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DB2 Log Related Tools from IBM to Improve Performance and Recovery

Ernie Mancill

Certified Consulting Software Specialist

IBM DB2 Tools – East Region

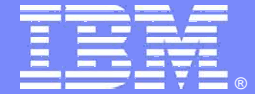


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Tooling to assist with backup and recovery

- DB2 Archive Log Accelerator
 - ▶ Storage savings via SMS compression
 - ▶ UNDO record removal
 - ▶ I/O elapsed time improvement using SMS striping
- DB2 Log Analysis Tool
 - ▶ Recovery avoidance by understanding update patterns
 - ▶ Quiet time detection helps identify time for quiesce
 - ▶ SQL based UNDO/REDO via log analysis
- DB2 Change Accumulation Tool
 - ▶ Generation of SHRLEVEL Reference Image Copy
 - ▶ MINI-Log based recovery via Write-to-VSAM
- DB2 Automation Tool
 - ▶ Automated Local site generation of D/R script (traditional log truncation approach)
 - ▶ Image Copy and Recovery utility profile based generation





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Archive Log Accelerator

Product Overview

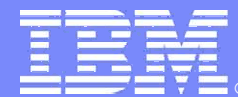


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DB2 Archive Log Accelerator - Features

- DB2 Archive Log Accelerator provides the following features:
 - ▶ The ability to choose from a selection of log compression methods.
 - ▶ The ability to leverage data striping and DFSMS compression (hardware and software based compression) for archive logs.
 - ▶ The ability to create multiple copies of archive logs.
 - ▶ The ability to read logs using DSN1LOGP, IBM DB2 Log Analysis Tool for z/OS, and the IBM DB2 Change Accumulation Tool.
- DB2 Archive Log Accelerator provides several methods to choose from for compressing the logs:
 - ▶ Compress the logs as DB2 is creating them (Cache mode).
 - ▶ Compress the logs after DB2 has created them (Passthru mode).
 - ▶ Compress them using batch jobs.





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IBM DB2 Log Analysis Tool

Product Overview



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Uses for DB2 Log Analysis Tool

- Recovery Avoidance
 - ▶ Use LAT to determine exactly what has or hasn't changed
- Recovery Alternatives
 - ▶ Use LAT to determine how many updates have occurred, then choose either UNDO/REDO SQL or traditional Image Copy + Log Apply approach
- Auditing and Reporting
 - ▶ WHO, WHAT, WHEN, WHERE, and HOW
 - ▶ Without expensive DB2 trace Overhead
 - ▶ Remember – READ Only SQL (Selects) are not logged
- Test Data Generation and Data Replication
 - ▶ Might need to consider CAPTURE DATA CHANGES
- Scheduling Utilities
 - ▶ Quiet time detection to find best time for Online Reorg or to pick possible points of consistency for recovery



Product Features - Analyze and audit

- Produce easy-to-read reports on log activity
 - ▶ General overview or Detail
- Specify reports by various database resource criteria
 - ▶ Date, Time, Plan, User, Database, DBID, PSID, OBID
- Review changes
 - ▶ Database or DB2 catalog
- Results can be loaded into a DB2 table for analysis

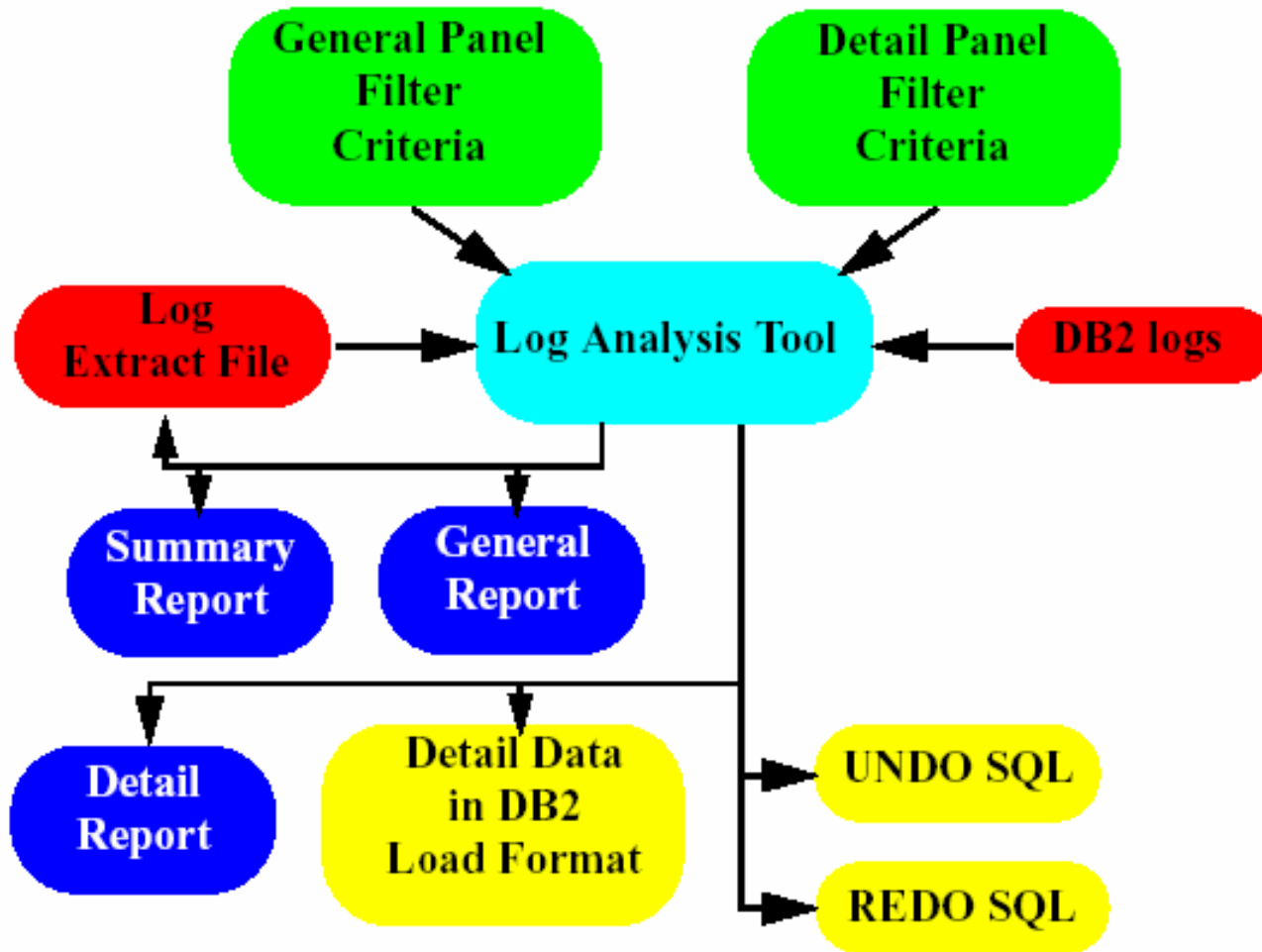


Product Features - Back out and migrate changes

- Back out integrity checking
 - ▶ Identify utilities
- UNDO SQL generation
 - ▶ Selectively reverse changes to your database
- REDO SQL generation
 - ▶ Produce SQL to replicate your changes
- Continuous mode (synchronized log extracts)
 - ▶ Keeps track of start date and time for next extract
- Stores details of uncommitted units of work



DB2 Log Analysis Tool - Overview

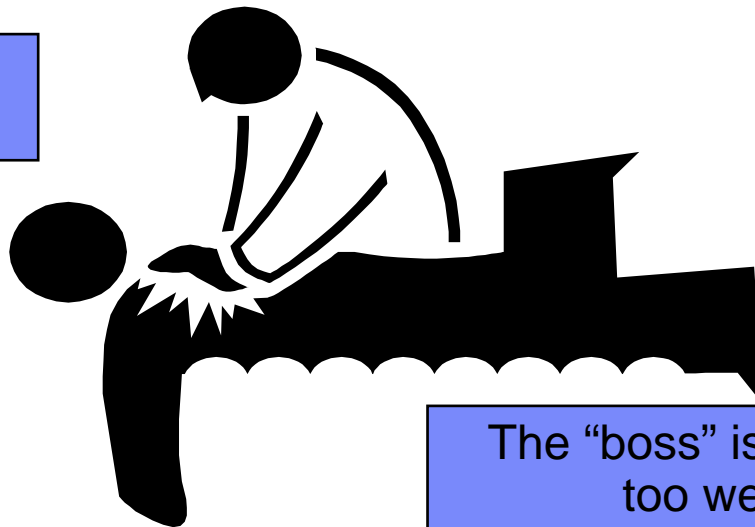


One scenario



Oh no, I didn't mean to update the Production payroll table!!!

Ann the application PGMr uses SPUFI....oops



The "boss" isn't taking it too well.....



What can we do to find the update?

- Run DSN1LOGP and hope we can find the update amongst the millions of log records
- Turn audit trace attribute on the PAYROLL table and catch the update the next time
- Send out an email and hope someone confesses

OR....

Dudley DBA can “pull it out” using The DB2 Log Analysis Tool and find out Who ran the update and generate an UNDO/REDO script



IBM DB2 Log Analysis Tool – Generate Report

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
----- Generate database activity report (general) ----- V2.1.0
COMMAND ==> _____

DB2 subsystem name.. => DSNB (SSID)      Action..... => E (E=Edit,S=Submit)
Generate details.... => Y (Y/N)          Job Identifier... => SYS24824
Data Sharing Mode... => N (Y/N)          Bypass SYSLGRNX.. => N (Y/N)
Specify Logs..... => N (Y/N)          Output mode..... => N (N/X/Q)

Log range:
Start/End Date-Time. => 2005/02/16 - 13.55.00 / 2005/02/16 - 14.10.00
Start/End RBAs..... => _____ / _____
Start/End LRSNs..... => _____ / _____
Continuous mode file => _____

Filters for log data:
Show UPDATES..... => Y (Y/N)          Show INSERTs..... => Y (Y/N)
Show DELETes..... => Y (Y/N)          Show rollbacks... => N (Y/N/O)
Include catalog data => N (Y/N)
Object filters..... => N (N=none, M=by Name, I=by IDs, A=Advanced)
Misc filters..... => Y (N=none, Y=by Authids, Plans, etc)
Filter file usage... => N (N=none, S=save, E=edit, U=use)
Filter file name.... => _____

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```

Summary Report – Shows object level information

```

SDSF OUTPUT DISPLAY SYS248T1 JOB08317 DSID 106 LINE 25 COLUMNS 02- 133
COMMAND INPUT ==> SCROLL ==> PAGE
OBJECT TYPE/NAME          UPDATES    INSERTS    DELETES    MD
-----
TABLE..... SYSIBM.TABLESPACESTATS    46         1         0
TABLE..... SYSIBM.INDEXSPACESTATS    62         0         0
TABLESPACE. DSNRTSTS                 108        1         0
DATABASE... DSNRTSDB                 108        1         0

TABLE..... ANLUSER0.REGISTRY          2          0         0
TABLE..... ANLUSER6.PLAN_TABLE        0          1         0          Y
TABLE..... ANLUSER6.DSN_STATEMNT_TABLE 0          1         0          Y
TABLE..... ANLUSER6.DSN_FUNCTION_TABLE 0          0         0          Y
TABLESPACE. ANLSPACE                  2          2         0          Y
DATABASE... ANLDBASE                  2          2         0          Y

TABLE..... ADB.ADBCHKPT               3          1         1
TABLESPACE. ADBSCH                    3          1         1
DATABASE... ADBDCH                    3          1         1

TABLE..... SYS248.PAYROLL              1          2         0
TABLESPACE. SYS248TS                  1          2         0
DATABASE... SYS248                    1          2         0

```

Let's take a closer look at this one

One update and 2 inserts



General Report shows more detail

```
=====
URID          DATE          TIME          AUTHID        PLAN          CONNTYPE      CONNID
-----
0011F8A5A5E0 2005-02-16 14:08:24 SYS248      ETIPLAN1     BATCH        DB2CALL

MEMBER ID LUWID= NETID/LUNAME/UNIQUE/COMMIT  LRSN          CORRID
-----
00000      USIBMNR /NDCDB202/BC950B872538/0001 BC950BA532AB SYS248

DBNAME  DBID  TSNAME  PSID  TABLE OWNER  TABLE NAME          OBID  ACTION/COUNT
-----
SYS248  00283 SYS248TS 00002 SYS248  PAYROLL              00045 I/1
=====
```

This is the first Insert



Summary Report

Take note of the URID

```

=====
URID          DATE          TIME          AUTHID        PLAN          CONNTYPE      CONNID
-----
0011F8A70671 2005-02-16  14:13:06  SYS248        ETIPLAN1     BATCH         DB2CALL

MEMBER ID LUWID= NETID/LUNAME/UNIQUE/COMMIT  LRSN          CORRID
-----
00000      USIBMNR /NDCDB202/BC950CA0A033/0001 BC950CB1E172 SYS248

=====
DBNAME      DBID  TSNAME      PSID  TABLE OWNER  TABLE NAME          OBID  ACTION/COUNT
-----
SYS248      00283 SYS248TS  00002 SYS248        PAYROLL              00045 U/1

```

Here is the update, lets take a closer look at this one



Details Report Generation

Note: We'll specify "generate UNDO SQL" and the URID from the SUMMRPT

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help

V2.2.0 ----- Generate database activity report (details) ----- DEMOMVS/DSNB

Action..... => E (E=Edit,S=Submit)
Job Identifier.... => _____ (8 character job identifier)
Log reading mode... => A (A=auto, B=backward, F=forward)
Commit scope..... => 000 (000-999)
Generate Undo SQL.. => Y (Y/N) Generate Redo SQL => N (Y/N)
Archive output.... => N (Y/N/S) Expert options... => N (Y/N)
Current row by key. => N (Y/N) Output flags..... => D (B/D/T)
WHERE clause by key => Y (Y/N)

Filters (applied against output of general report):
Bypass all filters. => Y (Y/N) Show UPDATES..... => Y (Y/N)
Show INSERTs..... => Y (Y/N/X) Show DELETES..... => Y (Y/N)
URID..... => 0011F8A70671
Object filters.... => M (N=none, M=by Name, I=by IDs, A=Advanced)
Misc filters..... => N (N=none, Y=by Authids, Plans, etc)
Filter file usage.. => N (N=none, S=save, E=edit, U=use)
Filter file name... => _____

COMMAND ==>
F1=HELP F2=SPLIT F3=END F4=RETURN F5=RFIND F6=RCHANGE
F7=UP F8=DOWN F9=SWAP F10=LEFT F11=RIGHT F12=RETRIEVE

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```


Detail Report - URID

Notice the before, after, and current row image is shown

```

ACTION DATE          TIME          TABLE OWNER  TABLE NAME          URID
-----
UPDATE 2005-02-16 14.13.06 SYS248          PAYROLL              0011F8A70671

DATABASE TABLESPACE DBID  PSID  OBID  AUTHID  PLAN      COMNTYPE  LRSN
-----
SYS248  SYS248TS  00283 00002 00045 SYS248  ETIPLAN1  BATCH     BC950CB1E173

MEMID CORRID          CONNID  LUW=NETID/LUNAME/UNIQUE/COMMIT  PAGE/RID
-----
000000 SYS248          DB2CALL  USIBMNR /NDCDB202/BC950CA0A033/0001 000000043/1A

ROW STATUS  FIRST_NAME          LAST_NAME
-----
CURRENT    Ernie              Mancill
POST-CHANGE Ernie              Mancill
PRE-CHANGE Ernie              Mancill

ROW STATUS  TITLE              SALARY#
-----
CURRENT    System Programmer  +150000
POST-CHANGE System Programmer  +150000
PRE-CHANGE System Programmer  +50000

```

SQL Undo/Redo File

Finally, we see the SQL to UNDO the update based on the URID specified
In the Detail Report setup screen

```
BROWSE      SYS248.SQLOUT                               Line 00000000 Col 001 080
***** Top of Data *****
--UNDO SQL FOR SUBSYSTEM: DSNB
--#00000001 *UNDO UPDATE*  URID:0011F8A70671  DATE/TIME:2005-02-16/14.13.06  ....

UPDATE
"SYS248"."PAYROLL"
SET
  "SALARY" = +50000
WHERE
  "FIRST_NAME" = 'Ernie'
AND "LAST_NAME" = 'Mancill'
AND "TITLE" = 'System Programmer'
AND "SALARY" = +150000
;
```

DB2 Log Analysis Tool – Quiet Time Analysis

Using these time ranges for our Log search:

```
LOG RANGE
-----
START DATE       : 2005/02/16
START TIME       : 11:30:00
END DATE         : 2005/02/17
END TIME         : 13:00:00
```

```
INCLUDE-TABLESPACE, SYS248.SYS248TS
```

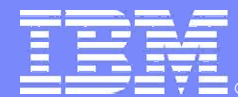
```
REQUESTED QUIET TIME THRESHOLD: 00:30:00
```

```
START QUIET TIME (2005-02-16 11:30:00) ... END QUIET TIME (2005-02-16 14:08:24)
      RBA/LRSN (0011F8209000) ... RBA/LRSN (0011F8A5A5E0)
START QUIET TIME (2005-02-16 14:13:06) ... END QUIET TIME (2005-02-17 13:00:00)
      RBA/LRSN (0011F8A7080C) ... RBA/LRSN (0011FACC2DB0)
```

In this example, we see that there were updates occurring between 14:08 and 14:13 on 02/16. Other than that, no other updates occurred

Quiet Time Information is also stored in a DB2 table for use by other IBM tools





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Change Accumulation Tool

Product Overview



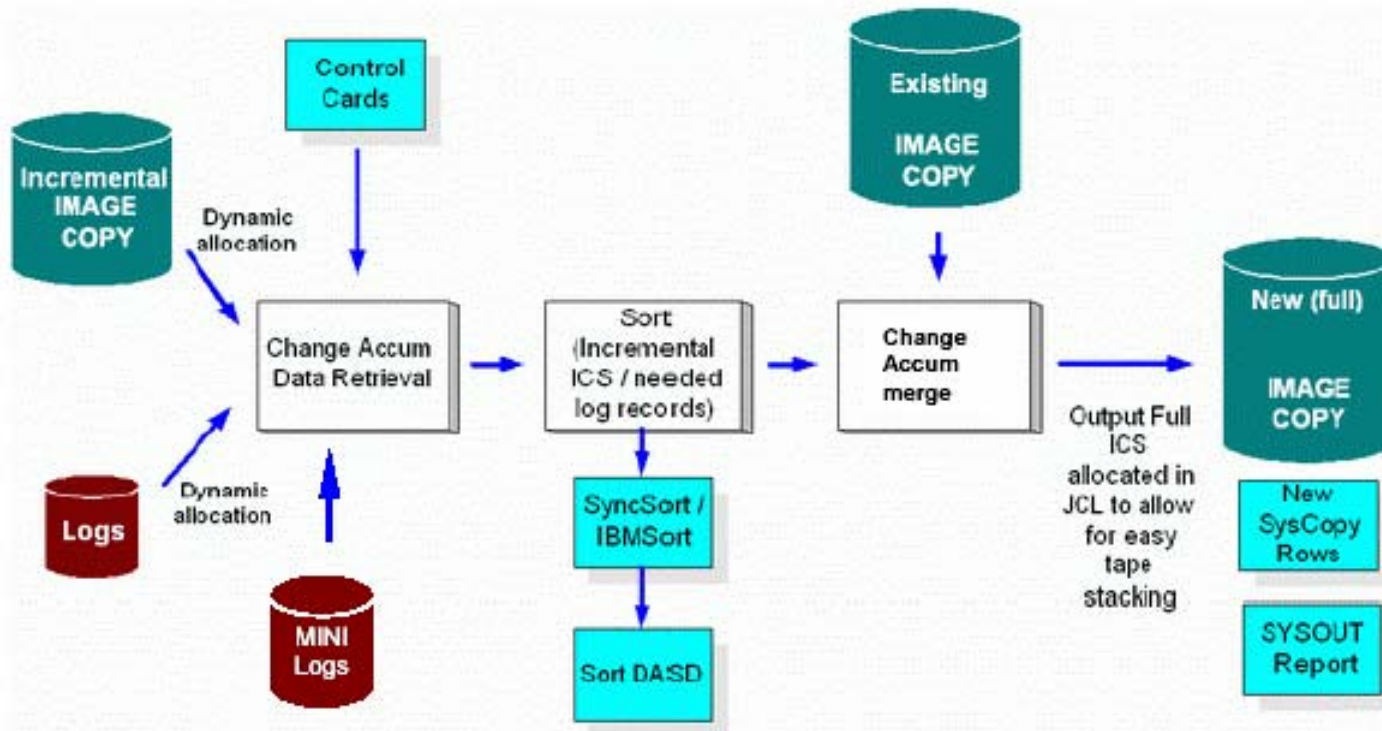
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DB2 Change Accumulation Tool- Summary

- IBM DB2 Change Accumulation Tool for z/OS is a powerful tool for backing up database objects in a precise and non-disruptive manner.
 - ▶ IBM DB2 Change Accumulation Tool for z/OS enables you to create both mini logs and image copies of DB2 table spaces by reading the most recent image copy of a table space and applying pertinent DB2 log information.
 - ▶ Table spaces remain unaffected and available for processing during the image copy process (shrlevel reference or change).
 - ▶ DB2 Change Accumulation Tool is capable of pointing its output to the VSAM file underlying the actual DB2 table space, and in essence becoming a recovery tool.



Product Architecture



Change Accumulation Tool Features

Makes precise “point-in-time” recovery of database objects

Allows recovery routines to focus on single objects and previous states

Produces SHRLEVEL REFERENCE image copies without the associated overhead and data locking

Controls the scope and specificity of image copy creation precisely via control cards

Maintains data integrity without recovery to RBA

Reduces recovery session times significantly in many cases

Incurs low overhead and minimizes downtimes for high-volume, complex databases with large numbers of tables and dependencies



Change Accumulation Tool “Utility” Profile

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
GGC$VOPT V1R3 ----- Utility Profile Options ----- 2005/02/17 09:54:11
Option ==> _____

Creator: DNET018      Profile: CAT IMAGE COPY      User: SYS248

Share Option ==> U (Upd/View/No) Description: IMAGE COPY TO ASPECIFIED POIN

                Include in          Update Utility
                Profile              Options

Mini Log Dataset Name Generation ==> N (Yes/No)      ==> N (Yes/No)
Image Copy Dataset Name Generation ==> Y (Yes/No)      ==> N (Yes/No)

Profile options:
End point ==> S (Current/Quiese/Specified)
Specified end point ==> X' D7C9E36DD9C2 ' (When End Point is 'S')
Add SYSCOPY rows on completion ==> Y (Yes/No)
SYSCOPY scan operating mode ==> L (Local site/Recovery site/Zparm)
Process Log Mode ==> 1 (1 pass/2 pass)
Write Mode ==> I (Image copy/Vsam/Both)
Buffers in 31 bit storage ==> N (Yes/No)

F1=HELP      F2=SPLIT      F3=END      F4=RETURN      F5=RFIND      F6=RCHANGE
F7=UP        F8=DOWN       F9=SWAP     F10=LEFT      F11=RIGHT     F12=RETRIEVE

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```


Change Accumulation Tool - Image Copy Options

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
GGC$VIMG V1R3 ----- Image Copy Options ----- 2005/02/17 09:56:28
Option ==> _____

Creator: DNET018      Name: CAT IMAGE COPY      User: SYS248

Enter the Image Copy options to associate with this utility profile

                Take Image Copy:      View/Update Options:

Local Primary      ==> _      (Yes/No)      ==> N      (Yes/No)
Local Backup       ==> _      (Yes/No)      ==> N      (Yes/No)
Recovery Site Primary ==> _      (Yes/No)      ==> N      (Yes/No)
Recovery Site Backup  ==> _      (Yes/No)      ==> N      (Yes/No)

F1=HELP      F2=SPLIT      F3=END      F4=RETURN      F5=RFIND      F6=RCHANGE
F7=UP        F8=DOWN       F9=SWAP     F10=LEFT      F11=RIGHT     F12=RETRIEVE

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```

Change Accumulation Tool – Dataset Options

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
GGC$VCPO V1R3 ----- Image Copy Options ----- 2005/02/17 09:58:35
Option ==>

Creator: DNET018      Name: CAT IMAGE COPY      User: SYS248

Enter the Image Copy options to associate with this utility profile
on the LOCAL PRIMARY dataset.

Update DSN create spec => N                (Yes/No)
Unit Type               => SYSDA_____ (CART/DISK/etc.)
Catalog                => Y                (Yes/No)
Data Class              => _____ (8 character class)
Storage Class           => _____ (8 character class)
Management Class       => _____ (8 character class)
Tape specific parameters (only needed if Unit Type is a Tape device):
Expiration date *or*   => _____ (YYYYDDD)
Retention period       => _____ (4 digit number)

F1=HELP      F2=SPLIT      F3=END      F4=RETURN      F5=RFIND      F6=RCHANGE
F7=UP        F8=DOWN        F9=SWAP     F10=LEFT      F11=RIGHT     F12=RETRIEVE

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```

Change Accumulation Tool – DSN Options

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
GGC$VCPN V1R3 ----- LP Image Copy DSN Generation ----- 2005/02/17 09:59:00
Option ==> _____
Creator: DNET018      Name: CAT IMAGE COPY      User: SYS248
Enter the dataset name generation code to append to the image copy DSN:

Qualifier code ==> __ Free form literal ==> _____ Show DSN ==> N
Current dataset name generation qualifier string:
&UID..&SSID..&DB..&SN..D&JDATE._____

Valid dataset name generation codes are:
( * marked items are not supported in IC dynamic dataset generation.)
 1. Database                11. Date (YYYYDDD)      * 21. GDG (+1)..(+n)
 2. Space Name              12. Year (YYYY)        22. ICBACKUP (#23.#24)
 3. Partition               13. Month (MM)         23. Local/Recovery (L/R)
 * 4. DSNUM                  14. Day (DD)           24. Primary/Backup (P/B)
 * 5. Partition when partitioned  15. Julian Day (DDD)  25. ICTYPE (Full/Incr)
 * 6. DSNUM when partitioned  16. Hours (HH)        26. Utility Name
 * 7. Vcatname               17. Minutes (MM)      27. Job Name
 8. Subsystem ID            18. Seconds (SS)      28. Step Name
 9. User ID                  * 19. Timestamp        29.
10. Time (HHMMSS)           * 20. Random Number    30. Use freeform literal

F1=HELP      F2=SPLIT      F3=END      F4=RETURN      F5=RFIND      F6=RCHANGE
F7=UP        F8=DOWN       F9=SWAP     F10=LEFT       F11=RIGHT     F12=RETRIEVE

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06/024

```

Mini Log Generation

Mini logs are data sets that contain DB2 log information for a specific table space (or sets of table spaces).

Mini logs extract portions of the DB2 log that pertain to the object being processed. By using DB2 Change Accumulation Tool to create an alternate mini log data set that is then stored in a Change Accumulation Tool-maintained database, you can speed and facilitate recoveries.

If mini logs are present, they will be used instead of the entire DB2 log. Mini logs shift the I/O time spent in reading vast portions of the log (even when SYSLGRNX is factored in) which contain no relevant data, to non-critical times.

If mini logs are found, Change Accumulation Tool can then gain log information directly from the concentrated mini log file(s) for the pertinent RBA ranges rather than having to read the entire DB2 log to acquire the same information.



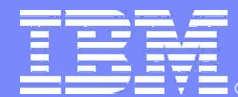
Write to VSAM

`WRITE_TO_VSAM` enables users to write changes to the underlying VSAM file.

When writing to an underlying VSAM file, DB2 Change Accumulation Tool uses the most recent image copy, any incremental image copies, any mini logs in existence, and DB2 log information and writes directly to the underlying VSAM file for the DB2 table space of interest.

Current product architecture forces a recovery to `CURRENT` when using `WRITE_TO_VSAM`, the ability to specify a `PIT` or `QUIESCE` point is a very high product requirement





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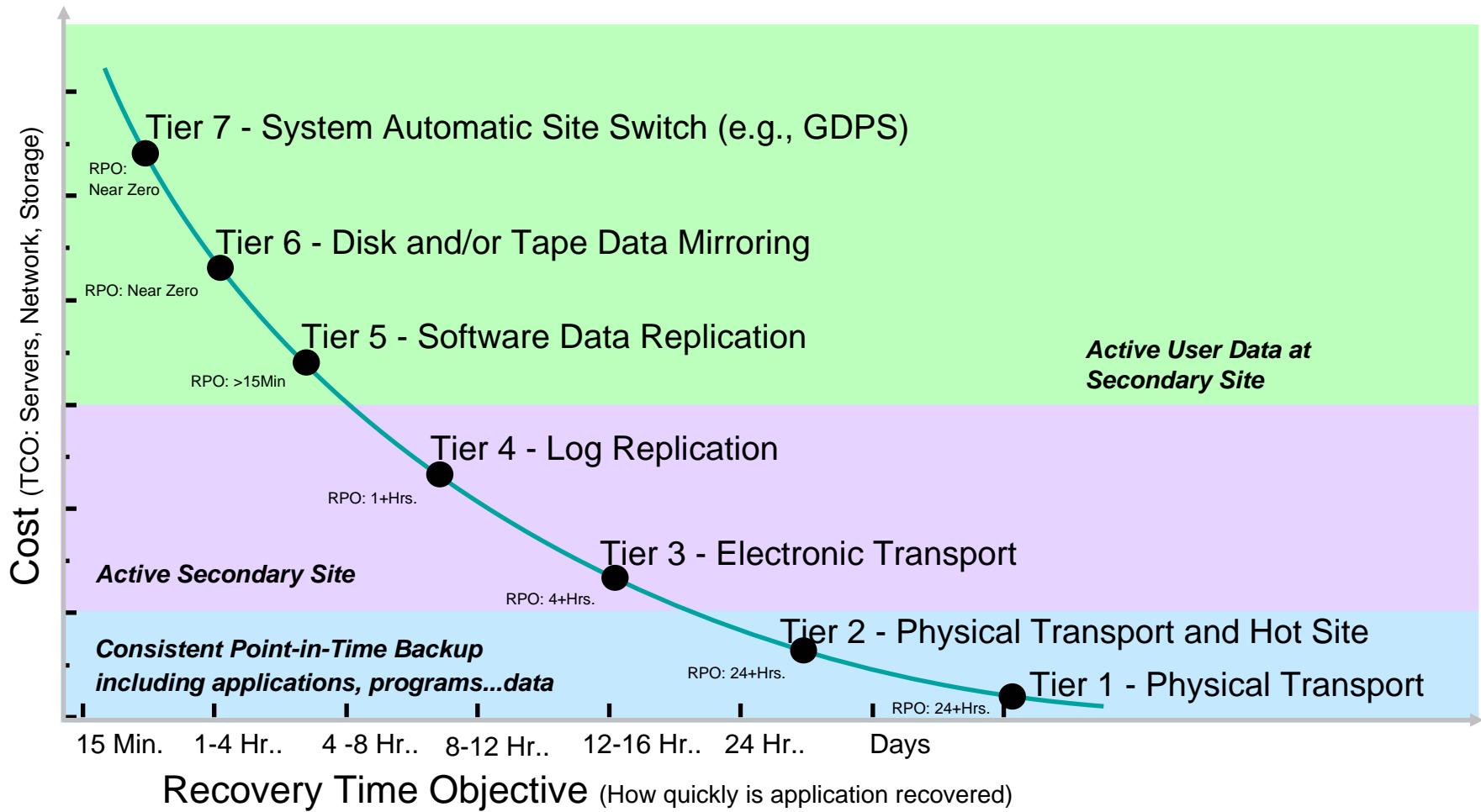
DB2 Automation Tool

Product Overview



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Recovery Components: Disaster Recovery Recovery Point Objectives (Amount of lost data)

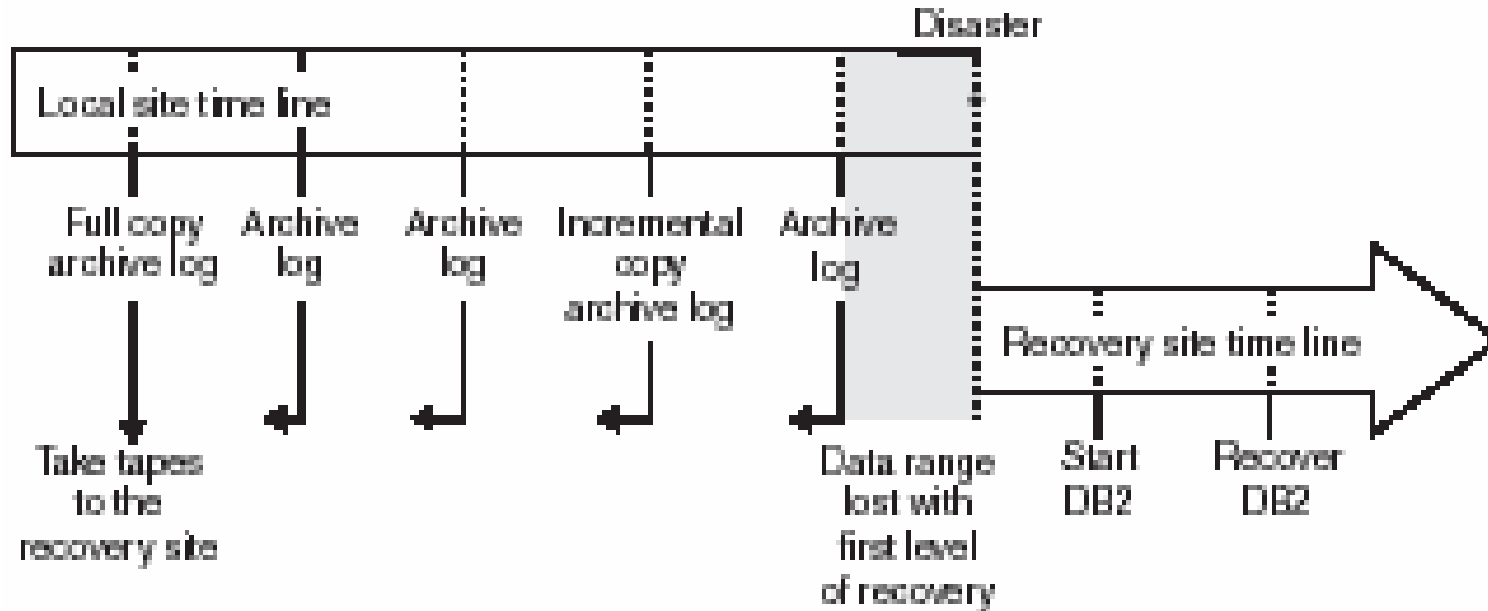


Ref: <http://www.eservercomputing.com/mainframe/articles/index.asp?id=781>

Tiers developed by SHARE Technical Steering Committee circa late 1980s



Preparing for disaster recovery – Materials at recovery site



Automation Tool - D/R Profile

One primary profile should be created that includes forcing a checkpoint and forcing the active log to archive. (Run once a day) This job also builds JCL to:

- Search the catalog and find all appropriate image copies

- Catalog the image copy data sets

- Copy the archive logs

- Rebuild the BSDS.

The PDS that contains the DR jobs and control records will contain the contents of the BSDS. This eliminates the need to mount tapes at the recovery site to build the BSDS.

A secondary profile is built (run periodically during the day), the disaster recovery batch job that is produced

- Updates the archive log

- Backs up and rebuilds the BSDS.

DB2 Automation Tool – D/R Generation

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
-----
HAA$YPRU  V2R1 ---- Update Disaster Recovery Profile ---- 2005/02/17 10:57:33
Option  ==>

-----
Creator: SYS248      Name: D/R PROFILE TEST GENERATION      User: SYS248
Share Option: U    (Upd,View,No)      Description:
-----

Archive Log Options
Archive Logs used at DR          ==> 2      (Copied/1/2)
Copy Localsite Logs             ==> 2      (1/2/Both/Create 2 copies from 1)
Force a checkpoint before Archiving ==> N      (Yes/No)
Force the Active log to Archive  ==> Y      (Yes/No)
Only run Archive Log Update Process ==> N      (Yes/No)
Process Datasharing Subsystems  ==> A      (All,Ssid,Lpar)
Archive Logs needed at DR       ==> 001 (days) and/or 000 (hours)
Copy Archive Logs to DASD       ==> 001 (days) and/or 000 (hours)
Unit for copying Archive Logs   ==> SYSDA
DR Archive Log Prefix 1         ==> DSNBCAT.ARCHLOG1
DR Archive Log Prefix 2         ==> DSNBCAT.ARCHLOG2

Image copy Options
Image Copies used at DR         ==> R      (Localsite/Recoverysite)
Catalog x days of Image Copies at DR ==> 001 (0-365)

F1=HELP      F2=SPLIT    F3=END      F4=RETURN   F5=IFIND    F6=RCHANGE
F7=UP        F8=DOWN     F9=SWAP     F10=LEFT    F11=RIGHT   F12=RETRIEVE

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```

Materials to be shipped to D/R site

The necessary recovery data sets should be placed on tape and shipped to a remote site. These include:

The recovery PDS - The DR batch jobs' output is generated to a PDS. At a minimum, this PDS contains two DR jobs and other necessary members to be used at the recovery site

The copies of the archive log data sets.

Image copy data sets for the DB2 catalog.

Image copy data sets for the application spaces.



Jobs run at D/R Site

1. Issues IDCAMS DELETE NOSCRATCH to delete all catalog and user objects from the MVS catalog.
2. Restores the DB2 catalog VSAM files. All VSAM and non-VSAM catalog files, log files, BSDS, and user VCAT-defined objects are created with the proper allocations.
3. Catalogs all the image copies from the last n number of days (as specified in the DR profile).
4. Rebuilds the BSDS from the 80-byte record file, placing it back into 4089-byte records.
5. Restores the BSDS by placing the 4089-byte records into a VSAM file.
6. Creates a conditional restart. **Note:** For data sharing environments, steps 4, 5, and 6 are performed once per group member.
7. Uncatalogs the tape archive logs.
8. Copies the uncataloged tape archive logs to DASD and catalog them

Additional Local-site Preparation of D/R materials

- You can also elect to build and execute your local site image copy jobs for the Catalog and Directory tablespaces using DB2 Automation Tool.
- You could also build your application object backup jobs and manage them a well.
- Finally you can elect to build your recovery jobs ahead of time and schedule their execution using Automation Tool prior to the D/R profile execution at the Local Site Some samples follow....



DB2 Automation Tool – Catalog / Directory Profile

Session A - [24 x 80]

File Edit View Communication Actions Window Help

DLC\$OPRV V2R1 ----- View Object Profile Display ----- 2005/02/17 11:05:39

Creator: HAASAMP Profile: DB2 CATALOG AND DIRECTORY User: SYS248

Share Option: V (Upd,View,No) Description: DSNDB01 DSNDB06 TABLESPACES
Row 1 of 2 >

Cmd	Type	Wild Card	Process Indexes	Include/Exclude	IX TS Crtr	DB Name/ Crtr	Volume / IX Crtr/ DB Name	IX Name/ TS Name	Part
	TS	Y	N	INC	*	DSNDB01	*		ALL
	TS	Y	N	INC	*	DSNDB06	*		ALL

***** Bottom of Data *****

Option ==>

F1=HELP	F2=SPLIT	F3=END	F4=RETURN	F5=IFIND	Scroll ==> PAGE
F7=UP	F8=DOWN	F9=SWAP	F10=LEFT	F11=RIGHT	F6=RCHANGE
					F12=RETRIEVE

MA a 22/015

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DB2 Automation Tool – Image Copy Options

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
Image Copy options ----- 2005/02/17 11:06:24
HAA$VTSC V2R1 -----
Option ==>
Creator: HAASAMP      Name: COPY TO TAPE      User: SYS248
Image Copy Utility mode      ==> D      (DB2/Symmetrix/Ess)
Dis EMC Symm/IBM ESS Options ==> N      (Yes/No)
Display Image Copy DSN specs ==> N      (Yes/No)
Utility ID                   ==> COPY      (16 characters)
Parallel                      ==> N      (Yes/No)
  Number of objects          ==>          (0 - 99)
  Number of tape units       ==>          (0 - 99)
Filter DDname                 ==>          (8 character DD name)
Sharelevel                    ==> R      (Reference/Change)
Full Image Copy               ==> Y      (Yes/No)
Check Page                    ==> N      (Yes/No)
Concurrent                    ==> N      (Yes/No)
Change Limit
  First Percent Value        ==>          (Percentage value)
  Second Percent Value       ==>          (Percentage value)
  Report only                ==> N      (Yes/No)
Max Tape Volume/DASD Unit Cnt ==> 5      (1-255 volumes)
Stack Copy Control Cards      ==> Y      (Yes/No)

F1=HELP      F2=SPLIT      F3=END      F4=RETURN      F5=IFIND      F6=RCHANGE
F7=UP        F8=DOWN       F9=SWAP     F10=LEFT      F11=RIGHT     F12=RETRIEVE

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```

DB2 Automation Tool – Recover Utility Options

```

Session A - [24 x 80]
File Edit View Communication Actions Window Help
DLC$VRCL V2R1 ----- Recover Utility Log Options ----- 2005/02/17 11:07:45
Option ==> _____

Creator: HAASAMP      Name: RECOVER      User: SYS248

Object event          ==> _      (Quiesce/blank)
Event generation      ==> 00      (00/-1/-2/-3/.../-9)

Select point-in-time ==> N      (Yes/No)
Log RBA/LRSN         ==> _____ (blank = current)
Log timestamp:

Reuse existing datasets ==> N      (Yes/No/Logonly)
Parallel object restores ==> N      (Yes/No)
Max nbr of parallel objects ==> 0      (0 = optimal)
Nbr of dynamic tape drives ==> 0      (0 = optimal)

F1=HELP      F2=SPLIT      F3=END      F4=RETURN      F5=IFIND      F6=RCHANGE
F7=UP        F8=DOWN       F9=SWAP     F10=LEFT      F11=RIGHT     F12=RETRIEVE

MA a
02/015
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```


References and additional Information

- For Log record contents and formats:
 - ▶ DB2 UDB for z/OS Administration Guide: SG26-9931-03
- For DB2 Log Analysis Tool:
 - ▶ DB2 Log Analysis Tool User Guide:
- For U/R information:
 - ▶ DB2 UDB for z/OS Diagnosis Guide and Reference: LY37-3740-00
- Or visit the DB2 and IMS Tools website:
 - ▶ WWW.SOFTWARE.IBM.COM/DATA/DB2IMSTOOLS

