

DSNTIJXZ program DSNTXAZP can be used to refresh the
content of a CLIST input (DSNTIDxx) member. Currently,
the value it outputs for the OPTRCSIZ entry of DSNTIDxx is
1024 times the value of the DSN6SYSP.TRACTBL parameter;
it should be 4096 times the DSN6SYSP.TRACTBL value.

(3) Job DSNTIJXZ (program DSNTXAZP) does not output an entry
for LOGOUTPT in the DSNTIDxx member being refreshed (V8
and V9)

The LOGOUTPT entry in the DSNTIDxx member corresponds to
the DSN6LOGP.OUTBUFF parameter. Currently, DSNTXAZP outputs
an entry for LOGOUTPT in DSNTIDxx in V10 only. It should
also output it for V8 and V9.

(4) Job DSNTIJXZ (program DSNTXAZP) outputs an incorrect value
for the SEQCACH entry of the DSNTIDxx member being
refreshed (V9)

Currently, when the DSN6SPRM.SEQCACH parameter is set to
SEQ, the value output for the SEQCACH entry of DSNTIDxx is
SEQUENTIAL.

(5) The SQL message text returned by GET DIAGNOSTICS and DSNTIAR
for SQLCODE -440 has changed (V9, V10)

The previous message text for -440 was
   NO routine-type BY THE NAME routine-name HAVING COMPATIBLE
   ARGUMENTS WAS FOUND IN THE CURRENT PATH

The new message text for -440 is
   NO AUTHORIZED routine-type NAMED routine-name HAVING
   COMPATIBLE ARGUMENTS WAS FOUND

(6) The SQL message text returned by GET DIAGNOSTICS and DSNTIAR
for SQLCODE -20497 has changed (V10)

The previous message text for -20497 was
  A STRING REPRESENTATION OF A DATETIME VALUE THAT CONTAINS
  A TIME ZONE CANNOT BE IMPLICITLY CAST TO A TARGET DEFINED
  AS DATETIME WITHOUT TIME ZONE

The new message text for -20497 is
  A STRING REPRESENTATION OF A DATETIME VALUE THAT CONTAINS
  A TIME ZONE CANNOT BE IMPLICITLY OR EXPLICITLY CAST TO A
  TARGET DEFINED AS DATETIME WITHOUT TIME ZONE

(7) SQL queries in sample member DSNTESP are downlevel (V9 and
    V10)

    DB2 performance-related SQL queries in sample member DSNTESP
    are downlevel from what is published in the topic entitled
    "Modeling your production system statistics in a test
    subsystem" in the Monitoring and Tuning DB2 Performance
    guide.
    * The query for obtaining statistics from SYSIBM.SYSTABLES
      does not select the NPAGESF column
    * The query for obtaining statistics from SYSIBM.SYSTABSTATS
      is missing
    * The query for obtaining statistics from SYSIBM.SYSCOLDIST
      is also missing

(8) Job DSNTIJMV creates address space procs for DB2-supplied
    WLM environments for all members of the data sharing group
    (V10)

    Beginning in V10, DB2 supplies a number of WLM environments,
    referred to as the 'core' WLM environment, that are suitable
    for initial setup and running of the DB2-supplied stored
    procedures and user-defined funnctions (UDFs). These WLM
    environments are:
       DSNWLM_DEBUGGER, DSNWLM_DSNACICS, DSNWLM_GENERAL,
       DSNWLM_JAVA, DSNWLM_MQSERIES, DSNWLM_NUMTCB1,
       DSNWLM_PGM_CONTROL, DSNWLM_REXX, DSNWLM_UTILS,
       DSNWLM_WEBSERVICES, and DSNWLM_XML
    See the DB2 Installation and Migration Guide for information
    about the core WLM environments.

    Currently, for each member of a DB2 data sharing group being
    installed or migrated, DSNTIJMV creates a set of address
    space procs for the DB2-supplied WLM environments. Each
    address space proc is named to reflect the subsystem ID of
    that member. Typically, the extra sets of address space
    procs are unused.

(9) Job DSNTIJRT, program DSNTRIN, ends with return code 12 when
    statements under the DB2OPT DD have no leading blanks (V10).

    The DB2OPT DD of DSNTIJRT (program DSNTRIN) accepts certain
    configuration options, such as buffer pools and a
    storage group, for creating databases that support DB2-
    supplied stored procedures and UDFs. See the DSNTIJRT
    job prolog for more information. Currently, DSNTIJRT

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will end with return code 12 and error messages if the
options specified under the DB2OPT DD do not have leading
blanks.

(10) Job DSNTIJRV, program DSNTRVFY, outputs warning message
DSNT018I during validation of the SYSPROC.WLM_REFRESH
stored procedure on a DB2 data sharing group (V10)

The SYSPROC.WLM_REFRESH stored procedure refreshes a WLM
environment. To execute the CALL statement, the SQL
authorization ID of the process must have READ access or
higher to the z/OS Security Server System Authorization
Facility (SAF) resource profile
   ssid.WLM_REFRESH.wlm-environment-name
in resource class DSNR, where
- 'wlm-environment-name' is the name of the environment to
  be refreshed
- 'ssid' specifies the subsystem ID of the DB2 subsystem
  with which the WLM environment is associated. By
  default, this is the subsystem ID of the subsystem on
  which WLM_REFRESH runs but in a data sharing environment,
  it is the group attach name for the data sharing group
  in which WLM_REFRESH runs.

Currently, when validating SYSPROC.WLM_REFRESH in a DB2 data
sharing environment, DSNTRVFY always calls it using the
subsystem ID even if a group attach name is available. This
is counter to documented use and results in the DSNT018I
message when the first-level qualifier of the SAF profile
for SYSPROC.WLM_REFRESH specifies the group attach name.

In response, the following changes are made:
(1) Jobs DSNTIJPA (V8 and V9) and DSNTIJPM (V10)
    * REPORT4 can contain errors
    * REPORT10 processing can halt processing because of an
      output error.

    In V8 and V9 (DSNTIJPA) and V10 (DSNTIJPM), the query
    for REPORT4 is modified to exclude native SQL procedures.
    The query for REPORT10 is modified to strip trailing
    blanks from columns selected from DB2 catalog tables.

(2) Job DSNTIJXZ (program DSNTXAZP) outputs an incorrect value
    for the OPTRCSIZ entry of the DSNTIDxx member being
    refreshed (V8, V9, V10)

    In V8, V9, and V10, DSNTXAZP is modified to set the value of
    the OPTRCSIZ entry of DSNTIDxx to be 4096 times the setting
    of the DSN6SYSP.TRACTBL parameter (instead of 1024 times
    that setting).

(3) Job DSNTIJXZ (program DSNTXAZP) does not output an entry
    for LOGOUTPT in the DSNTIDxx member being refreshed (V8
    and V9)

    In V8 and V9, DSNTXAZP is modified to output the entry for

LOGOUTPT in the DSNTIDxx member being refreshed.
DSNTIDxx.LOGOUTPT corresponds to the DSN6LOGP.OUTBUFF
parameter.

(4) Job DSNTIJXZ (program DSNTXAZP) outputs an incorrect value
    for the SEQCACH entry of the DSNTIDxx member being
    refreshed (V9)

    In V9, DSNTXAZP is modified to set the value of the SEQCACH
    entry of DSNTIDxx to be SEQ rather than SEQUENTIAL when the
    DSN6SPRM.SEQCACH parameter is set to SEQ.

(5) The SQL message text returned by GET DIAGNOSTICS and DSNTIAR
    for SQLCODE -440 has changed (V9, V10)

    In V9 and V10, the new message text for -440 is:
      NO AUTHORIZED routine-type NAMED routine-name HAVING
      COMPATIBLE ARGUMENTS WAS FOUND

(6) The SQL message text returned by GET DIAGNOSTICS and DSNTIAR
    for SQLCODE -20497 has changed (V10)

    In V10, the new message text for -20497 is
      A STRING REPRESENTATION OF A DATETIME VALUE THAT CONTAINS
      A TIME ZONE CANNOT BE IMPLICITLY OR EXPLICITLY CAST TO A
      TARGET DEFINED AS DATETIME WITHOUT TIME ZONE

(7) SQL queries in sample member DSNTESP are downlevel (V9 and
    V10)

    In V9 and V10, DSNTESP is updated as follows:
    * The query for obtaining statistics from SYSIBM.SYSTABLES
      now selects the NPAGESF column
    * The query for obtaining statistics from SYSIBM.SYSTABSTATS
      is now included
    * The query for obtaining statistics from SYSIBM.SYSCOLDIST
      is now included
    For information about these queries, see the topic entitled
    "Modeling your production system statistics in a test
    subsystem" in the Monitoring and Tuning DB2 Performance
    Guide.

(8) Job DSNTIJMV creates address space procs for DB2-supplied
    WLM environments for all members of the data sharing group
    (V10)

    In V10, the installation CLIST is modified to create address
    space procs for the DB2-supplied WLM environments only for
    the first member when a data sharing group is being
    installed or migrated. Related objects for the DB2-supplied
    Java WLM environment, the JAVAWLM file, the environment
    variable file, and the sample JVM startup options file, are
    also created only for the first member. In addition, if a
    group attach name is available, the address space procs and
    related files are named using the group attach name rather
    than the subsystem name. For data sharing installations and

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migrations, the DB2SSN parm is set to null rather than to a
subsystem name.

Note: These changes apply only to the address space procs
for the DB2-supplied WLM environments. The address space
proc for the default WLM environment, DSNWLM, continues to
be created for each member of group to be installed or
migrated, and continues to be named as specified in the
WLM PROC NAME field on installation panel DSNTIPX.

(9) Job DSNTIJRT, program DSNTRIN, ends with return code 12 when
statements under the DB2OPT DD have no leading blanks (V10).

In V10, program DSNTRIN is modified so that it will not
terminate with errors when statements specified in the
DB2OPT DD do not have leading blanks.

(10) Job DSNTIJRV, program DSNTRVFY, outputs warning message
DSNT018I during validation of the SYSPROC.WLM_REFRESH
stored procedure on a DB2 data sharing group (V10)

In V10, program DSNTRVFY is modified to use the group attach
name, when available, when validating SYSPROC.WLM_REFRESH.
Therefore, in DB2 data sharing environments where a group
attach name is defined, DSNTRVFY will expect WLM_REFRESH to
find a SAF resource profile in this format:
    group-attach-name.WLM_REFRESH.group-attach-nameWLMG
In cases where this resource profile is not available,
DSNTRVFY will return message DSNT018I when validating
SYSPROC.WLM_REFRESH.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM33991
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    ***Action for PM33991 (V9)

    This PTF modifies V10 premigration checkout job DSNTIJPA. If
    you maintain a customized copy of this job then after applying
    this PTF, you need to refresh it as follows:
    - Edit your customized copy of DSNTIJPA
    - Delete all lines and copy in the DSNTIJPA member from the
      prefix.SDSNSAMP library
    - Follow the directions in the job prolog to customize it for
      your DB2
    - If you are preparing to migrate to DB2 V10, run the updated
      customized job to check for conditions that may affect your
      migration.
  ACTION:
    ***Action for PM15965 (V9)

    This PTF modifies V10 premigration checkout job DSNTIJPA. If
    you maintain a customized copy of this job then after applying
    this PTF, you need to refresh it as follows:
    - Edit your customized copy of DSNTIJPA

- Delete all lines and copy in the DSNTIJPA member from the
  prefix.SDSNSAMP library
- Follow the directions in the job prolog to customize it for
  your DB2
- If you are preparing to migrate to DB2 V10, run the updated
  customized job to check for conditions that may affect your
  migration.
.

------ COVER LETTER FOR PTF UK69740 ------------

PROBLEM DESCRIPTION(S):
  PM36512 -
    ****
    * USERS AFFECTED: All DB2 for z/OS V8, DB2 9 and   *
    *   DB2 10 for z/OS users who do   *
    *   multiple outer joins in a SELECT   *
    ****
    * PROBLEM DESCRIPTION: ABEND0C7 in DSNXRTIM:5400,   *
    *   ABEND04E RC00E70005 in   *
    *   DNXORLI P002,ABEND04E   *
    *   RC00C90101 in DSNIBNRF:5007   *
    *   when running with parallelism or   *
    *   incorrect output when doing a SELECT   *
    *   with multiple outer joins.   *
    ****
    * RECOMMENDATION: *
    ****
    ABEND0C7 in DSNXRTIM:5400,ABEND04E RC00E70005 in
    DNXORLI P002,ABEND04E RC00C90101 in DSNIBNRF 5007
    when running with parallelism or incorrect output when
    doing a SELECT with multiple outer joins.

    The problem occurs from a column defined as NOT NULL. This
    NOT NULL column will be referenced in the ON clause of its
    parent join but not referenced in the parent join's SELECT
    clause.

    Sample type of query:
     SELECT 1 FROM
      tab1 a LEFT JOIN
        tab2 b FULL OUTER JOIN tab3 c ON b.c1=c.c1
          LEFT JOIN tab4 d ON c.c2 = d.c2
             ON a.c3 = b.c3

    tab3.c2 is defined as NOT NULL and the FULL OUTER JOIN is
    transformed into a LEFT JOIN.

    DB2 has been fixed to handle multiple outer joins when an
    outer join workfile has been merged and base columns are
    defined as NOT NULL and crosses into null padding join
    operations and the full outer join is transformed into
    a left join.

```
      Additional Keywords:   SQLOUTERJOIN SQLLEFTJOIN SQLFULLJOIN
                             SQLRIGHTJOIN SQLOUTER SQLLEFT SQLRIGHT
                             SQLFULL ERQUAL5400 ERQUAL5007
                             SQLPARALLELISM PARALLELISM
                             SQLINCORR SQLINCORROUT INCORROUT
                             DB2INCORR/K ERQUALP002 DB2PARALL/K
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM36512
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM36512:

    See PM36512 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM36512 corrects a problem of ABEND0C7 in DSNXRTIM:5400,
    ABEND04E RC00E70005 in DNXORLI P002, ABEND04E RC00C90101
    in DSNIBNRF:5007 when running with parallelism or
    incorrect out when doing a SELECT with multiple outer joins.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM21910:

    See PM21910 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM21910 corrects a problem of INCORROUT on a SELECT statement
    with outer join.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.


------ COVER LETTER FOR PTF UK69785 ------------

PROBLEM DESCRIPTION(S):
  PM40501 -
    ****************************************************************
    * USERS AFFECTED: All users of IFI commands on DB2 for z/OS   *
    *                 V9 and V10                                  *
    ****************************************************************
    * PROBLEM DESCRIPTION: Commands that are eligible to          *
    *                      run asynchronously run                 *
    *                      synchronously if issued via            *
    *                      the BATCH interface. These             *
    *                      same commands run asynchronously       *
    *                      when issued via the IFI interface.     *
```

```
*                        IFI applications would like to        *
*                        have an option to run                 *
*                        asynchronous-eligible commands        *
*                        synchronously.                        *
****************************************************************
* RECOMMENDATION:                                              *
****************************************************************
   An enhancement to the IFI interface is required to
   allow for asynchronous-eligible commands to run
   synchronously.
   A new flag IFCASYNC is introduced in the IFCA. IFI applications
   setting this bit for IFI COMMAND requests will see
   asynchronous-eligible commands run synchronously. The commands
   affected are:

   -STOP DATABASE
   -SET LOG
   -ALTER BUFFERPOOL
   -SET SYSPARM

   Setting this bit for synchronous only commands will have no
   effect on the command execution.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM40501
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
   AO:
    When the DISPLAY DATABASE, START DATABASE, or the STOP DATABASE
    command is specified with a range in the DATABASE or SPACENAM
    parameters, it is possible the range will appear to be invalid
    regardless of the order in which the range is specified.

    This happens when one or more of the characters in the range
    are being compared between a letter and a number
    (ie DBXA:DBX1, 'A' is being compared to '1').

    For example before applying this PTF the command -DISPLAY
    DATABASE(DBXA:DBX1) will produce the following output:
      DSNT365I  =    NO DATABASES FOUND
      DSN9022I  = DSNTDDIS 'DISPLAY DATABASE' NORMAL

    Switching the order of the range parameters does not rectify
    the problem.  The -DISPLAY DATABASE(DBX1:DBXA) command will
    produce the following output:
      DSNT307I  = INVALID RANGE SPECIFICATION -  DBX1 IS
                  GREATER THAN DBXA
      DSN9022I  = DSNTDDIS 'DISPLAY DATABASE' NORMAL

    Similar outputs can be seen with the START and STOP versions
    of the command as well before applying this PTF.

    After this PTF is applied the -DISPLAY DATABASE(DBXA:DBX1),
    -START DATABASE(DBXA:DBX1), and -STOP DATABASE(DBXA:DBX1)
    commands will still produce the same output as before:
      DSNT365I  =    NO DATABASES FOUND
```

```
    DSN9022I  = DSNTDDIS 'DISPLAY DATABASE' NORMAL
```

However, switching the range parameters after applying this
PTF will produce a different output. -DISPLAY
DATABASE(DBX1:DBXA) will succeed in executing and output
the databases in the range specified. Similarly the START
and STOP versions of this command will also successfully
execute.

In Version 7 and Version 8 CM, the correct order of the range
parameter is 'DBXA:DBX1'. The reason for this is because in
EBCDIC 'DBXA' is less than 'DBX1' and in Version 7 and Version
8 CM the CATALOG is in EBCDIC. However, in Version 8 NFM
and on, the CATALOG was converted to UNICODE and 'DBXA' is no
longer less than 'DBX1'. So the order needs to be switched to
'DBX1:DBXA' in order for the range to make sense.

Another ramification of switching to UNICODE is that the
qualified objects may also differ from before. For example
let's say we had the following objects in our system DBXA,
DBXB, DBX1, and DBX2. In EBCDIC the range 'DBXA:DBX1' would
cover DBXA, DBXB and DBX1. In UNICODE the range 'DBX1:DBXA'
would cover DBX1, DBX2, and DBXA. Although changing the order
of the range parameters would allow the command to successfully
execute, the objects it executed on can be different.

When applying this PTF special attention must be used on the
following:
   1. Database Commands with range specified in the DATABASE or
      SPACENAM parameters may affect different objects
      when the order of the range is switched.
   2. Database Commands with range specified in the DATABASE or
      SPACENAM parameters that used to break before may work
      after applying this PTF.
.

------ COVER LETTER FOR PTF UK69817 ------------

PROBLEM DESCRIPTION(S):
  PM27940 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
    *   users of REPAIR VERSIONS TABLESPACE.   *
    ****
    * PROBLEM DESCRIPTION: REPAIR VERSIONS TABLESPACE enhancement. *
    *   *
    *   Received ABENDS0C4 RC00000038 at   *
    *   DSNIVGET+0514 during REPAIR VERSIONS   *
    *   TABLESPACE of an XML or LOB table   *
    *   space.   *
    ****
    * RECOMMENDATION: Apply corrective PTF when available   *
    ****
    REPAIR VERSIONS TABLESPACE enhancement to help customers who use
    DSN1COPY to migrate table space that had not been REORGed but
```

had at least one INSERT or UPDATE operation after the ALTER.

Received ABEND0C4 RC38 at DSNIVGET+'0514'x during REPAIR
VERSIONS TABLESPACE of an XML or LOB table space because REPAIR
VERSIONS should not have allowed XML or LOB table space to be
processed.
Prior to this enhancement, user must REORG the table space or
perform at least one INSERT or UPDATE operation before using
DSN1COPY to move the data. For partitioned table space, this
operation must be done on all partitions.

With this enhancement, REPAIR VERSIONS can be used as long as
one UPDATE or INSERT had been performed after the first
version changing ALTER.

Without the fix for this APAR, trying to access the data in
the target system will result in an unpredictable behavior.
Some of the possible failures could be INCORROUT,
ABEND04E RC00C90101 DSNIRFNX ERQUAL:536A, ABEND04E RC00E70005
DSNXEFDA M500.

REPAIR VERSIONS TABLESPACE code is changed to issue DSNU068I
when the table space is an XML or LOB table space. RC=8

Additional keywords; DSNU068I ERQUAL536A PIC38

Note:
o If the table being copied has index, rebuild the index after
  REPAIR VERSIONS TABLESPACE is done.

o Even with this enhancement, there will be cases where REPAIR
  VERSIONS TABLESPABE can not continue because it does not have
  all the needed information. For example, if not all
  partitions are REORGed after an ALTER TABLE and no INSERT or
  UPDATE had been performed.

REPAIR VERSIONS TABLESPACE will issue the following message if
there are version zero rows without a version zero system page
and will end with RC8.

DSNU694I
csect-name REPAIR VERSIONS CANNOT CONTINUE, NOT ENOUGH
           INFORMATION

Explanation
The REPAIR utility attempted to repair a version, but did not
have enough information to update the target version. Either the
utility is unable to find a V0 OBDREC in the system page or
because there is no system page.

csect-name
The name of the control section that issued the message

System action
The utility operation is terminated. The target version is not
changed.

```
    User response
    Ensure to do at least one INSERT or UPDATE on one of the
    the partition or REORG all the partitions before moving the
    data using DSN1COPY.

    Severity
    8 (error)
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM27940
SPECIAL CONDITIONS:
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             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    A DSNV508I DBM1 31-bit private storage constraint message
    might be written at a lower storage allocation threshold with
    this APAR. The message is an indicator that DBM1 31-bit
    private storage is becoming a constrained resource.

    The message has also been augmented to include
    the DBM1 region size, the amount of remaining
    available storage, and the cushion size in megabytes (M).

    The DSNV508I message is defined as follows:

    DSNV508I
    DSNVMON - DB2 DBM1 BELOW THE BAR STORAGE warning, notification
                 sysconsume% CONSUMED
                 db2consume% CONSUMED BY DB2
                 stgavailM AVAILABLE OUT OF REGION SIZE regsizeM
                 WITH A cushsizeM STORAGE CUSHION

    Explanation
    This message is issued when the DBM1 address space is consuming
    a large mount of the available 31-bit, below-the-bar storage.

    System action
    Processing continues.

    Operator response
    Reduce the workload on the system.
  DOCUMENTATION:
    The fix for APAR PM27940 adds a new message to DB2 Messages
    book:

    DSNU694I
    csect-name REPAIR VERSIONS CANNOT CONTINUE, NOT ENOUGH
               INFORMATION

    Explanation
    The REPAIR utility attempted to repair a version, but did not
    have enough information to update the target version. Either the
    utility is unable to find a V0 OBDREC in the system page or
    because there is no system page.

    csect-name
```

The name of the control section that issued the message

System action
The utility operation is terminated. The target version is not
changed.

User response
Ensure to do at least one INSERT or UPDATE on one of the
the partition or REORG all the partitions before moving the
data using DSN1COPY.

Severity
8 (error)
.

------ COVER LETTER FOR PTF UK69952 ------------

PROBLEM DESCRIPTION(S):
  PM39997 -
    ****
    * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of REXX *
    *   Stored Procedures.   *
    ****
    * PROBLEM DESCRIPTION: 1. When a REXX Stored Procedure is   *
    *   defined with a LOB OUT or a LOB INOUT   *
    *   parameter, DB2 will incorrectly issue   *
    *   an SQLCODE -450 or an SQLCODE -430 on   *
    *   the CALL statement when the REXX stored *
    *   procedure is called.   *
    *   *
    *   2. When a REXX Stored Procedure is   *
    *   defined with PARAMETER STYLE GENERAL   *
    *   WITH NULLS, DB2 passes input parameters *
    *   incorrectly to the REXX program.   *
    *   *
    *   3. When a REXX Stored Procedure   *
    *   returns no value, an incorrect   *
    *   assignment is made any OUT or INOUT   *
    *   parameter.   *
    ****
    * RECOMMENDATION: *
    ****
    1. When a REXX Stored Procedure is defined with a LOB OUT or
        a LOB INOUT parameter, DB2 will incorrectly issue an
        SQLCODE -450 or an SQLCODE -430 on the CALL statement when
        the REXX stored procedure is called.

    2. When a REXX Stored Procedure is defined with PARAMETER STYLE
        GENERAL WITH NULLS, DB2 passes input parameters incorrectly
        to the REXX program.

    3. When a REXX Stored Procedure returns no value, an incorrect
        assignment is made any OUT or INOUT parameter.

    The following examples illustrate the problems above.

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1a. DB2 incorrectly issues an SQLCODE -450.

```
  CREATE PROCEDURE SPR4KL( IN S INT, OUT CL CLOB(4000) )
     LANGUAGE REXX EXTERNAL NAME SPR4KL
     PARAMETER STYLE GENERAL
     NO SQL NO COLLID PARAMETER CCSID EBCDIC
     WLM ENVIRONMENT WLMENVR;
```

When REXX Stored Procedure SPR4KL defined with a CLOB(4000)
output parameter is called from an application, DB2 will
incorrectly issue an SQLCODE -450. SQLCODE -450 is issued in
cases where the defined length of the LOB OUT parameter is
smaller than 32K.

Please note: DB2 will also issue -450 when the CLOB(4000)
              parameter is defined as an INOUT parameter.

1b. DB2 incorrectly issues an SQLCODE -430.

```
  CREATE PROCEDURE SPR2ML( IN S INT, OUT CL CLOB(2M) )
     LANGUAGE REXX EXTERNAL NAME SPR2ML
     PARAMETER STYLE GENERAL
     NO SQL NO COLLID PARAMETER CCSID EBCDIC
     WLM ENVIRONMENT WLMENVR;
```

When REXX Stored Procedure SPR2ML defined with a CLOB(2M)
output parameter is called from an application, DB2 will
incorrectly issue an SQLCODE -430. SQLCODE -430 is issued in
cases where the defined length of the LOB OUT parameter is
greater than 32K.

Please note: DB2 will also issue -430 when the CLOB(2M)
              parameter is defined as an INOUT parameter.

2. DB2 passes input parameters incorrectly to a REXX Stored
    Procedure defined with PARAMETER STYLE GENERAL WITH NULLS.

```
  CREATE PROCEDURE SPR4KN( IN S INT, INOUT VC VARCHAR(4000))
     LANGUAGE REXX EXTERNAL NAME SPR4KN
     PARAMETER STYLE GENERAL WITH NULLS
     NO SQL NO COLLID PARAMETER CCSID EBCDIC
     WLM ENVIRONMENT WLMENVR;
```

When REXX Stored Procedure SPR4KN, defined with PARAMETER STYLE
GENERAL WITH NULLS, is called from an application, DB2
incorrectly passes an extra input parameter to the REXX
program arguments.

The following query will help identify any existing REXX Stored
Procedures on your system which could be impacted after applying
this APAR.

```
SELECT       -- SPECIAL CASE OF GEN W/NULL AND OUT PARAM
  R.EXTERNAL_NAME                   AS "INSPECT PROGRAM"
, R.SCHEMA CONCAT '.' CONCAT R.NAME  AS "FOR REXX SP"
```

```
              , R.PARM_COUNT + 1                     AS "WRONG ARG()"
              , R.PARM_COUNT                         AS "EXTRA PARM"
              FROM SYSIBM.SYSROUTINES R
                  , SYSIBM.SYSPARMS    P
              WHERE R.LANGUAGE        = 'REXX'
                AND R.SCHEMA          = P.SCHEMA
                AND R.SPECIFICNAME    = P.SPECIFICNAME
                AND R.PARM_COUNT      = P.ORDINAL   -- LAST PARM
                AND R.PARAMETER_STYLE = 'N'
                AND P.ROWTYPE         = 'O'         -- OUT PARM
              UNION
              SELECT       -- OTHER CASES OF GEN W/N AND SOME PARMS
                R.EXTERNAL_NAME                      AS "INSPECT PROGRAM"
              , R.SCHEMA CONCAT '.' CONCAT R.NAME  AS "FOR REXX SP"
              , R.PARM_COUNT + 2                     AS "WRONG ARG()"
              , R.PARM_COUNT + 2                     AS "EXTRA PARM"
               FROM SYSIBM.SYSROUTINES R
                   , SYSIBM.SYSPARMS     P
              WHERE R.LANGUAGE        = 'REXX'
                AND R.SCHEMA          = P.SCHEMA
                AND R.SPECIFICNAME    = P.SPECIFICNAME
                AND R.PARM_COUNT      = P.ORDINAL   -- LAST PARM
                AND R.PARAMETER_STYLE = 'N'
                AND P.ROWTYPE        <> 'O'         -- IN OR INOUT PARM
              UNION
              SELECT       -- SPECIAL CASE OF GEN W/N AND NO PARMS
                R.EXTERNAL_NAME                      AS "INSPECT PROGRAM"
              , R.SCHEMA CONCAT '.' CONCAT R.NAME  AS "FOR REXX SP"
              , 2                                    AS "WRONG ARG()"
              , 2                                    AS "EXTRA PARM"
               FROM SYSIBM.SYSROUTINES R
              WHERE R.LANGUAGE        = 'REXX'
                AND R.PARAMETER_STYLE = 'N'
                AND R.PARM_COUNT      = 0            -- NO PARM
              ;
```

To demonstrate the query results assume the following
REXX Stored Procedures are defined in the DB2 system:

```
 CREATE PROCEDURE SYSADM.SPR( )
    LANGUAGE REXX   EXTERNAL NAME SPR
    PARAMETER STYLE GENERAL WITH NULLS
    NO SQL  NO COLLID  WLM ENVIRONMENT WLMENVR;

 CREATE PROCEDURE SYSADM.SPRI(IN INT)
    LANGUAGE REXX   EXTERNAL NAME SPRI
    PARAMETER STYLE GENERAL WITH NULLS
    NO SQL  NO COLLID  WLM ENVIRONMENT WLMENVR;

 CREATE PROCEDURE SYSADM.SPRO(OUT INT)
    LANGUAGE REXX EXTERNAL NAME SPRO
    PARAMETER STYLE GENERAL WITH NULLS
    NO SQL NO COLLID  WLM ENVIRONMENT WLMENVR;

 CREATE PROCEDURE SYSADM.SPRB(INOUT INT)
    LANGUAGE REXX   EXTERNAL NAME SPRB
```

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```
        PARAMETER STYLE GENERAL WITH NULLS
        NO SQL  NO COLLID  WLM ENVIRONMENT WLMENVR;


 CREATE PROCEDURE SYSADM.SPRII(IN INT, IN INT)
    LANGUAGE REXX  EXTERNAL NAME SPRII
    PARAMETER STYLE GENERAL WITH NULLS
    NO SQL  NO COLLID  WLM ENVIRONMENT WLMENVR;


 CREATE PROCEDURE SYSADM.SPRIO(IN INT, OUT INT)
    LANGUAGE REXX  EXTERNAL NAME SPRIO
    PARAMETER STYLE GENERAL WITH NULLS
    NO SQL  NO COLLID  WLM ENVIRONMENT WLMENVR;


 CREATE PROCEDURE SYSADM.SPRIB(IN INT, INOUT INT)
    LANGUAGE REXX  EXTERNAL NAME SPRIB
    PARAMETER STYLE GENERAL WITH NULLS
    NO SQL  NO COLLID  WLM ENVIRONMENT WLMENVR;
```

After executing the query above, the result table identifies
REXX stored procedure definitions whose REXX program could
be expected:

```
INSPECT PROGRAM      FOR REXX SP    WRONG ARG()    EXTRA PARM
------------------------------------------------------------
SPR                  SYSADM.SPR          2              2
SPRO                 SYSADM.SPRO         2              1
SPRI                 SYSADM.SPRI         3              3
SPRB                 SYSADM.SPRB         3              3
SPRIO                SYSADM.SPRIO        3              2
SPRII                SYSADM.SPRII        4              4
SPRIB                SYSADM.SPRIB        4              4
```

The column labeled "WRONG ARG()" lists the incorrect value the
REXX stored procedure program receives from the REXX ARG()
function when running without this APAR applied. After
applying this APAR, the correct value of the REXX ARG()
function will be one less than the value shown in the result
table. The REXX ARG() function provides the argument index of
the NULL indicator passed to a REXX stored procedure defined
with PARAMETER STYLE GENERAL WITH NULLS.

The column labeled "EXTRA PARM" lists the argument index of an
extra parameter which DB2 incorrectly passes to the REXX
stored procedure program. This extra parameter is passed with
no value.

Inspect any REXX stored procedure programs which the query
identifies on your system. Look for any use of the REXX ARG()
function, and also the receipt of input arguments at their
correct index position. The REXX programs may require coding
changes to correctly locate and receive input arguments passed
by DB2.

3. An incorrect OUT or INOUT parameter value is returned to
     the caller by DB2 when a REXX Stored Procedure program
     returns no value.

```
CREATE PROCEDURE SPR4K( IN S INT, OUT VC VARCHAR(4000))
   LANGUAGE REXX EXTERNAL NAME SPR4K
   PARAMETER STYLE GENERAL
   NO SQL NO COLLID PARAMETER CCSID EBCDIC
   WLM ENVIRONMENT WLMENVR;
```

When the REXX Stored Procedure program SPR4K executes the REXX
instruction
```
     RETURN;
```
the calling application receives an incorrect VARCHAR value
containing 4000 ebcdic space characters. In this case where the
REXX Stored Procedure is defined with PARAMETER STYLE GENERAL,
the correct value of the output parameter is a VARCHAR with
length of zero.

```
CREATE PROCEDURE SPR4KN( IN S INT, OUT VC VARCHAR(4000))
   LANGUAGE REXX EXTERNAL NAME SPR4KN
   PARAMETER STYLE GENERAL WITH NULLS
   NO SQL NO COLLID PARAMETER CCSID EBCDIC
   WLM ENVIRONMENT WLMENVR;
```

When the REXX Stored Procedure program SPR4KN executes the REXX
instruction
```
     RETURN;
```
the calling application receives an incorrect VARCHAR value
containing 4000 ebcdic space characters. In this case where the
REXX Stored Procedure is defined with PARAMETER STYLE GENERAL
WITH NULLS, the correct value of the output parameter is NULL.
DB2 code has been modified to correct the REXX Stored Procedure
issues mentioned above.

   Additional Keywords: INCORROUT DB2INCORR/K SQLINCORR SQLSP
                        SQLINCORROUT SQLCODE430 SQLCODE450
                        SQLSTOREDPROC
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM39997
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM39997:

    See PM39997 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM39997 corrects the follow problems,

    1. When a REXX Stored Procedure is defined with a LOB OUT or
        a LOB INOUT parameter, DB2 will incorrectly issue an
        SQLCODE -450 or an SQLCODE -430 on the CALL statement when
        the REXX stored procedure is called.

    2. When a REXX Stored Procedure is defined with PARAMETER STYLE
        GENERAL WITH NULLS, DB2 passes input parameters incorrectly
        to the REXX program.
```

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3. When a REXX Stored Procedure returns no value, an incorrect
   assignment is made any OUT or INOUT parameter.

For problem 2, please refer to the detail information in PTF
cover letter to identify if any existing REXX Stored Procedure
programs on your system could be impacted after applying this
APAR.

To make this fix effective for a static application, it must be
rebound after application of this PTF.  Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.


------ COVER LETTER FOR PTF UK69996 ------------

PROBLEM DESCRIPTION(S):
  PM38688 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS users whose query        *
    *                 contains EXCEPT and UNION                    *
    *                                                              *
    ****************************************************************
    * PROBLEM DESCRIPTION: Incorrect output may occur when        *
    *                 a query contains EXCEPT and UNION            *
    *                                                              *
    *                                                              *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    Incorrect output may occur when a query contains EXCEPT and
    UNION

    incorrect null value will be returned only when below sql
    second union leg has null value and EXCEPT first leg is not
    null column.


    The following example helps to illustrate a failing case.

     CREATE TABLE T1 (T1C1NOTNULL CHAR(1) NOT NULL);
     CREATE TABLE T2 (T2C1NOTNULL CHAR(1) NOT NULL);
     CREATE TABLE T3 (T3C1NULL    CHAR(1) );

     CREATE INDEX I1 ON T1(T1C1NOTNULL );
     CREATE INDEX I2 ON T2(T2C1NOTNULL );
     CREATE INDEX I3 ON T3(T3C1NULL);

     COMMIT;
     INSERT INTO T1 VALUES('A');
     INSERT INTO T1 VALUES('B');
     INSERT INTO T1 VALUES('C');
     INSERT INTO T1 VALUES('D');

```
        INSERT INTO T2 VALUES('A');
        INSERT INTO T2 VALUES('B');
        INSERT INTO T3 VALUES('A');
        INSERT INTO T3 VALUES('B');
        INSERT INTO T3 VALUES(NULL);
        INSERT INTO T3 VALUES(NULL);


        The below example sql result should be not null


        SELECT T1C1NOTNULL  FROM T1
        EXCEPT ALL
        (SELECT T2C1NOTNULL  FROM T2 UNION SELECT T3C1NULL FROM T3);



        incorrect result:
                    +---+
                    |   |
                    +---+
                 1_| ? |
                 2_| ? |
                    +---+
        correct result:




                    +---+
                    |   |
                    +---+
                 1_| C |
                 2_| D |
                    +---+


         please note: INTERSECT with a UNION subquery also has same
                      problem



      The bindtime code in DB2 is modified to correct
      incorrect output problem

       Additional keyword:
                   SQLINTERSECT   SQLINTERSECTALL
                   SQLEXCEPT  SQLEXCEPTALL   SQLUNION
                   SQLINCORR  INCORROUT SQLINCORROUT DB2INCORR/K
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM38688
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM38688:

    See PM38688 APAR/PTF text for additional information about
    why a REBIND is necessary.
```

PM38688 corrects a problem of incorrect out when query contains
EXCEPT and UNION

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK70006 ------------

PROBLEM DESCRIPTION(S):
  PM42397 -
    ****
    * USERS AFFECTED: All Distributed Data Facility (DDF) users. *
    *   Specifically where a DB2 for z/OS system is *
    *   configured to access remote servers.   *
    ****
    * PROBLEM DESCRIPTION: After applying APAR PM34006, PTFs   *
    *   UK67901/UK67902, attempts to access a *
    *   remote server (such as DB2/LUW) may   *
    *   fail with SQLCODE -300082 CONNECTION   *
    *   FAILED FOR SECURITY REASON 17   *
    *   (UNSUPPORTED FUNCTION).   *
    ****
    * RECOMMENDATION: *
    ****
    After applying APAR PM34006, PTFs UK67901/UK67902, access to a
    remote server, such as DB2/LUW, may fail with SQLCODE -30082,
    CONNECTION FAILED FOR SECURITY REASON 17 (UNSUPPORTED FUNCTION).
    This problem may occur when a remote DB2/LUW server database
    manager configuration specifies AUTHENTICATION = CLIENT and
    TRUST_ALLCLNTS = DRDAONLY. Setting the TRUST_ALLCLNTS to
    "DRDAONLY" allows clients, like DB2 for z/OS, to be trusted to
    perform client-side authentication. However, in order for
    the DB2/LUW server to determine which client is allowed to
    access the server (using client-side authentication), the DRDA
    SERVER CLASS NAME value is used. With APAR PM34006 applied,
    the DRDA SERVER CLASS NAME was changed to contain the string
    'QDB2 for DB2 UDB for z/OS' and DB2/LUW has no toleration for
    this extended form. As a result, the DB2/LUW server was unable
    to identify the DB2 for z/OS client (in order to allow access
    to the server without a password) and thus rejected the
    connection authentication security mechanism.

    DB2 has been changed to send the DRDA SERVER CLASS NAME value
    'QDB2', as was done prior to APAR PM34006, when creating an
    outbound connections to remote servers.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM42397
SPECIAL CONDITIONS:
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  ACTION:

```
    *** Action for PM13579 ***
    This APAR fix corrects the following problems observed at a
    DB2 for z/OS server:
      . ABEND04E-00D30014 DSNLTEXC:0002
        OR
      . Message DSNL030I with reason '00F30085'X and
        ABEND04E-00D30022
    To correct these server related problems, this APAR fix must be
    applied to the DB2 requester system.
    Please see PTF cover letter for more information.
.


------ COVER LETTER FOR PTF UK70026 ------------

PROBLEM DESCRIPTION(S):
  PM40757 -
    ****************************************************************
    * USERS AFFECTED: All Distributed Data Facility (DDF) users.  *
    *                 Specifically those with plans or packages   *
    *                 bound with DBPROTOCOL(PRIVATE).             *
    ****************************************************************
    * PROBLEM DESCRIPTION: Enhancements to the Private Protocol   *
    *                 Trace Analysis Program, DSN1PPTP            *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    One of the recommended steps in migrating away from using
    private protocol was to start a IFCID157 trace running on a
    requesting DB2.  The IFCID157 trace is produced every time an
    application attempts a private protocol request to another
    system.  The trace could be started on many subsystems
    running on the same LPAR which would mean that the trace
    records for all subsystems could be recorded in the SMF
    dataset.  Also, the SMF data from many systems in a sysplex
    can be merged into a single SMF dataset.  As such, if DSN1PPTP,
    the private protocol trace analysis program, were to process
    such an SMF dataset, it would not filter the trace records
    produced from a particular subsystem.  This could then mean
    that the private protocol information table of a subsystem
    could receive rows not intended for loading into the table.
    DSN1PPTP, the private protocol trace analysis program, has
    been enhanced to accept an optional input parameter on its
    job step which is a valid subsystem id (not a group attach
    id).  That id is then used by DSN1PPTP to process only those
    IFCID157 trace records produced by the specified subsystem.
    An extra status message will be written to the SYSPRINT
    output destination of the job step indicating which
    subsystem's IFCID157 trace data is being analyzed.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM40757
SPECIAL CONDITIONS:
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  ACTION:
    ***Action for PM40757:
```

This PTF changes the install job, DSNTIJPT. The program
which is run in job step, DSN1PPTP, now accepts an optional
parameter which is then used by DSN1PPTP to have it only
process those IFCID157 trace records generated by the
subsystem whose id matches the input parameter.

For those customers who have customized copies of DSNTIJPT
and want to use the enhancment provided by this PTF, update
the customized copy by adding
    ,PARM=''!DSN!'
where !DSN! is the DB2 subsystem name, after the COND=(4,LT)
parameter in job step DSN1PPTP.

Alternatively, the entire contents of the customized job can be
refreshed by the following steps:
- edit your customized copy DSNTIJPT
- delete all lines with the exception of the existing
  JOB statement
- copy in the DSNTIJPT member from the prefix.SDSNSAMP library
- follow the directions in the job prolog to customize for
  your DB2 and installation.
.

------ COVER LETTER FOR PTF UK70102 ------------

PROBLEM DESCRIPTION(S):
  PM39113 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS users of DESCRIBE   *
    *   are affected.   *
    ****
    * PROBLEM DESCRIPTION: DESCRIBE may issue an unexpected   *
    *   SQLCODE -330 when a table contains a   *
    *   column or qualified user-defined type *
    *   (UDT) name that expands to greater   *
    *   than 30 bytes of UTF-8.   *
    *   *
    *   PM39113 implements PM20766 (PTF   *
    *   UK67724) which was delivered for DB2 8 *
    *   only.   *
    ****
    * RECOMMENDATION: *
    ****
    DESCRIBE may issue an unexpected SQLCODE -330 or other
    unpredictable results when a table contains a column or
    qualified user-defined type (UDT) name that expands to greater
    than 30 bytes of UTF-8 due to improper truncation. The column
    and qualified UDT names must be truncated due to the 30-byte
    column and UDT name limitation in the SQLDA structure.
    DESCRIBE has been fixed to truncate correctly. Additional
    fixes for DESCRIBE and describe processing associated with
    PREPARE are also included.

    ADDITIONAL KEYWORDS:

                            522

```
      SQLDESCRIBE
      SQLCODE330
      INCORROUT
      SQLUDT
      JCCT2ZOS


      ++HOLD COMMENT FOR RELEASE 910, TYPE ACT:
      When using IBM DB2 Universal Driver for z/OS (aka IBM JCC
      Type 2 or T2 for z/OS), the applicable JDBC driver PTFs for
      the APARs specified below must be applied before the PTF for
      PM39113 is applied.

      PM36832 (JCC3.62.73)
      PM36838 (JCC4.12.72)
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM39113
SPECIAL CONDITIONS:
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   ACTION:
      When using IBM DB2 Universal Driver for z/OS (aka IBM JCC
      Type 2 or T2 for z/OS), the applicable JDBC driver PTFs for
      the APARs specified below must be applied before the PTF for
      PM39113 is applied.

      PM36832 (JCC3.62.73)
      PM36838 (JCC4.12.72)
.


      ------ COVER LETTER FOR PTF UK70105 ------------

PROBLEM DESCRIPTION(S):
   PM38035 -
      ****************************************************************
      * USERS AFFECTED: All DB2 for z/OS V8, All DB2 9 for z/OS and  *
      *                 all DB2 10 for z/OS users of queries that    *
      *                 reference a Common table expression.         *
      ****************************************************************
      * PROBLEM DESCRIPTION: An ABEND04E 00C90101 at location        *
      *                 DSNGDVRT:5005 will occur when all of         *
      *                 the following conditions are satisfied:      *
      *                                                              *
      *                 1,An Common Table Expression(CTE) was        *
      *                    used in the query.                        *
      *                                                              *
      *                 2,There is a CAST to transform the           *
      *                    string data to LOB data in CTE            *
      *                    select list and the result length         *
      *                    of CAST is great than the                 *
      *                    limitation.                               *
      ****************************************************************
      * RECOMMENDATION:                                              *
      ****************************************************************
      An ABEND04E 00C90101 at location DSNGDVRT:5005 will occur when
      all of the following conditions are satisfied:
```

1,An Common Table Expression(CTE) is used in the query.

       2,There is an CAST to transform the string data to LOB data in
         CTE select list and the result length of CAST is great than
         limitation.

       Example:
       ==

       WITH RPL (RESULT) AS (
         SELECT 'A' FROM SYSIBM.SYSDUMMY1
         UNION ALL
         SELECT CAST(CONCAT(CAST('TEST ' AS VARCHAR(30000)),
                            CAST(' TEST' AS VARCHAR(10000))
) AS CLOB(1G)
)
         FROM SYSIBM.SYSDUMMY1)
       SELECT RESULT FROM RPL;

       DB2 did not set the correct limitation for the output data
       length, which caused the ABEND.
       DB2 now has set correctly limitation length for output data.

       Additional keyword: SQLCTE CLOB SQLCAST.

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM38035
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM18271:

    See PM18271 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM18271 corrects a problem of incorrect datetime format when a
    query satisfies the following conditions:
     1. it is submitted from client in a distributed environment;
     2. it contains set operator, such as UNION ALL, UNION,
        INTERSECT ALL, INTERSECT, EXCEPT ALL, EXCEPT in its
        top most query block, and contains datetime type column
        in the select list of set operator branch;
     3. it contains table expression which references tables of
        different ccsid, and this table expression is merged into
        the top most query block.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

```
       ------ COVER LETTER FOR PTF UK70226 ------------


PROBLEM DESCRIPTION(S):
  PM38200 -
      ****************************************************************
      *  USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS     *
      *                  users of the following stored procedures:  *
      *                     o SYSPROC.ADMIN_UTL_SCHEDULE            *
      *                     o SYSPROC.ADMIN_UTL_SORT                *
      ****************************************************************
      *  PROBLEM DESCRIPTION: (1) SYSPROC.ADMIN_UTL_SCHEDULE:        *
      *                           (a) Concurrent execution of REORG  *
      *                               TABLESPACE SHRLEVEL CHANGE PART *
      *                               integer or REORG TABLESPACE    *
      *                               SHRLEVEL REFERENCE PART        *
      *                               integer on the same table     *
      *                               space with NPIs is causing     *
      *                               REORG TABLESPACE to terminate  *
      *                               with this error:              *
      *                                 DSNU180I DSNUGUCC -          *
      *                                 UTILITY IS NOT COMPATIBLE    *
      *                                 WITH THE REORG TABLESPACE    *
      *                                 UTILITY                      *
      *                           (b) Storage overflow caused by    *
      *                               utility statements exceeding   *
      *                               the maximum size of 32704,     *
      *                               resulting in abnormal         *
      *                               termination of the stored     *
      *                               procedure with this error:    *
      *                                 SYSTEM COMPLETION CODE=0C4   *
      *                                 REASON CODE=00000010         *
      *                                 ACTIVE LOAD MODULE NAME=     *
      *                                 CEEPLPKA                     *
      *                           (c) Object names with special     *
      *                               characters are not enclosed in *
      *                               quotation marks when they     *
      *                               are substituted for the       *
      *                               placeholder &OBJECT. in the    *
      *                               utility statement, causing     *
      *                               the utility execution to      *
      *                               fail with error message      *
      *                               DSNU049I csect-name INVALID   *
      *                               OPERAND ooooooooo FOR KEYWORD  *
      *                               kkkkkkkk                       *
      *                       (2) SYSPROC.ADMIN_UTL_SORT:           *
      *                           (a) SQLCODE -802 encountered      *
      *                               when summing the CARD and     *
      *                               SPACE values from the DB2     *
      *                               catalog tables for very       *
      *                               large partitioned table spaces *
      *                               and indexes, where the result  *
      *                               of SUM(CARD) or SUM(SPACE)    *
      *                               exceeds the maximum INTEGER    *
      *                               value allowed               *
```

```
*                          (b) Unqualified object names,      *
*                              instead of fully qualified     *
*                              object names, are used when    *
*                              checking for exclusive         *
*                              objects, resulting in objects  *
*                              incorrectly marked as exclusive *
*                          (c) When running RUNSTATS in       *
*                              parallel, exclusive objects    *
*                              are executed sequentially      *
*                              after all parallel tasks are   *
*                              processed, instead of in       *
*                              parallel                       *
*                          (d) New RTS-related objects        *
*                              introduced in V9 are not       *
*                              identified as exclusive objects *
*****************************************************************
* RECOMMENDATION: APPLY PTF                                   *
*****************************************************************
```

(1) SYSPROC.ADMIN_UTL_SCHEDULE:
    (a) Before executing a REORG TABLESPACE SHRLEVEL CHANGE
        PART integer or REORG TABLESPACE SHRLEVEL REFERENCE
        PART integer on a table space with NPIs, a check is
        not made to make sure that there is no running thread
        executing REORG TABLESPACE SHRLEVEL CHANGE PART integer
        or REORG TABLESPACE SHRLEVEL REFERENCE PART integer on
        the same table space. This allowed concurrent execution
        of REORG TABLESPACE SHRLEVEL CHANGE PART integer or
        REORG TABLESPACE SHRLEVEL REFERENCE PART integer on
        the same table space, causing the second REORG
        TABLESPACE utility execution to fail.
    (b) The cumulative length of a utility statement is not
        checked as each piece of the statement is read from
        the input table SYSIBM.UTILITY_STMT and concatenated
        in a read buffer. Neither is the length of a utility
        statement checked as the placeholders in the utility
        statement are replaced in a utility buffer. Therefore,
        if the concatenated utility statement exceeds the
        size of the read buffer, or if the expanded utility
        statement exceeds the size of the utility buffer,
        storage overlay could occur, causing the stored
        procedure to terminate abnormally with 0C4.
    (c) Object names with special characters are not enclosed
        in quotation marks when they are substituted for the
        placeholder &OBJECT. in the utility statement, causing
        the utility execution to fail with the error message
        DSNU049I csect-name INVALID OPERAND oooooooo FOR
        KEYWORD kkkkkkkk.
(2) SYSPROC.ADMIN_UTL_SORT:
    (a) The CARD and SPACE columns in SYSIBM.SYSTABLEPART
        and SYSIBM.SYSINDEXPART are INTEGERs. For a very
        large partitioned table space or index, the
        SUM(CARD) or SUM(SPACE) result may not fit within
        the range of the data type of the result, which is
        INTEGER, causing the SUM function to return
        SQLCODE -802.
        The value of the CARD column is capped at

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2,147,483,647. For a very large object, the value
in the CARD column may not be accurate anymore.
   (b) Unqualified object names, instead of fully qualified
object names, are used when checking for exclusive
objects, resulting in objects incorrectly marked as
exclusive.
   (c) When running RUNSTATS in parallel, exclusive objects
are executed sequentially after all parallel tasks
are processed, instead of in parallel.
   (d) The following RTS-related objects are not identified as
exclusive objects:
     - DSNDB06.SYSRTSTS
     - SYSIBM.SYSTABLESPACESTATS
     - SYSIBM.SYSINDEXSPACESTATS
     - DSNDB06.DSNRTX01
     - DSNDB06.DSNRTX02
     - DSNDB06.DSNRTX03
     - SYSIBM.DSNRTX01
     - SYSIBM.DSNRTX02
     - SYSIBM.DSNRTX03

(1) SYSPROC.ADMIN_UTL_SCHEDULE is updated to perform the
following:
   (a) Before executing a REORG TABLESPACE SHRLEVEL CHANGE
PART integer or a REORG TABLESPACE SHRLEVEL REFERENCE
PART integer on a table space with NPIs, a check is made
to make sure that there is no running thread that is
executing the utility REORG TABLESPACE SHRLEVEL CHANGE
PART integer or REORG TABLESPACE SHRLEVEL REFERENCE
PART integer on the same table space. If there is a
concurrency problem, the execution of the utility is
postponed.
   (b) The cumulative length of a utility statement is checked
as the pieces of the utility statement are read from
the input table SYSIBM.UTILITY_STMT and concatenated
in the read buffer. Likewise, before replacing a
placeholder in the utility statement, a check is
made to ensure that the length of the utility
statement does not exceed the size of the utility
buffer after the replacement is done. In either case,
if a potential storage overflow is detected, the
stored procedure terminates and returns RETURN_CODE=12
and MSG=DSNA603I with Invalid Reason Code=2 (Invalid
length).
   (c) Enclose every object qualifier and the object name with
double quotes when they are substituted for the
placeholder &OBJECT. in the utility statement.
(2) SYSPROC.ADMIN_UTL_SORT is updated to perform the following:
   (a) Change all references to CARD to CARDF, and all
references to SPACE to DOUBLE(SPACE).
   (b) Use qualified object names when checking for exclusive
objects.
   (c) When running RUNSTATS in parallel, do not mark any
objects as exclusive.
   (d) Identify the following RTS-related DB2 objects as
exclusive objects:
     - DSNDB06.SYSRTSTS

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```
                - SYSIBM.SYSTABLESPACESTATS
                - SYSIBM.SYSINDEXSPACESTATS
                - DSNDB06.DSNRTX01
                - DSNDB06.DSNRTX02
                - DSNDB06.DSNRTX03
                - SYSIBM.DSNRTX01
                - SYSIBM.DSNRTX02
                - SYSIBM.DSNRTX03
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM38200
SPECIAL CONDITIONS:
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  ACTION:
    This PTF modifies the DB2-supplied stored procedures
    SYSPROC.ADMIN_UTL_SCHEDULE and SYSPROC.ADMIN_UTL_SORT to
    o prevent concurrent execution of REORG TABLESPACE SHRLEVEL
      CHANGE PART integer or REORG TABLESPACE SHRLEVEL REFERENCE
      PART integer on the same table space which has NPIs
    o prevent storage overflow when processing a very long
      utility statement
    o enclose the object qualifier and object name in
      the utility statement with quotation marks
    o prevent SQLCODE -802 when summing the CARD and SPACE
      columns in SYSIBM.SYSTABLEPART and SYSIBM.SYSINDEXPART
      for very large partitioned table space or index.
    o use fully qualified object name when checking for
      exclusive objects
    o allow parallel RUNSTATS execution of exclusive objects
    o mark the new RTS-related objects as exclusive objects

    See the PTF cover letter for more information.

    ****************************************************************
    Actions for customers who are already using DB2 V9:
    ****************************************************************
    If you have already installed or migrated to DB2 Version 9 then
    after applying this PTF, you need to take the following action:
    (1) Bind the modified stored procedures
        SYSPROC.ADMIN_UTL_SCHEDULE and SYSPROC.ADMIN_UTL_SORT
        packages

    Procedures for these actions are given below.
    ---------------------------------------------------------------
    (1) Bind the modified stored procedures
        SYSPROC.ADMIN_UTL_SCHEDULE and SYSPROC.ADMIN_UTL_SORT
        packages
        **********************************************************
        * All V9 customers who want to use the stored procedures
        * SYSPROC.ADMIN_UTL_SCHEDULE and ADMIN_UTL_SORT need to
        * perform this step.
        **********************************************************
        Use the following procedure to avoid disrupting your
        existing DB2-supplied stored procedures and databases:
        (a) Create a work copy of your customized DSNTIJSG job
        (b) Remove all job steps except DSNTIAE
```

```
        (c) In job step DSNTIAE:
             - remove all BIND PACKAGE statements under the SYSTSIN
               DD, except for the following:
                 BIND PACKAGE(DSNADM) MEMBER(DSNADMUM) - ...
                 BIND PACKAGE(DSNADM) MEMBER(DSNADMUS) - ...
             - remove all CREATE statements under the SYSIN DD
        (d) Run the modified job to bind the stored procedures
            packages
        (e) When finished, you can delete the work copy created in
            step (1)(a), above.
        ----------------------------------------------------------------
.


------ COVER LETTER FOR PTF UK70430 ------------

PROBLEM DESCRIPTION(S):
  PM43051 -
    ****************************************************************
    * USERS AFFECTED: ALL DB2 users who use REBIND PLAN with the   *
    *                 COLLID option.                               *
    ****************************************************************
    * PROBLEM DESCRIPTION: REBIND PLAN with the COLLID option may  *
    *                      cause an inconsistency between          *
    *                      the SYSENTRIES column in                *
    *                      SYSIBM.SYSPACKAGE table and the actual  *
    *                      number of entries in SYSIBM.SYSPKSYSTEM *
    *                      table.                                  *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    REBIND PLAN with the COLLID option automatically converts DBRMs
    bound with the plan into packages. During such a process, if
    the plan has entries in SYSIBM.SYSPLSYSTEM table or the ENABLE
    option is specified with REBIND PLAN and the plan has more than
    one DBRM bound, DB2 failed to initialize the SYSTEM ENTRY
    counter for each package. This caused the SYSENTRIES column in
    SYSPACKAGE to be inconsistent with the actual number of entries
    in SYSPKSYSTEM table.
    DB2 will now correctly initialize the SYSTEM ENTRY counter
    before converting DBRMs into packages during REBIND PLAN
    with the COLLID option.

    NOTE: if you already experienced this problem before applying
          this fix, then SYSENTRIES column must have an incorrect
          number of entries. See HOLD information to correct them.

    ADDITIONAL KEYWORDS:
    REBIND PLAN COLLID SYSENTRIES SYSPKSYSTEM
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM43051
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM30382 APAR/PTF text in the PTF cover letter for
```

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additional information about why FREE PLAN, then BIND/REBIND
PLAN with COLLID option are necessary.

PM30382 corrects invalid LOCATION information in
SYSIBM.SYSPACKLIST table of a package record which is bound
with a plan.

To make this fix effective for plans already created with
invalid LOCATION data in SYSIBM.SYSPACKLIST table, the plans
need to be freed first, then BIND with DBRM and the remote
packages, and then REBIND with the COLLID option after
application of this PTF.

Review the PTF cover letter to determine which, if any, plans
could be affected by this change.
DB2BIND:
  See PM30274 APAR/PTF text in the PTF cover letter for
  additional information about why REBIND PLAN is necessary.

  PM30274 corrects an unexpected failure of a DBRM when converting
  to a package during REBIND PLAN with the COLLID option.

  To make this fix effective, a REBIND PLAN is required after
  application of this PTF. Review the PTF cover letter to
  determine which, if any, plans could be affected by this
  change.
DB2BIND:
  See PM01821 APAR/PTF text in the PTF cover letter for
  additional information about why FREE PLAN, then BIND/REBIND
  PLAN with COLLID option are necessary.

  PM01821 corrects an invalid value in the VERSION column of
  a package record which is bound with a plan.

  To make this fix effective for plans already created,
  the plans need to be freed first, then BIND with DBRM, and then
  REBIND with the COLLID option after application of this PTF.
  Review the PTF cover letter to determine which, if any, plans
  could be affected by this change.
ACTION:
  Since the problem that occurred could leave incorrect SYSENTRIES
  values in SYSIBM.SYSPACKAGE table, if you discover the number
  in the SYSENTRIES column for a package does not match the number
  of entries in SYSIBM.SYSPKSYSTEM, you will need to manually
  correct the SYSENTRIES column. Please contact IBM Service for
  assistance in correcting those records.
ACTION:
  The following steps are necessary to make the fix effective
  after application of the PTF:
   1. FREE plans which received SQLCODE -805 due to invalid
      LOCATION information in SYSIBM.SYSPACKLIST table.
   2. BIND those plans again with the original DBRM and remote
      packages first.
   3. Then, REBIND those same plans with the COLLID option.

  Alternatively, the following steps can be used to fix the

problem with or without the application of the PTF:
         1. FREE plans which received SQLCODE -805 due to invalid
            LOCATION information in SYSIBM.SYSPACKLIST table.
         2. BIND packages with the DBRMs originally bound with plans.
         3. BIND plan with PACKAGE LIST created in step 2.
     ACTION:
       PM28005 corrects invalid values in COLLID and NAME columns in
       SYSIBM.SYSPACKLIST table for a plan which is being rebound with
       the COLLID option. It also prevents a possible DB2 abend during
       such a process.

       To make this fix effective for existing plans with garbage data
       in COLLID and NAME fields of SYSIBM.SYSPACKLIST table, the
       following actions may be taken after application of this PTF:
         1. FREE the existing plan.
         2. BIND the plan again with MEMBERs and PKLIST.
         3. REBIND the plan with the COLLID option.
       An alternative way to get around this problem with or without
       application of this PTF:
         1. FREE the existing plan.
         2. BIND the DBRM into package.
         3. BIND the plan with package list only.
         Using this alternative method, there is no need to REBIND the
         plan with COLLID option since it does not contain any DBRM
         members.

       Please note REBIND PLAN alone on the affected plans does not
       solve the problem even with the fix applied. Review the PTF
       cover letter to determine which, if any, plans could be affected
       by this change.
     ACTION:
       The following steps are necessary to make the fix effective
       after application of the PTF:
         1. FREE plans which were bound with packages containing
            an invalid VERSION.
         2. BIND those plans again with the original DBRM first.
         3. Then, REBIND those same plans with the COLLID option.

       Alternatively, the following steps can be used to fix the
       problem with or without the application of the PTF:
         1. FREE plans which were bound with packages containing
            an invalid VERSION.
         2. BIND packages with the DBRMs originally bound with plans.
         3. BIND plan with PACKAGE LIST created in step 2.
 .

------ COVER LETTER FOR PTF UK70432 ------------

PROBLEM DESCRIPTION(S):
  PM37956 -
    ****
    * USERS AFFECTED: All DB2 for z/OS V8, DB2 9 for z/OS, and   *
    *   DB2 10 for z/OS utility users   *
    ****
    * PROBLEM DESCRIPTION: New function to trace CPU time usage by *

```
*                       DB2 utilities and to determine how much *
*                       of the utility CPU time is spent in     *
*                       sort processing.                        *
*                                                               *
*                       This APAR also addresses a problem in   *
*                       REORG running with reduced performance  *
*                       in DB2 Sort for z/OS for the index      *
*                       sorts in DB2 V8 and DB2 9 when a single *
*                       data sort is used.                      *
*****************************************************************
* RECOMMENDATION: Apply corrective PTF when available           *
*****************************************************************
```

IFCID 25 in performance class 10 trace is enhanced to provide
information on the CPU time used by the utility at termination
as well as the CPU time spent in sort processing by that
utility. When accounting class 1 trace is active in DB2 then the
time spent on zIIP by the utility will be written to IFCID 25.

If a utility was restarted, then the reported CPU times will
only include the time spent since restart.

For sort programs that return the information to DB2, the time
spent on zIIP within the sort program will be shown in the sort
specific field as well as included in the utility total zIIP
time.

For utilities that are using sort, additional information on the
number of different sort tasks being executed is included in
the trace record as well.

IFCID 25 records written at subtask termination will not
populate the new fields.

Utility and sort CPU time reporting requires z/OS 1.7 to 1.9
with the PTF for OA20758 installed, or z/OS 1.10 or a later
release.

IFCID 25 mapping detail is described in macro DSNDQW00.

When using the DB2 Sort for z/OS product, the REORG utility in
DB2 V8 and DB2 9 would not provide the correct amount of memory
object storage available to the index sort subtasks when
running with a single data sort task. This can cause DB2 Sort
to run with reduced performance on the index sorts.
Code was changed to provide CPU and zIIP time used by the
utility on termination and by all sort subtasks in IFCID 25.
DSNWMSGS will be updated in a later APAR to describe the new
fields provided in IFCID 25.

Code was changed to calculate the correct amount of memory
object storage available for index sorts in REORG when running
with DB2 Sort.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM37956
SPECIAL CONDITIONS:
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DOCUMENTATION:
   The PTF for APAR PM37956 extends the mapping for IFCID 25 in a
   compatible fashion. New fields have been added at the end of
   the record as described in macro DSNDQW00.

   Applications wishing to exploit the new data will need
   modification but otherwise no changes are necessary.
 ACTION:
   The PTF for APAR PM37956 has modified CSECTs in both the
   DSNUT910 and DSNUTILA load modules, affecting the utility batch
   and DB2 DBM1 address spaces. After the PTF has been applied,
   it will become active in the utility batch address space
   immediately upon job submission, while it will not take effect
   in the DB2 DBM1 address space until DB2 is stopped and started.

   The PTF does not have to be applied to all members in a data
   sharing environment simultaneously, and may be staged across
   each member. However, until the fix is active in both the
   utility batch and DB2 DBM1 address spaces, the problem the PTF
   addresses will not be resolved. No errors will occur due to the
   PTF being active in one address space and not the other.
.

------ COVER LETTER FOR PTF UK70509 ------------

PROBLEM DESCRIPTION(S):
  PM39942 -
     ****
     * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of   *
     *   applications with query contains select   *
     *   from mixed ASCII table with DBCS % in   *
     *   like predicate.   *
     ****
     * PROBLEM DESCRIPTION: Incorrect output may occur when query   *
     *   contains select from mixed ASCII table   *
     *   with DBCS % in like predicate.   *
     ****
     * RECOMMENDATION: *
     ****
     Incorrect output may occur when query contains select from
     mixed ASCII table with DBCS % in like predicate.
     Following is an example of such failing scenario:
     * % is DBCS
      SELECT INT1, CHR29MIXWD
        FROM TB23073A_A1
        WHERE CHR29MIXWD LIKE '@?%@IX%'
     TB23073A_A1 is mixed ASCII table
     DB2 is fixed to process the DBCS % in like predicate correctly.

     Additional keyword: SQLLIKE SQLCCSID SQLGRAPHIC SQLENCODING
                         SQLINCORR INCORROUT SQLINCORROUT DB2INCORR/K
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM39942
SPECIAL CONDITIONS:

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DB2BIND:
  ***Action for PM39942:

  See PM39942 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM39942 corrects a problem of incorrect output when select from
  mixed ASCII table with DBCS % in like predicate.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PM35235:

  See PM35235 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM35235 corrects a problem of incorrect output with mixed AND
  and OR predicates for index on expression.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PM33614 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  APAR PM33614 corrects problems that can cause an abend on query
  with huge OR/AND predicates (exceeding 32767).

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
   See PM23500 APAR/PTF text in the PTF cover letter for
   additional information about why a REBIND is necessary.

   APAR PM23500 corrects a problem that can cause an abend for a
   a query containing unmatched CCSID on its predicate.

   To make this fix effective for a static application, it must be
   rebound after application of this PTF. Review the PTF cover
   letter to determine which, if any, applications could be
   affected by this change.
DB2BIND:
  See PM22053 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  APAR PM22053 corrects a problem that can cause an incorrect
  result being returned for sort merge join on a query using

index on expression.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF. Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
.

     ------ COVER LETTER FOR PTF UK70543 ------------

PROBLEM DESCRIPTION(S):
  PM42686 -
     ****
     * USERS AFFECTED: DB2 for z/OS users with queries containing *
     *   predicates on columns with a column   *
     *   cardinality of 1 or 2.   *
     ****
     * PROBLEM DESCRIPTION: DB2 may select an incorrect filter   *
     *   factor for a predicate referencing a   *
     *   column with a column cardinality   *
     *   of 1 or 2.   *
     ****
     * RECOMMENDATION: *
     ****
     DB2 may select an incorrect filter factor for a predicate
     referencing a column that satisfies both of the following
     conditions:

       * SYSIBM.SYSCOLUMNS.COLCARDF (column cardinality) is 1 or 2.

       * No single columns frequency statistics are gathered for
         the column. The following query will identify whether
         any single column frequency statistics exist for a given
         column.
             SELECT COUNT(*)
             FROM SYSIBM.SYSCOLDIST
             WHERE TBOWNER = ?   <-- Table creator
               AND TBNAME = ?   <-- Table name
               AND NAME   = ?   <-- Column name
               AND TYPE   = 'F'
               AND NUMCOLUMNS = 1;

     This problem may occur intermittently as it is the result of
     an uninitialized variable. When the problem occurs, it could
     result in a poorly performing access path being selected by
     the optimizer.

     Additional Keywords:
     SQLACCESSPATH SQLPERFORMANCE SQLSTATS FILTERFACTOR
     DB2 has been modified to correctly initialize a few variables
     such that this problem will no longer occur.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM42686
SPECIAL CONDITIONS:
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DB2BIND:
  ***Action for PM42686:

  A rebind is necessary for static applications to rebuild
  access paths based on the changes in this APAR.

  PM42686 corrects a problem in which an incorrect filter factor
  may be selected for a predicate on a column with a COLCARDF of
  1 or 2. The incorrect filter factor may result in a poor
  performing access path.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
.

------ COVER LETTER FOR PTF UK70648 ------------

PROBLEM DESCRIPTION(S):
  PM27835 -
    ****
    * USERS AFFECTED: All DB2 for z/OS users.   *
    ****
    * PROBLEM DESCRIPTION: DB2 will support a TCB level ACEE for *
    *   the authid used in an IMS transaction *
    *   that calls DB2. This will permit RACF *
    *   authorization of DB2 resources accessed *
    *   in the IMS transaction.   *
    ****
    * RECOMMENDATION: *
    ****
    DB2 will support a TCB level ACEE for the authid used in an IMS
    transaction that calls DB2. This will permit RACF authorization
    of DB2 resources accessed in the IMS transaction.
    DB2 module DSN3SI30 has been modified to use the TCB level RACF
    ACEE for an IMS transaction.

    The DB2 Administration Guide will be updated to state that
    IMS transactions can exploit RACF authorization of DB2
    objects if the following tasks are completed.
    - IMS must be configured to use APPC/OTMA security full or use
      the Build Security Environment DFSBSEX0 security exit to
      return RC04 in register 15 to tell IMS to create the ACEE
      in the dependent region.
    - The RACF DB2 security exit DSNX@XAC must be installed.
    - DB2 resources accessed by IMS transactions must be defined
      in a RACF profile and RACF permits must be created for IMS
      authorization IDs.

    The DB2 Administration Guide, Appendix A 'Consideration for the
    access control authorization routine. When DB2 cannot provide
    an ACEE' will have the following sentence added - An ACEE is
    available to DB2 for an IMS transaction if IMS has been

configured to use APPC/OTMA security full or the DFSBSEX0
security exit has been configured to return RC04 in register
15 to tell IMS to create the ACEE in the dependent region.

The RACF Access Control Module Guide, Chapter 10 section
'When DB2 cannot provide an ACEE' contains this restriction.
1. The ACEE address is not passed for IMS transactions.
This restriction will be changed to say -
The ACEE may not be available for IMS transactions unless
IMS has been configured to use APPC/OTMA security full or the
DFSBSEX0 security exit has been configured to return RC04
in register 15 to tell IMS to create the ACEE in the dependent
region.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM27835
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    The DB2 Administration Guide (SC18-9840-00) will be updated to
    state that IMS transactions can exploit RACF authorization of
    DB2 objects if the following tasks are completed.
    - IMS must be configured to use APPC/OTMA security full or use
      the Build Security Environment DFSBSEX0 security exit to
      return RC04 in register 15 to tell IMS to create the ACEE
      in the dependent region.
    - The RACF DB2 security exit DSNX@XAC must be installed.
    - DB2 resources accessed by IMS transactions must be defined
      in a RACF profile and RACF permits must be created for IMS
      authorization IDs.

    The DB2 Administration Guide, Appendix A 'Consideration for the
    access control authorization routine. When DB2 cannot provide
    an ACEE' will have the following sentence added - An ACEE is
    available to DB2 for an IMS transaction if IMS has been
    configured to use APPC/OTMA security full or the DFSBSEX0
    security exit has been configured to return RC04 in register
    15 to tell IMS to create the ACEE in the dependent region.

    The RACF Access Control Module Guide (SC18-9852-00), Chapter 10
    section 'When DB2 cannot provide an ACEE' contains this
    restriction. 1. The ACEE address is not passed for IMS
    transactions. This restriction will be changed to say -
    The ACEE may not be available for IMS transactions unless
    IMS has been configured to use APPC/OTMA security full or the
    DFSBSEX0 security exit has been configured to return RC04
    in register 15 to tell IMS to create the ACEE in the dependent
    region.
.

------ COVER LETTER FOR PTF UK70655 ------------

PROBLEM DESCRIPTION(S):
  PM42749 -
    ****

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```
* USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS      *
*                 users who use BINARY and VARBINARY data      *
*                 types.                                        *
****************************************************************
* PROBLEM DESCRIPTION: Incorrect output may occur for an SQL   *
*                 statement that contains a predicate          *
*                 comparing a BINARY value with a              *
*                 VARBINARY value.                             *
****************************************************************
* RECOMMENDATION:                                              *
****************************************************************
Incorrect output may occur for an SQL statement that contains
a predicate comparing a BINARY value with a VARBINARY value.
For example,
CREATE TABLE MYTAB1 (COL1 BINARY(5)) ;
CREATE TABLE MYTAB2 (COL1 VARBINARY(5)) ;
INSERT INTO MYTAB1 VALUES (BINARY('ABC'));
INSERT INTO MYTAB2 VALUES (VARBINARY('ABC'));
SELECT HEX(MYTAB1.COL1)
FROM   MYTAB1,
       MYTAB2
WHERE  MYTAB2.COL1 = MYTAB1.COL1;

Two binary strings are equal only if the lengths of the two
strings are identical. If the strings are equal up to the length
of the shorter string, the shorter string is considered
less than the longer string even when the remaining bytes in the
longer string are hexadecimal zeros.

In the SELECT statement above, one record 'C1C2C30000' is
returned when no record is expected(RNF). This problem happens
because DB2 doesn't handle the data types correctly when
comparing the two values.
DB2 code is fixed to handle the data types correctly when
comparing BINARY with VARBINARY values.

Additional Keywords: SQLINCORR SQLINCORROUT INCORROUT
                     DB2INCORR/K
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM42749
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM42749:

    See PM42749 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM42749 corrects a problem of incorrect output when DB2 compares
    a BINARY value to a VARBINARY value.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
```

```
DB2BIND:
  ***Action for PK73538:


  See PK73538 APAR/PTF text for additional information about
  why a REBIND is necessary.


  PK73538 corrects a problem of ABEND04E RC00E70005 at location
  DSNXRSC2 M104 or at location DSNXRRP M104.


  To make this fix effective for a static application, it must be
  rebound after application of this PTF.  Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
.



------ COVER LETTER FOR PTF UK70811 ------------

PROBLEM DESCRIPTION(S):
  PM38025 -
    ****************************************************************
    * USERS AFFECTED: Users running statements when a like        *
    *                 predicate is used as the matching predicate  *
    *                 and the column is used with mixed data if    *
    *                 parallelism is enabled.                      *
    ****************************************************************
    * PROBLEM DESCRIPTION: If statements use a like predicate      *
    *                      as the matching predicate and the       *
    *                      column is used with mixed data when     *
    *                      parallelism is enabled, incorrect       *
    *                      output may occur.                       *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    If parallelism is enabled for statements using a like predicate
    as the matching predicate and the column is used with mixed
    data, DB2 could possibly cut the key ranges wrong and incorrect
    ouput may occur.
    If parallelism is enabled for statements using a like predicate
    as the matching predicate and the column is used with mixed
    data, DB2 will cut the key ranges correctly.


    Additional Keywords:
    SQLPARALLELISM  SET CURRENT DEGREE ANY SQLCPUP
    SQLINCORR  INCORROUT SQLINCORROUT SQLLIKE
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM38025
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM38025:


    See PM38025 APAR/PTF text for additional information about
    why a REBIND is necessary.
```

PM38025 corrects a problem of incorrect output when like
predicate is used as matching predicate and column is created
with mixed data.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
  DB2BIND:
    See PK66947 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PK66947 corrects an incorrect output situation that may occur
    when using PARALLELISM for an sql with an IS NULL predicate.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK70884 ------------

PROBLEM DESCRIPTION(S):
  PM40499 -
    ****
    * USERS AFFECTED: All users of DB2 Kanji panels in DB2 V9 for *
    *   z/OS are affected by this change.   *
    ****
    * PROBLEM DESCRIPTION: In DB2 V9, Kanji ISPF panel DSN0SP07   *
    *   for SPUFI appears in the SDSNPFPE   *
    *   target library rather than the SDSNPFPK *
    *   target library.   *
    ****
    * RECOMMENDATION: *
    ****
    DSN0SP07 is a Kanji ISPF panel for SPUFI defaults panel 2.
    Currently, due to a packaging error in DB2 V9, it appears in the
    SDSNPFPE target library (DB2 English language ISPF panels)
    rather than the SDSNPFPK target library (DB2 Kanji ISPF panels).

    This PTF deletes DSN0SP07 from the SDSNPFPE target library and
    reships it in the SDSNPFPK target library. In SDSNPFPK,
    DSN0SP07 is established with an alias of DSNESP07.
COMPONENT: 5740-XYR00-JDB9914
APARS FIXED: PM40499
SPECIAL CONDITIONS:
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  ACTION:
    This PTF corrects a packaging problem in DB2 9.1 for z/OS. It
    removes member DSN0SP07 (a Kanji ISPF panel for SPUFI defaults)
    from the prefix.SDSNPFPE target library.

    If you have modified member DSN0SP07 in the SDSNPFPE library

then you need to make a backup copy of it before you apply this
PTF.

If you have installed FMID JDB9911 (DB2 Kanji panels) then
after applying this PTF, you need to apply PTF UK70883 to
add member DSN0SP07 (with alias DSNESP07) to the
prefix.SDSNPFPK target library.
  DELETE:
    This PTF removes member DSN0SP07 (a Kanji ISPF panel for SPUFI
    defaults) from the prefix.SDSNPFPE target library.
.

------ COVER LETTER FOR PTF UK70913 ------------

PROBLEM DESCRIPTION(S):
  PM44087 -
    ****
    * USERS AFFECTED: All DB2 z/OS 9 and Z/OS 10 users who runs   *
    *   query for XMLEXISTS when index access is   *
    *   chosen.   *
    ****
    * PROBLEM DESCRIPTION: More rows may be returned for XMLEXISTS *
    *   when index access is chosen and   *
    *   XMLEXISTS contains two comparison   *
    *   operators, one operator is ">".   *
    ****
    * RECOMMENDATION: *
    ****
    More rows may be returned for XMLEXISTS when index access is
    chosen and XMLEXISTS contains two comparison operators, one
    operator is ">".

    The following example illustrates an error case.

     SELECT XMLQUERY('//teacher/office'
          PASSING TEACHER_CLASS)
     FROM TEACHER_XML
     WHERE XMLEXISTS('//teacher/office[.> $LOWID and .< $HIGHIDM'
      PASSING TEACHER_CLASS,
     CAST('J353' AS CHAR(128)) AS LOWID,
     CAST('J354' AS CHAR(10)) AS HIGHID)
    DB2 has been modified to ensure those identified problems
    are working.

    Additional Keywords: INCORROUT DB2INCORR/K SQLINCORROUT
                         SQLXML SQLINDEX
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM44087
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM44087 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

APAR PM44087 corrects problems that can cause incorrect output
for XMLEXIST when indexx access is chosen for XML value index.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK71067 ------------

PROBLEM DESCRIPTION(S):
  PM45133 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
    *   users of the DB2 scheduler for   *
    *   administrative tasks   *
    ****
    * PROBLEM DESCRIPTION: When a DB2 subsystem name is the same *
    *   as the group attachment name and a   *
    *   -STOP DB2 MODE (QUIESCE) is entered   *
    *   while its scheduler is still active,   *
    *   DB2 termination is hung.   *
    *   *
    *   When a DB2 subsystem name is the same *
    *   as the group attachment name, the   *
    *   following incorrect behaviors   *
    *   are exhibited by the scheduler   *
    *   associated with this DB2 subsystem: *
    *   o When the scheduler is started while *
    *   its associated DB2 is stopped, it   *
    *   connects to an active DB2 member   *
    *   in the same data sharing group,   *
    *   although it is not associated   *
    *   with this active member.   *
    *   -DISPLAY THREAD(*) issued   *
    *   on this active member shows that   *
    *   two threads from this scheduler   *
    *   are connected to it.   *
    *   o When DB2 is stopped, the scheduler   *
    *   is executing stored procedure tasks *
    *   on an active DB2 member in the same *
    *   data sharing group, although it   *
    *   is not associated with this active   *
    *   member. The tasks are marked   *
    *   executed by the DB2 member that is   *
    *   stopped.   *
    ****
    * RECOMMENDATION: APPLY PTF   *
    ****
    During a -STOP DB2, its associated scheduler terminates the
    first of its 2 connections to DB2 and then tries to IDENTIFY
    to DB2 by calling DSNRLI IDENTIFY without specifying 'NOGROUP '.
    If the DB2 subsystem name is the same as the group
    attachment name, DB2 termination (quiesce) is hung for the

following reason:
- o In V10, if there are no more active members in the same data sharing group, the scheduler does not receive a reply from IDENTIFY, causing the scheduler to hang, thereby hanging DB2 termination because its second thread is still connected to DB2.
- o In V9 and V10, if there are active members in the same data sharing group, the scheduler receives a successful reply from IDENTIFY, and it is connected to another active member. This caused the scheduler to think that the DB2 it is associated with is active, so it did not terminate its second thread to DB2, thereby hanging DB2 termination.

When the scheduler establishes connections to the DB2 it is associated with, it does not specify 'NOGROUP ' in the groupoverride parameter position when it calls DSNRLI IDENTIFY. If the DB2 it is associated with has a name that is the same as the group attachment name and is quiesced, the scheduler would be connected to another active member in the same data sharing group. It then executes stored procedure tasks on this active member, while flagging their execution status with the stopped DB2 subsystem name.
Currenlty, DSNRLI IDENTIFY is coded by the scheduler without the groupoverride parameter, meaning IDENTIFY with a group attachment name is possible. Since it is not the intention of the scheduler to connect to any DB2 subsystem in the group, that is, it needs to connect to a specific DB2 subsystem, every RRSAF DSNRLI IDENTIFY call the scheduler makes is modified to to add 'NOGROUP ' in the groupoverride parameter position.

By adding 'NOGROUP ' in the DSNRLI IDENTIFY groupoverride parameter, the scheduler will always get 00F30002 from IDENTIFY when the DB2 subsystem is stopping, and DB2 will not attempt a group attach. This ensures that the scheduler will not hang while DB2 is stopping, neither will DB2 termination hang because of the scheduler, and the scheduler will always be connected to the DB2 subsystem that it is associated with.
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APARS FIXED: PM45133
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  ACTION:
    After applying this PTF on DB2 9 for z/OS
    ===

    The following post-apply actions are required of all current
    V9 customers to activate the changes in this PTF:
    (1) Stop the DB2 scheduler for administrative tasks.
    (2) Refresh the DB2 scheduler packages.
    (3) Start the DB2 scheduler for administrative tasks.

    Each of these actions is detailed below. Note that DB2 must
    be running.

    (1) Stop the DB2 scheduler for administrative tasks.

```
        If the DB2 scheduler is running, stop it first by executing
        the following console command:
        MODIFY DSNADMT,APPL=SHUTDOWN
        where DSNADMT is the name of the scheduler.

   (2) Refresh the DB2 scheduler packages.
        Use the following procedure to avoid disrupting your
        existing DB2-supplied stored procedures and databases:
        (a) Create a work copy of your customized DSNTIJSG job.
        (b) Remove all job steps except DSNTIAS.
        (c) In job step DSNTIAS:
             - remove all CREATE statements under the SYSIN DD
             - remove all BIND PACKAGE commands under the SYSTSIN DD
               except for the following:
               BIND PACKAGE(DSNADM) MEMBER(DSNA6DB2) -
               ...
               BIND PACKAGE(DSNADM) MEMBER(DSNA6THP) -
               ...
        (d) Run the modified job to bind the DB2 scheduler packages.
        (e) When finished, you can delete the work copy created in
             step (2)(a), above.

   (3) Start the DB2 scheduler for administrative tasks.
        To start the DB2 scheduler again, execute the following
        console command:
        START DSNADMT
        where DSNADMT is the name of the scheduler.
.


------ COVER LETTER FOR PTF UK71068 ------------

PROBLEM DESCRIPTION(S):
  PM40117 -
     ****************************************************************
     * USERS AFFECTED: All users of DB2 9 for z/OS.               *
     ****************************************************************
     * PROBLEM DESCRIPTION: Code is being added to support a future *
     *                      function of DB2.                       *
     ****************************************************************
     * RECOMMENDATION:                                            *
     ****************************************************************
     Code is being added to support a future function of DB2.  The
     function being added will be enabled with a future APAR.
                                                                  .
     ----------------------------------------------------------------
                                                                  .
     In addition to the future function previously mentioned, this
     APAR PM40117 also addresses a limitation regarding the number of
     SQL SET requests supported for each of the following existing
     special registers or variables in a single long-running DB2
     thread:
                                                                  .
     CURRENT MAINTAINED TABLE TYPES FOR OPTIMIZATION
     CURRENT APPLICATION ENCODING SCHEME
     CURRENT DEBUG MODE
```

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```
      CURRENT DECFLOAT ROUNDING MODE
      CURRENT DEGREE
      CURRENT LOCALE
      CURRENT MAINTAINED TABLE TYPES
      CURRENT OPTIMIZATION HINT
      CURRENT PRECISION
      CURRENT REFRESH AGE
      CURRENT RULES
      ENCRYPTION PASSWORD
      CLIENT DEBUG INFO
                                                                   .
      For a long-running DB2 thread that uses DB2 distributed inactive
      thread connection pooling, or WAS ( Websphere ) connection pool-
      ing, or any other connection pooling/connection reuse management
      for DB2 connections across DB2 users, SQL SET statements can be
      issued 1000s of times over the life of a DB2 connection in order
      to replay or restore what a user's application issued to
      explicitly SET a special register to a specific value, before
      allowing this same user to reuse a DB2 connection previously
      used by a different user having different special register
      values.
                                                                   .
      When the number of SQL SET requests issued for a single special
      register named above exceeded 65,535 on one DB2 connection/
      thread, that special register value could be lost for that
      DB2 connection, and the application running on that connection
      could experience unexpected results or errors as if
      the application had not issued the SQL SET for that special
      register or variable.  The special register value was lost
      because DB2 improperly handled the 65,536th SQL SET request for
      that single special register (from the list above) that was
      issued on one DB2 connection.
                                                                   .
      DB2 code was changed to correctly handle > 65535 SQL SET
      requests issued on one DB2 connection for each of those special
      registers listed above.
      Code is being added to support a new function in DB2.  The
      new function will be enabled in a future APAR.
                                                                   .
      ----------------------------------------------------------------
                                                                   .
      For the 65,535 SQL SET limitation for a single special register,
      DB2 code was changed to correctly handle > 65535 SQL SET
      requests issued on one DB2 connection for each of those special
      registers listed above.
                                                                   .
      Additional search keywords: DB2INACTIVE DB2DDF DDF
  PM45145 -
      ****************************************************************
      * USERS AFFECTED: Fix completion for PM40117.                  *
      ****************************************************************
      * PROBLEM DESCRIPTION: Fix completion for PM40117              *
      ****************************************************************
      * RECOMMENDATION:                                              *
      ****************************************************************
      Fix completion for PM40117
```

```
      Fix completion for PM40117
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APARS FIXED: PM40117,PM45145
SPECIAL CONDITIONS:
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   DB2BIND:
     ***Action for PM36947:
     PM36947 corrects a problem that an ABEND04E RC00E70005 at
     location DSNXGRDS.DSNXRITV M106 could happen when a trigger is
     fired and the trigger satisfies all of the following conditions:

     1. It refers an XML column.
     2. The XML column is assigned by using a transition variable.

     To make this fix effective, the trigger packages must be
     rebound after application of this PTF.
   DB2BIND:
     ***Action for PM27500:

     See PM27500 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM27500 corrects a problem of An ABEND04E RC00C90101 at location
     DSNILREP+501B and an incorrect output when an SQL statement
     satisfies all of the following conditions:

     1. The SQL statement is a UPDATE;
     2. A row-fullselect is within the SET clause of the UPDATE
        statement;
     3. The returned data type of the row-fullselect is a TIMESTAMP,
        TIME or DATE and the type of target COLUMN is CHAR or
        VARCHAR;
     4. The row-fullselect returns a NULL value.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF.  Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
   DB2BIND:
     ***Action for PM24650:

     See PM24650 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM24650 corrects a problem of incorrect output from a query
     which invokes a user-defined SQL scalar function that satisfies
     the following conditions:

     1. It contains a CASE expression.
     2. The CASE expression contains special registers.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF.  Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
```

```
DB2BIND:
  ***Action for PK67558:

  See PK67558 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PK67558 corrects a problem of possible data truncation when
  inserting or updating with a string of more than 120 bytes into
  a LOB column.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF.  Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PK65245:

  See PK65245 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  PK65245 corrects a problem of an incorrect output or SQLCODE
  -304 (reported by SQLCODE -444) when a Unicode-bound application
  (e.g. using BIND option ENCODING(UNICODE)) calls an EBCDIC
  stored procedure and the stored procedure returns a datetime
  value as output under a system that is in V8 Enabling New
  Function Mode or higher.

  To make this fix effective for a static application or a
  package that contains the above CALL statement, the application
  and the package must be rebound after application of this PTF.
  Review the PTF cover letter to determine which, if any,
  applications or packages could be affected by this change.
DB2BIND:
  ***Action for PK63181:

  See PK63181 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  PK63181 corrects a problem of incorrect sqlcode -404 issued
  when NULL keyword is specified in THEN clause and an empty
  string is specified in THEN clause or ELSE clause in CASE
  expression.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF.  Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
ACTION:
  ***Action for PM31770:

  See PM31770 APAR/PTF text for additional information about
  why a ALTER PROCEDURE REGENERATE is necessary.

  PM31770 corrects a problem that SQLCODE -313 will be
  issued when the native SQL Procedure satisfies all of the
  below conditions:
```

```
      1, There is CONNECT statement in the native SQL procedure.

      2, The CONNECT statement specifies an authorization ID and a
         password.

      To make this fix effective, the related Stored Procedure must
      be REGENERATE after application of this PTF. Review the PTF
      cover letter to determine which, if any, Stored Procedure
      could be affected by this change.
   ACTION:
      ***Action for PM20496:
      TYPE:  ACT

      PM20496 corrects a problem of SQLCODE -904 with rc00C900D1 from
      DSNOTCSO signifying a 'resource unavailable' condition
      incorrectly issued when a native SQL procedure contains a SQL
      statement which references LOB type sql variables.

      After the application of this PTF, ALTER PROCEDURE REGENERATE is
      required for each native SQL procedure that is affected.
      Review the PTF cover letter to determine which, if any, native
      SQL procedure could be affected by this change.
   ACTION:
      After the application of this PTF, an ALTER PROCEDURE REGENERATE
      is required for native SQL procedures containing
      FETCH ABSOLUTE/RELATIVE statements that may have ABEND04E
      RC00E70005 at location DSNXGRDS.DSNXRFF M900.
   ACTION:
      ***Action for PK67558:

      PK67558 corrects a problem of data truncation when a native SQL
      procedure is used to insert into or update a LOB column with a
      string of more than 120 bytes.

      After the application of this PTF, ALTER PROCEDURE REGENERATE is
      required for each native SQL procedure that is affected.
      Review the PTF cover letter to determine which, if any, native
      SQL procedure could be affected by this change.
.


   ------ COVER LETTER FOR PTF UK71133 ------------

PROBLEM DESCRIPTION(S):
   PM42530 -
      ****************************************************************
      * USERS AFFECTED: All DB2 for z/OS users using REOPT(AUTO).   *
      ****************************************************************
      * PROBLEM DESCRIPTION: Sometimes ABEND 0CF-0000000F may       *
      *                      occur at DSNXORRA at offset 0B74       *
      *                      when the following conditions are      *
      *                      met.                                   *
      *                                                             *
      *                      1. The query is prepared with         *
      *                         REOPT(AUTO) option; and            *
```

```
*                     2. The plan chosen by DB2 has a     *
*                        cost of '7FFFFFFF'X              *
****************************************************************
* RECOMMENDATION:                                             *
****************************************************************
Sometimes ABEND 0CF-0000000F may occur at DSNXORRA at offset
0B74 when the following conditions are met.

1. The query is prepared with REOPT(AUTO) option
2. The plan chosen by DB2 has a cost of '7FFFFFFF'X.
The abend described above is solved by disabling
REOPT(AUTO) for the query with a cost of '7FFFFFFF'X.

Additional Keywords:
ABEND0CF REOPTAUTO
```

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APARS FIXED: PM42530
SPECIAL CONDITIONS:
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  DB2BIND:
    A rebind is necessary to rebuild package and/or plan structure
    based on the changes in this APAR.

    PM42530 corrects a problem that an ABEND0CF RC0000000F in
    DSNXORRA OFFSET 0B74 may occur when executing a package or plan
    with bind option REOPT(AUTO) and the plan used has a R-scan
    with cost of 7FFFFFFF.

    To make this fix effective for a static application, it must
    be rebound after application of this PTF. Review the PTF
    cover letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK71137 ------------

PROBLEM DESCRIPTION(S):
  PM43179 -
```
****************************************************************
* USERS AFFECTED: Users of the DB2 coprocessor for z/OS      *
*                 using file reference variables for XML data *
*                 types (XML AS CLOB-FILE, XML AS BLOB-FILE,  *
*                 or XML AS DBCLOB-FILE host variable in a    *
*                 COBOL application, XML AS CLOB_FILE,        *
*                 XML AS BLOB_FILE, or XML AS DBCLOB_FILE     *
*                 host variable in a C/C++ or PLI            *
*                 application).  910 A10                      *
****************************************************************
* PROBLEM DESCRIPTION: For a file reference host variable    *
*                 with XML data type (XML AS CLOB-FILE        *
*                 XML AS BLOB-FILE or XML AS DBCLOB-FILE     *
*                 in a COBOL application,                     *
*                 XML AS CLOB_FILE, XML AS BLOB_FILE          *
*                 or XML AS DBCLOB_FILE in a C/C++ or        *
```

```
*                       PLI application), DB2 may incorrectly   *
*                       issue SQLCODE -171 during              *
*                       bind time.                             *
**************************************************************
* RECOMMENDATION:                                            *
**************************************************************
The following COBOL example illustrates the problem:
01 HV-XML-CLOB-FILE SQL TYPE IS XML AS CLOB-FILE.
    EXEC SQL
       INSERT INTO T1 (DOCID, DOC)
       SELECT X.ID, XMLDOCUMENT(X.DOC)
       FROM XMLTABLE('//item' PASSING :HV-XML-CLOB-FILE
               COLUMNS
                  ID  INTEGER  PATH 'itemID',
                  DOC XML      PATH '.'
           ) AS X
    END-EXEC.

    When binding the DBRM generated by the DB2 coprocessor,
    DB2 incorrectly issues SQLCODE -171.
    COBOL APAR PM43791 is required as well as this DB2 APAR to
    fix the problem in a COBOL application.

    Additional keywords: DB2COPROCESSOR SQLCODE171 SQLHOSTVAR SQLLOB
    The DB2 coprocessor code is modified so that the unexpected
    SQLCODE -171 is not issued for the valid use of a file
    reference variable with XML data type.
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APARS FIXED: PM43179
SPECIAL CONDITIONS:
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  ACTION:
    PM43179 corrects a problem of SQLCODE -171 during bind when
    using a file reference host variable of XML data type in an
    application prepared by the DB2 coprocessor.
    To make this fix effective for a static application, it must
    be recompiled after application of this PTF.

    If the application is a COBOL application, the following
    COBOL PTFs may also be required in addition to this PTF to
    fix the problem:

    UK71077 Enterprise COBOL for z/OS V3R4   H26L340
    UK71078 Enterprise COBOL for z/OS V4R2   HADB420
    UK71079 Enterprise COBOL for z/OS V4R1   HADB400

    There is no problem applying the PTF for PM43179 without
    the COBOL PTF.  However, the problem described in PM43179
    will not be fixed for COBOL applications until the
    corresponding COBOL PTF is also applied.
.


------ COVER LETTER FOR PTF UK71145 ------------
```

PROBLEM DESCRIPTION(S):
  PM35280 -
    ****
    * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS and   *
    *   DB2 10 for z/OS users with queries   *
    *   which contain a set function, outer join   *
    *   and a table expression.   *
    ****
    * PROBLEM DESCRIPTION: DB2 may return wrong value when   *
    *   running a query which contains set   *
    *   function, outer join, and table   *
    *   expression.   *
    ****
    * RECOMMENDATION: *
    ****
    Incorrect output may occur when running a query which contains
    a combination of a set function, outer join, and a table
    expression.

    For example,
       SELECT COUNT(*)
         FROM (
           SELECT COALESCE(T2.C3, T3.C3) AS C3
             FROM T1 LEFT OUTER JOIN T2
                 ON T1.C1 = T2.C1
               FULL OUTER JOIN T3
                 ON T1.C2 = T3.C2
            WHERE T3.C4 = ...) AS T, (
           SELECT COALESCE(T2.C3, T3.C3) AS C3
             FROM T1 LEFT OUTER JOIN T2
                 ON T1.C1 = T2.C1
               FULL OUTER JOIN T3
                 ON T1.C2 = T3.C2) AS U
        WHERE T.C3 = U.C3;

       Additional Keywords: SQLINCORR SQLINCORROUT DB2INCORR/K
                   INCORROUT SQLSETFUNCTION
                   SQLOUTER SQLJOIN SQLOUTERJOIN SQLTABLEEXPR
    DB2 has been modified to correctly identify set function scan
    and avoid the incorrect output.
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APARS FIXED: PM35280
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM35280:

    See PM35280 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM35280 corrects a problem of incorrect output (wrong value
    returned) that can occur when running a query which contains
    a set function, outer join, and a table expression.

    To make this fix effective for a static application, it must be

rebound after application of this PTF. Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
   DB2BIND:
      ***Action for PM11360:

      See PM11360 APAR/PTF text for additional information about
      why a REBIND is necessary.

      PM11360 corrects a problem of incorrect output with UNION or
      UNION ALL and a set function when a subquery is transformed to
      a join.

      To make this fix effective for a static application, it must be
      rebound after application of this PTF. Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
   DB2BIND:
      See PK59067 APAR/PTF text in the PTF cover letter for
      additional information about why a REBIND is necessary.

      PK59067 corrects an incorrect output problem that can happen
      for queries with GROUP BY items from more than one table that
      refer to the innermost table of a join. If a set function
      for this type of query is evaluated at data retrieval, incorrect
      output may result.

      To make this fix effective for a static application, it must be
      rebound after application of this PTF. Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
   DB2BIND:
      See PK47960 APAR/PTF text in the PTF cover letter for
      additional information about why a REBIND is necessary.

      PK47960 corrects a problem of incorrect output when set function
      DISTINCT without GROUP BY is evaluated on the inner table of a
      join while the data is being read from the table or index.
      To find when a set function is evaluated, check the PLAN_TABLE
      after an EXPLAIN of the query. If column COLUMN_FN_EVAL='R',
      it indicates that the column function is being evaluated while
      the data is being read from the table or index.

      To make this fix effective for a static application, it must be
      rebound after application of this PTF. Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
.

------ COVER LETTER FOR PTF UK71148 ------------

PROBLEM DESCRIPTION(S):
  PK94824 -
      ****
      * USERS AFFECTED: All DB2 9 for z/OS users when running   *

```
*                    query containing aggregate functions with     *
*                    DISTINCT() and ALL() on the same decimal       *
*                    float expressions.                             *
****************************************************************
* PROBLEM DESCRIPTION: Incorrect output may be returned for    *
*                    query containing aggregate functions      *
*                    with DISTINCT() and ALL() on the same      *
*                    decimal float expressions.                 *
****************************************************************
* RECOMMENDATION:                                              *
****************************************************************
Incorrect output may be returned for query containing aggregate
functions with DISTINCT() and ALL() on the same decimal float
expressions.

The following query is an example of this case.

   SELECT
      COUNT(DISTINCT(DECFLOAT_1 + DECFLOAT_2)),
      COUNT(ALL(DECFLOAT_1 + DECFLOAT_2))
   FROM T1;
The code in DB2 is modified to correct the failing condition.

Additional keyword: SQLCOUNT SQLDISTINCT SQLALL SQLINCORR
                    INCORROUT DB2INCORR/K SQLAVG SQLMAX SQLMIN
                    SQLSUM
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APARS FIXED: PK94824
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  DB2BIND:
    See PM30196 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PM30196 corrects problems that can cause an incorrect
    output for a query using a set function like COUNT with
    DISTINCT on a DECFLOAT column.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM24841:

    See PM24841 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM24841 corrects a problem of ABEND0C4 may occur when user
    running query with arithmetic set function on a column and the
    column is coming from an arithmetic expression in a VIEW/table
    expression.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
```

letter to determine which, if any, applications could be
affected by this change.
  DB2BIND:
    See PK94847 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    APAR PK94824 corrects a problem that can cause incorrectout
    for query containing aggregate functions with DISTINCT() and
    ALL() on the same decimal float expressions.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PK89056 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PK89056 corrects a problem of ABEND0C4 RC04 at DSNISFWL+102A
    for queries containing a GROUP BY expression with an index on
    this expression and a set function in the select list.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

------ COVER LETTER FOR PTF UK71155 ------------

PROBLEM DESCRIPTION(S):
  PM43722 -
    ****
    * USERS AFFECTED: All DB2 for z/OS users   *
    ****
    * PROBLEM DESCRIPTION: DB2 may select an inefficient access   *
    *   path for a query if the query contains *
    *   compound predicates, IN-subquery   *
    *   predicates or predicates with column   *
    *   expression and the query contains one *
    *   or more subqueries.   *
    ****
    * RECOMMENDATION: *
    ****
    DB2 may overestimate cost of an access path if the access path
    utilizes multi-index access, index on expression or IN-subquery
    index access to a table and the query contains one or more
    subqueries that refer to the table. Consequently, DB2 may select
    an inefficient access path for the query.

    Additional Keywords:
    SQLACCESSPATH SQLSUBQUERY SQLPERFORMANCE SQLINDEXONEXP SQLINSUBQ
    MIDX
    Code is modified to correct the cost estimation for the queries
    described as above.

```
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APARS FIXED: PM43722
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  DB2BIND:
    ***Action for PM43722:


    A rebind is necessary for static applications to rebuild
    access paths based on the changes in this APAR.

    PM43722 corrects a problem that DB2 may select an inefficient
    access path for a query if the query contains compound
    predicates, IN-subquery predicates or predicates with column
    expression and the query contains one or more subqueries.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM35220:


    A rebind is necessary to rebuild package and/or plan structures
    based on the changes in this APAR.

    PM35220 corrects a problem of ABEND04E RC00C90101 in
    DSNIADR:5002 when direct row access is chosen to access a
    transition table of a trigger.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM28392:


    See PM28392 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM28392 prevents an ABEND0C4 RC04 in DSNXRT1J on a query with
    XMLTABLE or TABLE UDF that uses Hybrid Join.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.



------ COVER LETTER FOR PTF UK71242 ------------

PROBLEM DESCRIPTION(S):
  PM39362 -
    ***************************************************************
    * USERS AFFECTED: All DB2 for z/OS users who run INSERT        *
```

```
*                 with subquery statements bound with REOPT    *
*                 AUTO option                                   *
***************************************************************
* PROBLEM DESCRIPTION: ABEND04E RC00E70005 in DSNXRBND M120    *
*                      or ABEND0C4 RC00000011 in               *
*                      DSNXRSOR+016C occurs when running an     *
*                      INSERT statement with a subquery         *
*                      bound with the REOPT AUTO option.        *
***************************************************************
* RECOMMENDATION:                                             *
***************************************************************
ABEND04E RC00E70005 in DSNXRBND M120 or ABEND0C4 RC00000011 in
DSNXRSOR+016C occurs when running an INSERT statement with
a subquery bound with the REOPT AUTO option.

Additional Keywords: SQLINSERT SQLSUBQUERY SQLINSWSELECT
REOPTAUTO
Code has been changed to handle REOPT AUTO of INSERT statements
with a subquery.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM39362
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM35294:

    See PM35294 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM35294 corrects a problem where incorrect output may occur if a
    query contains a host variable or a parameter marker, and a
    special register: CURRENT TIMESTAMP, CURRENT TIME or CURRENT
    DATE, with BIND option REOPT(AUTO).

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM34595:

    A rebind is necessary to rebuild package and/or plan structures
    based on the changes in this APAR.

    PM34595 corrects a problem that an ABEND0C4 RC00000038 in
    DSNXORRA OFFSET 0DF2 may occur when binding a package or plan
    with bind option REOPT(AUTO) and the package or plan contains
    a query with special register CURRENT DATE, CURRENT TIME or
    CURRENT TIMESTAMP.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.
```

```
------ COVER LETTER FOR PTF UK71246 ------------

PROBLEM DESCRIPTION(S):
  PM38082 -
    ****************************************************************
    * USERS AFFECTED: All DB2 for z/OS users who have queries      *
    *                 involving multi-column partitioning keys     *
    *                 with host variables or parameter markers     *
    *                 on those columns, and have PM25059           *
    *                 applied (UK64445--V8, UK64446--V9,           *
    *                 UK64444--V10)                                *
    ****************************************************************
    * PROBLEM DESCRIPTION: When a query involves multi-column      *
    *                 partitioning keys and there are host         *
    *                 variables or parameter markers on           *
    *                 those columns, DB2 may stop page range       *
    *                 screening after the first predicate          *
    *                 involving host variables or parameter        *
    *                 markers.                                      *
    ****************************************************************
    * RECOMMENDATION:                                              *
    ****************************************************************
    SUMMARY OF DB2 EVENTS:

    DB2 may stop page range screening after the first matching
    predicate with host variables or parameter markers on queries
    involving multi-column partitioning keys with host variables
    or parameter markers on those columns and cause significant
    loss of page range screening.

    The following query is an example of this case.
    SELECT * FROM T
    WHERE C1 = ?
    AND C2 > ?;

    T is a partitioned table, and its partitioning key is
    (C1, C2). In this example, DB2 considers only C1 = ? for page
    rang screening, and does not consider C2 > ?. The contribution
    of C2 > ? on page range screening is lost.
    PROBLEM CONCLUSION:

    DB2 corrects the logic to identify qualified partitions for
    page range screening for multi-column partitioning keys with
    host variables or parameter markers on those columns. The
    qualified partitions are identified correctly under this
    scenario.

    ADDITION KEYWORDS:
    PAGERANGE SQLHOSTVAR PARAMETERMARKER SQLPMARKER SQLPMK
    SQLPERFORMANCE
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM38082
SPECIAL CONDITIONS:
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```

DB2BIND:
  ***Action for PM38082:

  See PM38082 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM38082 corrects a query performance problem involving
  significant loss of page range screening for queries with
  multi-column partitioning keys and predicates with host
  variables or parameter markers on those columns.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
.

------ COVER LETTER FOR PTF UK71277 ------------

PROBLEM DESCRIPTION(S):
  PM43402 -
    ****
    * USERS AFFECTED: DB2 8,9 and 10 for z/OS users of sequences *
    *   with a schema name beginning with 'SYS'   *
    *   other than 'SYSADM'.   *
    ****
    * PROBLEM DESCRIPTION: SELECT results in SQLCODE -20142   *
    *   when referencing a sequence with   *
    *   a schema name beginning with 'SYS'   *
    *   other than 'SYSADM'.   *
    ****
    * RECOMMENDATION: *
    ****
    This apar addresses the following problems:
    1. In DB2 8, CREATE SEQUENCE fails to issue SQLCODE -20074
       when the sequence name is unqualified and the implicit
       qualifier begins with 'SYS' and is not 'SYSADM'.
       This problem has been addressed in PM36323 for DB2 9 and 10.
    2. In DB2 9 and 10, SQLCODE -20142 is issued on INSERT, UPDATE
       and SELECT and SQLCODE -20100 is issued on CREATE TRIGGER
       when the erroneously created sequence is referenced.
    This apar implements the following fixes:
    1. DB2 8, CREATE SEQUENCE has been fixed to issue SQLCODE
       -20074 if the sequence is unqualified and the implicit
       qualifier begins with 'SYS' and is not 'SYSADM'.
    2. DB2 9 and 10, have been modified to allow reference for
       sequences with schema names beginning with 'SYS' that
       are not DB2 created.

    ADDITIONAL KEYWORDS:
    SQLCODE20074
    SQLCODE20100
    SQLCODE20142
    SQLCREATE

```
      SQLSEQUENCE
      SQLSELECT
      SQLINSERT
      SQLUPDATE
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM43402
SPECIAL CONDITIONS:
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  ACTION:
    PM36323 fixes CREATE SEQUENCE to issue SQLCODE -20074 if the
    sequence is unqualified and the implicit qualifier begins with
    'SYS' and is not SYSADM.

    PM36323 does not fix sequences created prior to applying this
    apar. Affected sequences must be dropped and recreated with a
    non-restricted schema.

    A query may be used to identify erroneously created sequences.

     SELECT * FROM SYSIBM.SYSSEQUENCES WHERE
       (   SCHEMA LIKE 'SYS%'
       AND SCHEMA  <> 'SYSADM'
       AND SEQTYPE =  'S'
       AND NOT (   SCHEMA = 'SYSIBM'
               AND NAME   = 'DSNSEQ_IMPLICITDB'));

    This query will identify user-defined sequences with a
    qualifier beginning with 'SYS' other than 'SYSADM'.
    This query is provided as an example and may not cover all
    variations and scenarios.
.


------ COVER LETTER FOR PTF UK71315 ------------

PROBLEM DESCRIPTION(S):
  PM45048 -
    ****************************************************************
    * USERS AFFECTED: All DB2 for z/OS users who have a query with *
    *                 a DISTINCT FROM predicate, and the column    *
    *                 in the predicate has only one value.         *
    ****************************************************************
    * PROBLEM DESCRIPTION: For a query that contains DISTINCT FROM *
    *                  predicate, and the colcard of the           *
    *                  column in the predicate is one, DB2 may     *
    *                  mis-estimate the filter factor for the      *
    *                  predicate, and result in a bad access       *
    *                  path.                                       *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    For a query that contains a DISTINCT FROM predicate, and the
    colcard of column in the predicate is one, DB2 may
    mis-estimate the filter factor.  This could result in a bad
    access path.
```

```
    For example,
    SELECT * FROM T1
    WHERE C1 IS DISTINCT FROM 100;

    COLCARDF(C1) = 1, HIGH2KEY = LOW2KEY = 100.

    We may estimate the filter factor for predicate
    C1 IS DISTINCT FROM 100 as 1.0 by mistake.

    Additional Keywords:
    SQLACCESSPATH FILTERFACTOR SQLPERFORMANCE SQLDISTINCT
    Code is modified to solve the problem described as above.
COMPONENT:   5740-XYR00-HDB9910
APARS FIXED: PM45048
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM45048:

    See PM45048 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM45048 corrects a problem of a wrong filter factor for the
    DISTINCT FROM predicate if COLCARDF of the column is 1.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM31741:

    See PM31741 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM31741 corrects a problem that DB2 may intermittently
    produce an inaccurate filter factor of an equal join predicate
    when the columns on both sides have histogram statistics.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM26922:

    See PM26922 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM26922 corrects a problem that the filter factor for equal
    join predicates may be underestimated, if the columns on both
    sides contain histogram statistics.

    To make this fix effective for a static application, it must be
```

```
          rebound after application of this PTF.  Review the PTF cover
          letter to determine which, if any, applications could be
          affected by this change.
.


        ------ COVER LETTER FOR PTF UK71384 ------------

        PROBLEM DESCRIPTION(S):
          PM19783 -
            ****************************************************************
            * USERS AFFECTED: Users of DB2 for z/OS who have queries       *
            *                 that have indexable predicates involving      *
            *                 a subquery in an outer join.                  *
            ****************************************************************
            * PROBLEM DESCRIPTION: THE PROBLEM THIS FIX ADDRESSES HAS THE   *
            *                      FOLLOWING SYMPTOMS:                       *
            *                                                                *
            *                       INCORRECT OUTPUT                         *
            *                                                                *
            *                                                                *
            *                      PROBLEM SCENARIO:                         *
            *                                                                *
            *                      The reported problem happened when        *
            *                      executing a query with an outer join      *
            *                      on a table with indexable predicates      *
            *                      and a subquery.                           *
            *                                                                *
            *                                                                *
            *                      Here is an example:                       *
            *                                                                *
            *                      CREATE TABLE TABLE1                       *
            *                          (  DEC1 DECIMAL(2,1) );               *
            *                                                                *
            *                                                                *
            *                       CREATE TYPE 2 INDEX IDX1 ON TABLE1       *
            *                          ( DEC1 ASC )                          *
            *                          BUFFERPOOL BP0 USING STOGROUP         *
            *                      SYSDEFLT PRIQTY 10                        *
            *                          SECQTY 64 ERASE NO;                   *
            *                                                                *
            *                                                                *
            *                      INSERT INTO TABLE1 VALUES (1.0);          *
            *                      INSERT INTO TABLE1 VALUES (6.0);          *
            *                      INSERT INTO TABLE1 VALUES (9.0);          *
            *                                                                *
            *                                                                *
            *                       CREATE TABLE TABLE2                      *
            *                          ( INT1 INTEGER);                      *
            *                                                                *
            *                                                                *
            *                      INSERT INTO TABLE2 VALUES (NULL);         *
            *                                                                *
            *                                                                *
            *                                                                *
            *                       SELECT                                   *
```

```
*                        (COALESCE(E.ID,7)) AS BAL         *
*                      FROM                                *
*                        (SELECT B.DEC1 AS ID              *
*                         FROM TABLE1 B                    *
*                         WHERE B.DEC1=6.0) AS A           *
*                      FULL OUTER JOIN                     *
*                        (SELECT C.DEC1 AS ID              *
*                         FROM TABLE1 C                    *
*                         WHERE (C.DEC1 =                  *
*                      (SELECT MAX(D.INT1) FROM TABLE2 D))) *
*                         AS E                             *
*                      ON A.ID = E.ID;                     *
*                                                          *
*                                                          *
*                                                          *
*                      7.0 is the expected result          *
*                      but the result was 1.0, 6.0 and 9.0 *
*                                                          *
*                                                          *
************************************************************
* RECOMMENDATION:                                          *
************************************************************
SUMMARY OF DB2 EVENTS:

DB2 did not correctly handle indexable predicates that
are used with a subquery as part of an outer join.
PROBLEM CONCLUSION:

DB2 will now correctly handle indexable predicates that
are used with a subquery as part of an outer join.

ADDITIONAL KEYWORDS:
SQLOUTERJOIN SQLSUBQUERY SQLTYPE2
SQLINCORR INCORROUT SQLINCORROUT DB2INCORR/K
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APARS FIXED: PM19783
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM19783:

    See PM19783 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM19783 corrects a problem of incorrect output when
    users of DB2 for z/OS have queries that have indexable
    predicates involving a subquery in an outer join.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.
```

```
------ COVER LETTER FOR PTF UK71403 ------------

PROBLEM DESCRIPTION(S):
  PM07944 -
      ****************************************************************
      * USERS AFFECTED: DB2 9 for z/OS users of EDITPROCs           *
      ****************************************************************
      * PROBLEM DESCRIPTION: Due to the restrictions associated     *
      *                      with the current type of edit          *
      *                      procedures (EDITPROCs), DB2 9 for z/OS  *
      *                      will support a new type of EDITPROC     *
      *                      with fewer restrictions.                *
      ****************************************************************
      * RECOMMENDATION:                                             *
      ****************************************************************
      Some of the restrictions associated with current EDITPROCs
      make using newer data types and adding columns not currently
      possible. This enhancement to EDITPROCs allows the newer data
      types as well as the ability to ALTER TABLE ADD COLUMN for
      tables already using EDITPROCs.
      New syntax will be provided on the CREATE TABLE EDITPROC clause:

      If a user specifies EDITPROC <program-name> WITH ROW ATTRIBUTES,
      then the behavior remains the same. This means the table may
      not contain any identity, LOB, XML, ROWID, or SECURITY LABEL
      columns. This is the default.

      If a user specifies EDITPROC <program-name> WITHOUT ROW
      ATTRIBUTES, the users may create tables containing identity,
      XML, ROWID, or SECURITY LABEL columns.

      You must not specify any edit procedure for a table with a LOB
      column. For more information on writing an EDITPROC, see DB2
      Administration Guide. If you omit EDITPROC, the table has no
      edit procedure.


      For the ALTER TABLE ADD COLUMN case, if a table has been defined
      with an EDITPROC WITHOUT ROW ATTRIBUTES, then users may alter
      add identity, XML, ROWID, or SECURITY LABEL columns.

      This enhancement does not allow users to alter EDITPROCs between
      WITH or WITHOUT ROW ATTRIBUTES.

      ++HOLD COMMENT FOR RELEASE 910, TYPE DOC:
      PM07944 introduces the following changes to externals:

      Changed messages or codes:
      For SQLCODE -350, the following is added to the explanation:
        - An XML column cannot be defined in a table that has an edit
          procedure that is defined with row attribute sensitivity
        - A LOB column cannot be defined in a table that has an edit
          procedure

      For SQLCODE -668, the message text has been modified to:
        THE COLUMN CANNOT BE ADDED TO THE TABLE BECAUSE THE TABLE
```

HAS AN EDIT PROCEDURE DEFINED WITH ROW ATTRIBUTE SENSITIVITY

For SQLCODE -750, the following has been modified in the explanation:
  The table has a valid procedure or an edit procedure that is defined with row attribute sensitivity.

For SQLCODE -771, the following is added to the explanation:
  - A ROWID column cannot be a column in a table with an edit procedure that is defined with row attribute sensitivity

For SQLCODE -846, the following is modified for REASON CODE 5:
  An edit procedure that is defined with row attribute sensitivity was specified for the identity column.

For SQLCODE -876, the following is modified in the explanation:
  The table being created or altered has an edit procedure that is defined with row attribute sensitivity, FIELDPROC, or VALIDPROC, in which case the column name in EBCDIC cannot exceed 18 EBCDIC bytes in length, or the conversion of a column name from UNICODE to EBCDIC failed.

For SQLCODE -20240, the following is modified for REASON CODE 2:
  An edit procedure that is defined with row attribute sensitivity was specified for the table with a security label column.

For message DSNH350I, the following is modified in the explanation:
  - A XML column cannot be defined in a table that has an edit procedure that is defined with row attribute sensitivity

Changed option for SQL statement CREATE TABLE, EDITPROC:
WITH ROW ATTRIBUTES
  Specifies that the edit procedure parameter list contains an address for the description of a row. WITH ROW ATTRIBUTES must not be specified for a table with an identity, LOB, XML, ROWID, or SECURITY LABEL column. WITH ROW ATTRIBUTES is the default. When WITH ROW ATTRIBUTES is used, the column names in the table must not be longer than 18 EBCDIC SBCS characters in length.

WITHOUT ROW ATTRIBUTES
  Specified that the description of the row is not provided to the edit procedure. On entry to the edit procedure, the address for the row description in the parameter list contains a value of zero.

In catalog table SYSIBM.SYSTABLES, CHECKRID column description is updated to the following:
  A value of 'FFFFFF00' in this column indicates that the edit procedure on this table is defined without row attribute sensitivity. Any other value indicates that the edit procedure is defined with row attribute sensitivity.

Information about this enhancement will be included in the
Information Management Software for z/OS Solutions Information
Center (http://publib.boulder.ibm.com/infocenter/imzic) at a
later date.

++HOLD COMMENT FOR RELEASE 910, TYPE MTS:
PM07944 is a pre-conditioning APAR that includes changes to
support a new function that will be enabled via another APAR at
a later date. At this time, all of the changes are transparent
to the user. In a data sharing group, this pre-conditioning APAR
should be applied to all members before the later enabling APAR
is applied.

Additional Keywords:
SQLCREATE
SQLALTER
SQLCODE350
SQLCODE668
SQLCODE750
SQLCODE771
SQLCODE846
SQLCODE876
SQLCODE20240
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM07944
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  MULTSYS:
    PM07944 is a pre-conditioning APAR that includes changes to
    support a new function that will be enabled via another APAR at
    a later date. At this time, all of the changes are transparent
    to the user. In a data sharing group, this pre-conditioning APAR
    should be applied to all members before the later enabling APAR
    is applied to any member. The new function is not enabled until
    the enabling APAR is applied.
  DOCUMENTATION:
    PM07944 introduces the following changes to externals:

    Changed messages or codes:
    For SQLCODE -350, the following is added to the explanation:
      - An XML column cannot be defined in a table that has an edit
        procedure that is defined with row attribute sensitivity
      - A LOB column cannot be defined in a table that has an edit
        procedure

    For SQLCODE -668, the message text has been modified to:
      THE COLUMN CANNOT BE ADDED TO THE TABLE BECAUSE THE TABLE
      HAS AN EDIT PROCEDURE DEFINED WITH ROW ATTRIBUTE SENSITIVITY

    For SQLCODE -750, the following has been modified in the
    explanation:
      The table has a valid procedure or an edit procedure that is
      defined with row attribute sensitivity.

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For SQLCODE -771, the following is added to the explanation:
  - A ROWID column cannot be a column in a table with an edit
    procedure that is defined with row attribute sensitivity

For SQLCODE -846, the following is modified for REASON CODE 5:
  An edit procedure that is defined with row attribute
  sensitivity was specified for the identity column.

For SQLCODE -876, the following is modified in the explanation:
  The table being created or altered has an edit procedure that
  is defined with row attribute sensitivity, FIELDPROC, or
  VALIDPROC, in which case the column name in EBCDIC cannot
  exceed 18 EBCDIC bytes in length, or the conversion of a
  column name from UNICODE to EBCDIC failed.

For SQLCODE -20240, the following is modified for REASON CODE 2:
  An edit procedure that is defined with row attribute
  sensitivity was specified for the table with a security label
  column.

For message DSNH350I, the following is modified in the
explanation:
  - A XML column cannot be defined in a table that has an edit
    procedure that is defined with row attribute sensitivity

Changed option for SQL statement CREATE TABLE, EDITPROC:
WITH ROW ATTRIBUTES
  Specifies that the edit procedure parameter list contains an
  address for the description of a row. WITH ROW ATTRIBUTES
  must not be specified for a table with an identity, LOB, XML,
  ROWID, or SECURITY LABEL column. WITH ROW ATTRIBUTES is the
  default. When WITH ROW ATTRIBUTES is used, the column names
  in the table must not be longer than 18 EBCDIC SBCS characters
  in length.

WITHOUT ROW ATTRIBUTES
  Specified that the description of the row is not provided to
  the edit procedure. On entry to the edit procedure, the
  address for the row description in the parameter list contains
  a value of zero.

In catalog table SYSIBM.SYSTABLES, CHECKRID column description
is updated to the following:
  A value of 'FFFFFF00' in this column indicates that the edit
  procedure on this table is defined without row attribute
  sensitivity. Any other value indicates that the edit procedure
  is defined with row attribute sensitivity.

Information about this enhancement will be included in the
Information Management Software for z/OS Solutions Information
Center (http://publib.boulder.ibm.com/infocenter/imzic) at a
later date.

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------ COVER LETTER FOR PTF UK71421 ------------

PROBLEM DESCRIPTION(S):
  PM27962 -
     ****
     * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
     *   utility users of the LOAD utility   *
     ****
     * PROBLEM DESCRIPTION: New function to enable LOAD INDEXDEFER *
     *   option to tell LOAD to bypass the sort *
     *   and build of the indexes during the   *
     *   LOAD and put the deferred indexes in   *
     *   Rebuild Pending (RBDP)   *
     ****
     * RECOMMENDATION: Apply corrective PTF when available   *
     ****
     The new LOAD option, INDEXDEFER NPI/ALL indicates to LOAD that
     the specified index types will be deferred. When the option
     is specified, the sort and build of the indexes will be
     skipped during the LOAD and the deferred indexes will be
     placed in RBDP state.
     Code has been changed to enable the new LOAD INDEXDEFER option.
     The Utility Guide and Reference and Messages books will be
     updated for PM27962 as follows:

     The LOAD section of the Utility Guide and Reference will be
     updated to describe the new INDEXDEFER option.
     _____

              .---INDEXDEFER NONE----------------------.
     ---------+--+-->
              | |
              '---INDEXDEFER-+-NPI--+--+-----------+----'
                             '-ALL--' '-NONUNIQUE-'

         INDEXDEFER

         Specifies that the index build should be deferred to improve
         LOAD performance, especially for LOAD PART operations. When
         the index build for an index is deferred the index or index
         part will be left in RBDP for the affected indexes. A REBUILD
         INDEX will need to be run after the LOAD INDEXDEFER to rebuild
         the indexes that were deferred. The combination of the LOAD
         INDEXDEFER and REBUILD INDEX may result in improved
         performance for certain scenarios.

         When INDEXDEFER ALL/NPI is specified with ENFORCE CONSTRAINTS
         indexed foreign keys will not be deferred.

         When deferring the index build for unique indexes, extra
         precaution is needed to ensure the data being loaded is in

                                567

fact unique since REBUILD INDEX will not correct duplicate
keys for a unique index.
 NONE
 Specifies that the index build should not be deferred
for any indexes. NONE is the default.

 ALL
 Specifies that the index build of both non-partitioned
and partitioned indexes should be deferred. Requires LOAD
SHRLEVEL NONE.

 NPI
 Specifies that the index build of non-partitioned
indexes should be deferred. Requires LOAD SHRLEVEL NONE.

        NONUNIQUE
 Specifies that only non-unique indexes should be
deferred. When NONUNIQUE is not specified, both unique
and non-unique indexes will be deferred. Unique indexes
should only be deferred if the data is in fact unique as
REBUILD INDEX will not resolve duplicate keys for unique
indexes.

The Messages manual will be updated to add the new
messages MSGDSNU1133I and MSGDSNU1134I.
_____

DSNU1133I
csect-name - INDEX BUILD DEFERRED FOR INDEX index-name.
INDEX WILL BE LEFT IN RBDP STATE.

Explanation
The index build for the specified index was deferred as
part of the INDEXDEFER option. The specified index or
index part will be left in REBUILD PENDING, RBDP. Rebuild
the index(s) after utility completion.

System action
The utility processing continues and the index build for
the specified index will be deferred and the index or
index part will be left in RBDP.

User response
Rebuild the index(s) after utility completion.

Severity
0 (informational)

DSNU1134I
csect-name - INDEX BUILD NOT DEFERRED FOR INDEX index-name.
REASON CODE=code

Explanation
The index build for the specified index was not deferred.

The reason code shown indicates why the index was not
deferred

 1 - The specified index is an indexed foreign key
and ENFORCE CONSTRAINTS was specified.

System action
The utility processing continues without deferring the
index build for the specified index.

User response
No action is required.

Severity
4 (warning)
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM27962
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    The Utility Guide and Reference and Messages books will be
    updated for PM27962 as follows:

    The LOAD section of the Utility Guide and Reference will be
    updated to describe the new INDEXDEFER option.
_____

             .---INDEXDEFER NONE----------------------.
    ---------+--+-->
             | |
             '---INDEXDEFER-+-NPI--+--+----------+----'
                            '-ALL--' '-NONUNIQUE-'

    INDEXDEFER

    Specifies that the index build should be deferred to improve
    LOAD performance, especially for LOAD PART operations. When
    the index build for an index is deferred the index or index
    part will be left in RBDP for the affected indexes. A REBUILD
    INDEX will need to be run after the LOAD INDEXDEFER to rebuild
    the indexes that were deferred. The combination of the LOAD
    INDEXDEFER and REBUILD INDEX may result in improved
    performance for certain scenarios.

    When INDEXDEFER ALL/NPI is specified with ENFORCE CONSTRAINTS
    indexed foreign keys will not be deferred.

    When deferring the index build for unique indexes, extra
    precaution is needed to ensure the data being loaded is in
    fact unique since REBUILD INDEX will not correct duplicate
    keys for a unique index.

     NONE

Specifies that the index build should not be deferred
for any indexes. NONE is the default.

 ALL
 Specifies that the index build of both non-partitioned
and partitioned indexes should be deferred. Requires LOAD
SHRLEVEL NONE.

 NPI
 Specifies that the index build of non-partitioned
indexes should be deferred. Requires LOAD SHRLEVEL NONE.

 NONUNIQUE
 Specifies that only non-unique indexes should be
deferred. When NONUNIQUE is not specified, both unique
and non-unique indexes will be deferred. Unique indexes
should only be deferred if the data is in fact unique as
REBUILD INDEX will not resolve duplicate keys for unique
indexes.

The Messages manual will be updated to add the new
messages MSGDSNU1133I and MSGDSNU1134I.

_____

DSNU1133I
csect-name - INDEX BUILD DEFERRED FOR INDEX index-name.
INDEX WILL BE LEFT IN RBDP STATE.

Explanation
The index build for the specified index was deferred as
part of the INDEXDEFER option. The specified index or
index part will be left in REBUILD PENDING, RBDP. Rebuild
the index(s) after utility completion.

System action
The utility processing continues and the index build for
the specified index will be deferred and the index or
index part will be left in RBDP.

User response
Rebuild the index(s) after utility completion.

Severity
0 (informational)

DSNU1134I
csect-name - INDEX BUILD NOT DEFERRED FOR INDEX index-name.
REASON CODE=code

Explanation
The index build for the specified index was not deferred.
The reason code shown indicates why the index was not
deferred

1 - The specified index is an indexed foreign key
        and ENFORCE CONSTRAINTS was specified.

        System action
        The utility processing continues without deferring the
        index build for the specified index.

        User response
        No action is required.

        Severity
        4 (warning)
    ACTION:
        The PTF for APAR PM27962 has modified CSECTs in both the
        DSNUT910 and DSNUTILA load modules, affecting the
        utility batch and DB2 DBM1 address spaces. After the PTF has
        been applied, it will become active in the utility batch address
        space immediately upon job submission, while it will not take
        effect in the DB2 DBM1 address space until DB2 is stopped and
        started.

        The PTF does not have to be applied to all members in a data
        sharing environment simultaneously, and may be staged across
        each member. However, until the fix is active in both the
        utility batch and DB2 DBM1 address spaces, the problem the PTF
        addresses will not be resolved.

        The fix for APAR PM27962 is a companion fix. It requires the
        fix for APAR PM42560, for FMID JDB991K to be applied.
    .

------ COVER LETTER FOR PTF UK71438 ------------

PROBLEM DESCRIPTION(S):
  PM37630 -
     ****
     * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS users *
     *   of REORG TABLESPACE utility.   *
     ****
     * PROBLEM DESCRIPTION: Improve sort processing for REORG   *
     *   TABLESPACE of single table   *
     *   non-partitioned table space   *
     ****
     * RECOMMENDATION: Apply PTF when available   *
     ****
     When REORG TABLESPACE SORTDATA is executed against a
     non-partitioned table space containing a single table,
     the following optimizations can be made:

     - avoid sorting on the table obid in the clustering data sort

     - avoid sorting the clustering index keys when parallel index
       build is used

     Code has been modified to implement the aforementioned sort

related improvements.
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APARS FIXED: PM37630
SPECIAL CONDITIONS:
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             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    The PTF for APAR PM37630 has modified CSECTs in both the
    DSNUT910 and DSNUTILA load modules, affecting the utility batch
    and DB2 DBM1 address spaces. After the PTF has been applied,
    it will become active in the utility batch address space
    immediately upon job submission, while it will not take effect
    in the DB2 DBM1 address space until DB2 is stopped and started.

    The PTF does not have to be applied to all members in a data
    sharing environment simultaneously, and may be staged across
    each member. However, until the fix is active in both the
    utility batch and DB2 DBM1 address spaces, the problem the PTF
    addresses will not be resolved.
  ACTION:
    The DB2 9 for z/OS PTF for APAR PM37479 has modified the REORG
    utility to use the maximum record length for tables that are
    compressed and defined with MAXROWS 1 and the KEEPDICTIONARY
    keyword is NOT specified on the utility statement. This change
    will usually require additional sort work space for the data
    sort.
.

       ------ COVER LETTER FOR PTF UK71459 ------------

PROBLEM DESCRIPTION(S):
  PM37622 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS users *
    *   of the REORG TABLESPACE utility.   *
    ****
    * PROBLEM DESCRIPTION: IBM zIIP processor enablement for data *
    *   unload during the UNLOAD phase of the *
    *   REORG TABLESPACE utility.   *
    ****
    * RECOMMENDATION: Apply PTF when available.   *
    ****
    This APAR enables IBM zIIP processor exploitation of the data
    unload process within the UNLOAD phase of the REORG TABLESPACE
    utility.
    This APAR enables IBM zIIP processor exploitation of the data
    unload process within the UNLOAD phase of the REORG TABLESPACE
    utility.
  PM47091 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS users *
    *   of the REORG TABLESPACE utility.   *
    ****
    * PROBLEM DESCRIPTION: AE fix completion for PM37622.   *
    *   *

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```
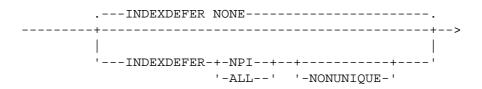    *                        IBM zIIP processor enablement for data   *
    *                        unload during the UNLOAD phase of the     *
    *                        REORG TABLESPACE utility.                 *
    ******************************************************************
    * RECOMMENDATION: Apply PTF when available.                        *
    ******************************************************************
    This APAR enables IBM zIIP processor exploitation of the data
    unload process within the UNLOAD phase of the REORG TABLESPACE
    utility.
    This APAR enables IBM zIIP processor exploitation of the data
    unload process within the UNLOAD phase of the REORG TABLESPACE
    utility.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM37622,PM47091
SPECIAL CONDITIONS:
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  ACTION:
    The PTF for APAR PM47091 has modified CSECTs in both the
    DSNUT910 and DSNUTILA load modules, affecting the
    utility batch and DB2 DBM1 address spaces.  After the PTF has
    been applied, it will become active in the utility batch address
    space immediately upon job submission, while it will not take
    effect in the DB2 DBM1 address space until DB2 is stopped and
    started.

    The PTF does not have to be applied to all members in a data
    sharing environment simultaneously, and may be staged across
    each member.  However, until the fix is active in both the
    utility batch and DB2 DBM1 address spaces, the problem the PTF
    addresses will not be resolved.
.


------ COVER LETTER FOR PTF UK71473 ------------

PROBLEM DESCRIPTION(S):
  PM44852 -
    ******************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS users *
    *                 of the IBM OmniFind Text Search Server.      *
    ******************************************************************
    * PROBLEM DESCRIPTION: An ABEND04E rc00E70005 at location      *
    *                      DSNXOSCF M715 can occur for the         *
    *                      OminiFind CONTAINS function and SCORE    *
    *                      function if the OmniFind Administration  *
    *                      Tables are not defined or set up         *
    *                      properly.                                *
    ******************************************************************
    * RECOMMENDATION:                                              *
    ******************************************************************
    An ABEND04E rc00E70005 can occur at location DSNXOSCF M715 for
    the OminiFind CONTAINS function and SCORE function if the
    OmniFind Administration Tables are not defined or set up
    properly.
    DB2 has been modified to prevent the abend and issue an SQLCODE
```

-904 if the dataset is not available.

        Additional Keywords: SQLCONTAINS SQLSCORE SQLCODE904

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM44852
SPECIAL CONDITIONS:
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   DB2BIND:
     See PM44852 APAR/PTF text in the PTF cover letter for
     additional information about why a REBIND is necessary.

     APAR PM44852 corrects problems that can cause abend for Omnfind
     function when OmniFind administration tables are not defined or
     set up correctly.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF. Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
.

------ COVER LETTER FOR PTF UK71480 ------------

PROBLEM DESCRIPTION(S):
  PM42316 -
     ****
     * USERS AFFECTED: All users of DB2 installation in DB2 UDB for *
     *   z/OS Version 8, DB2 V9 for z/OS, and DB2 10 *
     *   for z/OS are affected by this change.   *
     ****
     * PROBLEM DESCRIPTION: Customers using the DB2 for z/OS   *
     *   installation process can encounter one   *
     *   or more of the following issues: *
     *   (1) V8, V9, V10: Job DSNTIJXZ, program   *
     *   DSNTXAZP, can output an incorrect   *
     *   value for the DSNTIDxx.MVSSNAME   *
     *   (DB2 subsystem name) entry   *
     *   *
     *   (2) V9 and V10: The installation CLIST   *
     *   can halt during editing of the   *
     *   following jobs when it runs on a   *
     *   z/OS that uses a TSO command   *
     *   stacking product such as IBM   *
     *   Program Control Facility if that   *
     *   product uses the semicolon as a   *
     *   delimiter: *
     *   - DSNTIJOC and DSNTIJOS (V9 only)   *
     *   - DSNTIJSG (V10 only)   *
     *   - DSNTEJ1, DSNTEJ2A, DSNTEJ3M, and   *
     *   DSNTIJTM (V9 and V10)   *
     *   *
     *   (3) V9 and V10: The prolog of ENFM job   *
     *   DSNTIJEN does not alert users to   *

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```
*                        check for additional pieces for      *
*                        each index affected by ENFM that     *
*                        resides on user-managed storage.     *
*                                                             *
*           (4) V9 and V10: Job DSNTIJUZ job step             *
*               DSNTIZA shows 0 rather than 1 as              *
*               the default for the DSN6SPRM.-                *
*               CACHEDYN_FREELOCAL parameter                  *
*                                                             *
*           (5) V9 only: The DB2 install CLIST does           *
*               not track the setting for these               *
*               parameters:                                   *
*                  DSN6SPRM.PLANMGMT                          *
*                  DSN6SPRM.CACHEDYN_FREELOCAL                *
*                                                             *
*           (6) V10 only: When editing job DSNTIJUZ           *
*               the DB2 install CLIST does not                *
*               assign the user-specified                     *
*               (DSNTIDxx) setting for the                    *
*               DSN6SPRM.CACHEDYN_FREELOCAL                   *
*               parameter                                     *
*                                                             *
*           (7) V10 only: Job DSNTIJRT, program               *
*                                                             *
*               DSNTRIN, incorrectly initializes              *
*               SYSIBM.SQLTYPEINFO, a table used by           *
*               the DB2 Database metadata stored              *
*               procedures.  Currently, the                   *
*               COLUMN_SIZE column is set to 0 in             *
*               the row where TYPE_NAME = 'XML',              *
*               but it should be set to 2147483647.           *
*                                                             *
*           (8) V10 only: Job DSNTRVFY program                *
*               DSNTRVFY ends with return code 8              *
*               due to SQLCODE -4302 from the                 *
*               call to SYSPROC.XSR_COMPLETE or               *
*               SYSFUN.SYSTS_ENCRYPT or both.                 *
*               The Java WLM environment task log             *
*               contains these messages:                      *
*                                                             *
*               DSNX961I  DSNX9WLJ ATTEMPT TO                 *
*               PERFORM OPERATION CallStaticMethod            *
*               FAILED FOR ROUTINE                            *
*               SYSPROC.DSNWLM_INSTALL_INFOJ .                *
*               SSN= DSN PROC= DSNWLMJ ASID= nnnn             *
*               CLASS= com/ibm/db2/inst/DB2Routines           *
*               METHOD= getWLMInstallInfo  ERROR              *
*               INFO=java.lang.UnsatisfiedLinkError           *
*               : dsntrvfd (EDC5157I An internal              *
*               error has occurred.)                          *
*                                                             *
*           (9) V10 only: Job DSNTRVFY program                *
*               DSNTRVFY truncates the DSNT408I               *
*               message when a call to a DB2-                 *
*               supplied stored procedure returns             *
*               an SQL error.                                 *
```

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```
****************************************************************
* RECOMMENDATION:                                             *
****************************************************************
```

This APAR addresses the following DB2 for z/OS installation
issues:

(1) V8, V9, V10: Job DSNTIJXZ, program DSNTXAZP, outputs an
    incorrect value for the DSNTIDxx.MVSSNAME (DB2 subsystem
    name) entry

    DSNTIJXZ program DSNTXAZP can be used to refresh the
    content of a CLIST input (DSNTIDxx) member. In DSNTIDxx,
    the MVSSNAME entry tracks the DB2 subsystem name. Currently,
    DSNTXAZP updates the DSNTIDxx.MVSSNAME setting from DB2's
    DSNHDECP.SSID setting which may contain the subsystem name
    but in DB2 data sharing may contain a group attach name.

    This APAR modifies DSNTXAZP to use the current subsystem
    name as the value for the DSNTIDxx.MVSSNAME setting.

(2) V9 and V10: The installation CLIST can halt during editing
    of the following jobs when it runs on a z/OS that uses a
    TSO command stacking product such as IBM Program Control
    Facility if that product uses the semicolon as a delimiter:
    - DSNTIJOC and DSNTIJOS (V9 only)
    - DSNTIJSG (V10 only)
    - DSNTEJ1, DSNTEJ2A, DSNTEJ3M, and DSNTIJTM (V9 and V10)

    Currently, when editing the VCAT name of CREATE STOGROUP
    statements in the indicated jobs, the installation CLIST
    performs a search and replace operation for the string
    'DSNC!!0;'. The embedded semicolon can cause editing to
    halt when the CLIST is run on a z/OS that uses a command
    stacking product if that product uses the semicolon as
    a delimiter.

    This APAR modifies the installation CLIST not to use the
    semicolon in text search and replace operations.

(3) V9 and V10: The prolog of ENFM job DSNTIJEN does not alert
    users to check for additional pieces for each index
    affected by ENFM that resides on user-managed storage.

    Before running DSNTIJEN, the job for enabling new-function
    mode, you need to provide a shadow data set for each user-
    defined index on the DB2 catalog tables in table spaces
    converted by the job if the user-defined index resides on
    user-managed storage. You also need to provide a shadow
    data set for each additional piece on each index affected
    by DSNTIJEN that resides on user-managed storage. Currently,
    the DSNTIJEN prologs discusses the first consideration but
    not the second.

    This APAR modifies the DSNTIJEN prolog to provide guidance
    for identifying indexes affected by ENFM processing that
    require manually-defined shadow data sets.

(4) V9 and V10: Job DSNTIJUZ job step DSNTIZA shows 0 rather
    than 1 as the default for the DSN6SPRM.CACHEDYN_FREELOCAL
    parameter

    The prefix.SDSNSAMP library provides a template DSNTIJUZ job
    that shows each DB2 subsystem parameter with its default
    setting. Currently, the template DSNTIJUZ shows
    CACHEDYN_FREELOCAL=0. However, the actual default setting
    for CACHEDYN_FREELOCAL is 1. Note: When the installation
    CLIST edits DSNTIJUZ, it sets CACHEDYN_FREELOCAL to the
    correct default of 1.

    This APAR modifies the DSNTIJUZ template job to show
    CACHEDYN_FREELOCAL=1 rather than CACHEDYN_FREELOCAL=0.

(5) V9 only: The DB2 install CLIST does not track the setting
    for DSN6SPRM parameters PLANMGMT and CACHEDYN_FREELOCAL

    User-specified settings for most DB2 configuration
    parameters can be stored in the DSNTIDxx member and accessed
    by the installation CLIST to customize jobs for migration,
    installation, or update. Currently, the DB2 V9 installation
    CLIST and DSNTIDxx members do not provide for tracking the
    settings of the PLANMGMT and CACHEDYN_FREELOCAL parameters.

    This APAR modifies the DB2 V9 installation CLIST to provide
    optional tracking of the PLANMGMT amd CACHEDYN_FREELOCAL
    parameter settings.

(6) V10 only: When editing job DSNTIJUZ the DB2 install CLIST
    does not assign the user-specified (DSNTIDxx) setting for
    the DSN6SPRM.CACHEDYN_FREELOCAL parameter

    The V10 DSNTIDxx member provides a way to track the setting
    of the CACHEDYN_FREELOCAL parameter. Currently, however,
    the DB2 installation CLIST does not use the DSNTIDxx setting
    for CACHEDYN_FREELOCAL when editing job DSNTIJUZ. Instead,
    it always assigns CACHEDYN_FREELOCAL=1.

    This APAR modifies the DB2 V10 installation CLIST to use the
    DSNTIDxx.CACHEDYN_FREELOCAL setting when customizing the
    DSNTIJUZ job.

(7) V10 only: Job DSNTIJRT, program DSNTRIN, incorrectly
    initializes SYSIBM.SQLTYPEINFO, a table used by the DB2
    database metadata stored procedures. Currently, the
    COLUMN_SIZE column is set to 0 in the row where TYPE_NAME
    = 'XML', but it should be set to 2147483647.

    The DB2 database metadata stored procedures use the
    COLUMN_SIZE column in SYSIBM.SQLTYPEINFO to obtain the
    maximum length, total length, or number of digits in a
    data type. Currently, when DSNTRIN creates and initializes
    SYSIBM.SQLTYPEINFO, it assigns a value of 0 for the XML
    data type.   The correct value is 2147483647.

This APAR modifies DSNTRIN to set the COLUMN_SIZE column
SYSIBM.SQLTYPEINFO to 2147483647 in the row where
TYPE_NAME = 'XML'. It also modifies DSNTRIN to check for
and correct cases where the COLUMN_SIZE column for
TYPE_NAME = 'XML' is not set to 2147483647. This APAR
also updates the sample SQL in member DSNTESR.

(8) V10 only: Job DSNTRVFY program DSNTRVFY ends with return
code 8 due to SQLCODE -4302 from the call to
SYSPROC.XSR_COMPLETE or SYSFUN.SYSTS_ENCRYPT or both.

The Java WLM environment task log contains these messages:
   DSNX961I DSNX9WLJ ATTEMPT TO PERFORM OPERATION
   CallStaticMethod FAILED FOR ROUTINE
   SYSPROC.DSNWLM_INSTALL_INFOJ .
   SSN= DSN PROC= DSNWLMJ ASID= nnnn
   CLASS= com/ibm/db2/inst/DB2Routines
   METHOD= getWLMInstallInfo ERROR
   INFO=java.lang.UnsatisfiedLinkError: dsntrvfd (EDC5157I
   An internal error has occurred.)

This error can occur when the authorization of a Java stored
procedure's DLL file does not match the authorization of the
Java WLM address space. For example, the address space proc
of the Java WLM environment runs APF-authorized but the DLL
file is not marked as authorized.

This APAR modifies the STEPLIB DD of DSNWLMJ, the address
space proc for the DB2-supplied (core) Java WLM environment,
DSNWLM_JAVA, to include a non-APF authorized library,
prefix.DBRMLIB.DATA. That library is deliberately not a
a load module library in order to greatly reduce the
likelihood of it subsequently becoming APF-authorized.

(9) V10 only: Job DSNTRVFY program DSNTRVFY truncates the
DSNT408I message when a call to a DB2-supplied stored
procedure returns an SQL error.

Currently, when the DSNTRVFY program encounters an SQL error
it uses the DSNTIAR routine to format the SQLCA and produce
a DSNT408I message. When the total length of message tokens
passed in the SQLCA exceeds 70, the DSNT408I message will be
truncated because 70 is the maximum length for all tokens
supported by the SQLCA.

This APAR modifies DSNTRVFY to use GET DIAGNOSTICS in
preference to DSNTIAR to obtain information about
unexpected SQLCODEs. Use of GET DIAGNOSTICS allows
an untruncated message to be returned even when the
length of all message tokens in the SQLCA exceeds 70.

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APARS FIXED: PM42316
SPECIAL CONDITIONS:
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ACTION:
  ***Actions for PM42316 (V9)

  This PTF provides miscellaneous DB2 installation fixes including
  the following which require action if you have already installed
  or migrated to DB2 9.1 for z/OS:
  * The DB2 installation CLIST is modified to prevent edit errors
     that can occur when running on a z/OS that uses a TSO command
     stacking product such as IBM Program Control Facility if that
     product uses the semicolon as a delimiter. The CLIST is also
     modified to support tracking of two existing DB2 subsystem
     parameters, DSN6SPRM.CACHEDYN_FREELOCAL and DSN6SPRM.PLANMGMT

  * The template DSNTIJUZ job in the SDSNSAMP library is fixed to
     show CACHEDYN_FREELOCAL=1 rather than CACHEDYN_FREELOCAL=0.
     (CACHEDYN_FREELOCAL=1 is the default in DB2 V9).

  If you have already installed or migrated to DB2 V9 then after
  applying this PTF, you need to take the following actions:
  (1) Update customized copies of DB2 installation CLIST members
  (2) Verify the setting you use for DSN6SPRM.CACHEDYN_FREELOCAL.
  (3) Add DSN6SPRM.CACHEDYN_FREELOCAL and DSN6SPRM.PLANMGMT to
      private copies of DSNTIDxx

  These actions are detailed below:
  ----
  (1) Update customized copies of DB2 installation CLIST members
  ----
  ==> This action is required

      This PTF modifies CLIST members DSNTINST, DSNTINS1, and
      DSNTINS3 in the SDSNCLST target library only.
      You need to redo any record format changes and reapply any
      tailoring you have done to your copies of these CLISTs. You
      may also want to move them to the prefix.NEW.SDSNCLST data
      set, where the CLISTs processed by job DSNTIJVC reside.

  ----
  (2) Verify the setting you use for DSN6SPRM.CACHEDYN_FREELOCAL.

  ==> This action is recommended

      This PTF corrects errors with the default setting and the
      edited setting of the DSN6SPRM.CACHEDYN_FREELOCAL parameter
      in job DSNTIJUZ. After applying this PTF, check that your
      customized DSNTIJUZ job specifies the appropriate setting
      for your site for the CACHEDYN_FREELOCAL parameter:
      - 0: DB2 cannot free local cached statements to relieve
           storage constraints below the bar.
      - 1: DB2 can free local cached statements to relieve storage
           constraints below the bar.
           ===> This is the default setting.
      - Other settings: Use only with guidance from IBM

```
(3) Add DSN6SPRM.CACHEDYN_FREELOCAL and DSN6SPRM.PLANMGMT to
    private copies of DSNTIDxx
----------------------------------------------------------------
==> This action is recommended

    This PTF updates the DB2 CLIST defaults member, DSNTIDXA.
    If you have already installed or migrated to DB2 V9.1,
    you need to add entries to track the settings of the
    CACHEDYN_FREELOCAL and PLANMGMT parameters to your
    private DSNTIDxx members for V9.

CACHEDYN_FREELOCAL NUM  M 0     32767          <n>
PLANMGMT           CHAR M NONE NONE            <x>

    Change <n> to the setting you use for CACHEDYN_FREELOCAL. If
    CACHEDYN_FREELOCAL is not specified in your customized
    DSNTIJUZ job then change <n> to 1.

    Change <x> to the setting you use for PLANMGMT.  If PLANMGMT
    is not specified in your customized DSNTIJUZ job then change
    <x> to the default setting of OFF.
ACTION:
   ***Action for PM07234:
 See PM07234 APAR/PTF text for additional information.

To identify invalid data from SYSIBM.SYSINDEXSPACESTATS
run the following query:

SELECT NAME, INDEXSPACE
  FROM  SYSIBM.SYSINDEXSPACESTATS
 WHERE INDEXSPACE NOT IN (SELECT INDEXSPACE
                            FROM SYSIBM.SYSINDEXES);

To UPDATE the invalid data from SYSIBM.SYSINDEXSPACESTATS
run the following statement:

  UPDATE  SYSIBM.SYSINDEXSPACESTATS S
      SET INDEXSPACE = (SELECT X."INDEXSPACE"
                          FROM SYSIBM.SYSINDEXES      X
                             ,SYSIBM.SYSINDEXPART    P
                         WHERE X."NAME"       = P."IXNAME"
                           AND X."CREATOR"    = P."IXCREATOR"
                           AND S."DBID"       = X."DBID"
                           AND S."ISOBID"     = X."ISOBID"
                           AND S."PARTITION"  = P."PARTITION")
           WHERE 1 = (SELECT 1
                        FROM SYSIBM.SYSINDEXES      X
                           ,SYSIBM.SYSINDEXPART    P
                       WHERE X."NAME"       = P."IXNAME"
                         AND X."CREATOR"    = P."IXCREATOR"
                         AND S."DBID"       = X."DBID"
                         AND S."ISOBID"     = X."ISOBID"
                         AND S."PARTITION"  = P."PARTITION"
                         AND S."INDEXSPACE" <> X."INDEXSPACE");
```

```
     If you maintain a customized copy of job DSNTIJEN, you need to
     update it by locating the string I."INDEXSPACE" in the
     select-list of step ENFM1105 and changing it to X."INDEXSPACE"
.


------ COVER LETTER FOR PTF UK71772 ------------

PROBLEM DESCRIPTION(S):
  PM43673 -
    ***************************************************************
    * USERS AFFECTED: All DB2 9 and 10 for z/OS users who use     *
    *                 queries that reference aggregate functions  *
    *                 with CASE expressions as its arguments. The *
    *                 searched-when clause of the CASE expression *
    *                 contains a scalar fullselect.               *
    ***************************************************************
    * PROBLEM DESCRIPTION: SQLCODE -112 may be issued incorrectly *
    *                      when a query contains a scalar         *
    *                      fullselect in the searched-when clause *
    *                      of a CASE expression. The CASE         *
    *                      expression is the argument to an       *
    *                      aggregate function.                    *
    ***************************************************************
    * RECOMMENDATION:                                             *
    ***************************************************************
    SQLCODE -112 May be issued incorrectly when a query contains
    a scalar fullselect in the searched-when clause of a case
    expression. The CASE expression is the argument to an aggregate
    function.

    Example
    ===============================================================
    1,The scalar fullselect under searched-when clause.

    SELECT MAX ( CASE WHEN
                      (SELECT 1
                         FROM SYSIBM.SYSDUMMY1) = 1
                       THEN 100
                 ELSE 20
                 END  )
    FROM SYSIBM.SYSDUMMY1;


    2, Nested CASE expression.

    SELECT MAX
            ( CASE  WHEN RATE_CD = 'LA'
                     THEN ADJ_PCT
                    WHEN RATE_CD = 'ALL'
                     THEN
                        CASE
                          WHEN (SELECT 1
                                  FROM SYSIBM.SYSDUMMY1) = 1
                          THEN 100
                          END
```

```
                     END  )
       FROM SYSIBM.SYSDUMMY1;


       SQLCODE -112 will not be issued for above scenarios after
       applying this fix.
       DB2 is modified to correctly process scalar fullselect in the
       searched-when clause of a CASE expression when the CASE
       expression is the argument to an aggregate function.


       Addition Keywords: SQLCODE112 SQLSCALAR SQLFULLSELECT
                          SQLSCALARFULSEL SQLCASE SQLSETFUNCTION
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM43673
SPECIAL CONDITIONS:
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   DOCUMENTATION:
     When a SQL statement contains a scalar fullselect in WHEN
     clause of a searched-when clause form of a CASE expression
     in an expression that is used as an argument to an aggregate
     function, SQLCODE -112 will not be issued for above scenarios
     after apply this APAR/PTF. The change will be documented in the
     SQL Reference, and in the Information Management Software for
     z/OS Solutions Information Center.

     SQL Reference Changes:
     ----------------------------------------------------------------
     The argument of an aggregate function is a set of values derived
     from an expression. The expression must not include another
     aggregate function or a scalar-fullselect (SQLSTATE 42607,
     SQLCODE -112). The scope of the set is a group or an
     intermediate result table as explained in Chapter 4, "Queries,".
.


------ COVER LETTER FOR PTF UK71865 ------------

PROBLEM DESCRIPTION(S):
   PM46044 -
     ****************************************************************
     * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS               *
     *                 parallelism users.                          *
     ****************************************************************
     * PROBLEM DESCRIPTION: 04e-00e72200,                          *
     *                      loc=dsnxgrds.dsnxsprm+1ada or          *
     *                      0c4-00000004,                          *
     *                      loc=dsnxgrds.dsnxoga +7794             *
     *                      when parallelism is used.              *
     *                                                             *
     ****************************************************************
     * RECOMMENDATION:                                             *
     ****************************************************************
     Two problems are fixed in this apar:
```

1. ABEND04E RC00E72200 in DSNXSPRM+1ADA under
   parallelism when the leading table uses rid access
   with fully equal matching index and the index
   contains either VARCHAR or VARGRAPHIC data types.
   For example:

   SELECT *
   FROM   T1, T2
   WHERE T1.C3 = T2.C1 AND
          T1.C1 = 1   AND
          T1.C2 = 'A';

   The access path is:

   T1 nested loop join T2, where T1 is the leading
   table with rid access and the index used on T1
   is IX1(C1,C2). C2 is a VARCHAR column. Both of
   IX1's two columns are covered by equal local
   predicates (C1=1 and C2='A').

2. ABEND0C4 RC00000004 in DSNXOGA +7794 under
   parallelism when a query is bound/rebound with
   APREUSE or full optimization hints and parallel
   sort for join is specified in the hint.
   This abend happens on DB2 V10 only.

   Additional Keywords:
   SQLCPUP   SQLPARALLELISM   SET CURRENT DEGREE ANY
   DB2PARALL/K   OPTHINTS   OPTHINT

   The two problems mentioned above are fixed in this APAR.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM46044
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM46044 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM46044 fixes ABEND04E RC00E72200 in DSNXSPRM+1ADA or
    ABEND0C4 RC04 in DSNXOGA+7794 when a query is run under
    parallelism.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM38935:

    See PM38935 APAR/PTF text for additional information about
    why a REBIND is necessary.

PM38935 corrects a problem of inefficient list prefetch for
    parallelism.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    See PM26571 APAR/PTF text in the PTF cover letter for
    additional information about why a REBIND is necessary.

    PM26571 fixes a bad access path problem when a query
    is run in parallelism and the leading table of a join
    uses DPSI index access. The symptom of the problem
    can be 04E abend or incorrect output, depending on the data.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM12054:

    See PM12054 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM12054 corrects a problem of using an inefficient LIST
    PREFETCH plan when the leading table uses fully equal
    matching index scan if parallelism is enabled, but is not
    chosen.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
 .

    ------ COVER LETTER FOR PTF UK71867 ------------

PROBLEM DESCRIPTION(S):
  PM16327 -
    ****
    * USERS AFFECTED: All DB2 9 and 10 for z/OS users of the   *
    *   following built-in functions: *
    *   1. VARIANCE, VARIANCE_SAMP   *
    *   2. STDDEV, STDDEV_SAMP   *
    *   3. SUM   *
    *   4. AVG   *
    *   And all DB2 10 for z/OS users of the   *
    *   following built-in functions: *
    *   1. CORRELATION   *
    *   2. COVARIANCE, COVARIANCE_SAMP   *
    ****
    * PROBLEM DESCRIPTION: 1. Change the result data length of the *

```
*                             VARIANCE, VARIANCE_SAMP, SUM, AVG    *
*                             STDDEV, and STDDEV_SAMP built-in     *
*                             functions in DB2 9 and 10 for z/OS.  *
*                                                                  *
*                          2. Change the result data type of the   *
*                             CORRELATION, COVARIANCE, and          *
*                             COVARIANCE_SAMP built-in functions    *
*                             in DB2 10 for z/OS.                   *
********************************************************************
* RECOMMENDATION:                                                  *
********************************************************************
```
1. The result data length for the VARIANCE, VARIANCE_SAMP, SUM,
   AVG, STDDEV, and STDDEV_SAMP is being changed for certain
   input data type combinations to be consistent with other DB2
   platforms. The result data type will be changed from
   DECFLOAT(16) to DECFLOAT(34) when the input is DECFLOAT(16).

2. The result data type for the CORRELATION, COVARIANCE, and
   COVARIANCE_SAMP is being changed for certain input data type
   combinations to be consistent with other DB2 platforms.
   The result data type will change from DECFLOAT(34) to a
   double precision floating-point when the input is all integer
   or decimal values, or a mixture of float/double with
   integer/decimal.
   APAR PM34876 provides the pre-conditioning for this APAR.
   In a data sharing group, pre-conditioning APAR PM34876
   should be applied to all members before this enabling APAR
   is applied to any member.

   Additional Keywords: SQLSUM SQLAVG SQLCORRELATION
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM16327
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM32378:

    See PM32378 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM32378 corrects a problem of when parallelism is used, DB2
    does not stop after finding a qualified row for an non-
    correlated EXISTS/NOT EXISTS SUBQUERY.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM22769:

    See PM22769 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM22769 corrects a problem that an INCORROUT, an ABEND04E

RC00E20027 at location DSNXEFB.DSNSVBK+0A02 or ABEND04E
RC00E2000F at location LER OF S.DSNSVSFB+0846 or an SQLCODE -404
or -305 could happen if an SQL statement satisfies the
following conditions.

1. It contains a scalar function EBCDIC_STR, ASCII_STR,
   UNICODE_STR, UNICODE, ASCII_CHR or EBCDIC_CHR in the SELECT
   list of a subselect(A).
2. The subselect(A) connects to another subselect(B) by a
   clause UNION, EXCEPT, or INTERSECT.
3. The peer result column in the SELECT list of the other
   subselect(B) returns a value with data type NOT NULL.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  See PM16327 APAR/PTF text for additional information about why
  a REBIND is necessary. APAR PM34876 provides the
  pre-conditioning for this APAR.

  PM16327 changes the result data type for the following
  built-in functions:

   1. VARIANCE, VARIANCE_SAMP
   2. SUM
   3. AVG
   4. STDDEV, STDDEV_SAMP

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PM06527 APAR/PTF text in the PTF cover letter for
  additional information about why a REBIND is necessary.

  APAR PM06527 corrects a problem that can cause incorrect
  output to be returned when the VARBINARY type column is involved
  in a set function.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
MULTSYS:
  PM16327 is an APAR that includes changes to support a functional
  code change that will be enabled once this APAR is applied.
  Earlier, pre-conditioning APAR PM34876 was delivered. In a
  data sharing group, the pre-conditioning APAR should be applied
  to all members before applying this enabling APAR to any member.
  The code change is enabled once this enabling APAR is applied.

  The functional code change enabled by APAR PM16327 is to change
  the result data type for the following built-in functions:

```
     1. VARIANCE, VARIANCE_SAMP
     2. SUM
     3. AVG
     4. STDDEV, STDDEV_SAMP
ACTION:
  ***Action for PM22769:

  PM22769 corrects a problem that an INCORROUT, an ABEND04E
  RC00E20027 at location DSNXEFB.DSNSVBK+0A02 or ABEND04E
  RC00E2000F at location LER OF S.DSNSVSFB+0846 or an SQLCODE -404
  or -305 could happen if an SQL statement satisfies the
  following conditions.

     1. It contains a scalar function EBCDIC_STR, ASCII_STR,
        UNICODE_STR, UNICODE, ASCII_CHR or EBCDIC_CHR in the SELECT
        list of a subselect(A).
     2. The subselect(A) connects to another subselect(B) by a
        clause UNION, EXCEPT, or INTERSECT.
     3. The peer result column in the SELECT list of the other
        subselect(B) returns a value with data type NOT NULL.

  To make this fix effective for any view that contains the
  pattern described above, the view must be dropped and recreated
  after application of this PTF.
ACTION:
  This PTF changes the result data type for the following
  built-in functions in V9:

     1. VARIANCE, VARIANCE_SAMP
     2. SUM
     3. AVG
     4. STDDEV, STDDEV_SAMP

  The result data length for the VARIANCE, VARIANCE_SAMP, SUM,
  AVG, STDDEV, and STDDEV_SAMP is being changed for certain
  input data type combinations to be consistent with other DB2
  platforms.  The result data type will be changed from
  DECFLOAT(16) to DECFLOAT(34) when the input is DECFLOAT(16).

  The changes introduced by this APAR are incompatible with
  earlier DB2 V9 support.  These changes are necessary to
  standardize the resulting data types between different DB2
  platforms.

  If the following objects reference the above built-in functions,
  actions are required to make the PTF effective for them:

  1. Views

     Regenerate views using the ALTER VIEW REGENERATE statement

  2. Materialized query tables (MQT)

     Drop and recreate the MQTs
```

3. SQL scalar UDFs

      Drop and recreate the UDFs.

   4. SQL native procedures

      Regenerate procedures using the ALTER PROCEDURE REGENERATE
      statement

   This PTF may affect the format of data returned by dynamic SQL
   processing programs, such as SPUFI, DSNTEP2, and DSNTEP4 because
   of the data type and length difference. Proper action should be
   taken if such mismatch is observed. It may also impact the
   applications using DESCRIBE.

   If the DSNTIAUL sample program is used correctly to generate a
   LOAD utility control statement, then after application of this
   PTF, the new control statement generated may not match the data
   length of the view's column from the previous control statement.
.

   ------ COVER LETTER FOR PTF UK72123 ------------

PROBLEM DESCRIPTION(S):
  PM43936 -
     ****
     * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
     *   users of XML columns.   *
     ****
     * PROBLEM DESCRIPTION: Incorrect result for an XML column   *
     *   when the length of the XMLDATA column *
     *   is equal to 15849 or 15850 bytes   *
     ****
     * RECOMMENDATION: *
     ****
     XMLDATA is a column in the XML auxiliary table. The problem is
     when an XML column is fetched, two bytes of the XML document
     may be incorrect if the length of the data in the XMLDATA
     column is equal to 15849 or 15850 bytes. XMLDATA is a
     varbinary column with a maximum length of 15850.

     The problem is only 15850 bytes of memory was allocated for
     fetching the XMLDATA column. Two more bytes needed to be
     allocated to include the two byte length field for the
     varbinary column.

     The problem appeared when the UNLOAD utility was used to
     unload an XML column that supports multiple XML versions.
     The problem may also occur for SQL statements that fetch
     an XML column if the length of the data in the XMLDATA column
     is equal to 15849 or 15850 bytes.
     DB2 was fixed to allocate 15852 bytes for fetching the XMLDATA
     column from the XML auxiliary table.

     Additional keywords: SQLXML XMLALL

```
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM43936
SPECIAL CONDITIONS:
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  DB2BIND:
    See PM43936 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM43936 corrects a problem of incorrect XML output when the
    length of the XMLDATA column in the XML auxiliary table is
    greater than or equal to 15849 bytes.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.


------ COVER LETTER FOR PTF UK72194 ------------

PROBLEM DESCRIPTION(S):
  PM45659 -
    ****************************************************************
    * USERS AFFECTED: All IRLM 2.1(HIR2101), IRLM 2.2(HIR2220)    *
    *                 and IRLM 2.3(HIR2230) DB2 users data sharing *
    *                 SYSPLEXDS.                                   *
    ****************************************************************
    * PROBLEM DESCRIPTION: DB2 restart failure after IRLM PTFs for *
    *                      apars PM28625/PM38328 are applied.      *
    *                      IRLM failed during its global          *
    *                      initialization unable to join a data   *
    *                      sharing group. IRLM MSGDXR158I and     *
    *                      MSGDXR133I are issued on the console.  *
    ****************************************************************
    * RECOMMENDATION: INSTALL CORRECTIVE SERVICE FOR APAR/PTF     *
    ****************************************************************
    A data sharing member may be unable to join the group after
    PTFs for PM28625/PM38328 are applied to all existing members of
    the group. MSGDXR158I is issued by existing members rejecting
    the peer connection.
    DXR158I irlmnA CANNOT COEXIST WITH AT LEAST ONE EXISTING MEMBER.
    ALL DBMS IDENTIFY REQUESTS TO THAT IRLM WILL BE DENIED.
    The member which failed to restart would ABENDU2025 after
    issuing MSGDXR133I.
        DXR133I irlmnmB TIMEOUT DURING GLOBAL INITIALIZATION
        WAITING FOR irlmnA
COMPONENT:  5695-16401-HIR2220
APARS FIXED: PM45659
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    ****************************************************************
```

```
PM45659
*************************************************************
PM45659 is a fix for PE PTFs for apars PM28625 or PM38328
     APAR | IRLM210 | IRLM220 | IRLM230
    -------------------------------------------
   PM28625 | UK65360 | UK65361 | UK65362
   PM38328 | UK69136 | UK69137 | UK69138
    -------------------------------------------
    PTFs for PM38328 supercedes PTFs for PM28625.


PTFs for PM45659 can be applied in a rolling way. A group
restart is not necessary. Until all members in a datasharing
group have this fix ON, the group will continue to operate at
the lowest IRLM function level that will be using the old or
new hashing mechanism. When the last member is bounced with
the PM45659 fix and joins the group where all existing members
already have PM45659 fix ON, it will trigger the lock structure
rebuild for coexistence. The group will start operating with
the hashing mechanism that was used prior to PM28625/PM38328
changes, after the lock structure rebuild is successfully
completed.

PM45659 introduces a new function level 29 for IRLM.
Until all members of the data sharing group get this fix
installed, the group will be operating at function level < 29.
Once the whole group is operating at function level 29, IRLM
will switch the whole group to use the old hashing method which
was in place before the PM28625/PM38328 changes.

Installation Notes for PM45659
------------------------------
A. If you have NOT applied PE PTFs for apars PM28625 or PM38328
   for any  IRLM releases on any members in your datasharing
   group, there is no restriction in applying the PTFs for
   PM45659.  There is NO NEED to read further.


B. !!! ATTENTION REQUIRED !!!

   If you have PE PTFs for apars PM28625 or PM38328 installed,
   PLEASE READ the following note carefully, else you could run
   into follwing problems in a data sharing environment.
   - a member being unable to rejoin the group.
   - exposure to data corruption if PE PM28625 is installed
    without its fixing APAR PM38328 on some members in a group.


   Please contact IBM support with any questions.

   If you have applied PE PTFs for apars PM28625 or PM38328 on
   your data sharing members, you could perform rolling
   install of PM45659.  Until the last member is refreshed with
   PM45659, the remaining members can join and leave the group
   without any restrictions. When the last IRLM member in the
   group is upgraded with PM45659  and is restarted, the IRLM
   group function level is upgraded to function level 29 and
   members without PM45659 will not be allowed to join the group.
```

Note #1
     In the event of a group restart where not all members had
PM45659 applied, there are special guidelines and
restrictions.
If a member with PM45659 comes up first in the group during
the restart, it will block those members which have PE PTFs
for PM28625 or PM38328 on.
If a member with PE PTFs for PM28625 /PM38328 comes up
first then there are no restrictions in other members having
PM45659 applied to rejoin the group.

     Corrective action:
          Apply PM45659 fix or restore the PTFs for apars
PM28625/PM38328 on these failing members in order to have them
join the group. A new member NOT having PE PTFs for apars
PM28625/PM38328 would be able to join and leave the group
without any restrictions.

     Note #2
     With PE PTFs for apars PM28625 or PM38328 installed on all
members of a datasharing group, the IRLM function group level
is 28. While the existing IRLM group function level remains
at 28 IRLM group is using new hashing mechanism. IRLMs in the
group will not allow any member with function level less than
28 to join the group (i.e. those with IRLM maintenance level
prior to PM28625/PM38328 changes).

     Corrective action:
          Apply PM45659 fix on those members which failed to
restart, or terminate all members and start a member first
which does not have PE PTFs for apars PM28635/PM38328 applied.
****
ACTION:
****
PM38328
****
APAR PM38328 corrects an error in PM28625 which could cause
incorrect lock resource hash values in IRLM. Please follow
the installation guidelines below, which match your current
environment.

PM28625 ALREADY INSTALLED ON ALL MEMBERS

If PM28625 is already applied to all members in a group, the
group should be functioning at level 28 after the successful
rebuild of the lock structure which should have occurred when
the last member was upgraded to PM28265. You can apply PM38328
If you upgraded all members at once, there would not be a
rebuild necessary, so none would have been triggered.
You can apply PM38328 by recycling one or more members at a
time or all at one time.
The group will still be functioning at level(28) after PM38328
is applied. There will be no rebuild of the CF lock structure
occurring when the last member is upgraded with PM38328.

INSTALLATION OR OPERATIONAL RESTRICTIONS:

There are no restrictions associated with this install.

PM28625 NOT INSTALLED ON ANY MEMBER

Since PM38328 supercedes PM28625 and corrects the hash
algorithm error, it may be applied by recycling one or more
members at a time. The old hash algorithm is used until
all members have PM38328 applied and the group function
level rebuild of the CF lock structure has occurred.
If all members are brought down and upgraded at the same
time, no rebuild of the lock structure is necessary and
none will be triggered.

INSTALLATION OR OPERATIONAL RESTRICTIONS:
Members without PM38328 will be allowed to join the group
under the following conditions:
The first member to join the group does not have PM38328
applied AND either:
1.there is always at least one member in the group without
  PM38328 applied
OR
2.no member with PM38328 applied has joined the group since
  the last member without PM38328 left the group.

Once the last member without PM38328 leaves the group so that
all remaining members have PM38328 applied, if another member
with PM38328 joins the group resulting in a REBUILD of the CF
lock structure, the function level will change to 28 and
members without PM38328 will no longer be allowed in the
group.

If you are forced into a GROUP RESTART before all members
have been upgraded to PM38328, you have two choices:
1. Start one member which does NOT have the PM28625/PM38328
   fix on, first. This will preset the data sharing group level
   to the lower value (i.e. without PM28625/PM38328 fix).
   Bring up the rest of the group members with or without the
   PM28625/PM38328 fix applied, in any order.
OR
2. Upgrade all members immediately so that the group comes up
   with all members having PM38328 applied.

GENERAL INFORMATION:

IRLM function level is being increased in PM28625/PM38328 fix.
Until all members of a data sharing group have this fix on, the
group will continue to operate at a lower level which will be
using the old hashing mechanism in IRLM. The new hashing method
implemented in PM28625 will be enabled only when all of the
members in a data sharing group have PM28625/PM38328 fix
available. The last member joining the group where all other
members already have the fix ON, will trigger the lock
structure rebuild for group function change. The group will
start operating with the new hashing mechanism after a
successful rebuild indicated by the following messages:
Again, if the group was upgraded all at one time, there will

not be a rebuild of the CF lock structure.

DXR156I irlmnm REBUILDING LOCK STRUCTURE TO CHANGE THE GROUP
FUNCTION LEVEL.

DXR146I irlmnm REBUILD OF LOCK STRUCTURE COMPLETED SUCCESSFULLY
WITH nM LOCK TABLE AND nnnn RECORD LIST ENTRIES

>>>> IMPORTANT >>>>
Once a group is operational with all members having PM38328
applied, the group would be using the new hashing mechanism.
From this point forward, any new member attempting to join
the group WITHOUT the fix, will NOT be allowed in the group.
This is done to protect data integrity as all members in a
group are required to use the same hashing algorithm.
After the REBUILD of the CF lock structure is completed or
your group was started with all members having PM38328
applied, you can NOT have any member fall back to the old
code level.

If you need to fall back to the old level for any reason,
you will need to quiesce the whole group normally or
otherwise terminate the group. You many then start the
first member of the group without PM38328 applied and the
group will function using the old hash algorithm.
>>>>>>>>>>>>>>>>>>>

If a new member, which does not have PM28625/PM38328 fix
applied, attempts to join a group where all members have
PM28625/PM38328 fix already applied and are using the new
hashing algorithm, IRLM will fail the new member's
initialization.

Existing members of the data sharing group will issue
MSGDXR158I.

DXR158I irlmnA CANNOT COEXIST WITH AT LEAST ONE EXISTING
MEMBER. ALL DBMS IDENTIFY REQUESTS TO THAT IRLM WILL BE DENIED.

The down level member failing to join the group will issue
MSGDXR133I for each existing member it is waiting on.

DXR133I irlmnB TIMEOUT DURING GLOBAL INITIALIZATION
        WAITING FOR irlmnA

This down level member will finally time out and IRLM will
produce ABENDU2025.

There is no restriction for coexistence of members with
different DB2/IRLM release levels, as long as all of them
have the PM28625/PM38328 fix on.
    ****
ACTION:
    ****
    PM28625
    ****

This APAR fix could be applied to all members of a datasharing
group in a rolling fashion. The new functionality will be
enabled only when all of the members have this fix ON.

A group restart would be fine as long as all of the members
in the group have this fix applied. IRLM group function level
is being raised up with this fix. If a new member which does not
have this fix applied and attempts to join this group which is
operating at higher level, IRLM initialization will fail.

In cases where some of the datasharing members have the fix
applied and some of them don't have it, there are special steps
to be taken in order do a group restart in any event.
Users would need to bring an old member which doesn't have the
fix on, first in the group, followed by rest of the members in
that group.
If the group restart is attempted and one of the members that
has the fix, becomes the first member in the group it will
prevent restart of those members which don't have the fix ON.
because the group function level is raised by this APAR.
Failing members would be able to join in only after getting
this fix applied.
        ****
.

------ COVER LETTER FOR PTF UK72213 ------------

PROBLEM DESCRIPTION(S):
  PM43292 -
        ****
        * USERS AFFECTED: All DB2 for z/OS Distributed Data Facility *
        *   (DDF) users. Especially those who are   *
        *   using RACF PassTickets to remotely access   *
        *   a DB2 for z/OS server via TCP/IP.   *
        ****
        * PROBLEM DESCRIPTION: Message DSNL030I is displayed with   *
        *   csect-name token DSNLTSEC.30 and   *
        *   REASON=00F30085. Also, the userid   *
        *   displayed in the message is known to   *
        *   be a RACF protected userid.   *
        ****
        * RECOMMENDATION: *
        ****
        Currently, a DB2 for z/OS subsystem which receives connect
        requests from other DB2 for z/OS subsystems via TCP/IP must
        pass the userid credentials to SAF for authentication.
        Usually, for TCP/IP communications, the userid is presented
        with a password for authentication. Unlike SNA communications,
        specific TCP/IP requesting locations cannot be configured to
        be trusted to provide already-verified userids. TCP/IP
        communications must therefore be setup at a requesting DB2
        for z/OS to send both a userid and a password in the connect
        request to a remote DB2 location. To minimize the storing of
        userids and passwords in the requesting DB2 for z/OS
        Communications Data Base (CDB), many users configure the

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requesting DB2 for z/OS to use RACF PassTickets when connecting
to other remote DB2 for z/OS locations. Since the serving DB2
does not have any indication that the password could be a RACF
PassTicket, the serving DB2 passes the userid and password to
SAF for authentication. For most userids, SAF (RACF) will
check to see if the password is a valid RACF PassTicket, and
if it is, will then authenticate the userid for access to the
serving DB2 for z/OS. However, if the userid is a RACF
protected userid, RACF will reject this authentication request
by flagging the password as invalid. Both ICH408I and IRR013I
messages will be issued indicating that an invalid password was
presented for authentication.

DB2 has been changed to support receiving RACF PassTickets
with RACF protected userids over TCP/IP communications from
requesting DB2 for z/OS subsystems.
However, when receiving RACF PassTickets as passwords with
RACF protected userids over TCP/IP communications from a DB2
for z/OS requester, the following RACF actions must be taken
as follows:
- A RACF PTKTDATA resource profile must be created at the
  server system or sysplex using the following naming rules:

  RDEFINE PTKTDATA IRRPTAUTH.applname.userid or
  RDEFINE PTKTDATA IRRPTAUTH.applname.*

  Where applname is either the generic LU name or IPNAME
  assigned to each member of a serving data sharing group
  or is the LUNAME or IPNAME assigned to the serving
  non-data sharing subsystem.

  Where userid is either an asterisk ("*") or a RACF protected
  userid that one wants to allow into the serving subsystem or
  member of a data sharing group.
- Once the RACF profile has been defined, the PTKTDATA resource
  must be refreshed as follows:

  SETROPTS RACLIST(PTKTDATA) REFRESH
- Once the PTKTDATA resource profiles have been refreshed and
  loaded, the userid assigned in the STDATA of the STARTED
  profile of the ssidDIST address space must be permitted to
  read this new profile as follows:

  PERMIT IRRPTAUTH.applanme.userid CLASS(PTKTDATA) -
    ID(dist_userid) ACCESS(READ) or
  PERMIT IRRPTAUTH.applname.* CLASS(PTKTDATA) -
    ID(dist_userid) ACCESS(READ)

  Where userid and dist_userid are not the same.
The above actions do not need to be taken if one does not use
RACF protected userids in connect requests from a requesting
DB2 for z/OS to a serving DB2 for z/OS.
The RACF resource profile can be created prior to installing
the PTF of this APAR. However, until all members of a data
sharing group have been started with the PTF applied, some
members may still reject the connection attempt as receiving

an invalid password when a RACF protected userid is used in
the connection attempt.
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APARS FIXED: PM43292
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    ***Documentation for PM43292:

    See PM43292 APAR/PTF text for additional information.

    The following text describes the function that is provided
    by this APAR. This information will be available in the
    Information Management Software for z/OS Solutions
    Information Center at a later date.

    When receiving RACF PassTickets as passwords with RACF
    protected userids over TCP/IP communications from a DB2 for
    z/OS requester, the following RACF actions must be taken as
    follows:

    - A RACF PTKTDATA resource profile must be created at the
      server system or sysplex using the following naming rules:

      RDEFINE PTKTDATA IRRPTAUTH.applname.userid or
      RDEFINE PTKTDATA IRRPTAUTH.applname.*

      Where applname is either the generic LU name or IPNAME
      assigned to each member of a serving data sharing group
      or is the LUNAME or IPNAME assigned to the serving
      non-data sharing subsystem.

      Where userid is either an asterisk ("*") or a RACF protected
      userid that one wants to allow into the serving subsystem or
      member of a data sharing group.

    - Once the RACF profile has been defined, the PTKTDATA resource
      must be refreshed as follows:

      SETROPTS RACLIST(PTKTDATA) REFRESH

    - Once the PTKTDATA resource profiles have been refreshed and
      loaded, the userid assigned in the STDATA of the STARTED
      profile of the ssidDIST address space must be permitted to
      read this new profile as follows:

      PERMIT IRRPTAUTH.applanme.userid CLASS(PTKTDATA) -
        ID(dist_userid) ACCESS(READ) or
      PERMIT IRRPTAUTH.applname.* CLASS(PTKTDATA) -
        ID(dist_userid) ACCESS(READ)

      Where userid and dist_userid are not the same.

    The above actions do not need to be taken if one does not use
    RACF protected userids in connect requests from a requesting

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DB2 for z/OS to a serving DB2 for z/OS.
.

------ COVER LETTER FOR PTF UK72346 ------------

PROBLEM DESCRIPTION(S):
  PM43934 -
     ****
     * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
     *   users of DB2 sort.   *
     ****
     * PROBLEM DESCRIPTION: ABEND04E RC00E70005 DSNXESX2 P404   *
     *   may occur   *
     ****
     * RECOMMENDATION: *
     ****
     An internal DB2 sort buffer can contain several fields.
     In the error case, one of these fields is set incorrectly
     which could lead to an abend

     This problem is more likely to occur with parallelism but
     can occur without
     The code in DB2 has been modified to setup the sort buffer field
     correctly so that relocation failures do not occur during
     execution.

     Additional keywords: SQLPARALLELISM SQLSORT DB2PARALL/K
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM43934
SPECIAL CONDITIONS:
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  DB2BIND:
     ***Action for PM43934:

     See PM43934 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM43934 corrects a problem that can lead to an ABEND04E
     RC00E70005 at location DSNXESX2 P404.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF. Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
  DB2BIND:
     ***Action for PM28718:

     See PM28718 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM28718 corrects a problem of incorrect output when running
     a query which SELECT from MERGE when the UPDATE clause is in
     row expression format and the MERGE contains an INCLUDE column

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To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK72542 ------------

PROBLEM DESCRIPTION(S):
  PM44210 -
    ****
    * USERS AFFECTED: All DB2 users who create tables with XML   *
    *   columns.   *
    ****
    * PROBLEM DESCRIPTION: PM44210 provides pre-conditioning   *
    *   support for PM44216. Users who create *
    *   tables with XML columns in a data-   *
    *   sharing environment may be affected.   *
    ****
    * RECOMMENDATION: *
    ****
    PM44210 provides pre-conditioning support for PM44216.
    Users who create tables with XML columns in a data-sharing
    environment may be affected.

    Users who are affected are those who will be creating tables
    with XML columns in a data-sharing environment, and who also
    intend to use new function delivered in PM44216.

    Users who are affected by PM44210/PM44216 must apply this
    pre-conditioning APAR (PM44210) to all data-sharing
    members before the new function enabling APAR (PM44216)
    is applied to any data-sharing member.

    Please refer to the PTF coverletter for PM44216 for a
    description of the new function being delivered.

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APARS FIXED: PM44210
SPECIAL CONDITIONS:
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  MULTSYS:
    PM44210 is a pre-conditioning APAR that includes toleration
    support for APAR PM44216. PM44216 delivers new function
    support for randomized XML DOCIDs.

    Users who are not creating new tables with XML columns will
    not be affected by PM44210/PM44216.

    Users who do not reassemble a DSNZPARM module with
    XML_RANDOMIZE_DOCID=YES (enabled by PM44216) will also
    not be affected by PM44210/PM44216.

    For users who will create new tables with XML columns in

a data-sharing group and intend to enable new parameter
        XML_RANDOMIZE_DOCID, this pre-conditioning APAR PM44210
        must be applied to all data-sharing members before
        enabling APAR PM44216 is applied to any member.
.

------ COVER LETTER FOR PTF UK72780 ------------

PROBLEM DESCRIPTION(S):
  PM45855 -
      ****
      * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of   *
      *   Native SQL Procedure.   *
      ****
      * PROBLEM DESCRIPTION: ABEND04E RC00E70005 DSNXEBPG M800   *
      *   could occur when a native SQL   *
      *   procedure contains FOR statement and   *
      *   whose select statement of the cursor   *
      *   references SQL variables in its   *
      *   predicate.   *
      ****
      * RECOMMENDATION: *
      ****
      ABEND04E RC00E70005 DSNXEBPG M800 could occur when a native
      SQL procedure contains FOR statement and whose select
      statement of the cursor references SQL variables in its
      predicate.

      The following example could recreate the abend:
       CREATE PROCEDURE SYSADM.MYTEST1
       P1: BEGIN
          DECLARE VAR1 ,VAR2 INT;
          DECLARE NUM INTEGER;
          SET NUM=0;
          SET VAR1 = 3;
          SET VAR2 = 6;
          FOR FOR_CS1 AS FOR_CUR CURSOR FOR
           SELECT C1 AS VAR1
           FROM T1
            WHERE VAR2>5
           DO
            SET NUM=VAR1;
           END FOR;
        END P1 !
      DB2 is updated to handle the FOR statement in Native SQL
      Procedure correctly.
      Additional Keywords: SQLNATIVESQLPL SQLFORLOOP
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM45855
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM35665:

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See PM35665 APAR/PTF text for additional information about
why a REBIND is necessary.

PM35665 corrects a problem of incorrect output when a query
references a value compare predicate with different CCSID in
its left side and right side.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
PM31495 correctly process the LIKE predicate with the ESCAPE
expression whose result type is a BLOB.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
***Action for PM21805:

See PM21805 APAR/PTF text for additional information about
why a REBIND is necessary.

PM21805 corrects a problem of incorrect output when a SQL
statement contains a predicate comparing the result of case
expression to a column which is defined with a different
encoding scheme.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
***Action for PM08974:

See PM08974 APAR/PTF text for additional information about
why a REBIND is necessary.

PM08974 corrects a problem that a query may receive less rows
back or cause an ABEND04E RC00E70005 at location
DSNXGRDS.DSNXO1S P025 or an ABEND0C4 RC00000038 at location
DSNXGRDS.DSNXOB2+89DC if it meets one of the following
conditions:

1. The match-expression in a LIKE predicate references built-in
function RTRIM(COLUMN_NAME) that can be matched to an index key
expression.

2. The match-expression in a LIKE predicate references built-in
function STRIP(COLUMN_NAME, TRAILING) that can be matched to an
index key expression.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover

```
      letter to determine which, if any, applications could be
      affected by this change.
.



------ COVER LETTER FOR PTF UK72798 ------------

PROBLEM DESCRIPTION(S):
  PM46986 -
      *****************************************************************
      * USERS AFFECTED: Users of DB2 for z/OS executing queries      *
      *                 that have multiple IN-list predicates        *
      *                 on the same table.                           *
      *****************************************************************
      * PROBLEM DESCRIPTION: THE PROBLEM THIS FIX ADDRESSES HAS THE  *
      *                      FOLLOWING REPORTED SYMPTOMS:            *
      *                                                              *
      *                       INCORRECT OUTPUT                       *
      *                                                              *
      *                      PROBLEM SCENARIO:                       *
      *                                                              *
      *                      Too few rows are returned when          *
      *                      executing a query that has multiple     *
      *                      IN-list predicates on the same table.   *
      *                      Here is an example:                     *
      *                                                              *
      *                      SELECT *                                *
      *                       FROM T1 TAB1,                          *
      *                            T2 TAB2                           *
      *                        WHERE                                 *
      *                            TAB1.COL1 = TAB2.COL1             *
      *                        AND TAB1.COL2 = TAB2.COL2             *
      *                        AND                                   *
      *                        (                                     *
      *                         (TAB1.COL3 IN ('A','C','S','P')      *
      *                          AND                                 *
      *                          TAB1.COL4 IN ('~#','PO','TR','CS')  *
      *                          AND                                 *
      *                          TAB2.COL3 = 'Z'                     *
      *                         )                                    *
      *                         OR                                   *
      *                         (TAB1.COL3 IN ('A','C','S','P')      *
      *                         AND                                  *
      *                         TAB1.COL4 IN ('~#','LA','SR')        *
      *                         AND                                  *
      *                         TAB2.COL3 = 'X'                      *
      *                         )                                    *
      *                        )                                     *
      *                             ;                                *
      *****************************************************************
      * RECOMMENDATION:                                              *
      *****************************************************************
      SUMMARY OF DB2 EVENTS:
      DB2 was attempting to remove redundant predicates and
      removed an IN-list predicate that was not supposed to be
      removed.
```

```
        PROBLEM CONCLUSION:
        DB2 now correctly removes redundant predicates that are not
        IN-list.


        ADDITIONAL KEYWORDS:
        SQLIN INCORROUT SQLINCORR DB2INCORR/K
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM46986
SPECIAL CONDITIONS:
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   DB2BIND:
      ***Action for PM46986:


      See PM46986 APAR/PTF text for additional information about
      why a REBIND is necessary.


      PM46986 corrects a problem of incorrect output when
      executing a query that has multiple IN-list
      predicates on the same table.


      To make this fix effective for a static application, it must be
      rebound after application of this PTF.  Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
   DB2BIND:
      ***Action for PK67217:


      See PK67217 APAR/PTF text in the PTF cover letter for
      additional information about why a REBIND is necessary.


      PK67217 corrects a problem of possible incorrect output for a
      query containing an OR and both BETWEEN and NOT BETWEEN
      predicates.


      To make this fix effective for a static application, it must be
      rebound after application of this PTF.  Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
   DB2BIND:
      See PK44549 APAR/PTF text in the PTF cover letter for
      additional information about why a REBIND is necessary.


      PK44549 corrects a DB2 V9 incorrect output problem that may
      occur for outer join queries.


      To make this fix effective for a static application, it must be
      rebound after application of this PTF.  Review the PTF cover
      letter to determine which, if any, applications could be
      affected by this change.
.



      ------ COVER LETTER FOR PTF UK72975 ------------


PROBLEM DESCRIPTION(S):
```

```
PM48011 -
  ****************************************************************
  * USERS AFFECTED: All DB2 for z/OS users of subqueries.        *
  ****************************************************************
  * PROBLEM DESCRIPTION: DB2 may select an inefficient access    *
  *                      path for a query with subqueries that   *
  *                      is correlated to multiple tables, or    *
  *                      with a correlated subquery predicate    *
  *                      under a non-boolean term predicate.     *
  ****************************************************************
  * RECOMMENDATION:                                              *
  ****************************************************************
  DB2 may produce an inaccurate cost estimation for a query with
  subquery that is correlated to multiple tables or with a
  subquery predicate under a non-boolean term predicate.
  As a result, DB2 may select an inefficient access path for
  the query. In particular, DB2 may select an access path
  with Sort Merge Join.

  For example,
  SELECT *
  FROM   T1, T2
  WHERE  T1.C1 = T2.C1
    AND  EXISTS(
           SELECT 1
           FROM   T3
           WHERE  T3.C2 = T1.C2
             AND  T3.C3 = T2.C3);

  The above query contains a subquery that is correlated both T1
  and T2 in its parent query block. DB2 may select an inefficient
  access path for the above query due to the inaccurate cost
  estimation problem.

  Additional Keywords:
  SQLACCESSPATH SQLSUBQUERY SQLPERFORMANCE SQLSMJ SMJ SQLMSJ MSJ
  Code has been modified to provide a more accurate cost
  estimation for queries described as above.
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APARS FIXED: PM48011
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM48011:

  A rebind is necessary for static applications to rebuild
  access paths based on the changes in this APAR.

  PM48011 corrects a problem of inaccurate cost estimation for
  a query with subqueries that is correlated to multiple tables
  or with a correlated subquery predicate under a non-boolean
  term predicate.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF.  Review the PTF cover
```

letter to determine which, if any, applications could be
affected by this change.
.

------ COVER LETTER FOR PTF UK73138 ------------

PROBLEM DESCRIPTION(S):
  PM44216 -
    ****
    * USERS AFFECTED: All DB2 users who create tables with XML   *
    *   columns.   *
    ****
    * PROBLEM DESCRIPTION: PM44216 adds new subsystem parameter   *
    *   XML_RANDOMIZE_DOCID which specifies   *
    *   that the DOCIDs for tables that   *
    *   are created with XML columns can   *
    *   be generated in random order   *
    *   instead of sequentially.   *
    ****
    * RECOMMENDATION: *
    ****
    In DB2 9 for z/OS, PM44216 adds new subsystem parameter
    XML_RANDOMIZE_DOCID which indicates whether the DOCIDs for
    tables that are created with XML columns are to be generated in
    random order instead of sequentially.

    Tables with XML columns and DOCIDs generated in random order
    may have a performance benefit when concurrent users are
    inserting XML simultaneously.

    The new function takes effect when the DSNZPARM module is
    reassembled with XML_RANDOMIZE_DOCID=YES and put into effect.

    Tables created after XML_RANDOMIZE_DOCID is set to YES will
    get DOCIDs generated in random order. Tables created prior
    to applying this PTF, and tables created with
    XML_RANDOMIZE_DOCID set to NO will continue to have DOCIDs
    generated in sequential order.

    The default value of XML_RANDOMIZE_DOCID is NO, which
    provides the same behavior for generating DOCIDs that DB2
    has without applying this PTF. In other words, applying
    this PTF will have no effect unless XML_RANDOMIZE_DOCID
    is set to YES.

    In DB2 10 for z/OS, APAR PM31487 adds the XML_RANDOMIZE_DOCID
    subsystem parameter but requires DB2 10 for z/OS new-function
    mode in order to create table with DOCIDs that are generated in
    random order. APAR PM44216 allows tables with DOCIDs that are
    generated in random order to be created in DB2 10 for z/OS
    conversion mode after migration from DB2 9 for z/OS.

    PRECONDITIONING APAR CONSIDERATIONS:
    This APAR requires support from one or more preconditioning
    APARs according to the DB2 version and whether the environment

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is data sharing.

* DB2 9 for z/OS: A prerequisite for this APAR is UK72542,
the PTF for preconditioning APAR PM44210. On DB2 for z/OS
data sharing systems, apply PTF UK72542 to -all- V9 members
of the group before applying the fix for this APAR to -any-
member if all of the following are true:
- DB2 is running in V9 new-function mode
- You will set the XML_RANDOMIZE_DOCID parameter to YES
- You will be creating tables with XML columns

* DB2 10 for z/OS: A prerequisite for this APAR is UK68722,
the PTF for preconditioning APAR PM31486. On DB2 for z/OS
data sharing systems, apply PTF UK68722 to -all- V10 members
of the group before applying the fix for this APAR to -any-
member if all of the following are true:
- DB2 is not running in V10 new-function mode
- You have set or will set the XML_RANDOMIZE_DOCID parameter
  to YES
- You will be creating tables with XML columns

* DB2 data sharing systems that are in coexistence mode during
migration from DB2 9 for z/OS to DB2 10 for z/OS: Apply PTF
UK72542 to -all- V9 members of the group and apply PTF UK68722
to -all- V10 members of the group before applying the fix for
this APAR to -any- member if all of the following are true:
- You have set or will set the XML_RANDOMIZE_DOCID parameter
  to YES
- You will be creating tables with XML columns

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM44216
SPECIAL CONDITIONS:
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  MULTSYS:
    PM44216 is an enabling APAR that includes support for a new
    subsystem parameter XML_RANDOMIZE_DOCID. The new function
    is enabled by reassembling DB2's DSNZPARM module with
    XML_RANDOMIZE_DOCID set to YES.

    Users who are not creating tables with XML columns on
    data-sharing systems will not be affected by PM44210/PM44216.

    Users who do not reassemble DSNZPARM with
    XML_RANDOMIZE_DOCID=YES (enabled by this APAR PM44216) will
    also not be affected by PM44210/PM44216.

    For users who will create new tables with XML columns in
    a data-sharing group and intend to enable the parameter
    XML_RANDOMIZE_DOCID, the pre-conditioning APAR PM44210
    for DB2 9 for z/OS and the pre-conditioning APAR PM31486
    for DB2 10 for z/OS must be applied to all data-sharing
    members before enabling APAR PM44216 is applied to any member.
  ACTION:

This PTF adds a new DB2 subsystem parameter in DSN6SYSP called
XML_RANDOMIZE_DOCID to specify whether DB2 should generate the
DOCID values for XML columns sequentially or randomly. When a
row is inserted into an XML table, DB2 automatically generates
a DOCID to be used for clustering rows that belong to the same
XML document. The DOCIDs for an XML table are generated
sequentially or randomly according to the setting of this
parameter at the time the table was created. Valid settings
are NO and YES:

- NO means that DB2 is to generate the values sequentially.
  ==> This is the default setting.

- YES means that DB2 generates the values in a randomized
  manner. This setting can be beneficial for performance when
  concurrent insert is expected.

In DB2 data sharing, it is recommended that all members
use the same setting. It is not required to apply this
PTF to all members of the group at the same time. However:

* The PTF for pre-conditioning APAR PM44210 must be applied
  to all DB2 9 for z/OS members before this PTF is applied
  to any member

* The PTF for pre-conditioning APAR PM31486 must be applied
  to all DB2 10 for z/OS members in conversion mode before
  this PTF is applied to any member.

* When this PTF is applied to any member, it is recommended
  that the subsystem parameter (DSNZPxxx) module for the
  member use the same XML_RANDOMIZE_DOCID setting as all other
  members that have this PTF applied. See action (2) below
  for guidance.

If you have already installed or migrated to this version of DB2
you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

----
(1) Update customized copies of DB2 installation CLIST members
----
==> This action is required for all customers

    This PTF modifies CLIST member DSNTINST in the SDSNCLST
    target library only. You need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of this CLIST. You may also want to move it to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed by
    job DSNTIJVC reside.

```
          ----------------------------------------------------------------
          (2) Update your customized copy of job DSNTIJUZ
          ----------------------------------------------------------------
          ==> This action is required for all customers

               This PTF modifies DB2 installation job DSNTIJUZ in the
               SDSNSAMP target library. After applying this PTF, you
               need to update your customized copy of this job as follows:

               * Add the keyword parameter XML_RANDOMIZE_DOCID=<n>, where
                 <n> is either NO or YES to the invocation of the DSN6SYSP
                 macro in your customized copy of installation job
                 DSNTIJUZ.  Make sure to add a continuation character in
                 column 72 if needed. If you omit adding
                 XML_RANDOMIZE_DOCID here, the value will be set to the
                 default of NO when you assemble the DSNZPxxx module.

               * Run the first two steps of the DSNTIJUZ job you modified.

               * After the job completes, you must either use the -SET
                 SYSPARM command or stop and restart DB2 for the change to
                 take effect.  In DB2 data sharing, it is recommended that
                 all members use the same setting for XML_RANDOMIZE_DOCID.


          ----------------------------------------------------------------
          (3) Update private copies of the DSNTIDxx CLIST input member
          ----------------------------------------------------------------
          ==> This action is required for all customers

               This PTF adds an entry for XML_RANDOMIZE_DOCID to the CLIST
               default input member, DSNTIDXA, in the SDSNSAMP
               target library.  You need to add this entry to all
               private copies of your CLIST output DSNTIDxx member. In
               each such copy, add the following line:

          XML_RANDOMIZE_DOCID CHAR  G  NO          YES             <n>

               Change <n> to the value you specified for
               XML_RANDOMIZE_DOCID in step (2), above.
.


          ------ COVER LETTER FOR PTF UK73143 ------------

PROBLEM DESCRIPTION(S):
  PM35200 -
     ****************************************************************
     * USERS AFFECTED: All DB2 9 for z/OS utility users of REORG   *
     *                 TABLESPACE, REORG INDEX, REBUILD INDEX, and *
     *                 CHECK INDEX utilities.                      *
     ****************************************************************
     * PROBLEM DESCRIPTION: Enable spatial index support for REORG *
     *                 TABLESPACE, REORG INDEX, REBUILD INDEX,     *
     *                 and CHECK INDEX utilities.                  *
     *                                                             *
     ****************************************************************
```

```
   * RECOMMENDATION: Apply appropriate PTF.                        *
   ****************************************************************
   This APAR will enable spatial support for REORG TABLESPACE,
   REORG INDEX, REBUILD INDEX, and CHECK INDEX utilities.
   (SHRLEVEL CHANGE is not supported for spatial, however,
   and MSGDSNU076 is issued is specified on these utilities.)
   There are no external changes to these utilities as a
   result of this APAR.  With this APAR, DEFER YES is
   allowed on a spatial index in DB2 9 NFM.
   Code has been changed to enable spatial support by the
   REORG TABLESPACE, REBUILD INDEX, and CHECK INDEX utilities.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM35200
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
   The PTF for APAR PM35200 has modified CSECTs in both the
   DSNUT910 and DSNUTILA load modules, affecting the
   utility batch and DB2 DBM1 address spaces.  After the PTF has
   been applied, it will become active in the utility batch address
   space immediately upon job submission, while it will not take
   effect in the DB2 DBM1 address space until DB2 is stopped and
   started.

   The PTF does not have to be applied to all members in a data
   sharing environment simultaneously, and may be staged across
   each member.  However, until the fix is active in both the
   utility batch and DB2 DBM1 address spaces, the problem the PTF
   addresses will not be resolved.
.


------ COVER LETTER FOR PTF UK73184 ------------

PROBLEM DESCRIPTION(S):
  PM45829 -
    ****************************************************************
    * USERS AFFECTED: Users of DB2 9 and 10 for z/OS using        *
    *                 index-controlled partitioned table space    *
    ****************************************************************
    * PROBLEM DESCRIPTION: Converting from index-controlled to    *
    *                      table-controlled partitioning results  *
    *                      in all columns of the partitioning     *
    *                      index to be used for partitioning,     *
    *                      rather than using only column(s)       *
    *                      with a limit key value specified.      *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
   DB2 automatic conversion of index-controlled partitioned
   table space to table-controlled partitioned table space
   uses all columns of the partitioning index for partitioning,
   instead of using only the columns which the limit key values
   were specified for.
```

```
Consider the following scenario:
  CREATE DATABASE EMPDB;

  CREATE TABLESPACE EMPTS
  IN EMPDB
  NUMPARTS 4;

  CREATE TABLE EMPTAB
  (FIRST          CHAR(5) NOT NULL,
   MIDDLE         CHAR(5) NOT NULL,
   LAST           CHAR(5) NOT NULL,
   ID             CHAR(5) NOT NULL)
  IN EMPDB.EMPTS;

  CREATE INDEX EMPPARTIX ON EMPTAB (LAST,FIRST,MIDDLE)
  CLUSTER    (PARTITION 1 ENDING AT ('BAKER'),
              PARTITION 2 ENDING AT ('DOUGL') ,
              PARTITION 3 ENDING AT ('HUGHS'),
              PARTITION 4 ENDING AT ('JAMES'));

  ALTER TABLE EMPTAB ADD PARTITION ENDING AT ('SMITH');
   When adding a new partition, the conversion to table-
   controlled partitioned table space results in an internal
   limit key in SYSTABLEPART.LIMITKEY_INTERNAL which includes
   all the columns in the partitioning index.

   'BAKER',x'FFFFFFFFFF',x'FFFFFFFFFF'
   'DOUGL',x'FFFFFFFFFF',x'FFFFFFFFFF'
   'HUGHS',x'FFFFFFFFFF',x'FFFFFFFFFF'
   'JAMES',x'FFFFFFFFFF',x'FFFFFFFFFF'
   'SMITH',x'FFFFFFFFFF',x'FFFFFFFFFF'

  CREATE INDEX EMPIX02 ON EMPTAB(LAST,ID) PARTITIONING;
   EMPIX02 WILL BE CONSIDERED A DATA PARTITIONING
   secondary index (DPSI) instead of a partitioning index since
   the limit key is now defined on LAST, FIRST, and MIDDLE.
```
This APAR introduces an online-changeable subsystem parameter
in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE. Valid settings
are YES and NO. The default is NO, meaning that all columns
are used. When set to YES, DB2 will use only significant
columns of the partitioning index that is on an
index-controlled partitioned table space to define the
table-controlled partitioning key. DB2 will exclude all
trailing columns with all 'FF'x in SYSINDEXPART.LIMITKEY.
There will be no distinction between explicitly specified
'FF'x, MAXVALUE, or MINVALUE versus an omitted limit key
value.

The following will be affected:
 o CREATE INDEX statement with the PARTITIONED clause to
   create a secondary partitioned index on an index-controlled
   partitioned table space.
 o ALTER INDEX statement with the NOT CLUSTER clause on a
   partitioning index that is on an index-controlled
   partitioned table space.
 o DROP INDEX statement to drop a partitioning index on an

                              609

index-controlled partitioned table space.
     o ALTER TABLE statement to add a new partition, change a
       partition boundary, or rotate a partition to last on an
       index-controlled partitioned table space. Trailing
       'FF'x, MAXVALUE,or MINVALUE specified in the limit
       key value of the statement will always be significant.
     o ALTER TABLE statement to add a clone table.

IX_TB_PART_CONV_EXCLUDE does not apply to a CREATE INDEX
statement with a PART VALUES clause and without a CLUSTER
clause to create a partitioning index even though this causes
automatic conversion to table-controlled partitioning.

ADDITIONAL KEYWORDS:
SQLCREATE SQLALTER SQLDROP SQLCLONE

++HOLD COMMENT FOR RELEASE A10, TYPE DOC:
PM45829 introduces an online-changeable subsystem parameter
in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE. Valid settings
are YES and NO. The default is NO, meaning that all columns
are used. When set to YES, DB2 will use only significant
columns of the partitioning index that is on an
index-controlled partitioned table space to define the
table-controlled partitioning key. DB2 will exclude all
trailing columns with all 'FF'x in SYSINDEXPART.LIMITKEY.
There will be no distinction between explicitly specified
'FF'x, MAXVALUE, or MINVALUE versus an omitted limit key
value.

The approximate text is to be added to the DB2 manuals. This
text is subject to change.

============================
Changes to DB2 Administration
============================
 Automatic conversion to table-controlled partitioning

  When subsystem parameter IX_TB_PART_CONV_EXCLUDE is set NO
  (default), all columns of the partitioning index that is on
  an index-controlled partitioned table space will be used to
  define the table-controlled partitioning key. When set to YES,
  DB2 will use only significant columns of the partitioning
  index. DB2 will exclude all trailing columns with all 'FF'x
  in SYSINDEXPART.LIMITKEY. There will be no distinction between
  explicitly specified 'FF'x, MAXVALUE, or MINVALUE versus an
  omitted limit key value.

  For ALTER TABLE statement to add a new partition, change a
  partition boundary, or rotate a partition to last on an
  index-controlled partitioned table space, the trailing
  'FF'x, MAXVALUE, or MINVALUE specified in the limit key value
  of the statement will always be significant.

  IX_TB_PART_CONV_EXCLUDE does not apply to a CREATE INDEX
  statement with a PART VALUES clause and without a CLUSTER
  clause to create a partitioning index.

```
==========================
Changes to DB2 Installation
==========================
  PM45829 introduces an online-changeable subsystem parameter
  in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE that can be used
  to indicate whether DB2 will use only significant columns of
  the index-controlled partitioning partitioning index to
  define the table-controlled partitioning key. Valid settings
  are YES and NO. The default is NO, meaning that all columns
  are used. IX_TB_PART_CONV_EXCLUDE is online changeable. In
  data sharing, it has member scope.

++HOLD COMMENT FOR RELEASE 910, TYPE DOC:
PM45829 introduces an online-changeable subsystem parameter
in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE. Valid settings
are YES and NO. The default is NO, meaning that all columns
are used. When set to YES, DB2 will use only significant
columns of the partitioning index that is on an
index-controlled partitioned table space to define the
table-controlled partitioning key. DB2 will exclude all
trailing columns with all 'FF'x in SYSINDEXPART.LIMITKEY.
There will be no distinction between explicitly specified
'FF'x, MAXVALUE, or MINVALUE versus an omitted limit key
value.
The approximate text is to be added to the DB2 manuals. This
text is subject to change.


============================
Changes to DB2 Administration
============================
 Automatic conversion to table-controlled partitioning
 -----------------------------------------------------
  When subsystem parameter IX_TB_PART_CONV_EXCLUDE is set NO
  (default), all columns of the partitioning index that is on
  an index-controlled partitioned table space will be used to
  define the table-controlled partitioning key. When set to YES,
  DB2 will use only significant columns of the partitioning
  index. DB2 will exclude all trailing columns with all 'FF'x
  in SYSINDEXPART.LIMITKEY. There will be no distinction between
  explicitly specified 'FF'x, MAXVALUE, or MINVALUE versus an
  omitted limit key value.

  For ALTER TABLE statement to add a new partition, change a
  partition boundary, or rotate a partition to last on an
  index-controlled partitioned table space, the trailing
  'FF'x, MAXVALUE, or MINVALUE specified in the limit key value
  of the statement will always be significant.

  IX_TB_PART_CONV_EXCLUDE does not apply to a CREATE INDEX
  statement with a PART VALUES clause and without a CLUSTER
  clause to create a partitioning index.

==========================
Changes to DB2 Installation
==========================
```

PM45829 introduces an online-changeable subsystem parameter
in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE that can be used
to indicate whether DB2 will use only significant columns of
the index-controlled partitioning partitioning index to
define the table-controlled partitioning key. Valid settings
are YES and NO. The default is NO, meaning that all columns
are used. IX_TB_PART_CONV_EXCLUDE is online changeable. In
data sharing, it has member scope.

++HOLD COMMENT FOR RELEASE A10, TYPE ACT:
PM45829 introduces an online-changeable subsystem parameter in
DSN6SPRM called IX_TB_PART_CONV_EXCLUDE that can be used to
indicate whether DB2 will use only significant columns of the
index-controlled partitioning partitioning index to define the
table-controlled partitioning key. Valid settings are YES and
NO. The default is NO, meaning that all elements are used.

If you have already installed or migrated to this version of DB2
you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

----
(1) Update customized copies of DB2 installation CLIST members
----
==> This action is recommended for all customers

    This PTF modifies CLIST member DSNTINST in the SDSNCLST
    target library only. You need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of this CLIST. You may also want to move it to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed by
    job DSNTIJVC reside.

----
(2) Update your customized copy of job DSNTIJUZ

==> This action is required for all customers

    This PTF modifies DB2 installation job DSNTIJUZ in the
    SDSNSAMP target library. After applying this PTF, you
    need to update your customized copy of this job as follows:

    * Add the keyword parameter IX_TB_PART_CONV_EXCLUDE=<x>,
      where <x> is NO or YES, to the invocation of the
      DSN6SPRM macro. Make sure to add a continuation character
      in column 72 if needed. If you omit adding
      IX_TB_PART_CONV_EXCLUDE here, the value will be set to the
      default of NO when you assemble the DSNZPxxx module.

    * Run the first two steps of the DSNTIJUZ job you modified.

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```
     * After the job completes, you must either use the -SET
       SYSPARM command or stop and restart DB2 for the change to
       take effect.


-------------------------------------------------------------------
(3) Update private copies of the DSNTIDxx CLIST input member
-------------------------------------------------------------------
==> This action is required for all customers

     This PTF adds an entry for IX_TB_PART_CONV_EXCLUDE
     to the CLIST default input members in the SDSNSAMP target
     library. You need to add these entries to all private
     copies of your CLIST output DSNTIDxx member. In each such
     copy, add the following line:

IX_TB_PART_CONV_EXCLUDE  CHAR  M  NO            YES             <x>

     Change <x> to the value you specified for
     IX_TB_PART_CONV_EXCLUDE in step (2), above.

     If you do not add IX_TB_PART_CONV_EXCLUDE to a DSNTIDxx
     member, the DB2 installation CLIST will assume
     IX_TB_PART_CONV_EXCLUDE=NO when run with that member as
     input.


++HOLD COMMENT FOR RELEASE 910, TYPE ACT:
PM45829 introduces an online-changeable subsystem parameter in
DSN6SPRM called IX_TB_PART_CONV_EXCLUDE that can be used to
indicate whether DB2 will use only significant columns of the
index-controlled partitioning partitioning index to define the
table-controlled partitioning key. Valid settings are YES and
NO. The default is NO, meaning that all elements are used.


If you have already installed or migrated to this version of DB2
you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:


-------------------------------------------------------------------
(1) Update customized copies of DB2 installation CLIST members
-------------------------------------------------------------------
==> This action is recommended for all customers

     This PTF modifies CLIST member DSNTINST in the SDSNCLST
     target library only. You need to redo any record format
     changes and reapply any tailoring you have done to your
     copies of this CLIST. You may also want to move it to the
     prefix.NEW.SDSNCLST data set, where the CLISTs processed by
     job DSNTIJVC reside.


-------------------------------------------------------------------
(2) Update your customized copy of job DSNTIJUZ
```

```
                -----------------------------------------------------------------
                ==> This action is required for all customers

                     This PTF modifies DB2 installation job DSNTIJUZ in the
                     SDSNSAMP target library. After applying this PTF, you
                     need to update your customized copy of this job as follows:

                     * Add the keyword parameter IX_TB_PART_CONV_EXCLUDE=<x>,
                       where <x> is NO or YES, to the invocation of the
                       DSN6SPRM macro. Make sure to add a continuation character
                       in column 72 if needed. If you omit adding
                       IX_TB_PART_CONV_EXCLUDE here, the value will be set to the
                       default of NO when you assemble the DSNZPxxx module.

                     * Run the first two steps of the DSNTIJUZ job you modified.

                     * After the job completes, you must either use the -SET
                       SYSPARM command or stop and restart DB2 for the change to
                       take effect.

                -----------------------------------------------------------------
                (3) Update private copies of the DSNTIDxx CLIST input member
                -----------------------------------------------------------------
                ==> This action is required for all customers

                     This PTF adds an entry for IX_TB_PART_CONV_EXCLUDE
                     to the CLIST default input members in the SDSNSAMP target
                     library. You need to add these entries to all private
                     copies of your CLIST output DSNTIDxx member. In each such
                     copy, add the following line:

        IX_TB_PART_CONV_EXCLUDE  CHAR  M  NO           YES              <x>

                     Change <x> to the value you specified for
                     IX_TB_PART_CONV_EXCLUDE in step (2), above.

                     If you do not add IX_TB_PART_CONV_EXCLUDE to a DSNTIDxx
                     member, the DB2 installation CLIST will assume
                     IX_TB_PART_CONV_EXCLUDE=NO when run with that member as
                     input.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM45829
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    PM45829 introduces an online-changeable subsystem parameter
    in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE. Valid settings
    are YES and NO. The default is NO, meaning that all columns
    are used. When set to YES, DB2 will use only significant
    columns of the partitioning index that is on an
    index-controlled partitioned table space to define the
    table-controlled partitioning key. DB2 will exclude all
    trailing columns with all 'FF'x in SYSINDEXPART.LIMITKEY.
    There will be no distinction between explicitly specified
    'FF'x, MAXVALUE, or MINVALUE versus an omitted limit key
```

value.

The approximate text is to be added to the DB2 manuals. This
text is subject to change.

```
============================
Changes to DB2 Administration
============================
```
 Automatic conversion to table-controlled partitioning

   When subsystem parameter IX_TB_PART_CONV_EXCLUDE is set NO
   (default), all columns of the partitioning index that is on
   an index-controlled partitioned table space will be used to
   define the table-controlled partitioning key. When set to YES,
   DB2 will use only significant columns of the partitioning
   index. DB2 will exclude all trailing columns with all 'FF'x
   in SYSINDEXPART.LIMITKEY. There will be no distinction between
   explicitly specified 'FF'x, MAXVALUE, or MINVALUE versus an
   omitted limit key value.

   For ALTER TABLE statement to add a new partition, change a
   partition boundary, or rotate a partition to last on an
   index-controlled partitioned table space, the trailing
   'FF'x, MAXVALUE, or MINVALUE specified in the limit key value
   of the statement will always be significant.

   IX_TB_PART_CONV_EXCLUDE does not apply to a CREATE INDEX
   statement with a PART VALUES clause and without a CLUSTER
   clause to create a partitioning index.

```
==========================
Changes to DB2 Installation
==========================
```

   PM45829 introduces an online-changeable subsystem parameter
   in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE that can be used
   to indicate whether DB2 will use only significant columns of
   the index-controlled partitioning partitioning index to
   define the table-controlled partitioning key. Valid settings
   are YES and NO. The default is NO, meaning that all columns
   are used. IX_TB_PART_CONV_EXCLUDE is online changeable. In
   data sharing, it has member scope.
ACTION:
   PM45829 introduces an online-changeable subsystem parameter in
   DSN6SPRM called IX_TB_PART_CONV_EXCLUDE that can be used to
   indicate whether DB2 will use only significant columns of the
   index-controlled partitioning partitioning index to define the
   table-controlled partitioning key. Valid settings are YES and
   NO. The default is NO, meaning that all elements are used.

   If you have already installed or migrated to this version of DB2
   you need to take the following actions after applying this PTF:

   (1) Update customized copies of DB2 installation CLIST members
   (2) Update your customized copy of job DSNTIJUZ
   (3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

----
(1) Update customized copies of DB2 installation CLIST members
----
==> This action is recommended for all customers

    This PTF modifies CLIST member DSNTINST in the SDSNCLST
    target library only. You need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of this CLIST. You may also want to move it to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed by
    job DSNTIJVC reside.

----
(2) Update your customized copy of job DSNTIJUZ

==> This action is required for all customers

    This PTF modifies DB2 installation job DSNTIJUZ in the
    SDSNSAMP target library. After applying this PTF, you
    need to update your customized copy of this job as follows:

    * Add the keyword parameter IX_TB_PART_CONV_EXCLUDE=<x>,
      where <x> is NO or YES, to the invocation of the
      DSN6SPRM macro. Make sure to add a continuation character
      in column 72 if needed. If you omit adding
      IX_TB_PART_CONV_EXCLUDE here, the value will be set to the
      default of NO when you assemble the DSNZPxxx module.

    * Run the first two steps of the DSNTIJUZ job you modified.

    * After the job completes, you must either use the -SET
      SYSPARM command or stop and restart DB2 for the change to
      take effect.

----
(3) Update private copies of the DSNTIDxx CLIST input member

==> This action is required for all customers

     This PTF adds an entry for IX_TB_PART_CONV_EXCLUDE
     to the CLIST default input members in the SDSNSAMP target
     library. You need to add these entries to all private
     copies of your CLIST output DSNTIDxx member. In each such
     copy, add the following line:

IX_TB_PART_CONV_EXCLUDE CHAR M NO   YES   <x>

     Change <x> to the value you specified for
     IX_TB_PART_CONV_EXCLUDE in step (2), above.

     If you do not add IX_TB_PART_CONV_EXCLUDE to a DSNTIDxx
     member, the DB2 installation CLIST will assume
     IX_TB_PART_CONV_EXCLUDE=NO when run with that member as

input.
.

------ COVER LETTER FOR PTF UK73230 ------------

PROBLEM DESCRIPTION(S):
  PM43132 -
     ****
     * USERS AFFECTED: All DB2 9 for z/OS REORG TABLESPACE utility *
     *   users   *
     ****
     * PROBLEM DESCRIPTION: This APAR addresses multiple issues: *
     *   1. REORG TABLESPACE fails with ABEND04E *
     *   RC00E40800 after MSGDSNU3341I CANNOT   *
     *   ALLOCATE SORT DATASETS WITHIN 255 LIMIT *
     *   or ABEND04E RC00E40005 after MSGICE083A *
     *   RESOURCES WERE UNAVAILABLE FOR DYNAMIC   *
     *   ALLOCATION OF WORK DATA SETS (970C) in   *
     *   DFSORT after ALTER TABLE ADD/ALTER   *
     *   COLUMN.   *
     *   *
     *   2. Sort work data sets are allocated   *
     *   significantly larger than necessary   *
     *   after ALTER TABLE ADD/ALTER COLUMN.   *
     *   *
     *   3. REORG fails with ABEND04E RC00E40005 *
     *   after MSGICE046A SORT CAPACITY EXCEEDED *
     *   for partitioned table spaces.   *
     ****
     * RECOMMENDATION: Apply corrective PTF when available   *
     ****
     After columns in a table were added or altered, the REORG
     TABLESPACE utility was using the maximum record length for its
     estimations of sort work space for the data sort. This could
     lead to DSNU3341I messages in REORG or ICE083A messages in
     DFSORT when the calculated sort work space was not available
     in the sort pool. When the space was available, the sort work
     data sets may have been allocated significantly larger than
     necessary.

     When REORG on a partitioned table space was running with a
     single data sort it may use an outdated average row length
     from RUNSTATS even though a more accurate value was available
     from RTS. This may lead to ICE046A SORT CAPACITY EXCEEDED in
     DFSORT if the average row length used is not large enough.

     Code has been changed to provide a better estimate for the
     expected average row length of the data being sorted after
     columns were added or altered in a table. Best results will be
     achieved if Real-Time Statistics contains up to date values,
     RUNSTATS information will be used as fall back.

     Code has been changed to calculate a table space level average
     row length from the information used in all partitions that
     are processed.

```
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM43132
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    This APAR introduces a change that uses Real-Time Statistics
    values to calculate the current average row length in a table
    space or table space partition only when columns were added or
    altered using an ALTER TABLE statement. While other uses of
    RTS only occur if ZPARM UTSORTAL is set to YES, the calculation
    in that specific situation is done independent from the UTSORTAL
    setting. Other uses of RTS are not changed by this APAR.
.


------ COVER LETTER FOR PTF UK73242 ------------

PROBLEM DESCRIPTION(S):
  PM46702 -
    ******************************************************************
    * USERS AFFECTED: DB2 9 for z/OS and DB2 10 for z/OS users    *
    *                 of CASE expression in selection list and    *
    *                 parallelism.                                *
    ******************************************************************
    * PROBLEM DESCRIPTION: An ABEND04E RC00E70005 at DSNXVTRS M420 *
    *                 may occur when a query containing a         *
    *                 CASE expression in selection list is        *
    *                 referenced in ORDER BY or GROUP BY          *
    *                 clause running in parallel.                 *
    ******************************************************************
    * RECOMMENDATION:                                             *
    ******************************************************************
    An ABEND04E RC00E70005 at DSNXVTRS M420 may occur when a query
    containing a CASE expression in selection list is referenced in
    ORDER BY or GROUP BY clause running parallel. It is because the
    parallel buffer adjustment aligns the CASE expression result
    buffer incorrectly.

    Following is an example of such failing query:
    SELECT ...,
           CASE WHEN C1 IS NULL THEN 100 ELSE 200 END AS CEX1,
           ...
      FROM T1, ....
     WHERE ...
     ORDER BY ..., COALESCE(CEX1, 500), ...
    DB2 is modified to align the CASE expression result buffer
    for parallelism correctly in such scenario.

    Additional Keywords: SQLORDERBY SQLGROUPBY PARALLELISM
                         SQLPARALLELISM SQLCASE DB2PARALL/K
                         ABEND04E
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM46702
SPECIAL CONDITIONS:
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```

DB2BIND:
  ***Action for PM46702:

  See PM46702 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM46702 corrects a problem of an ABEND04E RC00E70005 at
  DSNXVTRS M420 may occur when a query containing a CASE
  expression in selection list is referenced in the ORDER BY or
  GROUP BY clause running in parallel.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
.

------ COVER LETTER FOR PTF UK73512 ------------

PROBLEM DESCRIPTION(S):
  PM40141 -
    ****
    * USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS   *
    *   customers using triggers.   *
    ****
    * PROBLEM DESCRIPTION: Subsequent to ALTER TABLE ALTER COLUMN *
    *   SET DATA TYPE, incorrect data may be   *
    *   stored in tables when a trigger is   *
    *   fired for the nested insert or update *
    *   if the corresponding transition   *
    *   variable for the altered column is   *
    *   used in a trigger action.   *
    ****
    * RECOMMENDATION: *
    ****
    Subsequent to ALTER TABLE ALTER COLUMN SET DATA TYPE,
    incorrect data may be stored in tables when a trigger is fired
    for the nested insert or update if the corresponding
    transition variable for the altered column is used in a
    trigger action. For INSTEAD OF triggers, the transition
    variable corresponds to the column of the view which is
    directly or indirectly dependent on the altered column.
    Note INSTEAD OF trigger only applies to DB2 9 since it is
    new function introduced in DB2 9.

    Additionally, REPAIR DBD may report an error on OBDTGFCLN.
      DSNU920I DSNUEDTG -   OBDS DIFFER AT OFFSET X'000000E2'
                            OBDTGFCLN(1)
      DSNU904I DSNUEDTG -   EXISTING VALUE X'0902'
      DSNU905I DSNUEDTG -   REBUILT VALUE X'0D02'
      DSNU916I DSNUEDTG -   OBDS DIFFER AT OFFSET X'000000D0'
                            OBDTGRL(1) - INFORMATION NOT IN DB2
                            CATALOG
      DSNU904I DSNUEDTG -   EXISTING VALUE X'0001000000000000'

```
DSNU904I  DSNUEDTG -     EXISTING VALUE  X'0000000000000000'
DSNU904I  DSNUEDTG -     EXISTING VALUE  X'0000090200000000'
DSNU904I  DSNUEDTG -     EXISTING VALUE  X'0000000000000000'
DSNU904I  DSNUEDTG -     EXISTING VALUE  X'0000000000000000'
DSNU904I  DSNUEDTG -     EXISTING VALUE  X'00000000'
DSNU905I  DSNUEDTG -     REBUILT  VALUE  X'0001000000000000'
DSNU905I  DSNUEDTG -     REBUILT  VALUE  X'0000000000000000'
DSNU905I  DSNUEDTG -     REBUILT  VALUE  X'00000D0200000000'
DSNU905I  DSNUEDTG -     REBUILT  VALUE  X'0000000000000000'
DSNU905I  DSNUEDTG -     REBUILT  VALUE  X'0000000000000000'
DSNU905I  DSNUEDTG -     REBUILT  VALUE  X'00000000'
DSNU913I  DSNUEDDR - OBD X'0008' COMPARISON COMPLETE -- 1
                     ERRORS WERE FOUND
```

The reported scenario is provided as an example:
  Altering COL2 of TEST_TRIGGER which corresponds to a
  transition variable in trigger TESTTI01 causes incorrect data
  to be stored in TEST_TRIGGER_OUTPUT when TESTTI01 is fired.

```
CREATE TABLE TEST_TRIGGER
      (COL1 SMALLINT NOT NULL
      ,COL2 DECIMAL (9, 2) NOT NULL WITH DEFAULT );

CREATE TABLE TEST_TRIGGER_OUTPUT
      (COLA SMALLINT NOT NULL
      ,COLB DECIMAL (9, 2) NOT NULL WITH DEFAULT );

CREATE TRIGGER TESTTI01
      AFTER INSERT ON TEST_TRIGGER
      REFERENCING NEW AS NEW
      FOR EACH ROW
      MODE DB2SQL
      WHEN (NEW.COL1 = 1)
      INSERT INTO TEST_TRIGGER_OUTPUT
                (COLA, COLB)
                VALUES (NEW.COL1, NEW.COL2);

INSERT INTO TEST_TRIGGER VALUES(1, 8000);

COMMIT;

ALTER TABLE TEST_TRIGGER ALTER COLUMN COL2
      SET DATA TYPE DECIMAL (13, 2);

COMMIT;

INSERT INTO TEST_TRIGGER VALUES(1, 8999);

SELECT * FROM TEST_TRIGGER ;
   +----------------------------+
   | COL1      |      COL2      |
   +----------------------------+
1_|        1 |      8000.00 |
2_|        1 |      8999.00 |
   +----------------------------+
```

```
       SELECT * FROM TEST_TRIGGER_OUTPUT ;
          +-----------------------------+
          | COLA       |     COLB       |
          +-----------------------------+
       1_|         1 |        8000.00   |
       2_|         1 |           0.89   |
          +-----------------------------+
```

   ALTER TABLE ALTER COLUMN SET DATA TYPE has been modified to
   issue SQLCODE -750 when the corresponding transition
   variable for the column being altered is used in a trigger
   action. For INSTEAD OF triggers, the transition variable
   corresponds to the column of the view which is directly or
   indirectly dependent on the altered column. In order to
   alter the data type, all affected triggers will need to be
   dropped and recreated after the ALTER is completed.

   PM40141 does not fix existing triggers with incorrect OBDTGFCLN
   values nor does it fix incorrect data stored in the tables as a
   result of the trigger firing. Users should drop and recreate
   affected triggers.

   Additional Keywords:
   SQLALTER
   SQLVIEW
   SQLTRIGGER
   SQLCODE750
   DB2INCORR
   SQLINCORR
   SQLINCORROUT
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM40141
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    The approximate text is to be added to the DB2 SQL Reference
    and Codes manual. This text is subject to change.

    SQL Reference
    =============
     ALTER TABLE section will be modified to include the new
     restriction.

     ALTER COLUMN column-alteration
     The table being altered must not be in an incomplete state
     because of a missing unique index on a unique constraint
     (primary or unique key). An ALTER TABLE ALTER COLUMN statement
     might not be processed in the same unit of work as a data
     change statement. A column cannot be altered if any of the
     following conditions are true:

     | o When the SET DATA TYPE clause is specified and the
     | corresponding transition variable for the column being
     | altered is used in a trigger action. For INSTEAD OF
     | triggers, the transition variable corresponds to the
```

```
       |   column of the view which is directly or indirectly
       |   dependent on the altered column

       Codes
       =====
        SQLCODE -750  will be used for the restriction. The
        explanation section will be updated to include a new
        restriction.

        Explanation
        The source table source-name in a RENAME or ALTER statement
        could not be processed for one of the following reasons:

       | o The corresponding transition variable for the column
       |   being altered is used in a trigger action. For
       |   INSTEAD OF triggers, the transition variable corresponds
       |   to the column of the view which is directly or indirectly
       |   dependent on the altered column.
     ACTION:
       Subsequent to ALTER TABLE ALTER COLUMN SET DATA TYPE,
       incorrect data may be stored in tables when a trigger is fired
       for the nested insert or update if the corresponding
       transition variable for the altered column is used in a
       trigger action. For INSTEAD OF triggers, the transition
       variable corresponds to the column of the view which is
       directly or indirectly dependent on the altered column.

       PM40141 modifies ALTER TABLE ALTER COLUMN SET DATA TYPE to
       issue SQLCODE -750 for the following conditions:
        o When the corresponding transition variable for the column
          being altered is used in a trigger action.
        o When the corresponding transistion variable for the column
          of the view which is directly or indirectly dependent on the
          altered column.
       Affected triggers must be dropped and recreated after the ALTER
       is completed.

       PM40141 does not fix triggers with incorrect OBDTGFCLN values
       nor does it fix incorrect data stored in the tables as a result
       of the trigger firing.

       Only REPAIR DBD TEST/DIAGNOSE can identify affected triggers.
       A query alone is not sufficient to determine affected triggers.
       However, querying the catalog to identify all triggers having
       base tables with one or more columns that have been altered or
       INSTEAD OF triggers dependent on a view that has been
       regenerated because a column of the base table has been altered
       (see example below) may be used to narrow down which databases
       to run REPAIR DBD TEST/DIAGNOSE on.

        SELECT DISTINCT TAB.DBNAME,TAB.CREATOR,TAB.NAME
        FROM    SYSIBM.SYSTABLES    AS TAB,
                SYSIBM.SYSCOLUMNS   AS COL,
                SYSIBM.SYSTRIGGERS  AS TRIG
        WHERE ( (   TAB.CREATOR = TRIG.TBOWNER
                AND TAB.NAME    = TRIG.TBNAME
```

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```
            AND TAB.CREATOR = COL.TBCREATOR
            AND TAB.NAME    = COL.TBNAME
            AND COL.CREATEDTS < COL.ALTEREDTS   )
        OR (  TAB.DBID <> 0
            AND TAB.OBID <> 0
            AND TAB.TYPE = 'V'
            AND TAB.VERSION <> 0 )) ;
```

If REPAIR DBD TEST/DIAGNOSE reports an error on OBDTGFCLN, then
drop and recreate affected trigger(s)
.

------ COVER LETTER FOR PTF UK73622 ------------

PROBLEM DESCRIPTION(S):
  PM45561 -
    ****
    * USERS AFFECTED: All DB2 for z/OS 9 and 10 users of XML.   *
    ****
    * PROBLEM DESCRIPTION: DB2 was sometimes skipping committed   *
    *   rows when requested by an uncommitted   *
    *   reader. This happened when requesting   *
    *   an IS lock on the XML table space   *
    *   during a very small window of time in   *
    *   data sharing environment.   *
    *   *
    *   Additional keywords: SQLCODE100 XML   *
    *   ISO(UR) SQLINCORR SQLINCORR/K SQLXML   *
    *   SQLCODE911 SQLCODE913.   *
    ****
    * RECOMMENDATION: *
    ****
    By design, DB2 acquires a lower level s-lock on the XML document
    to prevent reading partially inserted documents, since the
    inserter holds an x-lock on the XML. While s-lock on the XML
    by a UR reader is normal, it is not expected to fail on getting
    the IS lock on the table space.

    The reason for the IS lock failure is that DB2 was requesting a
    CONDITIONAL s-lock on the XML document for the UR reader, which
    resulted in a prerequisite CONDITIONAL IS lock request on the
    XML table space or the partition.
    (Note: CONDitional lock request means that the requester does
    not want to wait for another lock to be released.)
    The original insert or update was committed, however a new
    inserter or updater is attempting an IX lock at the same time
    as the IS lock request and IRLM is in the middle of processing
    this request.
    In a data sharing environment, there is a small window in IRLM
    when the IX lock is waiting on System (MVS/XES) Lock
    Manager(SLM) to grant the lock, therefore the IS lock request
    is failed since it is conditional. IRLM has to wait to process
    the IS lock until the IX request is complete to determine if the
    IS can be granted, but since this is a CONDITIONAL request, IRLM
    fails the IS lock request instead of waiting. Upon receiving
```

the lock failure, DB2 moves on to the next row, and skips the
committed row.

DB2 code is changed to acquire UNCONDITIONAL S-lock on XML
documents when requested by a UR reader. This also acquires an
UNCONDITIONAL IS lock on the XML table space.

If customers have applications expecting SQLCODE +100 by an
uncommitted reader, they can now also expect SQLCODE -911 or
-913.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM45561
SPECIAL CONDITIONS:
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  ACTION:
    APAR PM45561 fixes a problem that causes incorrect output for
    readers of XML data that use ISOLATION LEVEL(UR) and
    and potentially allows DB2 to cause the readers of XML data to
    wait for a lock, even though ISO(UR) is specified.
    The situation usually occurs during heavy concurrent insert,
    update, or delete activity.
    The incorrect output problem is fixed by requiring ISOLATION(UR)
    readers to wait for XML locks. As a result, ISOLATION(UR)
    readers that access XML data might see increased wait time for
    locks.
    The additional wait time for unconditional locks sometimes
    result in deadlocks or timeouts(SQLCODE -911 or -913),therefore,
    application logic may need to change to accommodate SQLCODEs
    -911 and -913.
.


------ COVER LETTER FOR PTF UK73647 ------------

PROBLEM DESCRIPTION(S):
  PM45483 -
    ****************************************************************
    * USERS AFFECTED: All users of DB2 9 for z/OS who will        *
    *                 be using IDAA (IBM DB2 Analytics            *
    *                 Accelerator) will be affected.             *
    ****************************************************************
    * PROBLEM DESCRIPTION: IDAA support is being added by APARs   *
    *                   PM45482, PM45483, PM50764, and PM51075. *
    ****************************************************************
    * RECOMMENDATION:                                            *
    ****************************************************************
    IDAA support is being added by APARs PM45482, PM45483, PM50764,
    and PM51075.  These APARs together provide the code in DB2 to
    support the use of IDAA.
    See the text of APAR PM45482 for more information about the
    IDAA support.

    Additional Keywords:
    IDAAV2R1/K
  PM51075 -

```
****************************************************************
* USERS AFFECTED: All users of DB2 9 for z/OS who will        *
*                 be using IDAA (IBM DB2 Analytics             *
*                 Accelerator) will be affected.              *
****************************************************************
* PROBLEM DESCRIPTION: IDAA support is being added by APARs   *
*                      PM45482, PM45483, PM50764, and PM51075. *
****************************************************************
* RECOMMENDATION:                                             *
****************************************************************
  IDAA support is being added by APARs PM45482, PM45483, PM50764,
  and PM51075.  These APARs together provide the code in DB2 to
  support the use of IDAA.
  See the text of APAR PM45482 for more information about the
  IDAA support.

  Additional Keywords:
  IDAAV2R1/K
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM45483,PM51075
SPECIAL CONDITIONS:
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  DOCUMENTATION:
    ***Documentation for PM34683 (V9):

    This APAR/PTF changes the description for DB2 reason code
    00D31030.  The change will be documented in the DB2 9 for z/OS
    Codes manual and in the Information Management Software for
    z/OS Solutions Information Center.

    See the PTF cover letter for the text of the new reason code.
  ACTION:
    The PTFs for PM45482/PM50764 and PM45483/PM51075 are
    coreq'd together, so the PTFs must be applied at the same
    time.
  ACTION:

    ***Action for PM45483 (V9):
    This PTF provides support for IDAA (IBM DB2 Analytics
    Accelerator). The majority of the support involves DB2 9 for
    z/OS server related changes but some requester related changes
    were also necessary. As a result, users are advised not to
    enable query acceleration using IDAA, either through the use of
    the CURRENT QUERY ACCELERATION special register in their
    applications or through the QUERY_ACCELERATION configuration
    parameter (at a server, site2), until the PTF is also applied
    to each DB2 9 for z/OS system (site1) that may request
    acceleration services (from site2). If the PTF is not also
    applied to each remote DB2 9 for z/OS requester system (site1),
    and acceleration services are requested, the DB2 9 for z/OS
    requester system (site1) may experience unpredictable symptoms
    including DRDA exception conditions.
  .
```

```
       ------ COVER LETTER FOR PTF UK73661 ------------

PROBLEM DESCRIPTION(S):
  PM45482 -
    ****************************************************************
    * USERS AFFECTED: All users of DB2 9 for z/OS who will be     *
    *                 using IDAA (IBM DB2 Analytics Accelerator    *
    *                 Version 2) or are using IBM Smart Analytics  *
    *                 Optimizer Version 1 are affected.           *
    *                 However, the HOLD actions are applicable     *
    *                 even if you do not plan to use IDAA.         *
    ****************************************************************
    * PROBLEM DESCRIPTION: IDAA support is being added by APARs   *
    *                 PM45482, PM45483, PM50764, and PM51075.     *
    *                 Also, ABEND0C4 RC04 in DSNWVSR2+038A         *
    *                 may occur for IBM Smart Analytics           *
    *                 Optimizer V1 when issuing online            *
    *                 monitor requests for IFCID 148.             *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    IDAA support is being added by APARs PM45482, PM45483, PM50764,
    and PM51075.  These APARs add the new subsystem parameters
    ACCEL_LEVEL and QUERY_ACCELERATION to enable the new support
    for IDAA. Code is added to support offloading of many queries
    to the accelerator for improved query performance.  DSNTEP2
    and DSNTEP4 are updated to recognize messages from the
    accelerator.  Also, these APARs correct an ABEND0C4 RC04 in
    DSNWVSR2+038A that may occur for IBM Smart Analytics Optimizer
    Version 1 when issuing online monitor requests for IFCID 148.

    All users need to perform steps (1) and (2), as well as (4),
    and (5) as applicable, under "Subsystem parameters and sample
    jobs" below, even if you do not plan to use IDAA.  Step (3) is
    highly recommended.  All users running V9 NFM also need to
    perform step (a) or (b) under "DSNTEP2 and DSNTEP4" below.

    Subsystem parameters and sample jobs
    ------------------------------------
    This PTF also adds two new DB2 subsystem parameters in DSN6SPRM:

    (A) ACCEL_LEVEL specifies the level of the query accelerator
        to be used by DB2 when DSN6SPRM.ACCEL is set to AUTO or
        COMMAND.  Valid settings are:
        *  V1: Use version 1 of the accelerator (e.g., with
               IBM Smart Analytics Optimizer Version 1).
               ==> This is the default setting.
        *  V2: Use version 2 of the accelerator (e.g., with
               IBM DB2 Analytics Accelerator Version 2).

        ACCEL_LEVEL is not online changeable: After modifying the
        setting, you need to stop and restart DB2 in order for the
        change to take effect.  ACCEL_LEVEL is deprecated in V9
        and eliminated thereafter.

    (B) QUERY_ACCELERATION specifies the default value for the
```

CURRENT QUERY ACCELERATION special register. The value
entered here is used when the special register has not been
set by means of the SET CURRENT QUERY ACCELERATION statement
Valid settings are:
* ENABLE: Indicates that any given query will be
            accelerated only if DB2 determines that
            it is advantageous to do so (i.e. costing
            is performed). If there is an accelerator
            failure while running the query, or the
            accelerator returns an error, DB2 will
            return a negative SQL code to the application.
* ENABLE_WITH_FAILBACK: This option is the same as
            ENABLE but with slight modification to the
            DB2 behavior for the cases when there is
            an accelerator failure or when the
            accelerator returns an error. In
            particular, this setting allows DB2 to
            re-execute (failback) the query in DB2
            without the accelerator if the attempt to
            process the query in accelerator fails.
            For special considerations when using this
            setting, refer to the discussion of the
            ENABLE WITH FAILBACK option of the CURRENT
            QUERY ACCELERATION special register in the
            DB2 SQL Reference.
* NONE : Indicates that no query acceleration is
            to take place.
            ===> This is the default setting

This PTF also modifies the following jobs to support both
version 1 and version 2 query accelerators:
* DSNTIJAS (creates the accelerator database)
* DSNTEJAS (creates the virtual accelerator database)
The job prologs contain specific guidance on how to configure
the JCL to create databases for either type of query
accelerator. By default, databases for version 2 accelerators
are created.

If you have already installed or migrated to this version of DB2
you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member
(4) Update private copies of job DSNTIJAS
(5) Update private copies of job DSNTEJAS
Detailed guidance for these actions follows:

----
(1) Update customized copies of DB2 installation CLIST members
----
==> This action is required

    This PTF modifies CLIST member DSNTINST in the SDSNCLST
    target library only. You need to redo any record format
    changes and reapply any tailoring you have done to your

copies of this CLIST. You may also want to move it to the
prefix.NEW.SDSNCLST data set, where the CLISTs processed by
job DSNTIJVC reside.

----
(2) Update your customized copy of job DSNTIJUZ

==> This action is required

   This PTF modifies DB2 installation job DSNTIJUZ in the
   SDSNSAMP target library. After applying this PTF, you
   need to update your customized copy of this job as follows:

   * Add the keyword parameter ACCEL_LEVEL=<x>, where <x> is
     V1 or V2, to the invocation of the DSN6SPRM macro. Make
     sure to add a continuation character in column 72 if
     needed. If you currently use IBM Smart Analytics
     Optimizer Version 1, do not specify ACCEL_LEVEL=V2 before
     you have reviewed the documentation for using IDAA with
     DB2 for z/OS and prepared to switch to IDAA.

   * Add the keyword parameter QUERY_ACCELERATION=<y>, where
     <y> is ENABLE, ENABLE_WITH_FAILBACK, or NONE to the
     invocation of the DSN6SPRM macro. Make sure to add a
     continuation character in column 72 if needed.

   * Run the first two steps of the DSNTIJUZ job you modified.

   * After the job completes, you must either use the -SET
     SYSPARM command or stop and restart DB2 for a change to
     QUERY_ACCELERATION to take effect. You must stop and
     restart DB2 for a change to ACCEL_LEVEL to take effect.

----
(3) Update private copies of the DSNTIDxx CLIST input member

==> This action is recommended

    This PTF adds entries for ACCEL_LEVEL and
    QUERY_ACCELERATION to the CLIST default input member,
    DSNTIDXA, in the SDSNSAMP target library. You need to
    add these entries to all private copies of your CLIST
    output DSNTIDxx member. In each such copy, add the
    following lines:

```
ACCEL_LEVEL            CHAR  M  V1              V2              <x>
QUERY_ACCELERATION CHAR   M  NONE            NONE            <y>
```

    Change <x> to the value you specified for
    ACCEL_LEVEL in step (2), above.

    Change <y> to the value you specified for
    QUERY_ACCELERATION in step (2), above.

    If you omit adding these parameters, the install
    CLIST will use the default settings the next time

```
      you run it to customize job DSNTIJUZ.


      ----------------------------------------------------------------
      (4) Update private copies of job DSNTIJAS
      ----------------------------------------------------------------
      ==> This action is required if you maintain a private copy of
          of job DSNTIJAS

          This PTF modifies job DSNTIJAS in the SDSNSAMP target
          library only.  After applying this PTF, refresh your
          private copy from the updated copy in SDSNSAMP and
          follow the job prolog to customize it for your site.


      ----------------------------------------------------------------
      (5) Update private copies of job DSNTEJAS
      ----------------------------------------------------------------
      ==> This action is required if you maintain a private copy of
          of job DSNTEJAS

          This PTF modifies job DSNTEJAS in the SDSNSAMP target
          library only.  After applying this PTF, refresh your
          private copy from the updated copy in SDSNSAMP and
          follow the job prolog to customize it for your site.


      ============================================================


      DSNTEP2 and DSNTEP4
      ------------------
      This PTF updates the source code for DSNTEP2 and DSNTEP4
      plus the shipped object decks (DSNTEP2L and DSNTEP4L) and
      shipped DBRMs (DSN@EP2L and DSN@EP4L).  These changes
      do not become effective until you rebuild the load modules
      and rebind the plans.

      * On DB2 V9 systems running in conversion mode (CM) or
        enabling-new-function mode (ENFM), no further action is
        required for DSNTEP2/DSNTEP4 after applying this PTF.
        The updates will be used when you run the V9 IVP jobs
        after DB2 V9 enters new-function mode.
      * On DB2 V9 systems in new-function mode, proceed as
        follows:
        (a) If you use DSNTEP2 or DSNTEP4 (or both) as supplied
            by DB2, run IVP job DSNTEJ1L to relink the load
            modules from the shipped object modules and bind the
            plans from the shipped DBRMs.
        (b) If you use a modified version of DSNTEP2 or DSNTEP4
            (or both) redo your modifications and then run IVP
            job DSNTEJ1P to recompile and link-edit the load
            modules and bind the plans for DSNTEP2 and DSNTEP4.


      ============================================================



      Additional Keywords:
      ISAOPT/K IDAAV2R1/K IFCID148
      IDAA support is implemented with PM45482, PM45483, PM50764, and
```

```
PM51075.  Also, the abend issue which can be encountered with
IFCID 148 is resolved.
For more information on how to use IDAA, please refer to the
IDAA User's Guide.
PM50764 -
****************************************************************
* USERS AFFECTED: All users of DB2 9 for z/OS who will        *
*                 be using IDAA (IBM DB2 Analytics            *
*                 Accelerator) will be affected.             *
****************************************************************
* PROBLEM DESCRIPTION: IDAA support is being added by APARs  *
*                      PM45482, PM45483, PM50764, and PM51075. *
****************************************************************
* RECOMMENDATION:                                            *
****************************************************************
IDAA support is being added by APARs PM45482, PM45483, PM50764,
and PM51075.  These APARs together provide the code in DB2 to
support the use of IDAA.
See the text of APAR PM45482 for more information about the
IDAA support.

Additional Keywords:
IDAAV2R1/K
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM45482,PM50764
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    ***Action for PM45482 (V9)

    All users need to perform steps (1) and (2), as well as (4),
    and (5) as applicable, under "Subsystem parameters and sample
    jobs" below, even if you do not plan to use IDAA.  Step (3) is
    highly recommended.  All users running V9 NFM also need
    to perform step (a) or (b) under "DSNTEP2 and DSNTEP4" below.

    Subsystem parameters and sample jobs
    ------------------------------------
    This PTF also adds two new DB2 subsystem parameters in DSN6SPRM:

    (A) ACCEL_LEVEL specifies the level of the query accelerator
        to be used by DB2 when DSN6SPRM.ACCEL is set to AUTO or
        COMMAND.  Valid settings are:
        *  V1: Use version 1 of the accelerator (e.g., with
               IBM Smart Analytics Optimizer Version 1).
               ==> This is the default setting.
        *  V2: Use version 2 of the accelerator (e.g., with
               IBM DB2 Analytics Accelerator Version 2).

        ACCEL_LEVEL is not online changeable: After modifying the
        setting, you need to stop and restart DB2 in order for the
        change to take effect.  ACCEL_LEVEL is deprecated in V9
        and eliminated thereafter.

    (B) QUERY_ACCELERATION specifies the default value for the
```

CURRENT QUERY ACCELERATION special register. The value
entered here is used when the special register has not been
set by means of the SET CURRENT QUERY ACCELERATION statement
Valid settings are:
* ENABLE: Indicates that any given query will be
          accelerated only if DB2 determines that
          it is advantageous to do so (i.e. costing
          is performed). If there is an accelerator
          failure while running the query, or the
          accelerator returns an error, DB2 will
          return a negative SQL code to the application.
* ENABLE_WITH_FAILBACK: This option is the same as
          ENABLE but with slight modification to the
          DB2 behavior for the cases when there is
          an accelerator failure or when the
          accelerator returns an error. In
          particular, this setting allows DB2 to
          re-execute (failback) the query in DB2
          without the accelerator if the attempt to
          process the query in accelerator fails.
          For special considerations when using this
          setting, refer to the discussion of the
          ENABLE WITH FAILBACK option of the CURRENT
          QUERY ACCELERATION special register in the
          DB2 SQL Reference.
* NONE : Indicates that no query acceleration is
          to take place.
          ===> This is the default setting

This PTF also modifies the following jobs to support both
version 1 and version 2 query accelerators:
* DSNTIJAS (creates the accelerator database)
* DSNTEJAS (creates the virtual accelerator database)
The job prologs contain specific guidance on how to configure
the JCL to create databases for either type of query
accelerator. By default, databases for version 2 accelerators
are created.

If you have already installed or migrated to this version of DB2
you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member
(4) Update private copies of job DSNTIJAS
(5) Update private copies of job DSNTEJAS

Detailed guidance for these actions follows:

----
(1) Update customized copies of DB2 installation CLIST members
----
==> This action is required

    This PTF modifies CLIST member DSNTINST in the SDSNCLST
    target library only. You need to redo any record format

631

changes and reapply any tailoring you have done to your
copies of this CLIST. You may also want to move it to the
prefix.NEW.SDSNCLST data set, where the CLISTs processed by
job DSNTIJVC reside.

----
(2) Update your customized copy of job DSNTIJUZ

==> This action is required

    This PTF modifies DB2 installation job DSNTIJUZ in the
    SDSNSAMP target library. After applying this PTF, you
    need to update your customized copy of this job as follows:

    * Add the keyword parameter ACCEL_LEVEL=<x>, where <x> is
      V1 or V2, to the invocation of the DSN6SPRM macro. Make
      sure to add a continuation character in column 72 if
      needed. If you currently use IBM Smart Analytics
      Optimizer V1, do not specify ACCEL_LEVEL=V2 before you
      have reviewed the documentation for using IDAA with
      DB2 for z/OS and prepared to switch to IDAA.

    * Add the keyword parameter QUERY_ACCELERATION=<y>, where
      <y> is ENABLE, ENABLE_WITH_FAILBACK, or NONE to the
      invocation of the DSN6SPRM macro. Make sure to add a
      continuation character in column 72 if needed.

    * Run the first two steps of the DSNTIJUZ job you modified.

    * After the job completes, you must either use the -SET
      SYSPARM command or stop and restart DB2 for a change to
      QUERY_ACCELERATION to take effect. You must stop and
      restart DB2 for a change to ACCEL_LEVEL to take effect.

----
(3) Update private copies of the DSNTIDxx CLIST input member

==> This action is recommended

    This PTF adds entries for ACCEL_LEVEL and
    QUERY_ACCELERATION to the CLIST default input member,
    DSNTIDXA, in the SDSNSAMP target library. You need to
    add these entries to all private copies of your CLIST
    output DSNTIDxx member. In each such copy, add the
    following lines:

ACCEL_LEVEL   CHAR M V1   V2   <x>
QUERY_ACCELERATION CHAR M NONE   NONE   <y>

    Change <x> to the value you specified for
    ACCEL_LEVEL in step (2), above.

    Change <y> to the value you specified for
    QUERY_ACCELERATION in step (2), above.

    If you omit adding these parameters, the install

```
     CLIST will use the default settings the next time
     you run it to customize job DSNTIJUZ.


----------------------------------------------------------------
(4) Update private copies of job DSNTIJAS
----------------------------------------------------------------
==> This action is required if you maintain a private copy of
    of job DSNTIJAS

    This PTF modifies job DSNTIJAS in the SDSNSAMP target
    library only.  After applying this PTF, refresh your
    private copy from the updated copy in SDSNSAMP and
    follow the job prolog to customize it for your site.


----------------------------------------------------------------
(5) Update private copies of job DSNTEJAS
----------------------------------------------------------------
==> This action is required if you maintain a private copy of
    of job DSNTEJAS

    This PTF modifies job DSNTEJAS in the SDSNSAMP target
    library only.  After applying this PTF, refresh your
    private copy from the updated copy in SDSNSAMP and
    follow the job prolog to customize it for your site.


============================================================


DSNTEP2 and DSNTEP4
-------------------
This PTF updates the source code for DSNTEP2 and DSNTEP4
plus the shipped object decks (DSNTEP2L and DSNTEP4L) and
shipped DBRMs (DSN@EP2L and DSN@EP4L).  These changes
do not become effective until you rebuild the load modules
and rebind the plans.

* On DB2 V9 systems running in conversion mode (CM) or
  enabling-new-function mode (ENFM), no further action is
  required for DSNTEP2/DSNTEP4 after applying this PTF.
  The updates will be used when you run the V9 IVP jobs
  after DB2 V9 enters new-function mode.
* On DB2 V9 systems in new-function mode, proceed as
  follows:
  (a) If you use DSNTEP2 or DSNTEP4 (or both) as supplied
      by DB2, run IVP job DSNTEJ1L to relink the load
      modules from the shipped object modules and bind the
      plans from the shipped DBRMs.
  (b) If you use a modified version of DSNTEP2 or DSNTEP4
      (or both) redo your modifications and then run IVP
      job DSNTEJ1P to recompile and link-edit the load
      modules and bind the plans for DSNTEP2 and DSNTEP4.


============================================================


The PTFs for PM45482/PM50764 and PM45483/PM51075 are
coreq'd together, so the PTFs must be applied at the same
time.
```

ACTION:
  PM43676 corrects a problem of incorrect output or unexpected
  SQLCODEs, such as -305, from executing the native SQL procedure
  which has been created with CREATE or ALTER PROCEDURE statement
  with a SQLWARNING.

  After the application of this PTF, ALTER PROCEDURE REGENERATE is
  required for each native SQL procedure that is affected.
  Review the PTF cover letter to determine which, if any, native
  SQL procedure could be affected by this change.
ACTION:
  ***Action for PM24538 (V9)
  This PTF updates the source code for DSNTEP4 plus the shipped
  object deck (DSNTEP4L) and shipped DBRM (DSN@EP4L). These
  changes do not become effective until you rebuild the load
  module and rebind the plan.

  * On DB2 V9 systems running in conversion mode (CM) or
    enabling-new-function mode (ENFM), no further action is
    required after applying this PTF. The updates will be
    used when you run the V9 IVP jobs after DB2 V9 enters
    new-function mode.
  * On DB2 V9 systems in new-function mode, proceed as
    follows:
    (a) If you use DSNTEP4 as supplied by DB2,
        run job steps PH01LS03 and PH01LS04 of IVP job DSNTEJ1L
        to relink the DSNTEP4 load module from the shipped
        object module and bind the plan from the shipped DBRM.
    (b) If you use a modified version of DSNTEP4
        redo your modifications and then run job steps PH01PS03
        and PH01PS04 of IVP job DSNTEJ1P to recompile and
        link-edit the load module and bind the plan for DSNTEP4.
ACTION:
  ***Action for PM19657 (V9)
  This PTF updates the source code for DSNTEP2 and DSNTEP4
  plus the shipped object decks (DSNTEP2L and DSNTEP4L) and
  shipped DBRMs (DSN@EP2L and DSN@EP4L). These changes
  do not become effective until you rebuild the load modules
  and rebind the plans.

  * On DB2 V9 systems running in conversion mode (CM) or
    enabling-new-function mode (ENFM), no further action is
    required after applying this PTF. The updates will be
    used when you run the V9 IVP jobs after DB2 V9 enters
    new-function mode.
  * On DB2 V9 systems in new-function mode, proceed as
    follows:
    (a) If you use DSNTEP2 or DSNTEP4 (or both) as supplied
        by DB2, run IVP job DSNTEJ1L to relink the load
        modules from the shipped object modules and bind the
        plans from the shipped DBRMs.
    (b) If you use a modified version of DSNTEP2 or DSNTEP4
        (or both) redo your modifications and then run IVP
        job DSNTEJ1P to recompile and link-edit the load
        modules and bind the plans for DSNTEP2 and DSNTEP4.
ACTION:

```
   ***Action for PM17349 (V9)
   This PTF updates the source code for DSNTEP2 and DSNTEP4
   plus the shipped object decks (DSNTEP2L and DSNTEP4L) and
   shipped DBRMs (DSN@EP2L and DSN@EP4L).  These changes
   do not become effective until you rebuild the load modules
   and rebind the plans.

   * On DB2 V9 systems running in conversion mode (CM) or
     enabling-new-function mode (ENFM), no further action is
     required after applying this PTF.  The updates will be
     used when you run the V9 IVP jobs after DB2 V9 enters
     new-function mode.
   * On DB2 V9 systems in new-function mode, proceed as
     follows:
     (a) If you use DSNTEP2 or DSNTEP4 (or both) as supplied
         by DB2, run IVP job DSNTEJ1L to relink the load
         modules from the shipped object modules and bind the
         plans from the shipped DBRMs.
     (b) If you use a modified version of DSNTEP2 or DSNTEP4
         (or both) redo your modifications and then run IVP
         job DSNTEJ1P to recompile and link-edit the load
         modules and bind the plans for DSNTEP2 and DSNTEP4.
ACTION:
   ***Action for PM08647 (V9)

   This PTF updates the source code for DSNTEP2 and DSNTEP4
   plus the shipped object decks (DSNTEP2L and DSNTEP4L) and
   shipped DBRMs (DSN@EP2L and DSN@EP4L).  These changes
   do not become effective until you rebuild the load modules
   and rebind the plans.

   * On DB2 V9 systems running in conversion mode (CM) or
     enabling-new-function mode (ENFM), no further action is
     required after applying this PTF.  The updates will be
     used when you run the V9 IVP jobs after DB2 V9 enters
     new-function mode.
   * On DB2 V9 systems in new-function mode, proceed as
     follows:
     (a) If you use DSNTEP2 or DSNTEP4 (or both) as supplied
         by DB2, run IVP job DSNTEJ1L to relink the load
         modules from the shipped object modules and bind the
         plans from the shipped DBRMs.
     (b) If you use a modified version of DSNTEP2 or DSNTEP4
         (or both) redo your modifications and then run IVP
         job DSNTEJ1P to recompile and link-edit the load
         modules and bind the plans for DSNTEP2 and DSNTEP4.
ACTION:
   ***Action for PK63887 (V9)

   This PTF updates the sample progams DSNTEP2 and DSNTEP4 to
   include an alternate PLIXOPT declaration with the environment
   variable PLI_SYSPRINT_ATTR_OVERRIDE.  This declaration is
   disabled by default.

   This PTF documents how the PL/I environment variable
   PLI_SYSPRINT_ATTR_OVERRIDE can be used to temporarily
```

resolve ONCODE=81 errors when the JCL used to run DSNTEP2 and
DSNTEP4 specifies an LRECL other than 133 for SYSPRINT.

This workaround is only available in z/OS 1.7, 1.8, and 1.9.
The complete solution is to change the JCL; this environment
variable should only be used while the JCL is being corrected.

See APAR PK63659 (PTFs UK37508, UK37509, UK37510) for more
details about the PLI_SYSPRINT_ATTR_OVERRIDE environment
variable.

To enable usage of PLI_SYSPRINT_ATTR_OVERRIDE in DSNTEP2 or
DSNTEP4, the following is required:
* z/OS 1.7, 1.8, or 1.9
* The fix for PL/I APAR PK63659 must be applied
* On DB2 V9 systems running in compatibility mode (CM) or
  enabling-new-function mode (ENFM), no further action is
  required after applying this PTF. The updates will be
  used when you run the V9 IVP jobs after DB2 V9 enters
  new-function mode.

  If you encounter the symptoms described in the PROBLEM
  DESCRIPTION section, contact IBM for further advice.

* On DB2 V9 systems in new-function mode, proceed as
  follows:

  (1) If you do not experience these errors, then no
      further actions are required for this APAR.

  (2) If you do experience these errors and would like
      to use the environment variable
      PLI_SYSPRINT_ATTR_OVERRIDE while you are modifying your
      JCL:

      (a) If you do not have a PL/I compiler and use DSNTEP2
          or DSNTEP4 (or both) as supplied by DB2,
          (i)   Contact DB2 for the usermod having the object
                decks and DBRMs
          (ii) Apply the usermod
          (iii) Run IVP job DSNTEJIL to relink the load modules
                from the shipped object modules and bind the
                plans from the shipped DBRMs.

      (b) If you have a PL/I compiler,
          (i)   If you use a modified version of DSNTEP2 or
                DSNTEP4 (or both), redo your modifications
          (ii) Comment out the default PLIXOPT declaration
                and uncomment the alternate PLIXOPT
                declaration that contains the environment
                variable PLI_SYSPRINT_ATTR_OVERRIDE
          (iii) Run IVP job DSNTEJ1P to recompile and link-edit
                the load modules and bind the plans for DSNTEP2
                and DSNTEP4.

.

```
       ------ COVER LETTER FOR PTF UK73664 ------------


PROBLEM DESCRIPTION(S):
  PM48865 -
    ******************************************************************
    * USERS AFFECTED: DB2 10 for z/OS users of virtual indexes.    *
    *                                                               *
    *                 DB2 9 for z/OS and DB2 10 for z/OS users of  *
    *                 any of these EXPLAIN tables:                 *
    *                  - DSN_FUNCTION_TABLE                        *
    *                  - DSN_PREDICAT_TABLE                        *
    *                  - DSN_QUERY_TABLE                           *
    ******************************************************************
    * PROBLEM DESCRIPTION: (1) While using virtual indexes on DB2  *
    *                      10 for z/OS, the following abend may     *
    *                      occur:                                   *
    *                                                               *
    *                      - ABEND04E RC00C90101 in DSNIBCTD :5007 *
    *                                                               *
    *                      (2) When issuing a SELECT on            *
    *                      DSN_FUNCTION_TABLE or                   *
    *                      DSN_PREDICAT_TABLE                      *
    *                      SQLCODE -331 with reason 16 may be      *
    *                      issued.                                 *
    *                                                               *
    *                      (3) While using EXPLAIN on a query      *
    *                      that has a GROUP BY with all literals,  *
    *                      the NODE_DATA column may show a GROUP   *
    *                      BY node with no GROUP BY items.         *
    *                                                               *
    ******************************************************************
    * RECOMMENDATION:                                               *
    ******************************************************************
    (1) While using virtual indexes on DB2 10 for z/OS the following
    abend may occur:

     - ABEND04E RC00C90101 in DSNIBCTD :5007

    (2) When issuing a SELECT on DSN_FUNCTION_TABLE or
    DSN_PREDICAT_TABLE SQLCODE -331 with reason 16 may be issued.

    The affected columns include FUNCTION_TEXT from
    DSN_FUNCTION_TABLE, and TEXT and LITERALS from
    DSN_PREDICAT_TABLE.

    (3) While using EXPLAIN on a query that has a GROUP BY with all
    literals, the NODE_DATA column may show a GROUP BY node with no
    GROUP BY items.

    An example that demonstrates this problem:

       Query:
         SELECT 'string' AS TEXT
         FROM T1
         GROUP BY 'string'
```

```
    Output before fix:
      ...
      <FROM-CLAUSE>
        FROM
         <TAB-REF TNO="1" TYPE="T">SYSADM.T1</TAB-REF>
      </FROM-CLAUSE>
      <GROUP-BY>
        GROUP BY
      </GROUP-BY>
      ...

    Output after fix:
      ...
      <FROM-CLAUSE>
        FROM
         <TAB-REF TNO="1" TYPE="T">SYSADM.T1</TAB-REF>
      </FROM-CLAUSE>
      ...
```

The above problems were caused by:
  - incorrect handling of virtual indexes
  - improper truncation of mixed data
  - not checking for GROUP BY items

Additional keywords:
ABEND04E RC00C90101 DSNIBCTD ERQUAL5007 SQLCODE331 SQLEXPLAIN

DB2 code has been changed to:

(1) Fix the problem and not issue the abend

(2) Fix the problem for the FUNCTION_TEXT column of
    DSN_FUNCTION_TABLE and the TEXT and LITERALS columns of
    DSN_PREDICAT_TABLE so that the SQLCODE is not issued

    (3) Fix the problem and not print out the GROUP BY
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM48865
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    This PTF corrects a problem where rows containing
    incorrectly truncated data are inserted into explain tables
    DSN_FUNCTION_TABLE and DSN_PREDICAT_TABLE. As a result,
    subsequent SELECTs on these tables received SQLCODE -331.
    After applying this PTF, you must delete the rows that
    are currently in the tables causing -331 to stop receiving
    the SQL code.
.

------ COVER LETTER FOR PTF UK73789 ------------

PROBLEM DESCRIPTION(S):

PM49549 -
```
     ****************************************************************
     * USERS AFFECTED: 1. All DB2 9 and 10 for z/OS users who       *
     *                    use spatial predicate functions in        *
     *                    predicates                                *
     *                                                              *
     *                 2. All DB2 9 for z/OS users who use a        *
     *                    CAST specification that the source and    *
     *                    target data types in the CAST are the     *
     *                    user-defined data types                   *
     ****************************************************************
     * PROBLEM DESCRIPTION: 1. When a spatial predicate function    *
     *                         is used in a predicate, there is no  *
     *                         mechanism to influence the spatial   *
     *                         index being chosen. Thus the query   *
     *                         performance is unpredictable. In     *
     *                         some cases, a 2-second query could   *
     *                         run for 3 minutes if the spatial     *
     *                         index is not used. This is           *
     *                         unacceptable for the web and         *
     *                         mobile applications.                 *
     *                                                              *
     *                      2. In DB2 9 if the source and target    *
     *                         data types in a CAST specification   *
     *                         are the user-defined types, the      *
     *                         query that contains such a CAST      *
     *                         could encounter a storage overlay    *
     *                         which may result to abend            *
     *                         04E-00E20029 at DSNXEFB.DSNSVSVB+    *
     *                         096A or other symptoms.              *
     *                                                              *
     *                         This storage overlay does not occur  *
     *                         in DB2 10.                           *
     ****************************************************************
     * RECOMMENDATION:                                              *
     ****************************************************************
```
1. When a spatial predicate function is used in a predicate,
   there is no mechanism to influence the spatial index being
   chosen. Thus the query performance is unpredictable.
   In some cases, a 2-second query could run for 3 minutes
   if the spatial index is not used. This is unacceptable for
   the web and mobile applications.

2. In DB2 9 if the source and target data types in a CAST
   specification are the user-defined types, the query that
   contains such a CAST could encounter a storage overlay
   which may result to abend 04E-00E20029 at
   DSNXEFB.DSNSVSVB+096A or other symptoms.

   For example,

     CREATE DISTINCT TYPE JOE.SHOESIZE AS DECIMAL(10,2);
     SELECT CAST(JOE.SHOESIZE(12.0) AS JOE.SHOESIZE) FROM DSW;

   The above CAST specification may receive 04E abend at
   DSNXEFB.DSNSVSVB+096A because DB2 does not handle the

storage for such a CAST properly.

    This storage overlay does not occur in DB2 10.
PM49549 is a new function APAR. But during implementation
we uncovered a storage overlay problem that was related to
a CAST specification whose source and target data types
were user-defined data types. Because the changes in this
APAR include the fix for the storage overlay, to make this
fix effective for a static application, after the
application of the PTF, the static application that
reference such a CAST must be rebound.

Additional keyword: SQLOVERLAY SQLSTORGEOVERLAY SQLUDT SQLCAST

The following describes the new function that is supported
in this APAR:

The new SELECTIVITY clause with a selectivity percentage
constant is introduced to a predicate to allow the user
to influence the optimizer to choose the spatial index.

The new clause is available starting in V9 New Function Mode.

```
+===============+
| SQL Reference |
+===============+
```

  Search conditions


```
  >>--+-----+--+--predicate-+--------------------+-+---->
      '-NOT-'  |            '--SELECTIVITY-clause--' |
              '--(search-condition)----------------'


   .-----------------------------------------------------------.
   v                                                           |
  >-+-----------------------------------------------------+-+><
    '-+-AND-+-+-----+-+-predicate-+-------------------+-+-'
      '-OR--' '-NOT-' |            '-SELECTIVITY-clause-' |
                      '-(search-condition)--------------'
```

  SELECTIVITY-clause

    SELECTIVITY numeric-constant

  SELECTIVITY numeric-constant

    Specifies the expected selectivity percentage for the
    predicate. SELECTIVITY can be specified only when the
    predicate contains one of the spatial predicate functions
    (SQLCODE -20046) and the predicate is in one of the forms

      spatial-predicate-function op expression

where op is "=" or "<" (SQLCODE -20046).

The selectivity value must be an integer or decimal constant
in the inclusive range from 0 to 1 (SQLCODE -644).
For example, if 0.01 is specified, the spatial function is
expected to filter out all but one percent of all rows in
the table.

The following spatial predicate functions are supported.
For usage syntax and additional details, please refer to
IBM Spatial Support for DB2 User's Guide and Reference.

```
  DB2GSE.ST_CONTAINS
  DB2GSE.ST_CROSSES
  DB2GSE.ST_DISTANCE
  DB2GSE.ENVELOPESINTERSECT
  DB2GSE.ST_EQUALS
  DB2GSE.ST_INTERSECTS
  DB2GSE.ST_OVERLAPS
  DB2GSE.ST_TOUCHES
  DB2GSE.ST_WITHIN
```

Example:

In the following query, the DB2GSE.ST_WITHIN function is
used to find all the customer locations that lie within
the input search area. With a selectivity value of
0.0001, the spatial index is expected to return 1 result
per 10,000 rows of data.

```
   SELECT ID, NAME FROM CUSTOMERS
      WHERE DB2GSE.ST_WITHIN (LOCATION, :SEARCH_AREA) = 1
               SELECTIVITY 0.0001;
```

```
+===================+
| Messages and Codes |
+===================+
```

-20046

THE SELECTIVITY CLAUSE FOLLOWING predicate-type CAN ONLY
BE SPECIFIED FOR A SPATIAL PREDICATE FUNCTION

Explanation

The SELECTIVITY clause is specified with a predicate
that does not include a spatial predicate function or
the operator is incorrect.

System response

The statement cannot be processed.

User response

Remove the SELECTIVITY clause following the predicate.

SQLSTATE: 428E5

DSNH20046I

THE SELECTIVITY CLAUSE FOLLOWING predicate-type CAN ONLY
BE SPECIFIED FOR A SPATIAL PREDICATE FUNCTION

Explanation

The SELECTIVITY clause is specified with a predicate
that does not include a spatial predicate function or
the operator is incorrect.

System response

The statement cannot be processed.

User response

Remove the SELECTIVITY clause following the predicate.

Severity: 8 (error)


```
+===================================+
| Spatial User's Guide and Reference |
+===================================+
```

In some instances, the users may have detailed information
about their spatial data such that the selectivity of a
particular query can be estimated accurately. In those
cases, the user can add a SELECTIVITY clause with a numeric
constant in the spatial predicate function specification to
the DB2 optimizer. DB2 will use this value as the new filter
factor for determining an access path for the SELECT statement.
Please refer to the SQL Reference for its syntax and usage.

COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM49549
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM49549:

    See PM49549 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM49549 corrects a problem of a storage overlay that is related
    to a CAST specification whose source and target data types are
    user-defined data types. The query that contains such a CAST
    could receive abend 04E-00E20029 at DSNXEFB.DSNSVSVB+096A or
    other symptoms.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM41072:

  A rebind is necessary for static applications to rebuild
  access paths based on the changes in this APAR.

  PM41072 corrects an incorrect output problem in which the
  order of rows can be returned in the wrong order for a query
  with ORDER BY and multiple encoding schemes.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PM38954:

  See PM38954 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM38954 corrects a problem of wrong order returned on query
  with RANK function and index access is selected.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  See PM38287 APAR/PTF text for additional information about
  why a REBIND is necessary.

  PM38287 corrects an incorrect output problem where data is
  returned in opposite order to what ORDER BY specified when
  the following conditions are true.

  1. ORDER BY contains a column first and then followed by an
     IOE key expression which preserves column order on the
     same column.

  2. The column is specified as ASC to be returned in ascending
     order.

  3. The IOE key expression is specified as DESC to be returned
     in descending order.

  To make this fix effective for a static application, it must be
  rebound after application of this PTF. Review the PTF cover
  letter to determine which, if any, applications could be
  affected by this change.
DB2BIND:
  ***Action for PM26888:

See PM26888 APAR/PTF text for additional information about
why a REBIND is necessary.

PM26888 corrects a problem of incorrect output when a SQL
statement containing a huge (more than 65534) continuous 'OR'
predicate list with literal constants on the same column.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM15463:

See PM15463 APAR/PTF text for additional information about
why a REBIND is necessary.

PM15463 corrects a bindtime problem that can result in an
incorrect result set being returned for a query that has a
SELECT with an OUTER JOIN that also contains an ALL quantified
predicate or NOT IN (subquery) predicate.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
DB2BIND:
  ***Action for PM13794:

See PM13794 APAR/PTF text for additional information about
why a REBIND is necessary.

PM13794 corrects a problem that the DB2 optimizer may select an
access path that performs an unnecessary sort for a query with
both GROUP BY and ORDER BY clauses.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.
ACTION:
  This PTF introduces the new SELECTIVITY clause with a
  selectivity percentage constant to a predicate to allow the
  user to influence the optimizer to choose the spatial index.

  This new clause is available starting in V9 New Function Mode.

  +===============+
  | SQL Reference |
  +===============+

     Search conditions

     >>--+-----+--+--predicate-+--------------------+-+---->
         '-NOT-' | '--SELECTIVITY-clause--' |

644

```
                    '--(search-condition)----------------'


      .------------------------------------------------------------.
      v                                                            |
   >-+------------------------------------------------------+-+><
     '-+-AND-+-+-----+-+-predicate-+-------------------+-+-'
        '-OR--' '-NOT-' |              '-SELECTIVITY-clause-' |
                        '-(search-condition)--------------'
```

SELECTIVITY-clause

  SELECTIVITY numeric-constant

SELECTIVITY numeric-constant

  Specifies the expected selectivity percentage for the
  predicate. SELECTIVITY can be specified only when the
  predicate contains one of the spatial predicate functions
  (SQLCODE -20046) and the predicate is in one of the forms

    spatial-predicate-function op expression

  where op is "=" or "<" (SQLCODE -20046).

  The selectivity value must be an integer or decimal constant
  in the inclusive range from 0 to 1 (SQLCODE -644).
  For example, if 0.01 is specified, the spatial function is
  expected to filter out all but one percent of all rows in
  the table.

  The following spatial predicate functions are supported.
  For usage syntax and additional details, please refer to
  IBM Spatial Support for DB2 User's Guide and Reference.

    DB2GSE.ST_CONTAINS
    DB2GSE.ST_CROSSES
    DB2GSE.ST_DISTANCE
    DB2GSE.ENVELOPESINTERSECT
    DB2GSE.ST_EQUALS
    DB2GSE.ST_INTERSECTS
    DB2GSE.ST_OVERLAPS
    DB2GSE.ST_TOUCHES
    DB2GSE.ST_WITHIN

  Example:

    In the following query, the DB2GSE.ST_WITHIN function is
    used to find all the customer locations that lie within
    the input search area. With a selectivity value of
    0.0001, the spatial index is expected to return 1 result
    per 10,000 rows of data.

```
    SELECT ID, NAME FROM CUSTOMERS
      WHERE DB2GSE.ST_WITHIN (LOCATION, :SEARCH_AREA) = 1
```

SELECTIVITY 0.0001;


```
+===================+
| Messages and Codes |
+===================+
```

-20046

    THE SELECTIVITY CLAUSE FOLLOWING predicate-type CAN ONLY
    BE SPECIFIED FOR A SPATIAL PREDICATE FUNCTION

    Explanation

      The SELECTIVITY clause is specified with a predicate
      that does not include a spatial predicate function or
      the operator is incorrect.

    System response

      The statement cannot be processed.

    User response

      Remove the SELECTIVITY clause following the predicate.

    SQLSTATE: 428E5

DSNH20046I

    THE SELECTIVITY CLAUSE FOLLOWING predicate-type CAN ONLY
    BE SPECIFIED FOR A SPATIAL PREDICATE FUNCTION

    Explanation

      The SELECTIVITY clause is specified with a predicate
      that does not include a spatial predicate function or
      the operator is incorrect.

    System response

      The statement cannot be processed.

    User response

      Remove the SELECTIVITY clause following the predicate.

    Severity: 8 (error)


```
+================================+
| Spatial User's Guide and Reference |
+================================+
```

In some instances, the users may have detailed information
about their spatial data such that the selectivity of a

particular query can be estimated accurately. In those
cases, the user can add a SELECTIVITY clause with a numeric
constant in the spatial predicate function specification to
the DB2 optimizer. DB2 will use this value as the new filter
factor for determining an access path for the SELECT statement.
Please refer to the SQL Reference for its syntax and usage.
ACTION:
This PTF fixes the problem of incorrectly remove
the special predicate 0 = 1 when it appears inside
a view, under a simple OR predicate and zparm PREDPRUNE
is set to ON.
To make this fix effective, views that are created on top of
another view that contains this special predicate needs
to be dropped and recreated.
ACTION:
This PTF fixes the following symptoms in V9:
   ABEND04E at DSNXGSFN M106 when a subquery contains
   comparison between VARCHAR and CHAR FOR BIT DATA with
   different encoding schemes.

 If the following objects reference the above comparison,
 actions are required to make the PTF effective for them:

 1. Views created in V9

    Regenerate views using the ALTER VIEW REGENERATE
    statement
 2. Materialized query tables (MQT) created in V9

    Drop and recreate the MQTs

 3. SQL PL stored procedures created in V9 NFM

    Regenerate procedures using the ALTER PROCEDURE REGENERATE
    statement
.

------ COVER LETTER FOR PTF UK73799 ------------

PROBLEM DESCRIPTION(S):
  PM49643 -
    ****
    * USERS AFFECTED: ALL DB2 9 and DB2 10 for z/OS users of   *
    *   scrollable cursor fetch.   *
    ****
    * PROBLEM DESCRIPTION: If a PRR (Program Recovery Routine)   *
    *   gets control for an error, a secondary *
    *   abend can occur during runtime program *
    *   recovery processing.   *
    ****
    * RECOMMENDATION: *
    ****
    If a PRR (Program Recovery Routine) gets control for an error,
    an unexpected secondary abend can occur during runtime program
    recovery processing.

A secondary ABEND may occur during runtime program recovery
routine processing because of the following two reasons.

1. A PRR that was added in some runtime modules is not
   deleted before the module exits so the PRR remains
   on the "active" PRR chain after the module exits.

2. A recovery routine label is not defined or declared
   properly. This can cause registers and/or variables to be
   optimized incorrectly leading to unwarranted values.

Typically these can be system abends ABEND0C1 or ABEND0C4, or
DB2 ABEND04E abends.
DB2 code has been modified to correct the identified
runtime program recovery routine cleanup problems
which will prevent the secondary abends.

Additional Keywors: SQLSCROLL ABEND0C1 ABEND0C4 ABEND04E
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM49643
SPECIAL CONDITIONS:
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  ACTION:
    Please note the following information as it pertains to apar
    PM05890.

    APAR PM05890 is a "preventive" APAR that prevents data loss by
    detecting when a DELETE WHERE CURRENT OF statement could delete
    data from the wrong table. Such a DELETE statement will fail
    with one of the following abends.

      ABEND04E in DSNXRDWG at offset M581
      ABEND04E in DSNXRDWG at offset M582
      ABEND04E in DSNXRDWG at offset M583

    The ABEND condition can be corrected by performing a rebind.
    Please reference apar PK95755 for additional information.

    Furthermore, previous APAR PK95755 is actually the "corrective"
    APAR, it corrects the problem that leads to deleting data from
    the wrong table. APAR PM05890 is the "preventive" APAR, it
    prevents rows from being deleted from the wrong table.
.

------ COVER LETTER FOR PTF UK73832 ------------

PROBLEM DESCRIPTION(S):
  PM50448 -
    ****
    * USERS AFFECTED: All DB2 9, DB2 10 for z/OS users of SET   *
    *   special register statement.   *
    ****
    * PROBLEM DESCRIPTION: Unexpected SQLCODE -713 could occur   *

```
*                          when a SET special register statement    *
*                          with a parameter marker on its right      *
*                          side .                                    *
****************************************************************
* RECOMMENDATION:                                                    *
****************************************************************
Unexpected SQLCODE -713 issued for SET special register
statement which references a parameter marker on its right
side.

The following statement passed to DB2 from an UNICODE
application can recreate the problem:
SET CURRENT SCHEMA = ? ;

The parameter marker is assigned with a string as: SYS£IBM
DB2 is updated to handle the SET special register statement
correctly.
Additional Keywords: SQLCCSID SQLUNICODE SQLSPECIALREG
                     PARAMETER MARKER
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM50448
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM50448:

    See PM50448 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM50448 corrects a problem of unexpected SQLCODE -713 issued
    for SET special register statement which references a parameter
    marker on its right side.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF.  Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.


------ COVER LETTER FOR PTF UK73884 ------------

PROBLEM DESCRIPTION(S):
  PM47894 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 and 10 for z/OS users of queries   *
    *                 that contain a CASE expression in a          *
    *                 predicate.                                   *
    ****************************************************************
    * PROBLEM DESCRIPTION: An incorrout may occur when user's SQL  *
    *                 statement satisfies all of following         *
    *                 conditions:                                 *
    *                                                             *
    *                 1, The SQL statement contains a BETWEEN *
    *                    predicate which references a CASE    *
```

```
*                     expression in its low or high      *
*                     operator.                          *
*                                                        *
*                  2, The CASE expression references a   *
*                     scalar fullselect in its           *
*                     searched-when clause.              *
*                                                        *
**************************************************************
* RECOMMENDATION:                                        *
**************************************************************
```

An incorrout may occur when user's SQL statement satisfies all
of following conditions:

1, The SQL statement contains a BETWEEN predicate which
   references a CASE expression in its low or high operator.

2, The CASE expression references a scalar fullselect in its
   searched-when clause.

Example
==
```
 CREATE TABLE TU1 (
      CU11 INT NOT NULL
     ,CU12 VARCHAR(10) NOT NULL
     ,CU13 DATE
     ,PRIMARY KEY (CU11));

 CREATE TABLE TU2 (
      CU21 INT NOT NULL
     ,CU22 VARCHAR(10) NOT NULL
     ,CU23 DATE
     ,PRIMARY KEY (CU21));

SELECT CU11, CU13
  FROM TU1
 WHERE CU13        BETWEEN
          (CASE   WHEN (SELECT CU21
                        FROM TU2
                        WHERE CU21 = 1
                        ) = 1
                  THEN  '1999-01-01'
                  ELSE  '2000-01-01'
             END )  AND
          (CASE   WHEN (SELECT CU21
                         FROM TU2
                         WHERE CU21 =1
                        )=  1
                  THEN  '2001-01-01'
                  ELSE  '2002-01-01' END)
 AND CU11 BETWEEN 1  AND 4
 ORDER BY CU11, CU13;
```

The reason for this incorrout is because DB2 did not process
BETWEEN predicate with CASE expression correctly.

Now DB2 can process BETWEEN predicate with CASE expression

correctly to avoid the incorrout.

       Additional Keywords:SQLINCORR INCORROUT SQLINCORROUT DB2INCORR/K
                         SQLBETWEEN SQLCASE SQLSCALAR SQLFULLSELECT
                         SQLSCALARFULSEL
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM47894
SPECIAL CONDITIONS:
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   DB2BIND:
     ***Action for PM47894:

     See PM47894 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM47894 corrects a problem that
     an incorrout may occur when user's SQL statement satisfies all
     of following conditions:

     1, The SQL statement contains a BETWEEN predicate which
        references a CASE expression in its low or high operator.

     2, The CASE expression references a scalar fullselect in its
        searched-when clause.

     To make this fix effective for a static application, it must be
     rebound after application of this PTF. Review the PTF cover
     letter to determine which, if any, applications could be
     affected by this change.
.

------ COVER LETTER FOR PTF UK73909 ------------

PROBLEM DESCRIPTION(S):
   PM50893 -
     ****
     * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
     *   REBUILD INDEX utility users.   *
     ****
     * PROBLEM DESCRIPTION: ABENDS0C4 accessing an index after   *
     *   REBUILD INDEX failed.   *
     ****
     * RECOMMENDATION: Apply corrective PTF when available.   *
     ****
     A REBUILD INDEX failed during initialization without
     resetting the index, and completed with RC=8. However,
     the version number in OLDEST_VERSION was updated to
     be the same as the current version for the index in
     SYSIBM.SYSINDEXES and SYSIBM.SYSINDEXPART. This updating
     of the version resulted in improper conversion to the
     current version for existing keys in the index, and this
     resulted in the ABEND0C4.

Another problem fixed with this apar is an ABEND0C4 in
        DSNUSIDX offset '69d4'x when collecting inline statistics,
        and message DSNU706I was received indicating that a row
        was in the wrong table space partition.
        If REBUILD INDEX doesn't complete successfully with RC=0
        or RC=4, then avoid updating the catalog tables containing
        the lowest version for the index.

        If message MSGDSNU706I for a data row in the wrong partition
        or message MSGDSNU340I for a duplicate key is issued, then
        any keys associated with these errors will be bypassed
        during statistics processing.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM50893
SPECIAL CONDITIONS:
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  ACTION:
        The PTF for APAR PM50893 has modified CSECTs in both the
        DSNUT910 and DSNUTILA load modules, affecting the utility
        batch and DB2 DBM1 address spaces. After the PTF has been
        applied, it will become active in the utility batch address
        space immediately upon job submission, while it will not take
        effect in the DB2 DBM1 address space until DB2 is stopped and
        started.

        The PTF does not have to be applied to all members in a data
        sharing environment simultaneously, and may be staged across
        each member. However, until the fix is active in both the
        utility batch and DB2 DBM1 address spaces, the problem the PTF
        addresses will not be resolved.
.

------ COVER LETTER FOR PTF UK73925 ------------

PROBLEM DESCRIPTION(S):
  PM46112 -
     ****
     * USERS AFFECTED: DB2 9 for z/OS users of EDITPROCs   *
     ****
     * PROBLEM DESCRIPTION: Due to the restrictions associated with *
     *   the current type of edit procedures   *
     *   (EDITPROCs), DB2 9 for z/OS will   *
     *   support a new type of EDITPROC with   *
     *   fewer restrictions.   *
     ****
     * RECOMMENDATION: *
     ****
     Some of the restrictions associated with current EDITPROCs make
     using newer data types and adding columns not currently
     possible. This enhancement to EDITPROCs allows the newer data
     types as well as the ability to ALTER TABLE ADD COLUMN for
     tables already using EDITPROCs.
     This is the enabling APAR for PM07944. Please see PM07944 for

more details.

New syntax will be provided on the CREATE TABLE EDITPROC clause:

If a user specifies EDITPROC <program-name> WITH ROW ATTRIBUTES, then the behavior remains the same. This means the table may not contain any identity, LOB, XML, ROWID, or SECURITY LABEL columns. This is the default.

If a user specifies EDITPROC <program-name> WITHOUT ROW ATTRIBUTES, the users may create tables containing identity, XML, ROWID, or SECURITY LABEL columns.

You must not specify any edit procedure for a table with a LOB column. For more information on writing an EDITPROC, see DB2 Administration Guide. If you omit EDITPROC, the table has no edit procedure.

For the ALTER TABLE ADD COLUMN case, if a table has been defined with an EDITPROC WITHOUT ROW ATTRIBUTES, then users may alter add identity, XML, ROWID, or SECURITY LABEL columns.

This enhancement does not allow users to alter EDITPROCs between the WITH and WITHOUT ROW ATTRIBUTES clauses.

++HOLD COMMENT FOR RELEASE 910, TYPE DOC:
PM46112 introduces the following changes to externals:

Changed messages or codes:
For SQLCODE -350, the following is added to the explanation:
  - An XML column cannot be defined in a table that has an edit
    procedure that is defined with row attribute sensitivity
  - A LOB column cannot be defined in a table that has an edit
    procedure

For SQLCODE -668, the message text has been modified to:
  THE COLUMN CANNOT BE ADDED TO THE TABLE BECAUSE THE TABLE
  HAS AN EDIT PROCEDURE DEFINED WITH ROW ATTRIBUTE SENSITIVITY

For SQLCODE -750, the following has been modified in the explanation:
  The table has a valid procedure or an edit procedure that is
  defined with row attribute sensitivity.

For SQLCODE -771, the following is added to the explanation:
  - A ROWID column cannot be a column in a table with an edit
    procedure that is defined with row attribute sensitivity

For SQLCODE -846, the following is modified for REASON CODE 5:
  An edit procedure that is defined with row attribute
  sensitivity was specified for the identity column.

For SQLCODE -876, the following is modified in the explanation:
  The table being created or altered has an edit procedure that
  is defined with row attribute sensitivity, FIELDPROC, or
  VALIDPROC, in which case the column name in EBCDIC cannot

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exceed 18 EBCDIC bytes in length, or the conversion of a
column name from UNICODE to EBCDIC failed.

For SQLCODE -20240, the following is modified for REASON CODE 2:
  An edit procedure that is defined with row attribute
  sensitivity was specified for the table with a security label
  column.

For message DSNH350I, the following is modified in the
explanation:
  - A XML column cannot be defined in a table that has an edit
    procedure that is defined with row attribute sensitivity

Changed option for SQL statement CREATE TABLE, EDITPROC:
WITH ROW ATTRIBUTES
  Specifies that the edit procedure parameter list contains an
  address for the description of a row. WITH ROW ATTRIBUTES
  must not be specified for a table with an identity, LOB, XML,
  ROWID, or SECURITY LABEL column. WITH ROW ATTRIBUTES is the
  default. When WITH ROW ATTRIBUTES is used, the column names
  in the table must not be longer than 18 EBCDIC SBCS characters
  in length.

WITHOUT ROW ATTRIBUTES
  Specified that the description of the row is not provided to
  the edit procedure. On entry to the edit procedure, the
  address for the row description in the parameter list contains
  a value of zero.

In catalog table SYSIBM.SYSTABLES, CHECKRID column description
is updated to the following:
  A value of 'FFFFFF00' in this column indicates that the edit
  procedure on this table is defined without row attribute
  sensitivity. Any other value indicates that the edit procedure
  is defined with row attribute sensitivity.

Information about this enhancement will be included in the
Information Management Software for z/OS Solutions Information
Center (http://publib.boulder.ibm.com/infocenter/imzic) at a
later date.

++HOLD COMMENT FOR RELEASE 910, TYPE MTS:
PM46112 is the enabling APAR that introduces the new function
support for EDITPROCs. Earlier, a pre-conditioning APAR PM07944
was delivered that will be needed. In a data sharing group, the
pre-conditioning APAR should be applied to all members before
applying this ENABLING APAR to any member. The new function will
be enabled once this ENABLING APAR is applied.

Additional Keywords:
SQLCREATE
SQLALTER
SQLCODE350

```
     SQLCODE668
     SQLCODE750
     SQLCODE771
     SQLCODE846
     SQLCODE876
     SQLCODE20240
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM46112
SPECIAL CONDITIONS:
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  MULTSYS:
    PM46112 is the enabling APAR that introduces the new function
    support for EDITPROCs. Earlier, a pre-conditioning APAR PM07944
    was delivered that will be needed. In a data sharing group, the
    pre-conditioning APAR should be applied to all members before
    applying this ENABLING APAR to any member. The new function will
    be enabled once this ENABLING APAR is applied.
  DOCUMENTATION:
    PM46112 and PM07944 introduce the following changes:

    Changed messages or codes:
    For SQLCODE -350, the following is added to the explanation:
      - An XML column cannot be defined in a table that has an edit
        procedure that is defined with row attribute sensitivity
      - A LOB column cannot be defined in a table that has an edit
        procedure

    For SQLCODE -668, the message text has been modified to:
      THE COLUMN CANNOT BE ADDED TO THE TABLE BECAUSE THE TABLE
      HAS AN EDIT PROCEDURE DEFINED WITH ROW ATTRIBUTE SENSITIVITY

    For SQLCODE -750, the following has been modified in the
    explanation:
      The table has a valid procedure or an edit procedure that is
      defined with row attribute sensitivity.

    For SQLCODE -771, the following is added to the explanation:
      - A ROWID column cannot be a column in a table with an edit
        procedure that is defined with row attribute sensitivity

    For SQLCODE -846, the following is modified for REASON CODE 5:
      An edit procedure that is defined with row attribute
      sensitivity was specified for the identity column.

    For SQLCODE -876, the following is modified in the explanation:
      The table being created or altered has an edit procedure that
      is defined with row attribute sensitivity, FIELDPROC, or
      VALIDPROC, in which case the column name in EBCDIC cannot
      exceed 18 EBCDIC bytes in length, or the conversion of a
      column name from UNICODE to EBCDIC failed.

    For SQLCODE -20240, the following is modified for REASON CODE 2:
      An edit procedure that is defined with row attribute
      sensitivity was specified for the table with a security label
      column.
```

For message DSNH350I, the following is modified in the
explanation:
  - A XML column cannot be defined in a table that has an edit
    procedure that is defined with row attribute sensitivity

Changed option for SQL statement CREATE TABLE, EDITPROC:
WITH ROW ATTRIBUTES
  Specifies that the edit procedure parameter list contains an
  address for the description of a row. WITH ROW ATTRIBUTES
  must not be specified for a table with an identity, LOB, XML,
  ROWID, or SECURITY LABEL column. WITH ROW ATTRIBUTES is the
  default. When WITH ROW ATTRIBUTES is used, the column names
  in the table must not be longer than 18 EBCDIC SBCS characters
  in length.

WITHOUT ROW ATTRIBUTES
  Specified that the description of the row is not provided to
  the edit procedure. On entry to the edit procedure, the
  address for the row description in the parameter list contains
  a value of zero.

In catalog table SYSIBM.SYSTABLES, CHECKRID column description
is updated to the following:
  A value of 'FFFFFF00' in this column indicates that the edit
  procedure on this table is defined without row attribute
  sensitivity. Any other value indicates that the edit procedure
  is defined with row attribute sensitivity.

Information about this enhancement will be included in the
Information Management Software for z/OS Solutions Information
Center (http://publib.boulder.ibm.com/infocenter/imzic) at a
later date.
.

------ COVER LETTER FOR PTF UK74016 ------------

PROBLEM DESCRIPTION(S):
  PM42910 -
    ****
    * USERS AFFECTED: 1. All DB2 9 for z/OS users who have   *
    *   installed UK64833 (PE APAR PM16023)   *
    *   and use synonyms in a dynamic   *
    *   statement   *
    *   *
    *   2. All DB2 10 for z/OS users who use   *
    *   synonyms in a dynamic statement   *
    ****
    * PROBLEM DESCRIPTION: On DB2 9 for z/OS, after PTF UK64833   *
    *   (PE APAR PM16023) is installed, if   *
    *   a dynamic statement with the   *
    *   DYNAMICRULES run behavior references   *

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```
*                     a synonym, and if the following     *
*                     conditions are true:                *
*                                                         *
*                     1. the values in CURRENT SQLID and  *
*                        CURRENT SCHEMA special registers *
*                        are different when the synonym   *
*                        is referenced                    *
*                     2. the value in CURRENT SQLID special *
*                        register can resolve the         *
*                        referenced synonym in catalog    *
*                        table SYSIBM.SYSSYNONYMS          *
*                     3. the synonym name is the same as  *
*                        the base table name on which the *
*                        synonym was defined, and the     *
*                        value in CURRENT SCHEMA special  *
*                        register can qualify that base   *
*                        table in catalog table           *
*                        SYSIBM.SYSTABLES                  *
*                                                         *
*                     the statement may receive erroneous *
*                     abends or SQLCODEs. The symptoms that *
*                     have been identified but not limited *
*                     to are:                             *
*                                                         *
*                     ABEND04E at DSNXGRDS.DSNXOSL M100    *
*                     ABEND04E at DSNXGRDS.DSNXOSL P333    *
*                     ABEND04E at DSNXGRDS.DSNXEFDA M500   *
*                     ABEND0C4 at DSNXGRDS.DSNXOMD+0E70    *
*                     SQLCODE -204                         *
*                     SQLCODE -206                         *
*                     SQLCODE -417                         *
***********************************************************
* RECOMMENDATION:                                         *
***********************************************************
On DB2 9 for z/OS, after PTF UK64833 (PE APAR PM16023)
was installed, a dynamic query with the DYNAMICRULES
run behavior that references a synonym may receive
various symptoms. The symptoms include but not limit to:

  ABEND04E at DSNXGRDS.DSNXOSL M100
  ABEND04E at DSNXGRDS.DSNXOSL P333
  ABEND04E at DSNXGRDS.DSNXEFDA M500
  ABEND0C4 at DSNXGRDS.DSNXOMD+0E70
  SQLCODE -204
  SQLCODE -206
  SQLCODE -417


if the following conditions are true:

  1. the values in CURRENT SQLID and CURRENT SCHEMA special
     registers are different when the synonym is referenced
  2. the value in CURRENT SQLID can resolve the referenced
     synonym in catalog table SYSIBM.SYSSYNONYMS
  3. the synonym name is the same as the base table name on
     which the synonym was defined, and the value in CURRENT
     SCHEMA can qualify that base table in catalog table
```

SYSIBM.SYSTABLES

The following examples illustrate SQLCODE -206 and abend
04E at DSNXOSL M100 --

  GRANT CREATEIN, DROPIN ON SCHEMA "BASE" TO "SYNONYM";
  COMMIT;

  SET CURRENT SQLID = 'SYNONYM';
  COMMIT;

  SET CURRENT SCHEMA = 'BASE';
  COMMIT;

  CREATE TABLE T1(C1 INT);
  COMMIT;

  SELECT SUBSTR(CREATOR,1,8) QUALIFIER,
         SUBSTR(NAME,1,8) NAME,
         TYPE
    FROM SYSIBM.SYSTABLES
    WHERE NAME = 'T1';

      +-----------------------------+
      | QUALIFIER | NAME | TYPE |
      +-----------------------------+
   1_| BASE | T1 | T |
      +-----------------------------+

  CREATE SYNONYM T1 FOR BASE.T1;
  COMMIT;

  SELECT SUBSTR(CREATOR,1,8) CREATOR,
         SUBSTR(NAME,1,8) NAME,
         SUBSTR(TBCREATOR,1,8) TBCREATOR,
         SUBSTR(TBNAME,1,8) TBNAME
    FROM SYSIBM.SYSSYNONYMS
    WHERE NAME = 'T1';

      +---+
      | CREATOR | NAME | TBCREATOR | TBNAME |
      +---+
   1_| SYNONYM | T1 | BASE | T1 |
      +---+

  SELECT C1 FROM T1;

    SQLCODE = -206, ERROR: C1 IS NOT VALID IN THE CONTEXT
                            WHERE IT IS USED

  SELECT * FROM T1;

    ABND=04E-00E70005, LOC=DSNXGRDS.DSNXOSL M100
DB2 has been modified to ensure the erroneous abends and
SQLCODEs that were caused by PTF UK64833 (PE APAR PM16023)
no longer occur. As part of the fix, DB2 restores the
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synonym support to the level that existed in V9 prior to
the PTF UK64833, which is the same behavior as in V8. As such,
DB2 restores the synonym support in DB2 10 to the same level
as well.

The synonym support on DB2 for z/OS is different from that
on other DB2 family products. Synonyms are not recommended
for use. Use the CREATE ALIAS statement to create an alias
instead.

Additional keywords: SQLSYNONYM SQLSQLID SQLSCHEMA SQLALIAS
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM42910
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    PM42910 restores the synonym support to the level that
    existed in V9 prior to PTF UK64833 (PE PM16023), which is
    the same behavior as in V8. If your application cannot
    use this level of the synonym support such as receiving
    SQLCODE -204 when referencing a synonym, please use the
    CREATE ALIAS statement to create the aliases instead.
.

------ COVER LETTER FOR PTF UK74177 ------------

PROBLEM DESCRIPTION(S):
  PM38417 -
    ****
    * USERS AFFECTED: All Distributed Data Facility (DDF) users. *
    *   Specifically where DB2 for z/OS is accessed *
    *   as a server, via DRDA protocols, from   *
    *   remote DB2 for z/OS client applications.   *
    ****
    * PROBLEM DESCRIPTION: With the elimination of DB2 Private   *
    *   Protocol in DB2 10 for z/OS, the   *
    *   current DB2 server plan owner based   *
    *   authorization behavior relative to   *
    *   remote DB2 for z/OS client systems   *
    *   is no longer applicable.   *
    *   APARs PM17665 and PM37300 made changes *
    *   to allow users to move to this new   *
    *   authorization environment however   *
    *   additional changes are required.   *
    ****
    * RECOMMENDATION: *
    ****
    When a DB2 for z/OS server is accessed via DRDA protocols, the
    authorization behavior relative to remote DB2 for z/OS client
    applications is different than the authorization behavior
    relative to remote non DB2 for z/OS client applications.
    The authorization behavior for a DB2 for z/OS DRDA client
    application was treated differently because it was associated
    to a DB2 for z/OS Plan, and thus DB2 for z/OS server processing

wanted to apply the same authorization behavior that users
were accustomed to with DB2 Private Protocol. That is, remote
DB2 for z/OS DRDA client application privileges, like those for
Private Protocol, are also inherited from the associated DB2
for z/OS Plan Owner ID and this privilege inheritance has
historically been honored by DB2 for z/OS servers relative to
remote DB2 for z/OS client applications only.
Now that DB2 Private Protocol is being eliminated, this
DB2 for z/OS server privilege inheritance behavior (relative
to remote DB2 for z/OS DRDA client applications) is no
longer applicable and is being eliminated for the benefit of
consistent authorization behavior with respect to non
DB2 for z/OS client applications.
Changes were made via APARs PM17665 and PM37300 to help users
move to the new authorization environment, however additional
changes are required.
o Users may need additional time to evaluate their dependency
  on the old authorization behavior and make the necessary
  authorization adjustments to adapt to the new environment. As
  a result, DB2 provides a DSNZPARM configurational value, via
  the DSN6FAC macro PRIVATE_PROTOCOL parameter, to enable or
  disable this new authorization environment. Additional
  changes are necessary to complete the implementation
  of this configurational value.
o When operating under the new package execution authorization
  environment, via DSN6FAC PRIVATE_PROTOCOL=NO, and in an
  effort to provide consistent behavior and appearance relative
  to remote DB2 for z/OS and non DB2 for z/OS applications,
  APAR PM37300 made changes to always utilize a plan name of
  DISTSERV - even relative to remote DB2 for z/OS (plan name
  based) applications.
  This plan name related change must be reversed because there
  is value in continuing to recognize the actual plan name
  associated to remote DB2 for z/OS applications.

  DB2 for z/OS server processing, relative to remote (via DRDA)
  DB2 for z/OS client applications only, is changed to provide
  additional enhancements for the benefit of moving to an
  environment that provides consistent authorization behavior
  with respect to remote non DB2 for z/OS client applications.
o DB2 has been changed to complete the changes associated to
  the implementation, or extension, of the DSN6FAC
  PRIVATE_PROTOCOL parameter.
o When DB2 is configured to enable the new package execution
  authorization environment, DB2 has been changed to restore
  its knowledge of the remote DB2 for z/OS application plan
  name.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM38417
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    ***Action for PM38417 (V9):
    This PTF modifies the DB2 V9 installation process to support a
    new setting of the DSN6FAC.PRIVATE_PROTOCOL parameter. The new

setting, AUTH, was added by PTF UK67641 (V9 fix for APAR
PM37300).

If you have already installed or migrated to DB2 V9, you need
to take the following action after applying this PTF:

```
------------------------------------------------------------------
(1) Update private copies of the DSNTIDxx CLIST input member
------------------------------------------------------------------
==> This action is required for all customers
```

    Edit your private copy of the V9 DSNTIDxx member and locate
    the entry for PRIVATE_PROTOCOL. Change the 4th field from
    NO to NONE and change the 5th field from YES to NONE. In
    other words change:

```
    PRIVATE_PROTOCOL CHAR  G  NO            YES            <x>
                                 |             |
    to this                   +- field 4  +- field 5
                                 |             |
    PRIVATE_PROTOCOL CHAR  G  NONE          NONE           <x>
```

    where <x> is your current DSN6FAC.PRIVATE_PROTOCOL setting.
ACTION:
 ***Action for PM37300 (V9):
 This PTF adds a new keyword to the DB2 DSN6FAC PRIVATE_PROTOCOL
 subsystem parameter for optionally enabling the use of legacy
 private protocol related Plan Owner based authorization
 semantics, yet still prevent actual use of private protocol.
 The new keyword is:
 - AUTH   : Allows legacy private protocol related
                        Plan Owner based authorization semantics
                        for the benefit of remote DB2 for z/OS
                        DRDA client applications.

Users should be aware that the DB2 10 for z/OS default
behavior is different than that of DB2 for z/OS V8 or V9,
and this constitutes a release incompatibility relative to
DB2 10 for z/OS. When migrating to DB2 10 for z/OS from
DB2 for z/OS V8 or V9, users should examine their V8 or V9
PRIVATE_PROTOCOL parameter specification. If the DB2 for z/OS
V8 or V9 PRIVATE_PROTOCOL parameter is not specified, or if
the YES or AUTH keyword is specified, then users may need to
specify AUTH in their target DB2 10 for z/OS environment.

Users should also be aware that in environments where the
legacy private protocol related Plan Owner based authorization
semantics are disallowed, DB2 for z/OS server processing will
now utilize the use of secondary group IDs to establish
privileges for remote DB2 for z/OS DRDA client applications,
and a Plan Name of DISTSERV will also be utilized.

Please see the PTF cover letter for information on using
the PRIVATE_PROTOCOL parameter relative to remote DB2 for z/OS
DRDA client applications.

To change the PRIVATE_PROTOCOL setting after applying this
PTF, modify your customized copy of DSNTIJUZ as follows:
o In job step DSNTIZA, under the invocation of the DSN6FAC
  macro, locate the entry for PRIVATE_PROTOCOL and change
  the setting to YES, NO, or AUTH, making sure to add a
  continuation character in column 72 if needed.
o Run the first two steps of the DSNTIJUZ job you modified,
  to assemble and link the load module.
o After the job completes, you need to use the -SET SYSPARM
  command or stop and start DB2 in order for the changes to
  take effect.
.

------ COVER LETTER FOR PTF UK74264 ------------

PROBLEM DESCRIPTION(S):
  PM50572 -
    ****
    * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of   *
    *   native SQL procedure.   *
    ****
    * PROBLEM DESCRIPTION: Unexpected sqlcode -104 could be   *
    *   issued during rebind when a native   *
    *   SQL procedure contains an SQL   *
    *   statement satisfies one or two of   *
    *   the following conditions: *
    *   1. there is qualified SQL variable   *
    *   referenced ,   *
    *   2. there are blanks between the   *
    *   SQL variable qualifier and SQL   *
    *   variable name.   *
    ****
    * RECOMMENDATION: *
    ****
    Unexpected sqlcode -104 could be issued during rebind when a
    native SQL procedure contains an SQL statement satisfies
    one or two of the following conditions:
    1. there is qualified SQL variable referenced,
    2. there are blanks between the SQL variable qualifier and
       SQL variable name.

    The following example could recreate the problem:

    CREATE PROCEDURE MYTEST1 (INOUT P1 INT)
     P1:
      BEGIN
        DECLARE A DEC(2,1);
        DECLARE B INTEGER;
        SELECT P1.   A INTO P1 FROM T1 WHERE T1.C1 >5;
      END?

    DB2 is updated to handle the qualified SQL variables correctly.
    Additional keywords: SQLNATIVESQLPL SQLCODE104 SQLREBIND
COMPONENT: 5740-XYR00-HDB9910

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APARS FIXED: PM50572
SPECIAL CONDITIONS:
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  DB2BIND:
    PM38119 corrects a problem that ABEND0C4 RC00E70005 at location
    DSNXGRDS.DSNXRSPL M517 could happen when calling a native SQL
    procedure that has a LOOP or REPEAT statement following with a
    statement that triggers a CONTINUE handler.

    After the application of this PTF, an ALTER PROCEDURE REGENERATE
    is required for the aforementioned native SQL procedures.
  DB2BIND:
    ***Action for PM34004:

    See PM34004 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM34004 corrects a problem of missing describe name for the
    SQL statement involving a top-level SET operator that satisfies
    the following conditions:
    1. Zparm UNION_COLNAME_7 is turned on,
    2. The top-level SET operator has a order by clause or
    fetch first clause.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  DB2BIND:
    ***Action for PM29191:

    See PM29191 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM29191 corrects a problem of an incorrect output that may
    occur when a SQL-routine-body in SQL-native PROCEDURE satisfies
    all of the following conditions:
    1. A control statement is contained;
    2. For the expression in this control statement:
       - left hand side of comparison doesn't contain any SQL
         variable;
       - right hand side of comparison contains one SQL variable.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
  ACTION:
    ***Action for PM50572
    TYPE: ACT

    PM50572 corrects a problem of sqlcode -104 issued during rebind
    when a native SQL procedure contains an SQL statement with
    a qualified SQL valiable referenced.

After the application of this PTF, ALTER PROCEDURE REGENERATE is
     required for each native SQL procedure that is affected.
     Review the PTF cover letter to determine which, if any, native
     SQL procedure could be affected by this change.
   ACTION:
     ***Action for PM38188:

     See PM38188 APAR/PTF text for additional information about
     why a REBIND is necessary.

     PM38188 corrects a problem that
     When a variable in a native SQL procedure is referenced as a
     table locator, but it is not declared as a table locator or has
     no definition in procedure. The SQLCODE -408 and -312 is not
     issued as expected when creating the procedure. That will cause
     DB2 issued SQLCODE -301 or returned incorrout result when
     calling the procedure.

     To make this fix effective, the related procedure must be
     regenerate after application of this PTF. Review the PTF cover
     letter to determine which, if any, native procedure could be
     affected by this change.
   ACTION:
     ***Action for PM35275
     TYPE: ACT

     PM35275 corrects a problem of sqlcode -206 issued during rebind
     when a native SQL procedure contains an SQL statement with
     a standalone SQL valiable in the select list without an AS
     clause and this SQL variable is referenced as a column in
     another place.

     After the application of this PTF, ALTER PROCEDURE REGENERATE is
     required for each native SQL procedure that is affected.
     Review the PTF cover letter to determine which, if any, native
     SQL procedure could be affected by this change.
   ACTION:
     ***Action for PM34039:
     TYPE: ACT

     PM34039 improves the performance for a SQL statement contains
     LIKE predicate in a native SQL procedure.

     After the application of this PTF, ALTER PROCEDURE REGENERATE is
     required for each native SQL procedure that is affected.
     Review the PTF cover letter to determine which, if any, native
     SQL procedure could be affected by this change.
.

------ COVER LETTER FOR PTF UK74273 ------------

PROBLEM DESCRIPTION(S):
  PM46861 -
    ****
    * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS users *

```
*                 of the EXCEPT or INTERSECT set operators.    *
****************************************************************
* PROBLEM DESCRIPTION: An ABEND04E RC00E70005 can occur at     *
*                      location DSNXGDT2 OFFSET M204 or at      *
*                      DSNXOSOC OFFSET M999 when running an     *
*                      SQL statement that contains an EXCEPT    *
*                      or INTERSECT set operator with empty     *
*                      strings in each of the SELECT clauses    *
*                      of the sub-selects.                      *
****************************************************************
* RECOMMENDATION:                                              *
****************************************************************
```

An ABEND04E RC00E70005 can occur at location DSNXGDT2 OFFSET
M204 or at DSNXOSOC OFFSET M999 when running an SQL statement
that contains an EXCEPT or INTERSECT set operator with empty
strings in each of the SELECT clauses of the sub-selects.

The failure occurs because DB2 doesn't handle the internal
buffers for the empty strings properly.

The following query is an example of a failing case.

```
   SELECT DEPTNO,'', DEPTNAME FROM DEPT
   EXCEPT
   SELECT DEPTNO,'', DEPTNAME FROM DEPT;
```

Executing this statement results in an ABEND04E rc00E70005
at location DSNXGRDS.DSNXGDT2 M204.

Please note. Both SELECT clauses need to contain empty strings
for this failure to occur.
The code in DB2 is modified to process the empty strings
correctly.

Additional Keywords: SQLINTERSECT SQLEXCEPT
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM46861
SPECIAL CONDITIONS:
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  DB2BIND:
    ***Action for PM46861:

    See PM46861 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM46861 corrects a problem of ABEND04E at DSNXGDT2 or DSNXOSOC
    when running query that contains an EXCEPT or INTERSECT and
    with empty string in the select list.

    To make this fix effective for a static application, it must be
    rebound after application of this PTF. Review the PTF cover
    letter to determine which, if any, applications could be
    affected by this change.
.

```
------ COVER LETTER FOR PTF UK74479 ------------

PROBLEM DESCRIPTION(S):
  PM49537 -
    ****************************************************************
    * USERS AFFECTED: All DB2 9 for z/OS users of Spatial indexes  *
    *                 who are migrating from DB2 9 for z/OS to DB2 *
    *                 10 for z/OS.                                  *
    ****************************************************************
    * PROBLEM DESCRIPTION: An unexpected ABEND0C4 rc4 can occur at *
    *                 location dsnk2dm.dsnksins+048c when          *
    *                 using a Spatial index which was created *
    *                 or regenerated on a DB2 V10 CM            *
    *                 subsystem either in a V10 CM/V9 co-      *
    *                 existence environment or in a V10 CM    *
    *                 fallback to V9 environment.             *
    ****************************************************************
    * RECOMMENDATION:                                             *
    ****************************************************************
    An unexpected ABEND0C4 RC4 can occur at location
    dsnk2dm.dsnksins offset048c when DB2 exploits a Spatial index in
    an INSERT statement.  The index was created on a DB2 V10
    subsystem in either a V10 CM / V9 NFM co-existence environment
    or in a V10 CM fallback to V9 environment.

    The abend occurs because the DB2 v9 execution code path does not
    recognize the internal execution structure generated and saved
    from DB2 V10 CM when the Spatial index was created.

    Please note that other abends are also possible.
    The code in DB2 is modified to correct the problem.

    With the fix provided in this apar, DB2 will perform an internal
    regeneration of the V10 Spatial index to produce a V9 internal
    execution structure which can then be recognized and executed on
    the V9 subsystem.

    Please note that once PM49664 is applied, all existing spatial
    indexes should be dropped and recreated.  This includes spatial
    indexes that are not created in V10.

    Also, please reference the ++HOLD for additional information.

    Additional Keywords: SQLSPATIAL SQLINSERT SQLDELETE SQLUPDATE
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM49537
SPECIAL CONDITIONS:
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  ACTION:
    ++HOLD COMMENT FOR RELEASE 910, TYPE ACT:
    ***Action for PM49537:

    PM49537 corrects a DB2 abend problem that can occur when
    exploiting a V10 Conversion Mode (formerly Compatibility Mode)
```

created or regenerated Spatial index on a DB2 V9 subsystem in a
co-existence or fallback environment.

In order to ensure that PM49537 implicitly regenerates the
Spatial index correctly when it is exploited in a DB2 V9
environment, Spatial index users are advised to apply apar
PM49664 which corrects the internal "environment identifier"
which is stored in the catalog.

Please note that once PM49664 is applied, all existing spatial
indexes should be dropped and recreated. This includes spatial
indexes that are not created in V10.
  ACTION:
    ***Action for PK68094:

    See PK68094 APAR/PTF text in the PTF cover letter for
    additional information about necessary action.

    PK68094 provides a way to reclaim extra storage used in
    SYSVIEWS table space by views created prior to installation of
    PK34372. Users can use ALTER VIEW view_name REGENERATE
    statement to compact the storage used by the view.
    REORG utility must be performed on SYSVIEWS table space after
    running the ALTER statement to reclaim the storage.
.

------ COVER LETTER FOR PTF UK74561 ------------

PROBLEM DESCRIPTION(S):
  PM51625 -
    ****
    * USERS AFFECTED: All users of DB2 9 for z/OS and DB2   *
    *   10 for z/OS who are using the DB2-   *
    *   supplied user-defined function   *
    *   DSNADM.ADMIN_TASK_STATUS(MAX_HISTORY).   *
    ****
    * PROBLEM DESCRIPTION: DSNADM.ADMIN_TASK_STATUS(MAX_HISTORY) *
    *   abends with 0C4 while processing a   *
    *   DB2 scheduler task that has multiple   *
    *   execution statuses.   *
    ****
    * RECOMMENDATION: APPLY PTF   *
    ****
    DSNADM.ADMIN_TASK_STATUS(MAX_HISTORY) saves a task's information
    it read from SYSIBM.ADMIN_TASKS in a local variable. Since a
    local variable is used, the task information is not preserved
    between the function's FETCH operations when more than one
    execution status has to be returned for this task. Therefore,
    subsequent FETCH operations can result in an 0C4 abend.
    DSNADM.ADMIN_TASK_STATUS(MAX_HISTORY) is modified to save a
    task's information which it read from SYSIBM.ADMIN_TASKS in the
    scratchpad, thereby increasing the scratchpad length of this
    function from 16 to 8208.
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM51625

```
SPECIAL CONDITIONS:
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            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    This PTF fixes an 0C4 abend in the user-defined function
    DSNADM.ADMIN_TASK_STATUS(MAX_HISTORY) when it is processing
    a DB2 scheduler task that has multiple execution statuses.


    ***************************************************************
    Actions for customers who are already using DB2 V9:
    ***************************************************************
    If you have already installed or migrated to DB2 Version 9 then
    after applying this PTF, you need to take the following actions:
    (1) Update your customized copy of job DSNTIJSG.
    (2) Alter the SCRATCHPAD parameter for the user-defined function
        DSNADM.ADMIN_TASK_STATUS(MAX_HISTORY) from 16 to 8208,
        and bind this function's DBRM.

    Procedures for these actions are given below.
    ---------------------------------------------------------------
    ---------------------------------------------------------------
    (1) Update your customized copy of job DSNTIJSG
        *******************************************************
        * All V9 customers who maintain a private copy of DB2
        * installation job DSNTIJSG need to perform this step.
        *******************************************************
        (a) Edit your customized copy of DSNTIJSG
        (b) In job step DSNTIAS:
            - locate the CREATE statement for user-defined function
              DSNADM.ADMIN_TASK_STATUS( MAX_HISTORY INTEGER )
              and change the SCRATCHPAD parameter value from 16
              to 8208.
        (c) Save your changes.
        ---------------------------------------------------------------
    (2) Alter the SCRATCHPAD parameter for the user-defined function
        DSNADM.ADMIN_TASK_STATUS(MAX_HISTORY) from 16 to 8208,
        and bind this function's DBRM.
        *******************************************************
        * All V9 customers who want to use the user-defined
        * function DSNADM.ADMIN_TASK_STATUS(MAX_HISTORY)
        *******************************************************
        Use the following procedure to avoid disrupting your
        existing DB2-supplied stored procedures and databases:
        (a) Create and edit a copy of the DSNTIJSG job you updated
            in step (1) of this procedure
        (b) Remove all job steps except DSNTIAS
        (c) In job step DSNTIAS:
            - remove all BIND PACKAGE statements under the SYSTSIN
              DD, except for the following:
                  BIND PACKAGE(DSNADM) MEMBER(DSNADMTH) - ...
            - remove all CREATE statements under the SYSIN DD,
              and add the following:
                  ALTER SPECIFIC FUNCTION DSNADM.ADMIN_TASK_STATUSH
                  SCRATCHPAD 8208;
        (d) Run the job to alter the SCRATCHPAD parameter for the
            user-defined function
```

```
              DSNADM.ADMIN_TASK_STATUS(MAX_HISTORY) from 16 to 8208,
              and bind this function's DBRM.
              ----------------------------------------------------------------
.



------ COVER LETTER FOR PTF UK74717 ------------

PROBLEM DESCRIPTION(S):
  PM52371 -
      ****************************************************************
      * USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of      *
      *                 INSERT into SYMMETRIC view statement.       *
      ****************************************************************
      * PROBLEM DESCRIPTION: Unexpected SQLCODE -161 could be       *
      *                      issued for an INSERT statement         *
      *                      satisfies the following conditions:    *
      *                      1. The target of the INSERT is a       *
      *                           SYMMETRIC view,                   *
      *                      2. The inserted data conforms to       *
      *                           the view definition.              *
      ****************************************************************
      * RECOMMENDATION:                                             *
      ****************************************************************
      Unexpected SQLCODE -161 could be issued for an INSERT statement
      satisfies the following conditions:
      1. The target of the INSERT is a SYMMETRIC view,
      2. The inserted data conforms to the view definition.

      The following example could recreate the problem:
      CREATE TABLE MYTEST1
      (C1  VARCHAR(24), C2  VARCHAR(24));

      CREATE VIEW MYVIEW AS
       SELECT * FROM MYTEST1
         WHERE C1 IN ('TEST1', 'TEST23') WITH CHECK OPTION;

      INSERT INTO MYVIEW VALUES('TEST1', 'MYTEST');
      SQLCODE -161 issued for INSERT statement even though the data
      in the values clause conforms to the symmetric view definition.
      DB2 is updated to handle the INSERT statement above
      correctly.
      Additional keywords: SQLVIEW SQLINSERT SQLCODE161
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM52371
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    ***Action for PM52371:

    See PM52371 APAR/PTF text for additional information about
    why a REBIND is necessary.

    PM52371 corrects a problem of unexpected SQLCODE -161 issued
    for an INSERT into SYMMETRIC view statement.
```

To make this fix effective for a static application, it must be
        rebound after application of this PTF. Review the PTF cover
        letter to determine which, if any, applications could be
        affected by this change.
      DB2BIND:
        ***Action for PM32373:

        See PM32373 APAR/PTF text for additional information about
        why a REBIND is necessary.

        PM32373 corrects a problem that An INCORROUT, performance
        problem or an ABEND04E RC00E72018 at location DSNXSINE may
        occur when the query satisfies all of following conditions:

        1, The query includes an IN or equal sub-query predicate
           containing UNION, INTERSECT or EXCEPT.

        2, Columns referenced in the SELECT list of the sub-query are
           defined with FIELDPROC.

        3, The encoded datatype and length of the FIELDPROC differ from
           the decoded datatype and length.

        To make this fix effective for a static application, it must be
        rebound after application of this PTF. Review the PTF cover
        letter to determine which, if any, applications could be
        affected by this change.
  .

------ COVER LETTER FOR PTF UK74735 ------------

PROBLEM DESCRIPTION(S):
  PM49678 -
      ****
      * USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS   *
      *   users of Spatial support.   *
      ****
      * PROBLEM DESCRIPTION: This apar provides a new ST_DISTANCE   *
      *   function between points written in PL/X *
      *   to improve its performance.   *
      *   *
      *   Also, this apar addresses a problem for *
      *   a spatial query, which uses a spatial   *
      *   index, that results in an incorrect   *
      *   result.   *
      ****
      * RECOMMENDATION: *
      ****
      This apar provides a rewrite of the ST_DISTANCE function between
      points to improve its performance.

      The performance of the previous ST_DISTANCE function (written in
      C) cannot meet customer's demand. Therefore, the ST_DISTANCE
      function for points is being replaced with a rewrite in PL/X to

improve its performance.

Also, this apar addresses a problem for a spatial query, which
when using a spatial index, results in an incorrect result.

An example of a failing query is as follows.

    SELECT PLACE_ID FROM DB2GSE.POINT
    WHERE DB2GSE.ST_DISTANCE(DB2GSE.ST_POINT(0,0,1),POINT) < 200 ;

The query fails to produce the correct result because for index
screening using a spatial index, DB2 does not correctly process
a spatial coordinate if its value is zero.

The performance of the rewritten ST_DISTANCE function is
significantly better. The code in DB2 is modified to return the
correct result for a Spatial query which uses a Spatial index.

Additional Keywords: SQLSPATIAL DB2INCORR/K SQLINCORR
                     SQLINCORROUT
COMPONENT: 5740-XYR00-HDB9910
APARS FIXED: PM49678
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
             LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  ACTION:
    This apar is the DB2 companion apar to apar PM19841 and
    provides the DB2 support for the Spatial performance
    enhancement. It is required to apply both apars together in
    order to take advantage of the enhancement. Otherwise Spatial
    functions may not work properly.
  ACTION:
    ***Action for PK91287:

    See PK91287 APAR/PTF text for additional information.

    PK91287 is a DB2 9 pre-conditioning APAR that includes changes
    to support a new function that will be enabled via another APAR,
    PK87566 for DB2 Spatial Support.

    For this apar, all of the changes are transparent to the user.
    In a data sharing group, this pre-conditioning APAR should be
    applied to all members before the later enabling APAR is applied
    for DB2 Spatial Support.

    The new function is not enabled until the enabling APAR is
    applied.
.

------ COVER LETTER FOR PTF UK74746 ------------

PROBLEM DESCRIPTION(S):
  PM49235 -
    ****
    * USERS AFFECTED: All users of CATMAINT UPDATE SCHEMA SWITCH   *

```
*****************************************************************
* PROBLEM DESCRIPTION: CATMAINT UDPATE SCHEMA SWITCH MAY FAIL   *
*                      UNEXPECTEDLY WITH ONE OF THE FOLLOWING   *
*                      ERRORS:                                  *
*                      1. ABEND04E RC00E40601 in DSNUESCM       *
*                      2. Message DSNU767I with reason code 8   *
*****************************************************************
* RECOMMENDATION:                                              *
*****************************************************************
1. ABEND04E RC00E40601 in DSNUESCM:
The CATMAINT UPDATE SCHEMA SWITCH code commits changes when a
certain number of catalog records are updated. In cases where
the records have a parent/child relation and there is a commit
when processing child records, the internal cursor for the
parent record needs to be re-positioned before it can be
updated. However, the code did not take that into consideration
and therefore it failed with ABEND04E RC00E40601 in DSNUESCM
when updating the parent record.

2. Message DSNU767I with reason code 8:
CATMAINT UPDATE SCHEMA SWITCH prevents switching schema names
that are referenced in the check condition in the table
check constraints. This restriction was enforced by scanning
the content in SYSCHECKS.CHECKCONDITION. However, this scanning
produced false errors with DSNU767I messages.
DB2 code has been updated to prevent the errors.

   Additional Keywords:
   MSGDSNU767I
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM49235
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
            LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DOCUMENTATION:
    In the Utility Guide and Reference, the SCHEMA SWITCH option
    in the section of "syntax and options of the CATMAINT
    statement" is updated:

      The schema is not changed for views, materialized query
      tables, SQL scalar functions, triggers and native SQL
      procedures.

      <schema_name> cannot identify a schema(qualifier) of any
      object that triggers, views, SQL functions, materialized
      query tables, native SQL procedures, indexes on expressions
      depend on.

    In the Messages and Codes, the explanation of message DSNU767I
    reason 5 is updated:

      Name cannot be the qualifier of an existing object that is
      referenced by a view, function, materialized query table,
      trigger, native SQL procedure or index on expressions.
  ACTION:
    This PTF corrects a problem in the CATMAINT UPDATE SCHEMA SWITCH
```

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option that caused inconsistencies in DB2 objects. Application
of this PTF cannot correct the errors that occurred prior to
this PTF.

If the CATMAINT UPDATE SCHEMA SWITCH option was never used, no
action is required. Otherwise, you will need to run the
following queries to identify the objects that may need to be
examined and corrected:

(The following queries assume you changed "old_schema"
 to "new_schema", please update the predicates to the actual
 schema names. Please also note that because of the
 complexity of the variations of how schema names can appear
 in a statement or expression, the queries below are being
 provided as a reasonable attempt. However, these queries
 alone may not be sufficient and manual examination may be
 required to further evaluate the situation.)

```
  SELECT DISTINCT K.IXNAME, K.IXSCHEMA
    FROM SYSIBM.SYSDEPENDENCIES AS D,
         SYSIBM.SYSKEYTARGETS AS K
  WHERE D.DTYPE = 'I' AND
        D.DNAME = K.IXNAME AND
        D.DSCHEMA = K.IXSCHEMA AND
        D.BSCHEMA = 'new_schema' AND
        K.DERIVED_FROM LIKE '%old_schema%';
```

The query above identifies indexes on expressions where the
expressions stored in SYSKEYTARGETS.DERIVED_FROM contains
the old schema name which makes the expression become
inconsistent. For each row returned, examine the index and
query the expression from SYSKEYTARGETS.DERIVED_FROM. If there
is an error, you can drop the index and recreate it with
a new expression.

```
  SELECT R.SCHEMA, R.NAME
    FROM SYSIBM.SYSROUTINES AS R
   WHERE R.ORIGIN = 'N' AND
         R.TEXT LIKE '%old_schema%';
```

The query above identifies native SQL procedures where the
procedure statement stored in the SYSROUTINES.TEXT column
contains the old schema name which makes the statement
become inconsistent. For each row returned, examine the
procedure and query the statement text from SYSROUTINES.TEXT.
If there is an error, you can drop and recreate the procedure
with a new statement.

```
  SELECT R.SCHEMA, R.NAME
    FROM SYSIBM.SYSROUTINES AS R
   WHERE R.ORIGIN = 'N' AND
         R.SCHEMA = 'new_schema' AND
     NOT EXISTS
         (SELECT * FROM SYSIBM.SYSPACKAGE AS P
            WHERE P.NAME = R.NAME AND
                  P.COLLID = R.SCHEMA);
```

The query above identifies native SQL procedures whose schema
has been updated to the new schema but with the old schema
left behind in the SYSPACKAGE.COLLID column. The procedures
returned from the query may no longer operate properly and
should be removed. You need to run the CATMAINT UPDATE SCHEMA
SWITCH option again to restore to the old schema name first
in order to be able to drop the procedure.
.

------ COVER LETTER FOR PTF UK74761 ------------

PROBLEM DESCRIPTION(S):
  PM48358 -
    ****
    * USERS AFFECTED: DB2 9 and 10 for z/OS users having tables   *
    *   defined with DATA CAPTURE CHANGES.   *
    ****
    * PROBLEM DESCRIPTION: ALTER TABLE ALTER COLUMN with the   *
    *   SET DATA TYPE, SET DEFAULT, or   *
    *   DROP DEFAULT clause is allowed   *
    *   for tables with DATA CAPTURE CHANGES   *
    *   defined.   *
    ****
    * RECOMMENDATION: *
    ****
    ALTER TABLE ALTER COLUMN with the SET DATA TYPE, SET DEFAULT,
    or DROP DEFAULT clause is allowed for tables with DATA
    CAPTURE CHANGES defined. This does not affect DB2
    functionality, however users of data propagation products
    that do not support alter column may encounter unexpected
    results.
    PM48358 introduces a subsystem parameter in DSN6SPRM
    called RESTRICT_ALT_COL_FOR_DCC that can be used to indicate
    whether DB2 will prevent use of the ALTER TABLE ALTER COLUMN
    with SET DATA TYPE, SET DEFAULT, and DROP DEFAULT when data
    capture changes is enabled on the target table. Valid settings
    are YES and NO. The default is NO, meaning that ALTER TABLE
    ALTER COLUMN with SET DATA TYPE, SET DEFAULT, and DROP DEFAULT
    operations are allowed when the target table is defined with
    data capture changes. Use YES if you use a version of data
    propagation products that does not support alter column.
    RESTRICT_ALT_COL_FOR_DCC is online changeable. ALTER TABLE
    ALTER COLUMN with SET DATA TYPE, SET DEFAULT, and DROP DEFAULT
    will result in SQLCODE -148 when the table is defined with
    capture changes when the subsystem parameter is set to YES. In
    data sharing, it has member scope.

    ADDITIONAL KEYWORDS: SQLALTER SQLCODE148

    ++HOLD COMMENT FOR RELEASE A10, TYPE DOC:
    The approximate text is to be added to the DB2 SQL Reference,
    Codes, and Installation manual. This text is subject to change.
    =============
    SQL Reference

```
=============
 ALTER TABLE -> Notes  section:
 ------------------------------
 Altering the data type, length, precision, or scale of a
 column:
  When you change the data type, length, precision, or
  scale of a column, the following information applies to
  indexes, limit keys, check constraints, and invalidation:
    * Restrictions. The ALTER TABLE statement is not allowed if
      any of the following conditions are true:
|         o The table is defined with DATA CAPTURE CHANGES and
|            subsystem parameter RESTRICT_ALT_COL_FOR_DCC is YES

 ALTER TABLE -> SET default-clause section:
 ------------------------------------------
|The table must not be referenced by a view and cannot be
|defined with the DATA CAPTURE CHANGES attribute when subsystem
|parameter RESTRICT_ALT_COL_FOR_DCC is YES (SQLCODE -148)

 ALTER TABLE -> DROP DEFAULT section:
 -----------------------------------
 The table that contains the specified column must not be
|referenced in a view and cannot be defined with the
|DATA CAPTURE CHANGES attribute when subsystem parameter
|RESTRICT_ALT_COL_FOR_DCC is YES (SQLCODE -148)


=========
DB2 Codes
=========
 SQLCODE -148
 ------------
 Modify reason code 01 and 02. This is current DB2 behavior,
 however the documentation needs to be updated to reflect it.
 01
     The ALTER statement specified an ALTER COLUMN clause
     that attempted to drop the default value, alter the default
|    value, or alter the data type. The column cannot be altered
     because the column has a field procedure or is involved in
     a referential constraint. The default value cannot be
     changed because the column has a field procedure.
 02
     The ALTER statement specified an ALTER COLUMN clause that
     attempted to drop the default value, alter the default
|    value, or alter the data type. The column cannot be
     altered because the table that is identified by source-name
       o Is a table that has an edit procedure or validation
         procedure.
       o Is a global temporary table.
 Add reason code 03.
|03
|    The ALTER statement specified an ALTER COLUMN clause that
|    attempted to drop the default value, alter the default
|    value, or alter the data type. The column cannot be
|    altered because the table is defined with data capture
|    changes and subsystem parameter  RESTRICT_ALT_COL_FOR_DCC
|    value is YES.
```

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```
================
DB2 Installation
================
|RESTRICT_ALT_COL_FOR_DCC is a subsystem parameter in DSN6SPRM
|that can be used to indicate whether DB2 will prevent
|use of the ALTER TABLE ALTER COLUMN with SET DATA TYPE, SET
|DEFAULT, and DROP DEFAULT when data capture changes is
|enabled on the target table. Valid settings are YES and NO.
|The default is NO, meaning that ALTER TABLE ALTER COLUMN with
|SET DATA TYPE, SET DEFAULT, and DROP DEFAULT operations are
|allowed when the target table is defined with data capture
|changes. Use YES if you use a version of data propagation
|products that does not support alter column.
|RESTRICT_ALT_COL_FOR_DCC is online changeable. ALTER TABLE
|ALTER COLUMN with SET DATA TYPE, SET DEFAULT, and DROP DEFAULT
|will result in SQLCODE -148 when the table is defined with data
|capture changes and the subsystem parameter is set to YES. In
|data sharing, it has member scope.

++HOLD COMMENT FOR RELEASE 910, TYPE DOC:
The approximate text is to be added to the DB2 SQL Reference,
Codes and Installation manual. This text is subject to change.
=============
SQL Reference
=============
 ALTER TABLE -> Notes  section:
 -----------------------------
 Altering the data type, length, precision, or scale of a
 column:
  When you change the data type, length, precision, or
  scale of a column, the following information applies to
  indexes, limit keys, check constraints, and invalidation:
    * Restrictions. The ALTER TABLE statement is not allowed if
      any of the following conditions are true:
|         o The table is defined with DATA CAPTURE CHANGES and
|            subsystem parameter RESTRICT_ALT_COL_FOR_DCC is YES

 ALTER TABLE -> SET default-clause section:
 ------------------------------------------
|The table must not be referenced by a view and cannot be
|defined with the DATA CAPTURE CHANGES attribute when subsystem
|parameter RESTRICT_ALT_COL_FOR_DCC is YES (SQLCODE -148)

 ALTER TABLE -> DROP DEFAULT section:
 ------------------------------------
 The table that contains the specified column must not be
|referenced in a view and cannot be defined with the
|DATA CAPTURE CHANGES attribute when subsystem parameter
|RESTRICT_ALT_COL_FOR_DCC is YES (SQLCODE -148)

=========
DB2 Codes
=========
 SQLCODE -148
 ------------
```

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Modify reason code 01 and 02. This is current DB2 behavior,
however the documentation needs to be updated to reflect it.
 01
     The ALTER statement specified an ALTER COLUMN clause
     that attempted to drop the default value, alter the default
| value, or alter the data type. The column cannot be altered
     because the column has a field procedure or is involved in
     a referential constraint. The default value cannot be
     changed because the column has a field procedure.
 02
     The ALTER statement specified an ALTER COLUMN clause that
     attempted to drop the default value, alter the default
| value, or alter the data type. The column cannot be
     altered because the table that is identified by source-name
       o Is a table that has an edit procedure or validation
         procedure.
       o Is a global temporary table.

 Add reason code 03.
|03
| The ALTER statement specified an ALTER COLUMN clause that
| attempted to drop the default value, alter the default
| value, or alter the data type. The column cannot be
| altered because the table is defined with data capture
| changes and subsystem parameter RESTRICT_ALT_COL_FOR_DCC
| value is YES.

================
DB2 Installation
================
|RESTRICT_ALT_COL_FOR_DCC is a subsystem parameter in DSN6SPRM
|that can be used to indicate whether DB2 will prevent
|use of the ALTER TABLE ALTER COLUMN with SET DATA TYPE, SET
|DEFAULT, and DROP DEFAULT when data capture changes is
|enabled on the target table. Valid settings are YES and NO.
|The default is NO, meaning that ALTER TABLE ALTER COLUMN with
|SET DATA TYPE, SET DEFAULT, and DROP DEFAULT operations are
|allowed when the target table is defined with data capture
|changes. Use YES if you use a version of data propagation
|products that does not support alter column.
|RESTRICT_ALT_COL_FOR_DCC is online changeable. ALTER TABLE
|ALTER COLUMN with SET DATA TYPE, SET DEFAULT, and DROP DEFAULT
|will result in SQLCODE -148 when the table is defined with data
|capture changes and the subsystem parameter is set to YES. In
|data sharing, it has member scope.

++HOLD COMMENT FOR RELEASE A10, TYPE ACT:
PM48358 introduces an online-changeable subsystem parameter in
DSN6SPRM called RESTRICT_ALT_COL_FOR_DCC that can be used to
specify whether DB2 will prevent use of the ALTER TABLE ALTER
COLUMN with SET DATA TYPE, SET DEFAULT, and DROP DEFAULT when
data capture changes is enabled on the target table. Valid
settings are NO and YES.
- NO : Allows the indicated SQL operations when the target
        table is defined with data capture changes.
         ==> This is the default

- YES: Disallows the indicated SQL operations when the target
        table is defined with data capture changes. Use YES
        if you use a version of data propagation products that
        does not support alter column.

If you have already installed or migrated to this version of DB2
you need to take the following actions after applying this PTF:
(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:
----
(1) Update customized copies of DB2 installation CLIST members
----
==> This action is recommended for all customers

    This PTF modifies CLIST member DSNTINST in the SDSNCLST
    target library only. You need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of this CLIST. You may also want to move it to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed by
    job DSNTIJVC reside.
----
(2) Update your customized copy of job DSNTIJUZ

==> This action is required for all customers

    This PTF modifies DB2 installation job DSNTIJUZ in the
    SDSNSAMP target library. After applying this PTF, you
    need to update your customized copy of this job as follows:
    * Add the keyword parameter RESTRICT_ALT_COL_FOR_DCC=<x>,
      where <x> is NO or YES, to the invocation of the
      DSN6SPRM macro. Make sure to add a continuation character
      in column 72 if needed. If you omit adding
      RESTRICT_ALT_COL_FOR_DCC here, the value will be set to
      the default of NO when you assemble the DSNZPxxx module.
    * Run the first two steps of the DSNTIJUZ job you modified.
    * After the job completes, you must either use the -SET
      SYSPARM command or stop and restart DB2 for the change to
      take effect.
----
(3) Update private copies of the DSNTIDxx CLIST input member

==> This action is required for all customers
      This PTF adds an entry for RESTRICT_ALT_COL_FOR_DCC
      to the CLIST default input members in the SDSNSAMP target
      library. You need to add these entries to all private
      copies of your CLIST output DSNTIDxx member. In each such
      copy, add the following line:
RESTRICT_ALT_COL_FOR_DCC CHAR M NO   YES   <x>
      Change <x> to the value you specified for
      RESTRICT_ALT_COL_FOR_DCC in step (2), above.

      If you do not add RESTRICT_ALT_COL_FOR_DCC to a DSNTIDxx
      member, the DB2 installation CLIST will assume

RESTRICT_ALT_COL_FOR_DCC=NO when run with that member as
                    input.

++HOLD COMMENT FOR RELEASE 910, TYPE ACT:
PM48358 introduces an online-changeable subsystem parameter in
DSN6SPRM called RESTRICT_ALT_COL_FOR_DCC that can be used to
specify whether DB2 will prevent use of the ALTER TABLE ALTER
COLUMN with SET DATA TYPE, SET DEFAULT, and DROP DEFAULT when
data capture changes is enabled on the target table. Valid
settings are NO and YES.
- NO : Allows the indicated SQL operations when the target
        table is defined with data capture changes.
        ==> This is the default
- YES: Disallows the indicated SQL operations when the target
        table is defined with data capture changes. Use YES
        if you use a version of data propagation products that
        does not support alter column.

If you have already installed or migrated to this version of DB2
you need to take the following actions after applying this PTF:
(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:
----
(1) Update customized copies of DB2 installation CLIST members
----
==> This action is recommended for all customers

    This PTF modifies CLIST member DSNTINST in the SDSNCLST
    target library only. You need to redo any record format
    changes and reapply any tailoring you have done to your
    copies of this CLIST. You may also want to move it to the
    prefix.NEW.SDSNCLST data set, where the CLISTs processed by
    job DSNTIJVC reside.
----
(2) Update your customized copy of job DSNTIJUZ

==> This action is required for all customers

    This PTF modifies DB2 installation job DSNTIJUZ in the
    SDSNSAMP target library. After applying this PTF, you
    need to update your customized copy of this job as follows:
    * Add the keyword parameter RESTRICT_ALT_COL_FOR_DCC=<x>,
      where <x> is NO or YES, to the invocation of the
      DSN6SPRM macro. Make sure to add a continuation character
      in column 72 if needed. If you omit adding
      RESTRICT_ALT_COL_FOR_DCC here, the value will be set to
      the default of NO when you assemble the DSNZPxxx module.
    * Run the first two steps of the DSNTIJUZ job you modified.
    * After the job completes, you must either use the -SET
      SYSPARM command or stop and restart DB2 for the change to
      take effect.
----
(3) Update private copies of the DSNTIDxx CLIST input member

```
        ----------------------------------------------------------------
        ==> This action is required for all customers
              This PTF adds an entry for RESTRICT_ALT_COL_FOR_DCC
              to the CLIST default input members in the SDSNSAMP target
              library. You need to add these entries to all private
              copies of your CLIST output DSNTIDxx member. In each such
              copy, add the following line:

      RESTRICT_ALT_COL_FOR_DCC  CHAR  M  NO        YES           <x>
              Change <x> to the value you specified for
              RESTRICT_ALT_COL_FOR_DCC in step (2), above.
              If you do not add RESTRICT_ALT_COL_FOR_DCC to a DSNTIDxx
              member, the DB2 installation CLIST will assume
              RESTRICT_ALT_COL_FOR_DCC=NO when run with that member as
              input.
COMPONENT:  5740-XYR00-HDB9910
APARS FIXED: PM48358
SPECIAL CONDITIONS:
  COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2006
              LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
  DB2BIND:
    The fix does not fix indexes that are already broken.
    Since the broken indexes are not usable,they should be dropped.

    The following query can identify the indexes that need
    to be dropped.

    SELECT I.NAME, I.CREATOR, I.TBNAME, I.TBCREATOR,
    I.PADDED, C.COL
    FROM SYSIBM.SYSTABLES T, SYSIBM.SYSCOLUMNS C,
    SYSIBM.SYSINDEXES I, SYSIBM.SYSKEYS K
     WHERE C.TBCREATOR = T.CREATOR AND
           C.TBNAME = T.NAME AND
           I.TBCREATOR = T.CREATOR AND
           I.TBNAME = T.NAME AND
           K.IXCREATOR = I.CREATOR AND
           K.IXNAME = I.NAME AND
           I.PADDED = 'Y' AND
           ( DATATYPEID = 908 OR SOURCETYPEID = 908 ) AND
           K.COLNO = C.COLNO;
  DB2BIND:
    APAR PM05503 will lift the SQLCODE -148 restriction on ALTER
    TABLE ALTER COLUMN with SET DATA TYPE, SET DEFAULT, or DROP
    DEFAULT options specified when the table is defined with DATA
    CAPTURE CHANGES (DCC).

    ALTER TABLE ALTER COLUMN SET DATA TYPE on a table defined with
    DCC requires IBM InfoSphere Replication Server for z/OS
    V10.01.00 Program Number 5655-IRS FMIDs HAAWA10, JAAWA11,
    JAAWA12, JAAWA13. Earlier releases of IBM InfoSphere
    Replication Server for z/OS may have unexpected output.
  DOCUMENTATION:
    The approximate text is to be added to the DB2 SQL Reference,
    Codes and Installation manual. This text is subject to change.

    =============
```

```
SQL Reference
=============


 ALTER TABLE -> Notes  section:
 ------------------------------
 Altering the data type, length, precision, or scale of a
 column:
  When you change the data type, length, precision, or
  scale of a column, the following information applies to
  indexes, limit keys, check constraints, and invalidation:

    * Restrictions. The ALTER TABLE statement is not allowed if
      any of the following conditions are true:
|          o The table is defined with DATA CAPTURE CHANGES and
|            subsystem parameter RESTRICT_ALT_COL_FOR_DCC is YES

 ALTER TABLE -> SET default-clause section:
 ------------------------------------------
|The table must not be referenced by a view and cannot be
|defined with the DATA CAPTURE CHANGES attribute when subsystem
|parameter RESTRICT_ALT_COL_FOR_DCC is YES (SQLCODE -148)

 ALTER TABLE -> DROP DEFAULT section:
 -----------------------------------
 The table that contains the specified column must not be
|referenced in a view and cannot be defined with the
|DATA CAPTURE CHANGES attribute when subsystem parameter
|RESTRICT_ALT_COL_FOR_DCC is YES (SQLCODE -148)


=========
DB2 Codes
=========


 SQLCODE -148
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 Modify reason code 01 and 02. This is current DB2 behavior,
 however the documentation needs to be updated to reflect it.

 01
     The ALTER statement specified an ALTER COLUMN clause
     that attempted to drop the default value, alter the default
|    value, or alter the data type. The column cannot be altered
     because the column has a field procedure or is involved in
     a referential constraint. The default value cannot be
     changed because the column has a field procedure.
 02
     The ALTER statement specified an ALTER COLUMN clause that
     attempted to drop the default value, alter the default
|    value, or alter the data type. The column cannot be
     altered because the table that is identified by source-name
       o Is a table that has an edit procedure or validation
         procedure.
       o Is a global temporary table.


 Add reason code 03.
```