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Data Management

DB2 Advanced Recovery Solutions

January 26, 2012

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> Speaker



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IBM





Traditional DB2 LUW Recovery Methodologies

- DB2 Database or Table Space BACKUP and RESTORE
 - Database Partition Granularity
- HADR
 - Database failover from Primary to Standby
- Replication Based Solution
 - Capture changes in database and replicate to another system
- Others ...





IBM DB2 Advanced Recovery Solutions for LUW

- Complement, Extend, Simplify, ...

- *DB2 Recovery Expert*
- *DB2 Merge Backup*
- *Optim High Performance Unload*





InfoSphere Warehouse Advanced Enterprise Edition

Solution: *Advanced Editions for Warehousing*



InfoSphere Warehouse Model Packs for *fast out of the box* experience

- Ready to Go Customer, Campaign, and Inventory Analytics Packs
- Adds additional Value and Business Content to InfoSphere Warehouse



Optim Tools to *complete the warehouse packaging*

DB2 Recovery Expert, DB2 Merge Backup, High Performance Unload

- Addresses cost of backup and recovery management
- Increases speed to backup or export large warehouse objects
- Enhances ability to recover from user or application error

InfoSphere Data Architect

- Enhances the enterprise design capabilities of the warehouse

Optim Query Tuner

- Lower cost of management and ownership with new tuning capabilities



Simplifies the selling and purchasing process

- Provides complete portfolio solution for warehousing
- Everything is contained in one product
- Maximizes the competitive values of the IBM Warehouse Package





DB2 Recovery Expert for LUW



Recovery Expert V3.1 (eGA June 17 2011, FP1 1Q12)

- Recovery Expert (RE) is a *log analysis* and *recovery tool* that manages DB2 systems
- Log analysis is facilitated through processing of DB2 log files
- Recovery is facilitated through DB2 log files and available recovery assets i.e. backups
- There is minimal disruption to DB2
- In addition to full license there is the option of installing 30-day Trial license version

Value Proposition:

Recovery Expert provides a simple and intuitive interface to manage and report on database changes through log analysis as well as facilitate recovery in instances of either *logical* or *physical* data errors.





What Can Recovery Expert for DB2 LUW Do?

- Evaluates the available recovery assets to determine which recovery paths are possible to recover the object to the requested point-in-time
- Dropped Table Recovery without Table Space level restore
- Data change reporting through log mining (*Who? What? When?/‘Quiet Time’*)
- Generate DML for recreation, rolling back or going forward ([SQL Undo/Redo](#))
- Easy to use environment for less experienced DBAs

Reduce Disaster Recovery (DR) time

Eliminate user data errors

Track and report data changes for auditing purposes





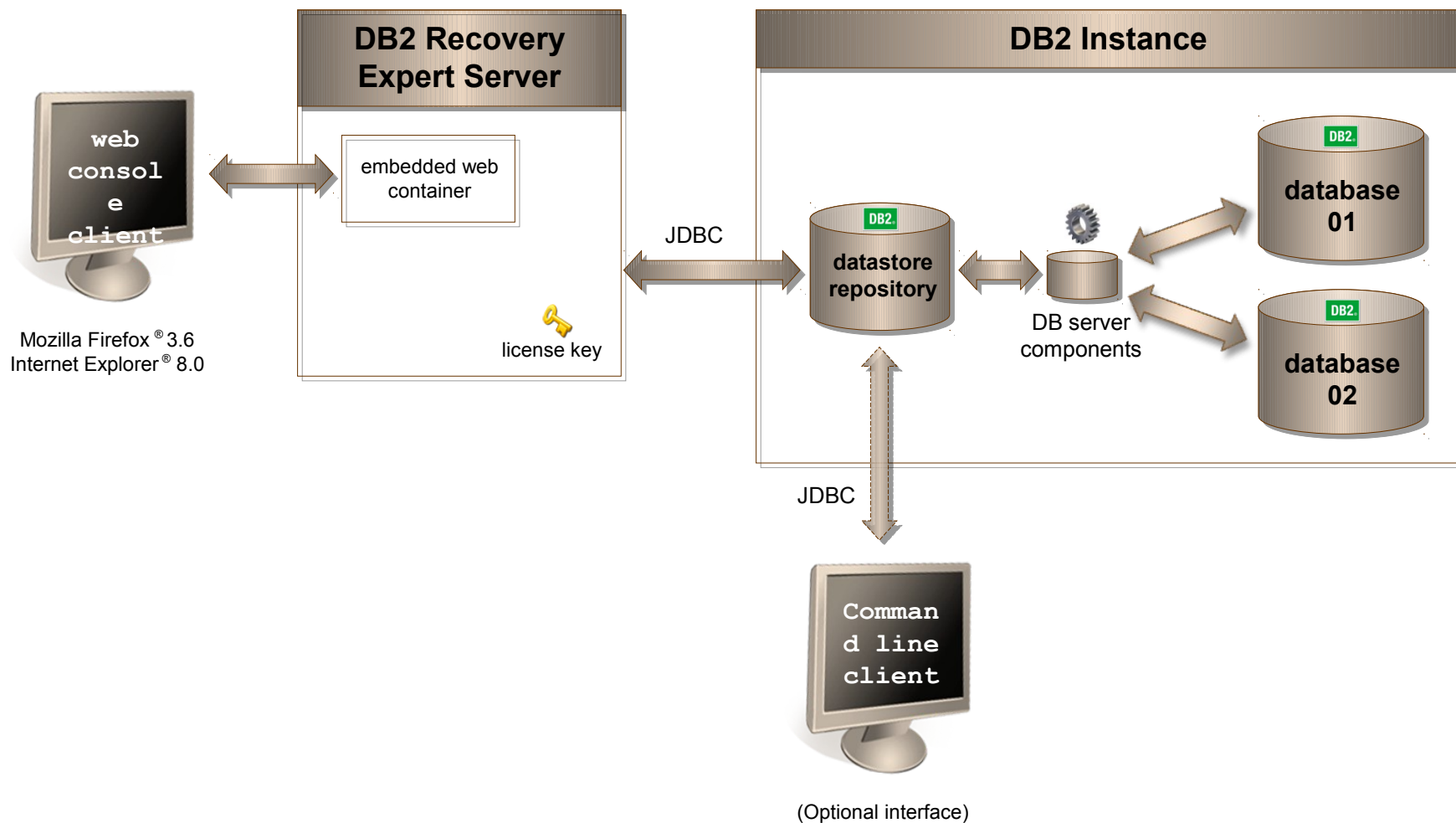
Recovery Expert: Supported Configurations

- Two types of client interfaces:
 - Web browser console
 - Java Command Line
- Supports DB2 LUW V9.1, V9.5, V9.7
- Supported OS versions:
 - AIX (5.3, 6.1 and 7.1) 64-bit; Linux on xSeries (RHEL 5, SLES 10 and 11) 32 and 64-bit; Solaris 10 (SPARC) 64-bit; Windows (7 Professional/Enterprise, XP, Vista, Server 2003/ 2008 all editions) 32 and 64-bit, HP-UX 11 (FP1)





DB2 Recovery Expert for LUW: Client-Server Architecture





IBM DB2 Recovery Expert: Startup View

The screenshot shows the IBM DB2 Recovery Expert console in a web browser. The browser address bar displays `localhost:9080/recoveryexpert/console/recovery/index.jsp`. The page title is "IBM DB2 Recovery Expert". In the top navigation bar, the "Task Manager" menu item is circled in red. A red arrow points from this menu item to a red starburst callout containing the text "Starting point for all RE actions". The main content area displays a "Welcome to Recovery Advisor" message, followed by instructions on how to use the Recovery Advisor, including selecting location, objects, point in time, options, and a recovery plan. At the bottom of the page, there are "Next >" and "Run" buttons.

IBM DB2 Recovery Expert

Task Manager

Welcome

Overview x New Tab

Overview

Location

Objects

Point in time

Options

Dependencies

Recovery plan

Status

Welcome to Recovery Advisor

The Recovery Advisor assists you through the steps of recovering data and dropped objects for a database.

Location: Select the location of the database.
Objects: Select the objects to recover.
Point in Time: Select a Point in Time (PIT) to recover to.
Options: Optionally, define additional search locations for log files and backups.
Recovery plan: Generate a recovery plan, review and choose a plan, then launch the selected recovery plan.
Status: Review the result.

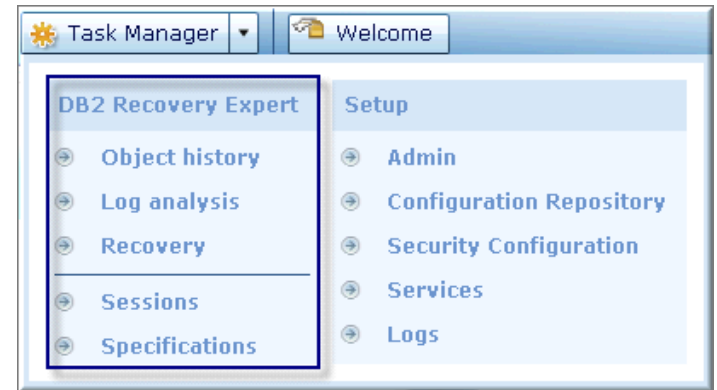
When you are working with the Recovery Advisor, you can save your work in progress and return to it at a later point in time. Click **Save** at any point to create a recovery specification.
When you save a specification, any work that is currently running on your behalf continues running at the database location. You can review its results when you reopen the specification.

Skip this page next time

Save...

Next > Run

Recovery Expert: Task Manager



- *Object History*

- Manage history information about the objects in your database

- *Log Analysis*

- Mine database logs and generate reports as well as Redo or Undo SQL

- *Recovery*

- Perform a recovery plan for a set of database objects

- *Sessions*

- Track currently running and completed Object History, Log Analysis and Recovery operations

- *Specifications*

- Save a set of user specified values for Object History, Log Analysis or Recovery and run the same task at a later time





Log Analysis: Use-Cases

- Monitor data changes and isolate undesired/accidental changes
 - Large unexplained spikes in log activity

 - Transactions not committing

 - Determine which objects 3rd party applications are involved with

 - Correct logical data errors via Undo SQL generation
 - Ran monthly batch job instead of weekly
 - Delete script with wrong parameters

 - Who changed what and when?
 - Someone dropped a table
 - What indexes existed on it?
 - Generate regular audit report for change activity





Log Analysis Reports

- **Report Filtering by:**
 - Application ID, application name, table name and ID, table space name and ID, Log Sequence Number (LSN), transaction ID, partition group, authorization ID, schema
 - Include or exclude filtering and wildcards
 - Post filtering to apply different filters to a Log Analysis report
- **Operations Filtering by:**
 - Insert, Update, Delete
 - Transaction status: Committed, Partial, Uncommitted, Rolled Back
- **Report Types:**
 - Summary or Summary + Detail
- **Report Formats:**
 - CSV, XML, text





Log Analysis: GUI Illustration

- Log analysis report with Undo generated to back out transactions

The screenshot shows the 'Log analysis' window with a 'New Tab' button highlighted. The interface includes a sidebar with navigation options (Overview, Location, Report, Objects, Filters, Options, Status, Result) and a main content area. The 'Tables' section is expanded, showing a list of tables: DBAPOT.NEW_TABLE, GOSALES.INVENTORY_LEVELS, and GOSALES.PRODUCT_LINE. The 'Transactions' table is displayed with columns: Local Transac, Transaction L, Date, Time, and Status. The 'Operations' table is also visible with columns: LSN, Action, Node, Partition grou, and Tables. A callout box labeled '1. Tables' points to the table list, stating 'Show which tables any transactions have affected'. Another callout labeled '2. Transaction' points to a transaction row, stating 'Select the transaction you wish to review'. A third callout labeled '3. Single DML operation' points to an 'Insert' action in the operations table, stating 'See each DML operation for that transaction'. A fourth callout labeled '4. Undo' points to the bottom of the window, stating 'Review the Undo SQL for each DML operation' and 'Run Undo SQL if desired'. The bottom of the window displays the SQL command: DELETE FROM "DBAPOT"."NEW_TABLE" WHERE "COL1" = 'TEST1 ' AND "COL2" = 1





Sample Log Analysis Report

STATISTICS

NGNAME	UPDATES	INSERTS	DELETES
IBMCATGROUP	1966	160	0
IBMDEFAULTGROUP	0	24	0

TSNAME	UPDATES	INSERTS	DELETES
IBMDB2SAMPLEREL	0	24	0
SYSCATSPACE	100	159	0
SYSTOOLSPACE	1866	1	0

LOCAL TRANSACTION ID	COMMIT LSN	DATE	TIME	STATE	AUTHID	GLOBAL TRANSACTION ID
00000001FB2C	00000000059D8536	2011-10-03	15:25:49.000001	COMMITTED		

NGNAME	TSNAME	TABLE OWNER	TABLE NAME	ACTION	PARTITION	LSN
IBMDEFAULTGROUP	IBMDB2SAMPLEREL	BILLM	ORG2	I	0	00000000055F23A7
IBMDEFAULTGROUP	IBMDB2SAMPLEREL	BILLM	ORG2	I	0	00000000055F240B
IBMDEFAULTGROUP	IBMDB2SAMPLEREL	BILLM	ORG2	I	0	00000000055F246B

TABLE	UPDATES	INSERTS	DELETES
BILLM.ORG2	0	24	0
SYSIBM.SYSCOLDIST	0	150	0

TOTAL STATISTICS

TOTAL INSERTS : 184
TOTAL UPDATES : 1,966
TOTAL DELETES : 0





DB2 Recovery Expert: 'Recovery'

- Automatically determine the most efficient method for any given recovery situation

- Recover database objects to a user specified point-in-time
 - _ Avoid using resource intensive disaster recovery i.e. database/table space restores
 - _ Save recovery scenarios for reuse

- Recover dropped objects (RE maintains database object history)

- Ability to extract consistent data from online backup image via CLP

- Roll back unwanted data changes throughout a database (Undo/Redo SQL)
 - _ Keep the system online during this time

- Automatic recovery of related objects, i.e. Referential integrity referenced tables, Indexes, Views, Triggers, Functions, Procedures





Recovery: "Recovery plan" Perspective

IBM DB2 Recovery Expert console showing a recovery plan for 'SAMPLE' database. The interface includes a navigation menu, overview details, a table of scenario steps, selected step details, and status messages.

Overview

Review the available recovery plans and select a plan to perform the recovery for the database objects that were previously specified.

Host: bminor01, Instance: DB2, Target database: SAMPLE Get trace...

Created on 2011-06-07 11:03:38 Status ⚠ Aryplan generated scenario successfully with 5 warning(s).

Session ID 2

Active scenario Extract data from backup image and generate redo SQL (1) Regenerate

Scenario steps Restore all

Step	Description	Partition
1	Drop existing objects	0
2	Create objects	0
3	Create objects	0
4	Run recovery components	0
5	Extract	0
6	Load	0
7	Backup	0
8	Set integrity	0

Selected step details Restore

Option	Value
<input checked="" type="checkbox"/> Save mode	Make backup
<input type="checkbox"/> Table	Save load copy
	Make backup

Status messages Copy status

Message

ARY0200I: Generate scenario based on Extract data from backup image and generate undo SQL

ARY0200I: Generate scenario based on Generate undo SQL from current state

ARY0044W: Cannot recover the table: 'BILLM','STAFF' from current table. Between PIT and current table there are some table geometry changes.

ARY0042W: Cannot recover at least one object by scenario: Generate undo SQL from current state

Save... < Previous Next > Run





GUI Recovery Illustration

- Recovering a table called NEW_TABLE along with its dependent objects

1. Dropped object
Find one or more dropped objects to restore. In this example, a table.

2. Dependencies
All dependencies automatically determined and ready to be restored

3. Scenarios
Multiple scenarios can be determined. Review for the one that works best for you.

4. Steps
Each scenario is made of steps where you can review each step before running.

Dependencies
List of all dependent objects

- Group for DBAPOT.NEW_TABLE
 - Indexes
 - DBAPOT.NEW_INDEX
 - Schemas
 - DBAPOT
 - Tablespaces
 - USERSPACE1
 - Views
 - DBAPOT.NEW_VIEW

Created on 2011-06-21 17:20:39 Status ✔ Aryplan generated scenario successfully.
 Session ID 2
 Active scenario **Recreate object definitions from the SLR and generate Redo SQL (1)**

Scenario steps Restore all

Step	Description	Partition
1	Drop existing objects	0
2	Run recovery components	0
3	Generate Redo SQL	
4	Apply SQL	0

Selected step details

Option





Recovery Expert: Command Line Interface

- In addition to the RE GUI, one can install the Java based client
 - ◻ Interactive shell mode or accepts an input file of commands to perform in batch mode
 - ◻ Allows many of the web console functions but not all
 - ◻ Principal functions: (1) [Batch Log Analysis](#) (2) [Data Extraction](#)

```
ox Recovery Expert CLP Client
ary> help
Command summary:

Connection related commands:
    add datastore connection          reset connection
    drop datastore connection        set current connection
    list datastore connections        show current connection

Action commands:
    apply SQL                          run la                run ddlmaker
    export report                       run ox
    export SQL                          run slr

Status and session commands:
    get slr info                        save session
                                        unsave session

Type:      help <command name> or ? <command name>
to show arguments and additional details for a specific command.
Example:
    help add datastore connection

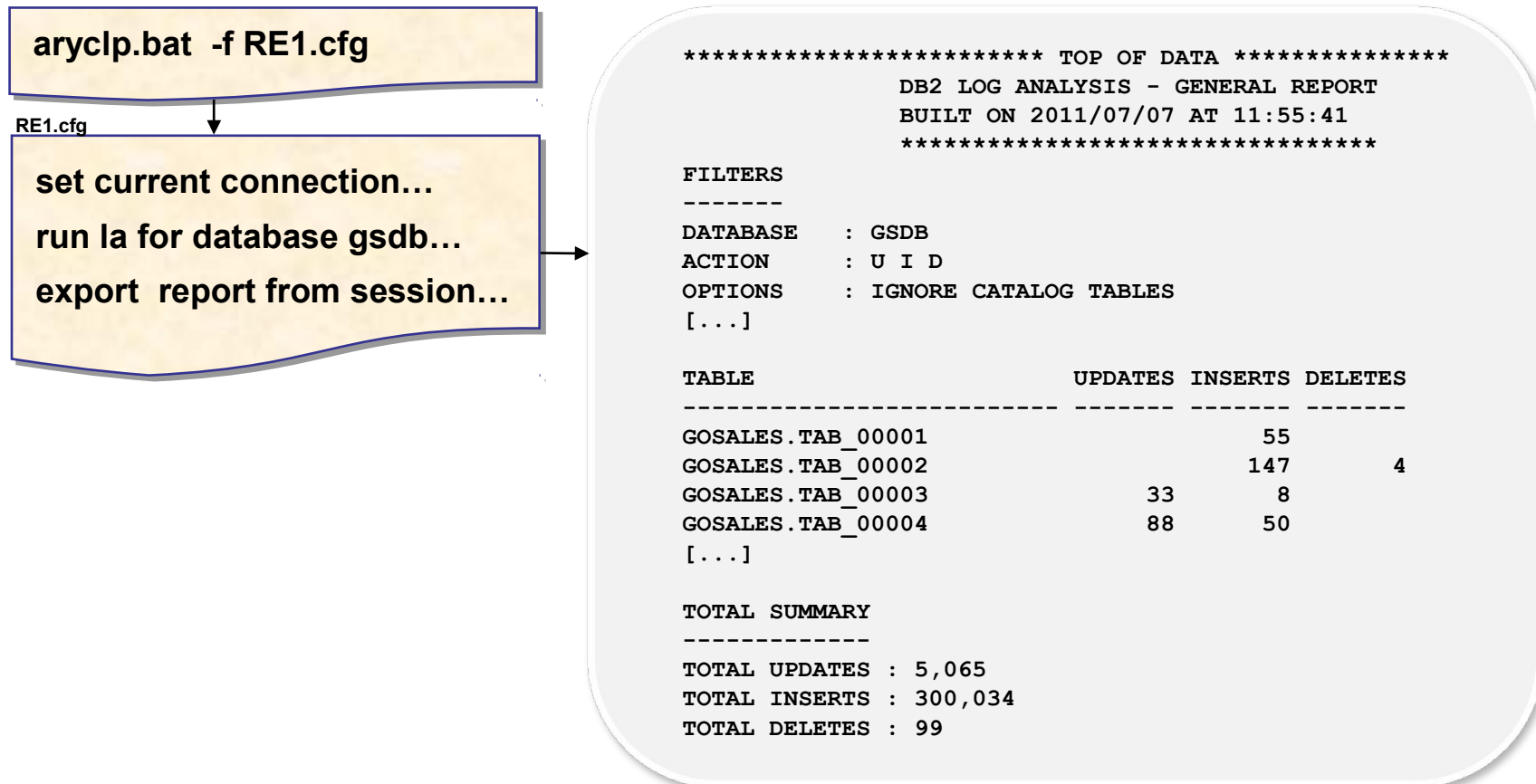
Type "quit" or "q" to exit from the command shell.
ary> _
```



Recovery Expert: Command Line Processor

- Recovery Expert CLP interactive batch mode

Example #1: Log analysis report generation





DB2 Merge Backup for LUW



IBM DB2 Merge Backup V1.1 (eGA May 20 2011, FP1 4Q11)

- A command line utility that allows you to merge full DB2 backups with DB2 incremental/delta backups to build a *new full DB2 backup image*
- Eliminates the need to take DB2 full backups
- Online and offline backup images are supported
- Merge Backup (MBK) can be run on the database server or on a **standalone** (remote) machine
- MBK uses the History File to determine which backups are available for a merge

Value Proposition:

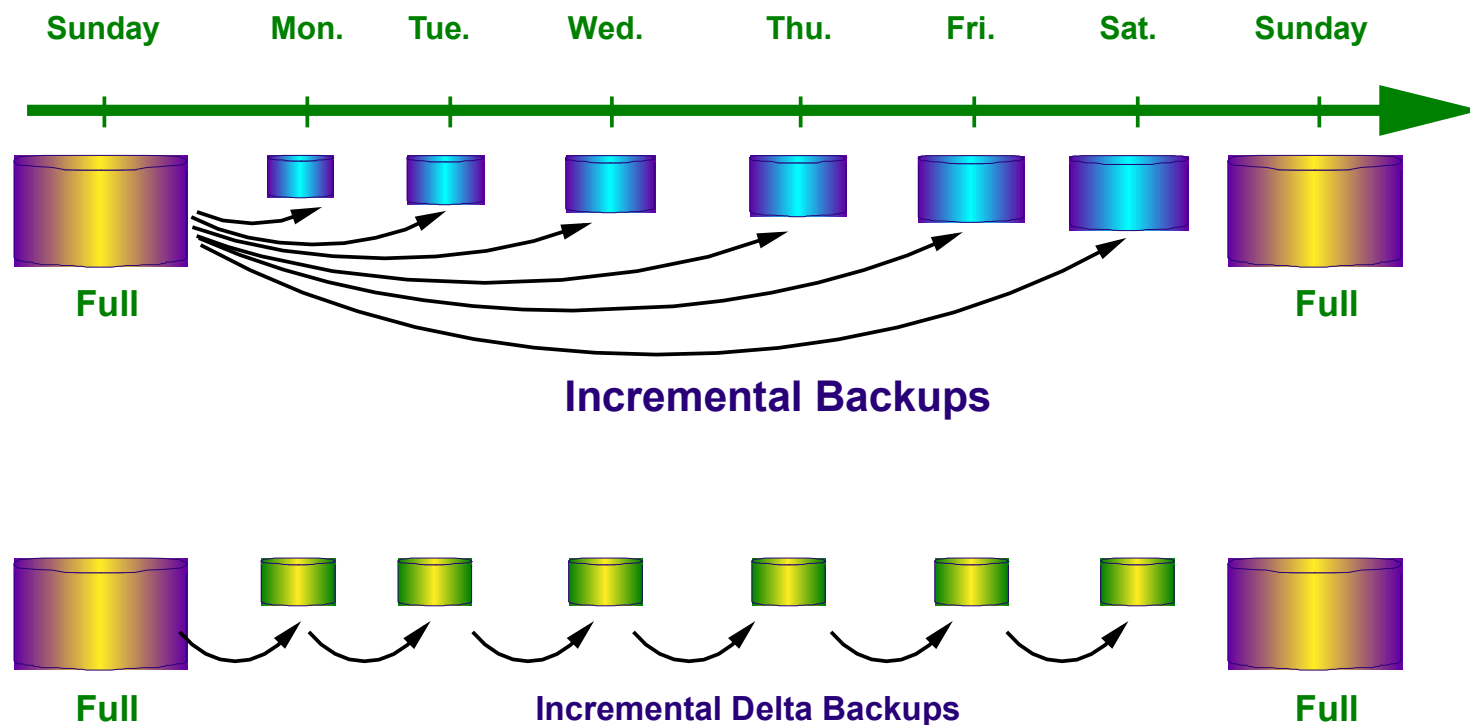
- Reduce backup intensive resources on the database server, i.e. eliminate full DB2 backups by backing up only what needs to be backed up
- Reduce number of objects required during recovery
 - Simplify recovery process through restore of up-to-date full backup images





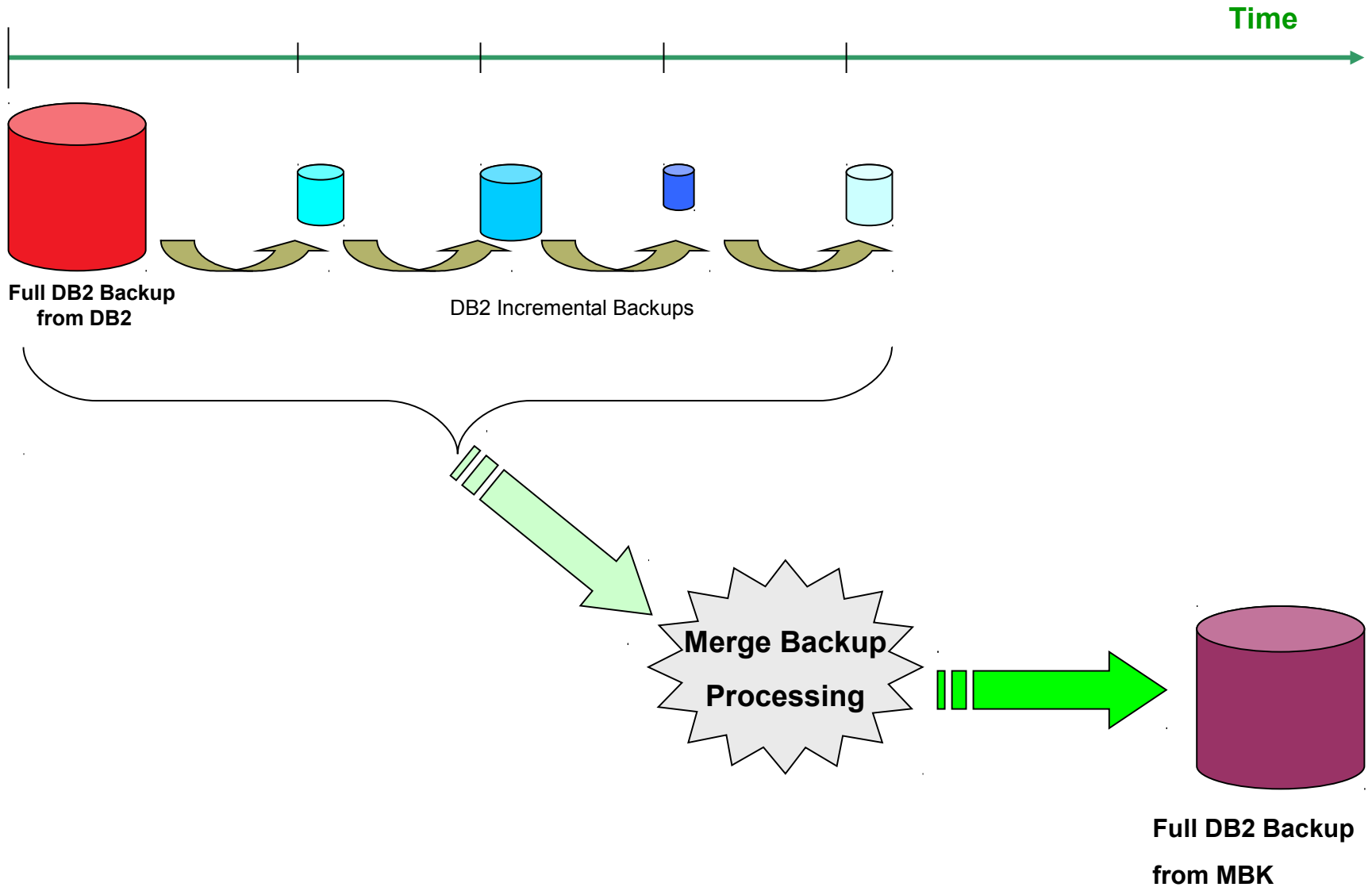
Review: DB2 Incremental and Delta Backups

- **Incremental**: Backup all changes since last full backup
- **Incremental Delta**: Backup all changes since last backup of any type
- **Full Backup**: All changes in a database for a given point in time



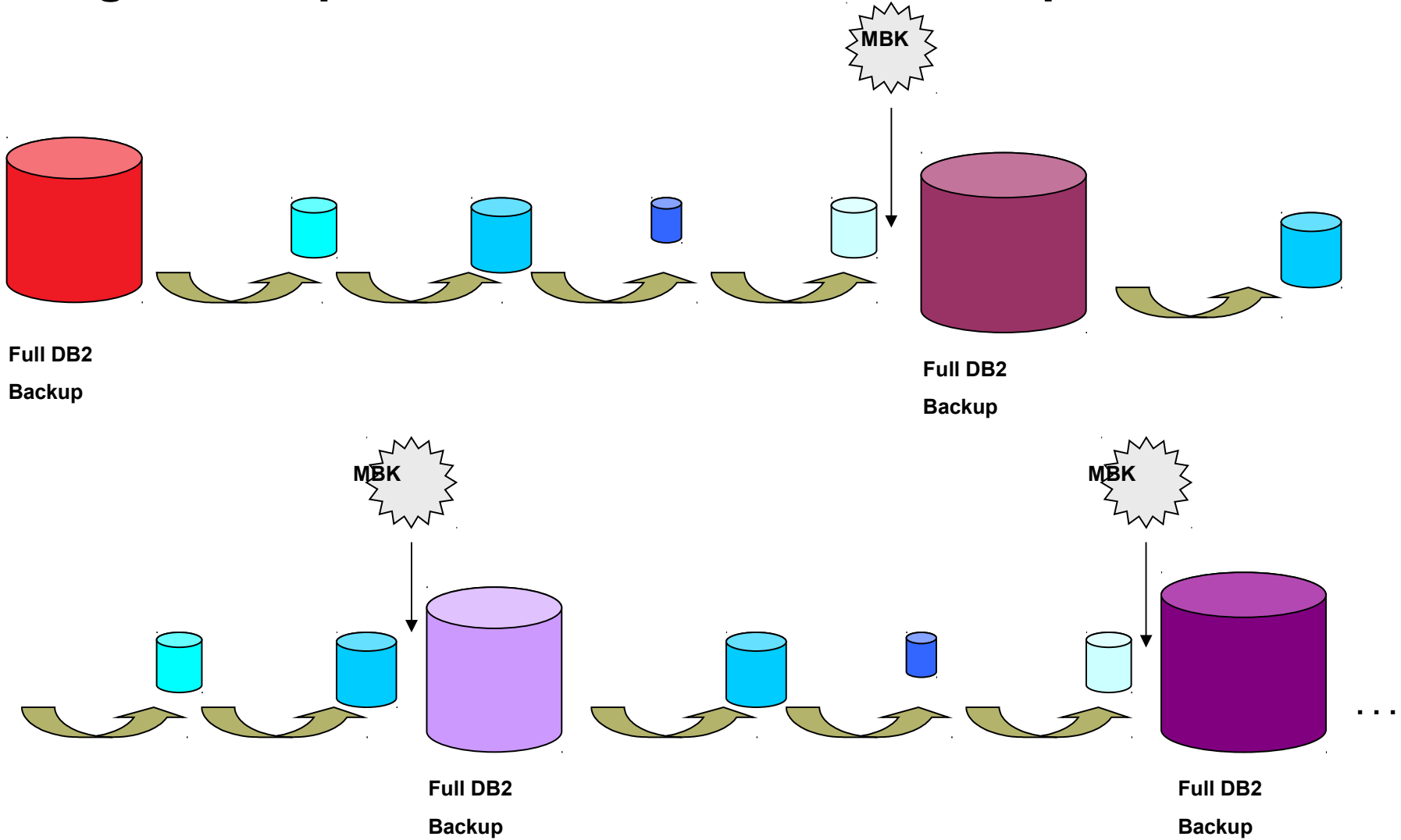


Merge Backup Overview





Merge Backup: No Need for DB2 Full Backups





Merge Backup: Configuration

- Supported as of *DB2 LUW V9.7 F4* and *DB2 V9.5 FP8*
 - Support for all DB2 supported OS platforms

- MBK is installed on the Database Server*
 - For DPF, once per physical machine

- To run MBK in “*Standalone*” mode
 - Install MBK on any machine, doesn't have to be db server; machine doesn't even require DB2

- Install is very quick and clean => Only two prompts:
 - Choose install directory or accept default (/opt/IBM/DB2TOOLS/)
 - Accept license agreement





Merge Backup Execution

- Command line only, or
- Command line with control file
 - Control files are ASCII text files that contain a list of MBK commands and options

Example: `db2mbk -f mbk.ctl`

mbk.ctl

```
MERGE DATABASE SAMPLE  
PART (1)  
OUTPUT  
USE TSM OPEN 2 SESSIONS  
COMPRESS YES
```

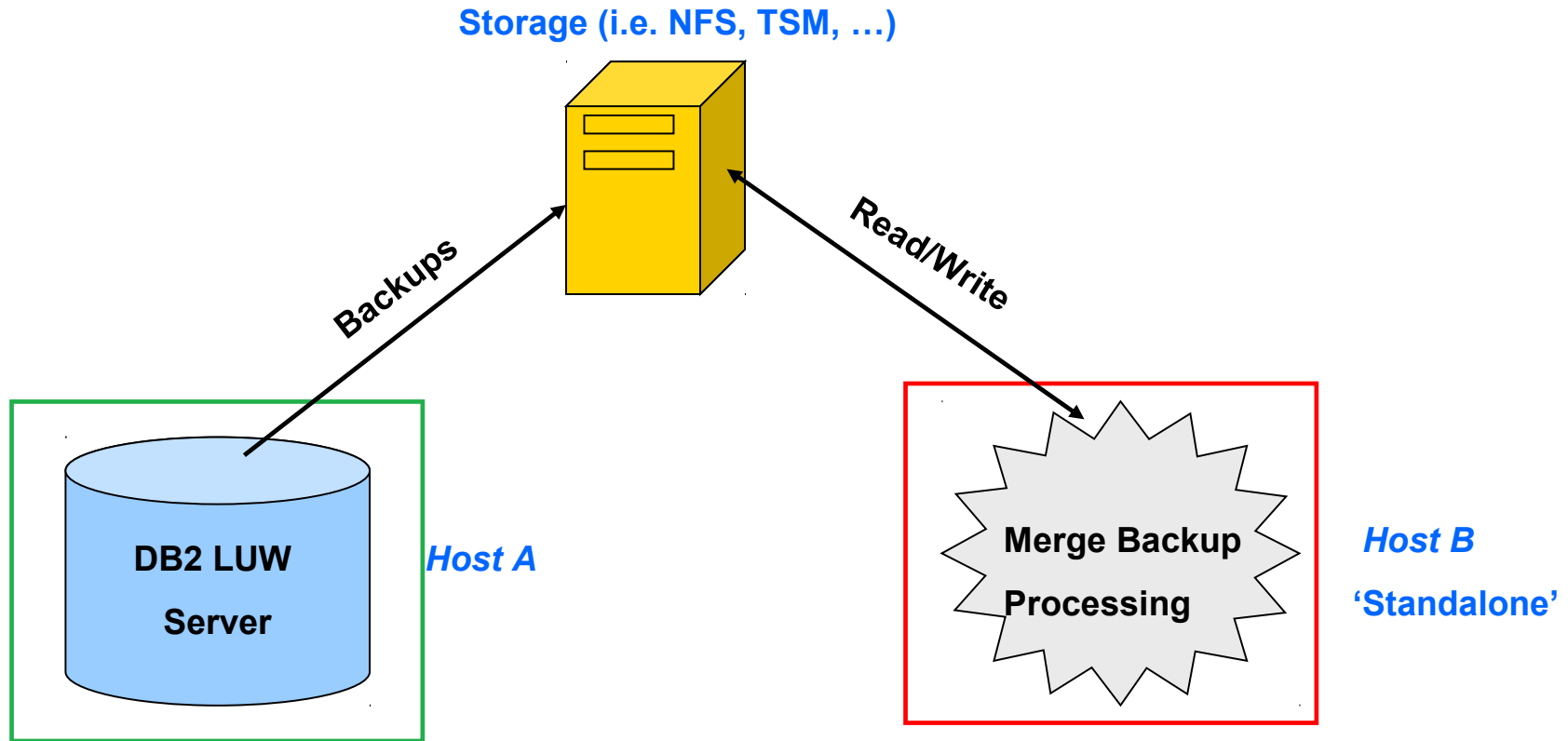
What happens:

- DB2 Merge Backup merges all the DB2 incremental backups created since the last full DB2 backup on database partition 1
- DB2 backup compression is applied
- DB2 Merge Backup processing stores the new full DB2 backup image with Tivoli Storage Manager by using two sessions



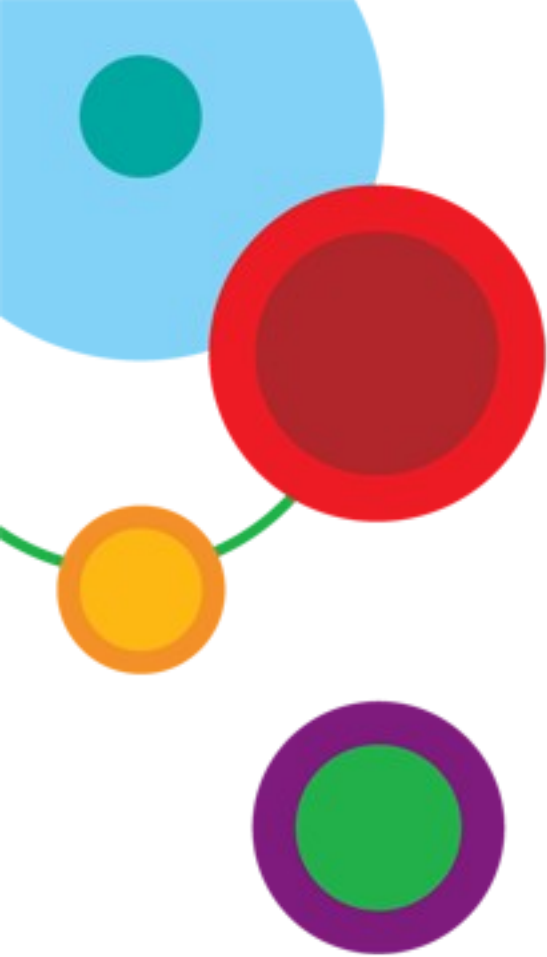


Merge Backup: Standalone Mode



- Merge backup is installed on a different server from where backups are taken ('Standalone')
- Minimize CPU usage and I/O usage on DB2 server by offloading merge backup processing to standalone machine
- All of the backups involved in the merge must be accessible to the standalone machine





Optim High Performance Unload for LUW





Optim High Performance Unload (V4.2, FP1 4Q11)

- High Performance Unload (HPU) is a standalone command line utility for DB2 LUW databases
- HPU performs high-speed, bulk data unloads
 - Unload can be from:
 - **Backup images** (full:DB2 or Merge Backup produced, incremental; compressed)
 - **Directly from the database container files** (bypasses the database engine)

Value Proposition:

- Recoverability
- Bulk data conversion
- Test data management (selective unload with sampling and predicate based queries)
- Repartition/redistribution for warehouse databases
- Migrate DB2 database from one DB2 instance to another





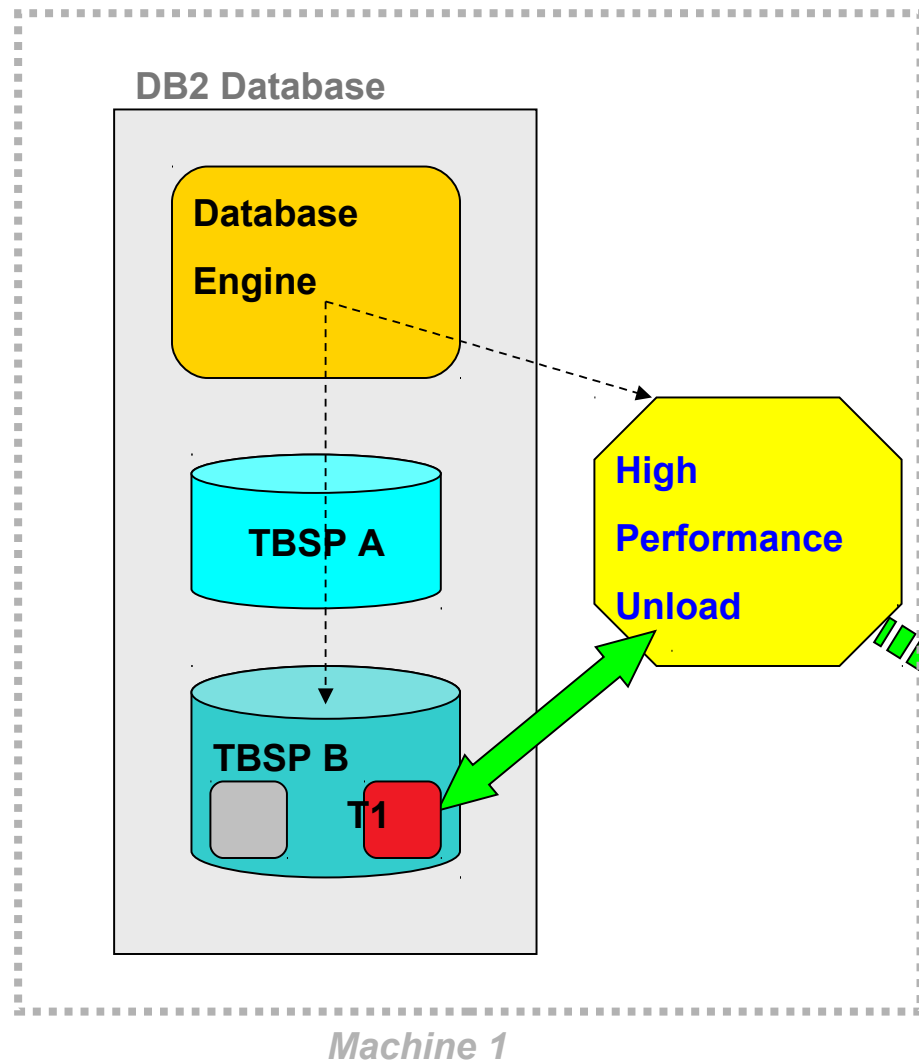
High Performance Unload Features

- HPU can unload data to: flat files, tape devices or named pipes
 - With pipes no need for additional storage to land data
- Unload file format types: ASC, DEL and DELIMITED, DSNITAU, IXF, XML
 - Each file can be directed to different servers and directories, each with a different file format
- As part of unload processing, can automatically generate LOAD command required to populate data back into DB2
- HPU is typically 10-12 times faster than EXPORT (some tests have benchmarked over 20 times faster)
- HPU Execution: Command line unload; CMD line + Control File; Stored Procedure
- Full support for DPF; Supports DB2 LUW V9.8





HPU: Unload Data from a DB2 Database Table Space



- Unload table T1 from table space TBSP B
 - Direct access to table space containers
 - Data unloaded to file or named pipe
 - Complex unload statements to pass through DB2 Engine

(Command file next slide)

T1_data.out

```
10,"Sanders",20,"Mgr ",7,98357.50,
20,"Pernal",20,"Sales",8,78171.25,612.45
30,"Marenghi",38,"Mgr ",5,77506.75,
40,"O'Brien",38,"Sales",6,78006.00,846.55
50,"Hanes",15,"Mgr ",10,80659.80,
60,"Quigley",38,"Sales",66808.30,650.25
70,"Rothman",15,"Sales",7,76502.83,1152.00
...
```



HPU Commands for Unloading Table T1

HPU Command Line

```
db2hpu -f UnloadTableT1.ctr
```

Invoke HPU with a control file (no overrides)

UnloadTableT1.ctr (control file)

```
GLOBAL CONNECT TO DB_PROD1
```

Connect to DB_PROD1 database

```
DB2 YES
```

Allow DB2 engine to process if SELECT complex

```
QUIESCE YES LOCK YES
```

Ensure consistent load by flushing the buffer pools and disallowing edits to the table

```
;
```

```
UNLOAD TABLESPACE
```

```
SELECT * FROM T1;
```

Unload specific table T1

```
LOADFILE ("unload_dir\T1_loadcmd.out")
```

Generate a DB2 LOAD command for this data

```
OUTFILE ("unload_dir\T1_data.out" REPLACE)
```

Specify pathname and filename of output

```
INTERVAL 10
```

Unload every 10 records

```
FORMAT ASC
```

Fixed length ASCII format

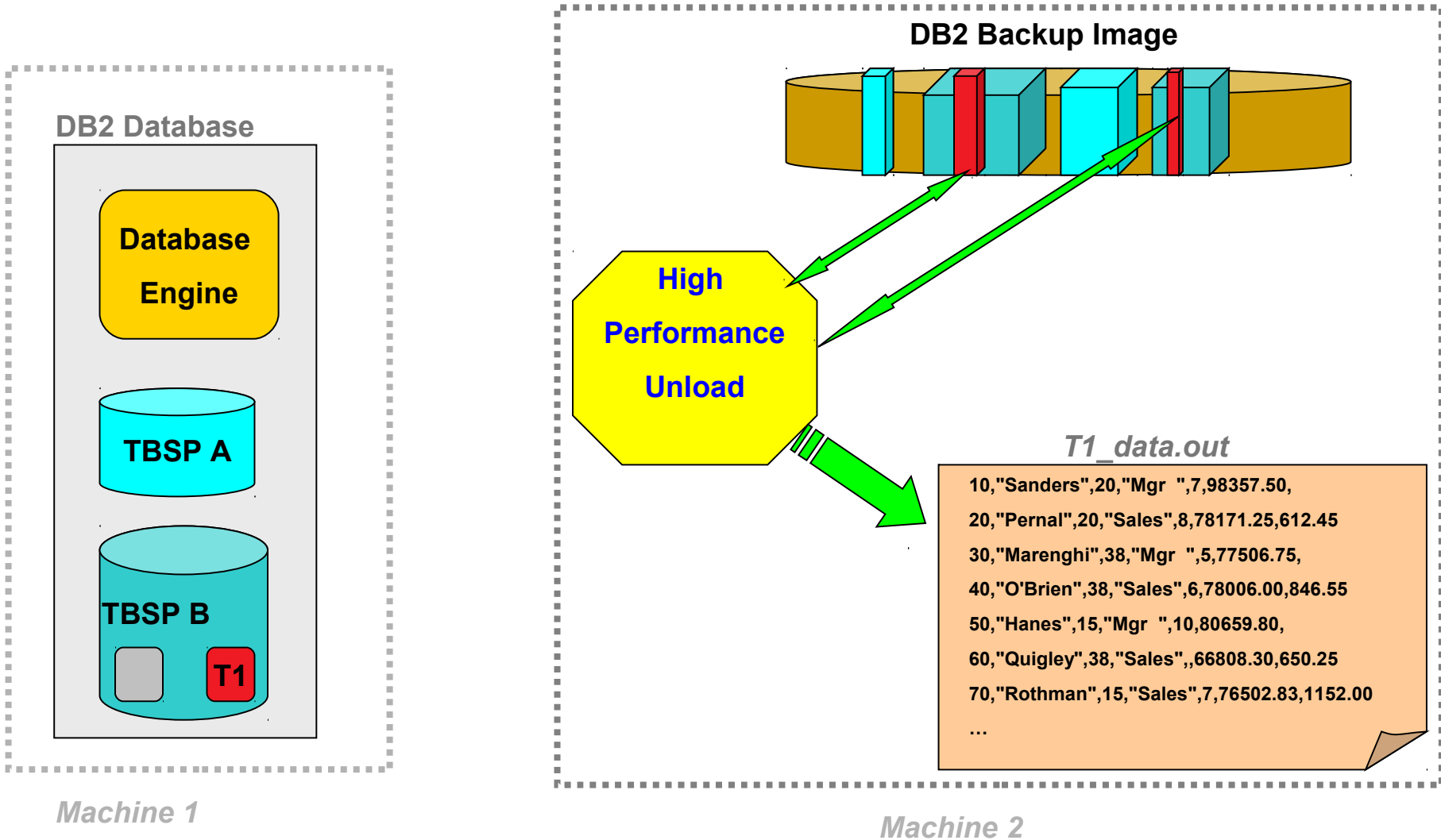
```
OPTIONS DATE DATE_E
```

Convert American dates to European dates

```
;
```



HPU: Unload Table Data from DB2 Backup Image





HPU Commands for Unloading Table T1 from DB2 Backup Image

HPU Command Line

```
db2hpu -f UnloadFromBackup.ctr  
-o "T1_data.out"  
-m "T1_unloadMsg.out"
```

- ← Invoke HPU with a control file
- ← Outfile and message file specified here will override any set in a control block

UnloadFromBackup.ctr (control file)

```
GLOBAL CONNECT TO DB_PROD1  
DB2 NO  
USING BACKUP CATALOG  
DB_PROD1 FROM "backup_dir"  
TAKEN at 20110126190035;  
UNLOAD TABLESPACE  
SELECT * FROM T1;  
FORMAT DEL  
;
```

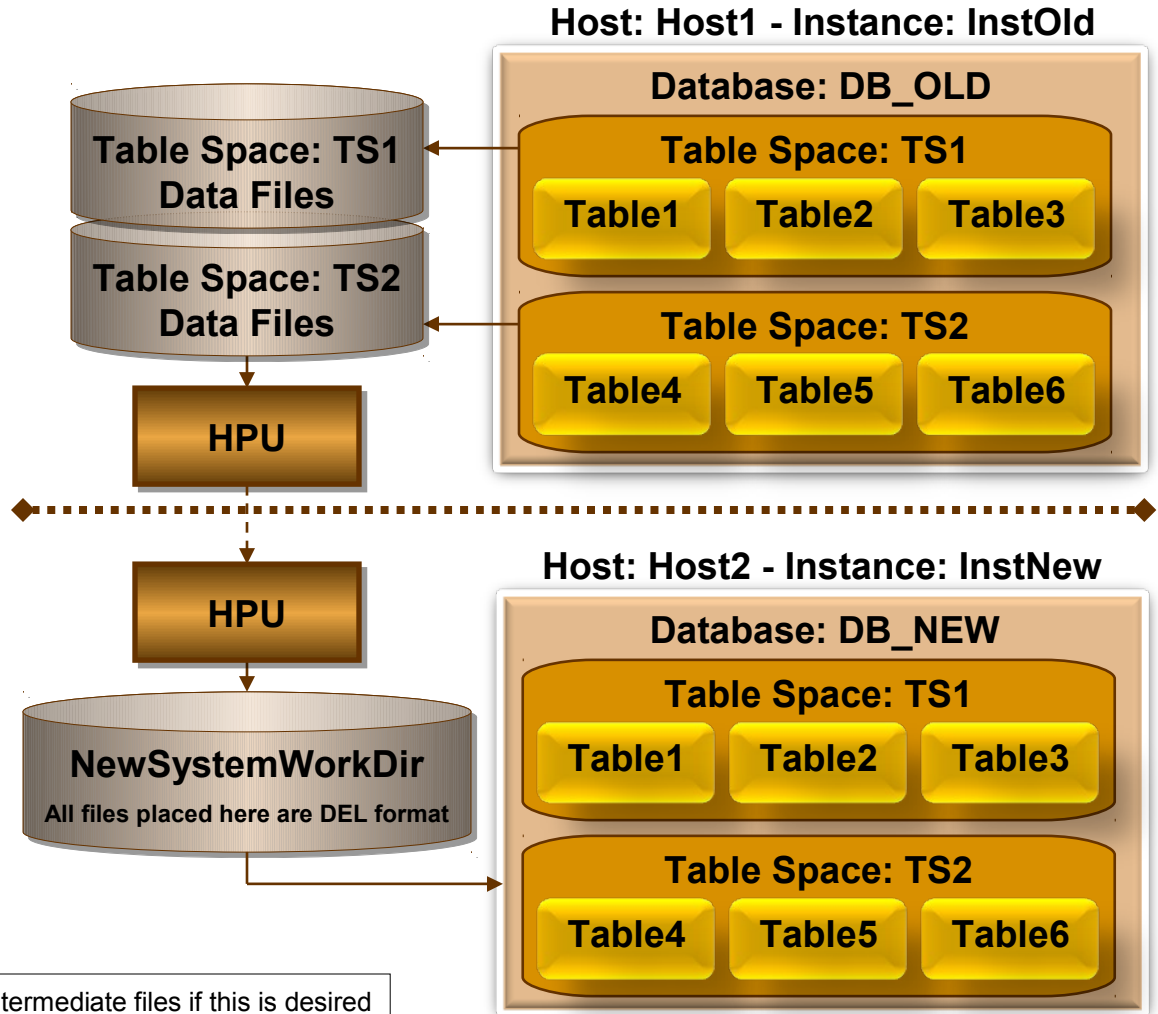
- ← Force HPU to process, not the DB2 engine
- ← Use specific catalog rather than active one
- ← Use specific backup rather than latest one
- ← Format output in DEL ASC





Optim High Performance Unload : Migrate all the data in a DB2 database

- **Migrate all the data from:**
 - DB_OLD to DB_NEW
 - Host1 to Host2
 - InstOld to InstNew
- **Specify a work file directory ***
- **Intermediate files: DEL format**



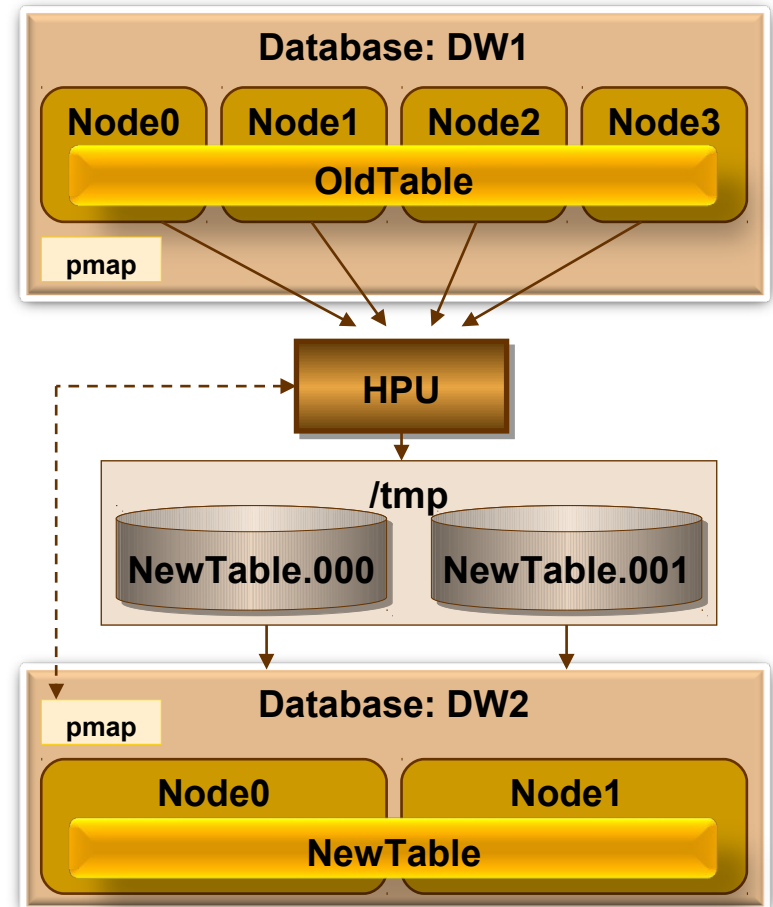
* HPU has the ability to do a migration without using intermediate files if this is desired





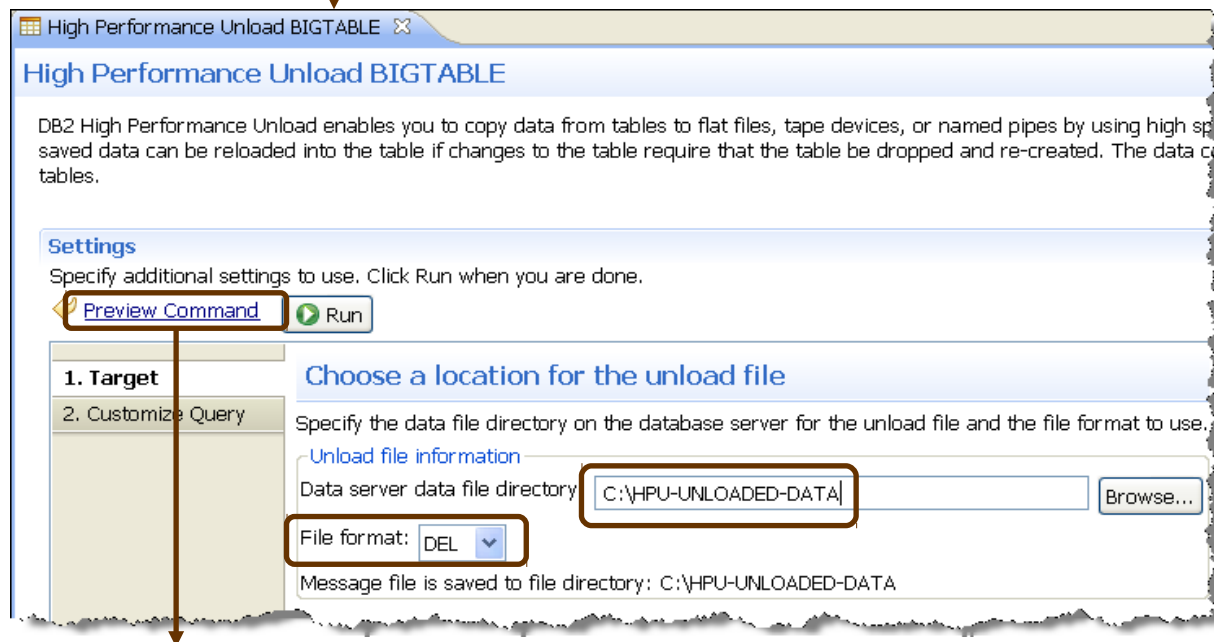
HPU : Repartition/Redistribute a Data Warehouse Table

- Unload a 4 partition table from source database
- Split it into 2 files using target database pmap
 - Include header in first file
(Header contains partition map, partition number, partition key columns)
- Use /tmp as working directory
- Load output files into target partitioned table



Optim High Performance Unload: Plug-in to Data Studio

- Example: HPU commands built and invoked from the Data Studio



```
--<ScriptOptions statementTerminator="!"/>
UNLOAD TABLESPACE SELECT * FROM GOSALES.BIGTABLE; OUTPUT ("C:\HPU-UNLOADED-DATA\default_GOSALES_BIGTABLE.dat") FORMAT DELI;
```



developerWorks Best Practice Paper

<http://www.ibm.com/developerworks/data/bestpractices/db2luw/>





IBM Delivers Advanced Recovery for DB2 Linux, UNIX and Windows

Backup

IBM DB2 Merge Backup LUW

- Backup efficiently
- Maintain recent full backups,
- Accelerate recovery

Unload

IBM Optim High Performance Unload for DB2 LUW

- Pure Unload performance
- Minimal application impact

Recover

IBM DB2 Recovery Expert LUW

- Targeted Recovery
- Advanced Recovery Technology





Where Can I Get the Code?

- <http://www-01.ibm.com/software/data/db2/linux-unix-windows/tools/db2-recovery-expert/>

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DB2 Recovery Expert for Linux, UNIX and Windows

Recover faster and with greater granularity while protecting your critical business data

Overview

DB2 Recovery Expert is a self-managing backup and recovery solution that offers the insurance you need to protect the mission-critical data that runs your business.

Learn more

- Announcement Letter
- Brochure

Downloads

- Trial

Use and maintain

- Information Center

DB2 Recovery Expert recovers database objects safely, precisely and quickly without having to resort to full database recovery. It can help you avoid accidental data loss or corruption by providing a faster, less costly method of recovery when time is of the essence.

- Recovers database objects without using resource-intensive disaster recovery
- Rolls back unwanted data changes precisely throughout a database
- Determines the most efficient technique for a recovery situation
- Recreates databases (or selected objects) to new environments
- Automates recovery of database assets, even as the system remains online
- Analyzes and provides diagnostics of altered, incorrect or missing database assets including tables, indexes or data.
- Automates the process of rebuilding these assets to a correct "point-in-time"

Product framework

Family overview

[DB2 for Linux, UNIX and Windows](#)

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DB2 for Linux, UNIX and Windows

Reduce database recovery time by using DB2 Advanced Recovery Solution for Linux, UNIX, and Windows

Learn how



- <http://www.ibm.com/developerworks/downloads/im/db2recovery/>

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IBM® DB2® Recovery Expert for Linux™, Unix, and Windows™ is a self-managing backup and recovery solution that protects mission-critical data. It can help you avoid accidental data loss or corruption by providing a faster, less costly method of recovery when time is of the essence.

The Log Analysis features enable organizations to monitor changes to a database by creating reports indicating what was changed and by whom. It can help you reduce the time for a DB2 recovery by utilizing different approaches, enabling you to choose the most effective solution.

This product is available in English only.

→ [Features and benefits](#)

→ [System requirements](#)

→ [Product library](#)

→ [Pricing](#)

→ [Product main page](#)

→ [Product support](#)

→ [Efficient backup and recovery with DB2 advanced recovery solution](#)

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Operating system	Version	Size	Method	Download
AIX, Red Hat Linux, Solaris, SUSE Linux, Windows™	V3.1	450MB	HTTP Download Director	Download

The estimated download time using Download Director over a 1.5Mbps connection is 50 minutes.

[Browse the how-to resources](#) including tutorials, articles, demos, production documentation, webcasts, forums, a searchable knowledge database, and more.



Online Product Documentation

- <http://publib.boulder.ibm.com/infocenter/db2ars/v1r1/>



IBM DB2 Advanced Recovery Solution

Design Develop Test Administer Monitor Tune Backup & Recover Archive & Retire Community

DB2 Merge Backup DB2 Recovery Expert Optim High Performance Unload

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DB2 Advanced Recovery Solution

Welcome to the DB2 Advanced Recovery Solution information center. Advanced Recovery Solutions from IBM offer breakthrough efficiencies that shorten recovery times and protect your valuable data. Advanced Recovery Solutions help accelerate savings through increased availability to your data, which minimizes the cost of downtime, including lost business, missed service targets and even fines and penalties.

- Better backup and recovery strategies can help you meet your service level agreements (SLAs) for database uptime, accuracy and responsiveness
- Better backup and recovery strategies minimize the impact on your production systems in support of your overall business objectives
- Better backup and recovery strategies can help ensure you are prepared when unplanned service interruptions occur such as power loss or natural disaster
- Better data availability means you are prepared for audits or legal proceedings including eDiscovery

IBM DB2 Advanced Recovery Solution for DB2 for Linux, UNIX, and Windows provides three distinct products: IBM DB2 Merge Backup, IBM DB2 Recovery Expert, and IBM InfoSphere Optim High Performance Unload.

[Learn more about DB2 Advanced Recovery Solution](#)

Getting started

Products included in this information center

This information center contains a subset of the product documentation that is available for DB2 Advanced Recovery Solution products. It contains information for the following products:

- [DB2 Merge Backup](#)
- [DB2 Recovery Expert](#)

Related resources

Support and assistance

[Support portal](#)

developerWorks

[developerWorks](#)

[Video demo: Efficient backup and recovery with DB2 Advanced Recovery Solution](#)

[Article: Reduce database recovery time by using DB2 Advanced Recovery Solution for](#)



References

- **Article:**

<http://www.ibm.com/developerworks/data/library/techarticle/dm-1106db2advancedrecovery/index.html>

- **Video Demo:**

<http://www.ibm.com/developerworks/offers/lp/demos/summary/im-optimbackuprecovery.html?ca=drs->

- **DB2 Advanced Recovery Solutions Brochure:**

http://www-01.ibm.com/software/sw-library/en_US/detail/W269469I30015Y81.html

- **DB2 Recovery Expert:**

<http://www-01.ibm.com/software/data/db2/linux-unix-windows/tools/db2-recovery-expert/>

- **DB2 Recovery Expert Trial Page:**

http://www.ibm.com/developerworks/downloads/im/db2recovery/?S_CMP=rnav

- **Optim High Performance Unload:**

<http://www-01.ibm.com/software/data/optim/high-performance-unload-db2-luw/>

- **Optim High Performance Unload Trial Page:**

<http://www.ibm.com/developerworks/downloads/im/optimhighperf/index.html>

- **DB2 Merge Backup:**

<http://www-01.ibm.com/software/data/db2/linux-unix-windows/tools/db2-merge-backup-luw/>

- **DB2 Merge Backup Trial Page:**

https://www14.software.ibm.com/webapp/iwm/web/pick.do?source=swg-ibmdb2mbtb&S_CMP=rnav



> Questions



Thank You!

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Thank you for attending!

