Part Two: IBM DB2 10 Migration Planning and Early Experiences

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Objectives

- Share lessons learned, surprises, pitfalls
- Provide hints and tips
- Address some myths
- Provide additional planning information
- Provide usage guidelines and positioning on new enhancements

Agenda

- Introduction
- Highlights
- Performance and Scalability
- Availability
- Other
- Migration and Planning
- Security considerations when removing DDF Private Protocol
- Items planned for post-GA delivery
- Summary

Performance and Scalability …

- Accounting Trace Class 3 enhancement – separate counters
  - IRLM Lock/Latch waits
  - DB2 Latch waits
- Data sharing
  - Faster DB2 shut down by avoiding local buffer pool scan per GBP-dependent object
  - Avoiding scan of XXXL local Buffer pool when
    - Pageset/partition transitions into GBP-dependency
    - Pageset/partition transitions out of GBP-dependency
- Inline LOBs work very well
  - Potential for significant CPU and elapsed time improvement with the right inline value
  - Trade off in setting the right inline value
    - Avoiding access to auxiliary tablespace
    - Increasing base row size with fewer rows per page
    - May have to increased page size
  - Inline portion can be compressed
  - Significant space with small LOBs (<1000 bytes)

Performance and Scalability …

- Compress on INSERT
  - Compression ratios almost as good compared with running REORG later
- Active log writes
  - Prior to V10, log writes are done serially when re-writing partial CIs
  - Determined that destructive writes due to IO errors no longer occur
  - Now all log write IOs are done in parallel
  - Elapsed time improvements
- Limited value of Currently Committed locking semantics
  - SQL UPDATE not supported

Performance and Scalability …

- Hash access vs. Index only access
  - Competes against index only access
    - Advantage that index only access still provides for clustered data access
    - Can now have unique index with INCLUDE columns
      - Reduce number of indexes required for performance reasons
      - Improve insert, update and delete performance
  - Need to find the sweet spot
    - High NLEVELS in index (>=3)
    - Purely direct row access by primary key
    - Truly random access
    - Read intensive, not volatile
    - No range queries
    - Many rows per page etc
  - Space allocation of fixed hash space is key to control overflow
    - Too small will lead to rows in overflow
    - Too large will lead to random IO
    - REORG AUTOESTSPACE(YES) but still some rows in overflow
  - Degraded LOAD and REORG utility performance

Availability

- Online Schema Evolution ('Deferred Alter')
  - Migrate from classic table space types (simple, segmented, partitioned) to UTS PBG/PBR
    - One way ticket only
  - UTS is pre-requisite for Cloned Table, Hash, Inline LOB, Currently Committed
  - Once migrated to UTS PBG/PBR can change attributes in both directions
    - DSSIZE, index page size, MEMBER CLUSTER, Hash Access, …
  - Benefits
    - Streamed line way to move to UTS
    - Reduce administrative time and cost
    - Cuts down on errors
    - Reduce outages
  - Issue that PIT recovery to point before successful materializing REORG not possible
    - Incorrect results from REORG
    - Application change rollback

Availability

- Online REORG with FORCE
  - Customers perceive limited value
  - Only running threads which are blocking are cancelled
  - Threads which are suspended / inactive will cause REORG to still fail
- Online REORG LOB with DISCARD
  - Customers perceive limited value
  - Cannot handle LOB columns greater than 32KB

Other

- Ability to create classic partitioned table space (PTS)
  - Classic PTS deprecated in V10
  - By default will be created as UTS PBR
  - UTS will only support table based controlled partition syntax
  - Options to be able to officially create classic PTS
    - Specify SEGSIZE 0 on CREATE TABLESPACE
    - Set new zparm DPSEGSZ=0 (default 32)
- Old COBOL and PL/1
  - V7 lookalike pre-compiler (DSNHPC7) for older COBOL and PL/I is still provided
- DDL Concurrency after Catalog restructure
  - Some help provided but concurrency issues not absolutely solved
  - Still deadlocks with parallel heavy DDL against different databases

Other …

- Single thread BIND/REBIND
  - Degraded CPU and elapsed time performance on entry CM
    - PLANMGMT=EXTENDED is now default
    - New indexes defined for post ENFM when hash links are eliminated
    - Change in access path (index access) on entry to CM
    - No concurrency improvement until after Catalog restructure in ENFM
- Concurrent BIND/REBIND in data sharing mode
  - Problems addressed
    - Performance problems related to DELETE/INSERT process
    - Space growth in SPT01 for both LOB space and base table
  - Now working well
    - Inefficient space search for out line LOB in data sharing (APAR PM24721)
    - Inline LOB with compression for SPT01 to address SPT01 growth (APAR PM27073)
    - More efficient space reuse for base table and UTS (APAR PM27973)
  - Recommendations
    - Customers need to change existing procedures to go parallel
    - But cannot do this until post ENFM
    - Benefit from reducing application down time to implement new application releases

Other …

- Value of REBIND under V10
  - Performance from new run time (avoid puffing, enable SPROC)
  - Maximize DBM1 31-bit VSCR
  - Reduce exposure to problems with migrated packages from earlier releases
- How to mitigate exposure to bad access path change introduced with REBIND which leads to degraded run time performance (regression)
  - Use access plan stability (PLANMGMT=EXTENDED|BASIC) and fallback if needed
  - Use APREUSE and APCOMPARE (see next few slides)

Other …

- Access Path Reuse - APREUSE and APCOMPARE
  - Introduced in V10 through APARs PM33767 (function) and PM25679 (enabled)
  - Works independently of access plan stability (PLANMGMT=EXTENDED|BASIC)
  - Provides ability to generate new SQL run time but will attempt to reuse the existing access path by internally using OPTHINTS
    - Applies to both BIND REPLACE and REBIND
  - Available in CM when migrating from V9 -> V10 and then applies to subsequent BIND/REBIND in V10
  - Only works when package bound on V9 or higher
    - Starting with V9, EXPLAIN information is saved with the package in SPT01
    - Referred to as “Explain Data Block (EDB)” which is a compact representation of PLAN_TABLE information
  - Not guaranteed to succeed in all cases as OPTHINTS are not enforceable 100% of the time e.g.,
    - Incompatibilities between old and new release

Other …

- Access Path Reuse - APREUSE and APCOMPARE …
  - Conservative approach where minimal access path changes are required
    - Step 0 (Optional)
      - Use REBIND ... EXPLAIN(ONLY) + APREUSE(ERROR)
      - Perform an impact analysis before actual REBINDs
    - Step 1: REBIND PACKAGE (*)
      - Use PLANMGMT(EXTENDED) ... backup of V9 access paths, just in case
        + EXPLAIN(YES)
        + APREUSE(ERROR)
    - Step 2: For packages that failed Step 1 (i.e., leftovers)
      - 2a: Leave them as is ... they will be at the old level
        OR
      - 2b. REBIND with PLANMGMT(EXTENDED) + APREUSE(NO)
        - » This step exposes yourself to access path changes
        - » But you have a backup

Other …

- RUNSTATS/REBIND recommendations based upon on scenario
  - V8 preparation
    - If RUNSTATS will be difficult on large number of objects immediately after migration to V9/10, then REORG and/or RUNSTATS (V8) immediately prior to migration can reduce RUNSTATS need on V9/10 - as RUNSTATS INDEX can be sufficient to capture new CR/DRF
  - V9 migration
    - RUNSTATS objects as soon as possible after migration
      - Target dynamic applications first as these are exposed to new access paths immediately
    - Delay static REBINDs until associated objects have RUNSTATS run
  - V8->V10 migration
    - RUNSTATS objects as soon as possible after migration
      - Target dynamic applications first as these are exposed to new access paths immediately
      - Equal priority - target static parallelism packages to REBIND to avoid incremental bind at each execution
    - Delay non-parallelism REBINDs until associated objects have RUNSTATS run
  - V9->V10 migration
    - REBIND static parallelism packages as soon as possible to avoid incremental bind at each execution
    - Delay non-parallelism REBINDs until associated objects have RUNSTATS run
    - BIND/REBIND options APREUSE/APCOMPARE are available on V10 for packages bound on V9

Other …

- RUNSTATS/REBIND recommendations based upon on scenario …
  - V8/9 co-existence
    - Set STATCLUS=STANDARD while in co-existence with V8
    - Set ABIND=COEXIST while in co-existence with V8
    - Avoid REBIND while in co-existence with V8
    - Follow V9 migration steps after all members are V9, including resetting the following zparms
      - Set STATCLUS=ENHANCED
      - Set ABIND=YES
  - V8/10 co-existence
    - Set STATCLUS=STANDARD while in co-existence with V8
    - Set ABIND=COEXIST while in co-existence with V8
    - What to do with static parallel queries?
      - Accept incremental bind whenever executed on V10 member
      - OR, REBIND with DEGREE('1') to disable parallelism while in co-existence.
    - Follow V8-V10 migration steps after all members are V10, including resetting the following zparms
      - Set STATCLUS=ENHANCED
      - Set ABIND=YES

Other …

- RUNSTATS/REBIND recommendations based upon on scenario …
  - V9/10 co-existence
    - Set ABIND=COEXIST while in co-existence with V8
    - What to do with static parallel queries?
      - Accept incremental bind whenever executed on V10 member
      - OR, REBIND with DEGREE('1') to disable parallelism while in co-existence.
    - Follow V8-V10 migration steps after all members are V10, including resetting the following zparms
      - Set ABIND=YES

Other …

- Incompatible changes
  - CHAR() scalar function
    - Solution via APAR PM29124 to restore compatible behavior for CHAR

```
SELECT COL1
      ,CHAR(COL1)
      ,HEX(CHAR(COL1))
      ,SUBSTR(CHAR(COL1), 2, 4) APPL_SUBSTR
FROM DB2_TABLE;
```

```
+-----------------------------------------------+
!  COL1   ! CHAR_V9 ! HEX_CHAR_V9  ! APPL_SUBSTR !
+-----------------------------------------------+
!     9   !  0009,  ! 40F0F0F0F96B ! 0009        !
!    99   !  0099,  ! 40F0F0F9F96B ! 0099        !
!   999   !  0999,  ! 40F0F9F9F96B ! 0999        !
!  9999   !  9999,  ! 40F9F9F9F96B ! 9999        !
+-----------------------------------------------+
```

```
+-------------------------------------------------+
!  COL1   ! CHAR_V10 ! HEX_CHAR_V10 ! APPL_SUBSTR !
+-------------------------------------------------+
!     9   ! 9        ! F94040404040 !             !
!    99   ! 99       ! F9F940404040 ! 9           !
!   999   ! 999      ! F9F9F9404040 ! 99          !
!  9999   ! 9999     ! F9F9F9F94040 ! 999         !
+-------------------------------------------------+
```

Other …

- Incompatible changes …
  - Create Trigger
    - Impact: Trigger created in V10 not executable in V9
    - Workaround: drop and create trigger in V9
    - PMR open

```
DSNT408I SQLCODE = -723, ERROR: AN ERROR OCCURRED IN A TRIGGERED SQL STATEMENT IN
TRIGGER AWAT.OCA_TEST_TRIGGER. INFORMATION RETURNED: SQLCODE -904, SQLSTATE 57011,
MESSAGE TOKENS 00E30305,00000801,AWAT.OCA_TEST_TRIGGER- .18E5950B04A23EEC, SECTION
NUMBER 1
```

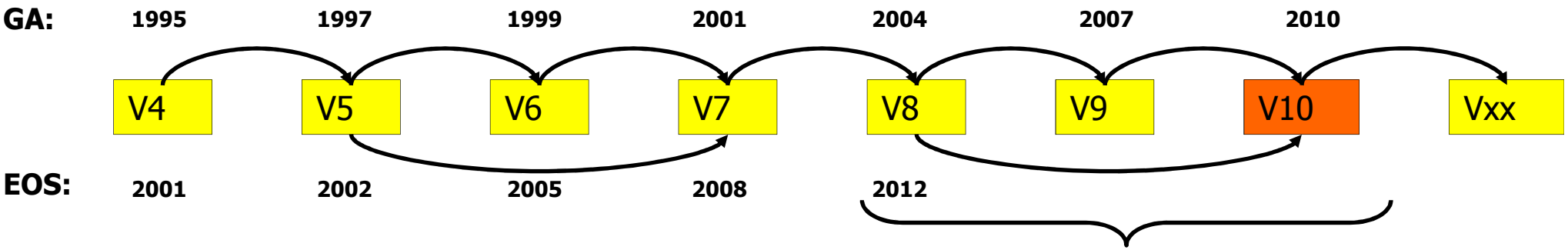
Other …

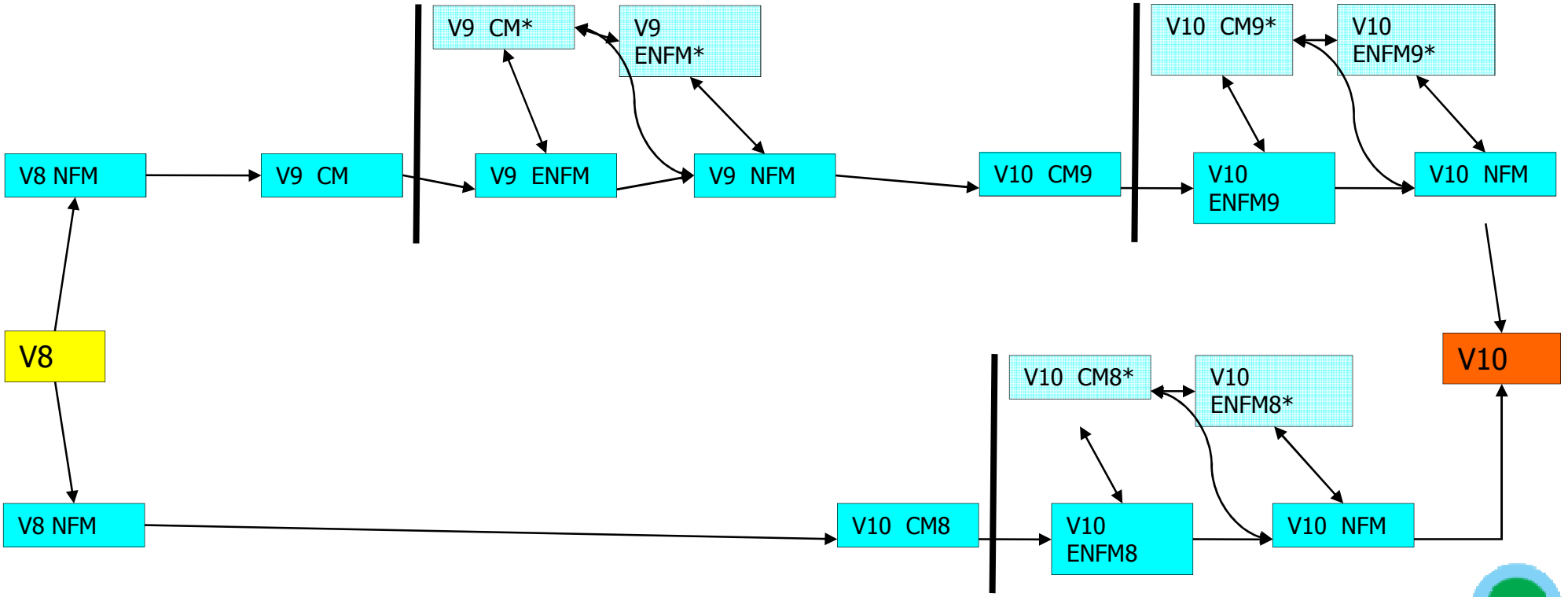
- Incompatible changes …
  - SQL stored procedures

```
SQLCODE = -904, ERROR: UNSUCCESSFUL EXECUTION CAUSED BY AN UNAVAILABLE
RESOURCE. REASON 00E7009E, TYPE OF RESOURCE 00000801, AND RESOURCE NAME
BE2TFKT.LESE_VARIANTEN.18DEB14D119115C4
```

    - Impact: Deployment has to be executed on V9 member in V10
    - Workaround: run ALTER PROCEDURE REGENERATE on V9 member
    - APAR PM13525


DB2 10
is here


GA:
1995
1997
1999
2001
2004
2007
2010
V4
V5
V6
V7
V8
V9
V10
Vxx
EOS:
2001
2002
2005
2008
2012


V8 NFM
V9 CM
V9 CM*
V9 ENFM*
V9 ENFM
V9 NFM
V10 CM9
V10 CM9*
V10 ENFM9*
V10 ENFM9
V10 NFM
V8
V10
V8 NFM
V10 CM8
V10 CM8*
V10 ENFM8*
V10 ENFM8
V10 NFM

Migration and Planning

- Migration process very similar to V8 and V9
  - Works well with few problems with migration fallback
- Migration from either DB2 for z/OS V8 NFM or DB2 9 for z/OS NFM
- Cannot migrate
  - V8 NFM > V10 CM8 > V8 NFM > V9 CM
  - V8 NFM > V9 CM > V8 NFM > V10 CM8
- Fallback Toleration SPE
  - APAR PK56922
- Early Code
  - For V8/V9 APAR PK87280 (superseeds APAR PK61766)
- Information APARs
  - II14474: V8 to V10
  - II14477: V9 to V10

Migration and Planning

V8 premigration checklist

http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/topic/com.ibm.db2z10.doc.inst/src/tpc/db2z_premigr8checklist.htm

V8 migration checklist:

http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/topic/com.ibm.db2z10.doc.inst/src/tpc/db2z_migrcm8checklist.htm

V9 premigration checklist:

http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/topic/com.ibm.db2z10.doc.inst/src/tpc/db2z_premigr9checklist.htm

V9 migration checklist:

http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/topic/com.ibm.db2z10.doc.inst/src/tpc/db2z_migrcm9checklist.htm

Migration and Planning …

- If coming from V8
  - BSDS must be reformatted for larger active / archive tracking
- DB2 Connect
  - Minimum level
    - V9.1 FP1 (recommended is FP7)
    - V9.5 (recommended is FP4)
  - Level for new functions
    - V9.7 FP3A
- IPL amounts for need to be adjusted based on number of DB2 members
  - 64-bit Private (1TB)
  - 64-bit Shared (128GB)
  - 64-bit Common (6GB)

Migration and Planning …

- DBRMs bound directly into plans no longer supported
  - If found in V10, will trigger auto bind into packages
  - For V8 and V9
    - APARs PK62876/PK79925 adds new syntax to convert from DBRMs to packages
      - REBIND PLAN option COLLID
      - Could result in access path change
    - APARs PM01821 (Version) and PM30382 (Location from * to blank) should be on
- Old plans and packages bound prior to V6 will require REBIND
- Catalog and Directory must be SMS managed (EF, EA) ahead of ENFM
- PDSEs required for SDSNLOAD, SDSNLOD2, ADSNLOAD
- DSNHDECP NEWFUN=V10|V9|V8

Migration and Planning …

- Must absolutely eliminate all use of DDF Private Protocol before migrating
  - No longer supported In V10
  - Local packages miss tagged with DDF Private Protocol will be tolerated
  - Otherwise package must exist in both local and remote sites
  - A lot of packages and plans are bound with DBPROTOCOL(PRIVATE) because this was the default (zparm DBPROTCL) when introduced in DB2 V6
    - DSNT226I is issued if DBPROTOCOL(PRIVATE) is used during REBIND
  - Since V8, APAR PK92339 introduces new zparm PRIVATE_PROTOCOL=YES|NO
    - Must be in sync with zparm setting of DBPROTCL
    - DSNT225I message to indicate private protocol failure for REBIND
    - IFCID 157 can be used to identify packages which are using private protocol
    - APAR PM17665 removes authorization behaviour for private protocol i.e., .
      - Execute privilege on package is required for the user running the program under DRDA
      - APAR PM37300 will provide relief (see later slides)
  - Since V8, APAR PK64045 (PE, PM14816) adds new zparm DRDA_RESOLVE_ALIAS
    - Private protocol always performs alias resolution
      - 3-part name is sent to the server
    - If DRDA_RESOLVE_ALIAS is set to YES then also DRDA connections get this resolution e.g.,
      - For remote BIND with COPY option

Migration and Planning …

- EXPLAIN tables
  - Format and CCSID from previous releases is deprecated in V10
    - Cannot use pre V8 format
      - SQLCODE -20008
    - V8 or V9 format
      - Warning SQLCODE +20520 regardless of CCSID EBCDIC or UNICODE
    - Must not use CCSID EBCDIC with V10 format
      - EXPLAIN fails with RC=8 DSNT408I SQLCODE = -878
      - BIND with EXPLAIN fails with RC=8 DSNX200I
  - Recommendations
    - Use CCSID UNICODE in all supported releases (V8, V9, V10) due to problems with character truncation and conversion etc
    - Use the V10 extended column format with CCSID UNICODE when
      - Applications access EXPLAIN tables and can only tolerate SQLCODE 0 or +100
    - V10 column format is supported under V8 and V9 with the SPE fallback APAR PK85956 applied with the exception of
      - DSN_STATEMENT_CACHE_TABLE due to the BIGINT columns
  - APAR PK85068 can help migrate V8 or V9 format to the new V10 format with CCSID UNICODE

Migration and Planning …

- Early customer adopters of V10 migrating from either V8 or V9 should make plans and take extra care to mitigate against the risk of instability
  - Perform application regression and stress testing to keep ‘fires’ away from production
  - Need to be more aggressive on planned continual application of preventative service
    - Will have to stay a lot more current than 2 full ‘major’ drops a year
    - Regular full ‘major’ maintenance drops including HIPERs/PEs essential required for the first year or so
      - May be 4 ‘major’ drops in the first year
    - Can move to 2 ‘major’ and 2 ‘minor’ maintenance drops as the release passes the early adopter curve
    - Exploit CST/RSU recommended maintenance as opposed to the PUT route
      - Recommended maintenance after successful testing for a least one month
      - Testing performed over and above that performed by DB2 Development
      - CST testing still does not replace customer regression/stress testing
  - Must be prepared to tolerate hit some ‘bumps in the road’
  - Customer who are not prepared to take mitigating actions and have no tolerance for ‘bumps in the road’ should not be early adopters
    - V8 customers should migrate to V9 quickly as it is relatively stable
  - Answer depends on your risk profile and then setting yourself up for best chance for success

Migration and Planning …

- CST and RSU example

CST4Q10 RSU1012	RSU1101	RSU1102	CST1Q11 RSU1103
All service through end Sept 2010 not already marked RSU + H&PE through end Nov 2010	H&PE through end Dec 2010	H&PE through end Jan 2011	All service through end Dec 2010 not already marked RSU + H&PE through end Feb 2011
↓	↓	↓	↓
Available at the beginning of January 2011	Available at the beginning of February 2011	Available at the beginning of March 2011	Available at the beginning of April 2011
Base: Sep 2010 H&PE: Nov 2010	Base: Sep 2010 H&PE: Dec 2010	Base: Sep 2010 H&PE: Jan 2011	Base: Dec 2010 H&PE: Feb 2011

H&PE = HIPER/Security/Integrity/Pervasive PTFs + PE resolution (and associated requisites and supersedes)

Security considerations when removing DDF Private Protocol

- There are fundamental differences on how authorization is performed based on the distributed protocol used
- Private Protocol (DB2 for z/OS requester)
  - Supports static SQL statements only
  - Plan owner must have authorization to execute all SQL executed on the DB2 server
  - Plan owner authenticated on DB2 requester and not on the DB2 server
- DRDA Protocol
  - Supports both static and dynamic SQL statements
  - Primary auth ID and associated secondary auth IDs must have authorization to execute package and dynamic SQL on the DB2 server
  - Primary auth ID authenticated and secondary auth IDs are associated on DB2 server
- Prior to V10 - Private Protocol and DRDA Protocol can be used by same application
  - Private Protocol security semantics was used due to possible inconsistent behavior which is dependent on how programs are coded and executed

Security considerations when removing DDF PP …

- But there is also currently a difference in the authorizations required by an incoming DRDA connection at the DB2 for z/OS server, depending on where the connection come from:
  - Dynamic SQL DRDA connection from DB2 Connect and/or DB2 client direct connectipm
    - Connecting userid needs authority to run the appropriate DB2 package and authority to access the DB2 table
  - Dynamic SQL DRDA connection from DB2 for z/OS requester
    - Connecting userid needs authority to access the DB2 table
    - Originating plan owner needs authority to run the appropriate DB2 package
- It is different for DB2 for z/OS requester to DB2 for z/OS server because connections were designed to use Private Protocol (PP) semantics to avoid changing authids when switching between PP to DRDA Protocol
- With the disappearance of PP in V10, DB2 have decided to bring the DRDA connection from DB2 for z/OS requester to DB2 for z/OS server in line with other DRDA requesters and to change the authorizations required
  - This was retrofitted back into V8 and V9 with APAR PM17665
  - It is very important to distinguish clearly between the behavior of DRDA before and after APAR PM17665

Security considerations when removing DDF PP …

- APAR PK92339 introduced new zparm PRIVATE_PROTOCOL=YES|NO
  - To prevent future introduction of PP then set PRIVATE_PROTOCOL=NO
- The result of migrating to V10 or the introduction of APAR PM17665 under V8 or V9, when running with PRIVATE_PROTOCOL=NO introduces the authorization changes at the DB2 for z/OS server for DRDA connections coming from DB2 for z/OS requester
  - PP security semantics are no longer used as default for access from a DB2 for z/OS requester
  - Plan owner value is ignored and connecting userid must be granted authority to execute the package at the remote site
  - Otherwise the connection will fail with SQLCODE -551
- As a result of customer complaints, APAR PM37300 introduces PRIVATE_PROTOCOL=AUTH which allows an installation to
  - Disable PP but keep the plan owner authorization check (the "private protocol semantics“)
- Migration to V10 or the application of PTF for APAR PM17665 does affect you even if you have everything already bound as DRDA

Security considerations when removing DDF PP …

- In summary
  - Before disabling private protocol, ensure all appropriate grants are performed by
    - Grant execute privilege to any user who plans to run a package or stored procedure package from a DB2 for z/OS requester, just like other DRDA clients
  - DB2 V8 and V9 can disable private protocol but maintain private protocol authorization checks by
    - Setting system parameter DSN6FAC PRIVATE_PROTOCOL=AUTH
  - DB2 10 does not support private protocol but can allow private protocol authorization checks for use of DRDA protocol for DB2 for z/OS requesters by
    - Setting system parameter DSN6FAC PRIVATE_PROTOCOL=AUTH

Items Planned for post-GA Delivery via APAR

- APREUSE, APCOMPARE (PM33767, PM25679)
- Delete data sharing member (PM31009)
- Enhancements for new DBA authorities (PM28296)
  - Prevent privileged users from stopping audit traces
  - No implicit system privileges for DBADM
- Inline LOBs for SPT01 (PM27811)
  - Compression, BIND performance
- Online REORG concurrency for materializing deferred ALTERs (PM25648)
- Temporal enhancements
  - TIMESTAMP WITH TIMEZONE support (PM31314)
  - Enhancement for data replication (PM31315)
  - ALTER ADD COLUMN, propagate to history table (PM31313)

Items Planned for post-GA Delivery via APAR …

- New system profile filters based on “client info” fields (PM28500)
  - Three new columns for userid, appname, and workstation
  - Wildcard support: if column is ‘*’ then all threads pass that qualification
- Zparm to force deletion of CF structures on group restart (PM28925)
- Relief for incompatible change in CHAR of decimal data (PM29124)
- Real storage monitoring and contraction enhancements (PM24723)
- Hash LOAD performance (PM31214)
- DSSIZE > 64GB – APAR coming
- REORG REBALANCE SHRLEVEL CHANGE – APAR coming

RSM APAR OA35885 vital for DB2 10

- Strong advice not to go into major production environment without the PTF and corresponding DB2 support in the PTF for APAR PM24723
- Enables proper monitoring of REAL storage usage by providing DB2 with 64-bit memory object statistics
- Provides some protection against the system paging or running out of AUX storage

Summary

- Very good release in terms of the opportunities for price/performance and scalability improvements
  - Significant DBM1 31-bit VSCR after rebind
  - Use long term page fixed buffer pools
    - Exploit 1MB real storage page frames on z10 and z196
  - Reduced latch contention, log manager improvements, etc
  - Opportunity for further price performance improvements
    - More use of persistent threads
      - CICS, IMS/TM, High Performance DBATs
    - More use of RELEASE(DEALLOCATE) with persistent threads
    - More use of RELEASE(DEALLOCATE) is a trade off
      - Increased storage consumption
        - » Need to plan on additional real memory
      - Reduced concurrency
        - » BIND/REBIND and DDL
  - Opportunity for scale up and LPAR/DB2 consolidation

Summary …

- Carefully plan, provision and monitor real storage consumption
- Early customer adopters of V10 migrating from either V8 or V9 should make plans and take extra care to mitigate against the risk of instability
  - Regular full ‘major’ maintenance drops
  - Exploitation of CST/RSU recommended maintenance
  - Perform application regression and stress testing to keep ‘fires’ away from production
  - Must be prepared to tolerate some ‘bumps in the road’
- Answer to should you migrate from V8 to V9 or directly to V10?
  - Depends on your risk profile
  - Setting yourself up for best chance of success

Information Management Communities

- On-line communities, User Groups, Technical Forums, Blogs, Social networks, and more
  - Find the community that interests you…
    - World of DB2 for z/OS http://db2forzos.ning.com/
    - Information Management ibm.com/software/data/community
    - Business Analytics ibm.com/software/analytics/community
    - International DB2 User Group www.idug.org

- IBM Champions
  - Recognizing individuals who have made the most outstanding contributions to Information Management, Business Analytics, and Enterprise Content Management communities
    - ibm.com/champion

Useful DB2 for z/OS URLs

- **DB2 10 Launch Website** → http://bit.ly/DB210Launch
- **DB2 for z/OS Website** → http://www-01.ibm.com/software/data/db2/zos/
- **DB2 Product Library** → http://www.ibm.com/software/data/db2/zos/library.html
- **DB2 Newsletter** → http://www.ibm.com/vrm/newsletter/11065

- **Latest Whitepapers**
  - Business Value of DB2 10 – Julian Stuhler
  - A Matter of Time: Temporal Data Management
  - Why DB2 for z/OS is BETTER than Oracle RAC ?
- **DB2 for z/OS e-Kit** → http://bit.ly/DB210e-Kit
- **Upcoming Conferences/Events**
  - **IDUG DB2 Tech Conference EMEA Prague - 13th -18th Nov 2011**
  - **DB2 10 Migration Planning Workshop Prague - 13th November 2011**
  - **IDUG DB2 Tech Conference AG Denver - 14th -16th May 2012**
  - **IDUG 10 Migration Planning Workshop Denver - 13th May 2012**

Top DB2 for z/OS e-Communities

- **World of DB2 for z/OS – 1700+ members** → http://db2forzos.ning.com/
- **DB2 10 LinkedIn – 1000+ members** → http://linkd.in/IBMDB210
- **DB2 for z/OS What's On LinkedIn – 2000+ members** → http://linkd.in/kd05LH
- **DB2 for z/OS YouTube** → http://www.youtube.com/user/IBMDB2forzOS
- **WW IDUG LinkedIn Group – 2000 +members** → http://linkd.in/IDUGLinkedIn
- **IBM DeveloperWorks** → http://www.ibm.com/developerworks/data/community/

DB2 10 is Here!
Customers seeing reduced costs, simplified workloads through proven technology

Reduced Costs	Simplified Workloads	Proven Technology
"Based on the performance metrics from our controlled test environment, we see a significant amount of CPU and Elapsed time savings. This release has many features that will help bring down our operating costs." Morgan Stanley **Morgan Stanley DB2 Team**	**"With DB2 10 able to handle 5-10 times as many threads as the previous version, the upgrade will immediately give the bank some much-needed room for future workload growth while simultaneously reducing their data sharing overhead."** BANCO DO BRASIL **Paulo Sahadi - Senior Production Manager, Information Management Division at Banco do Brasil**	**"Every single SQL statement we have tested has been better or the same as our current optimal paths – we have yet to see any significant access path regression. We had to spend a lot of time tuning SQL with DB2 9, but we expect that to disappear when we upgrade to DB2 10."** **Philipp Nowak,** **BMW DB2 Product Manager**
"We are particularly interested in the performance improvements due to the potential CPU reductions that we realized during our DB2 10 Beta testing. Our early testing has shown out-of-the-box processing cost reductions of between 5% - 10% and for some workloads as high as 30%. Potential cost savings of this magnitude cannot be ignored given today's business climate." **Large Global Bank**	**"The new temporal functionality in DB2 10 for z/OS will allow us to** drastically simplify **our date-related queries. In addition, we'll be able to** reduce our storage costs **by using cheaper storage for inactive rows and reduce our processing cost by having DB2 handle data movement more efficiently than the custom code we've written to do the same work in the past"** **Large Insurance Company**	**The new audit capabilities in DB2 10 will allow tables to be audited as soon as they are created, which is an obvious benefit for the business and will reduce costs and simplify our processes"** **Guenter Schinkel -Postbank Systems AG** Postbank

For more customer references visit : http://www.ibm.com/software/data/db2/zos/testimonials.html

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