

RECOVERY EXPERT

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Brightstar
lottery

AGENDA

- » Intro
- » Difficult of recovery
- » Failure scenario
- » Manual recovery
- » Recovery expert overview
- » How it works
- » Instalation and configuration
- » Demo
- » Pitfalls

- » DB2 RECOVERY EXPERT - tool designed for backup recovery, transaction log analysis and data restorations in DB2 databases
- » Practice usage:
 - » Recovery tables, indexes or entire database
 - » Restore data to specific point in time
 - » Analyze DB2 transaction logs
 - » Simple generation of Undo/Redo SQL operations
 - » Minimize downtime during recovery

- » Time pressure during outages (most common during night time)
- » Missing documentation
- » Most recovery knowlage in DBA head
 - » leads to
- » Human errors during recovery
- » Complex dependency chains

Example error SQL1477N

```
MESSAGE : ADM5571W  DB2 is marking the "DATA" object with id "<tableid>" in  
            tablespace "<tablespaceid>" for table "<schema>.<tablename>"  
  
            unavailable. Either the table will have to be dropped, or if the  
  
            object is part of a partitioned table the partition in error can  
  
            be detached or the index in error can be dropped.
```

» Without DB2 recovery expert:

Scenario:

Production ; Thousands active users ; Continuous transactions ; 24/7 system

At 02:05 , developer accidentally runs

```
UPDATE ACCOUNTS  
SET balance =0;
```

Restore + rollforward to 02:04:59 → lose all valid transaction after 02:05

Required database recovery procedure

Potential downtime or parallel recovery environment

- » Traditional recovery workflow
 - » Identify problem
 - » Find correct backup
 - » Determine PIT timestamp
 - » Restore database/tablespace
 - » Rollforward logs
 - » Validate consistency

Many manual decisions. Easy to make mistake. More stress.



» More effort of DBA



» Risk of conflict during merge (parallel environment)



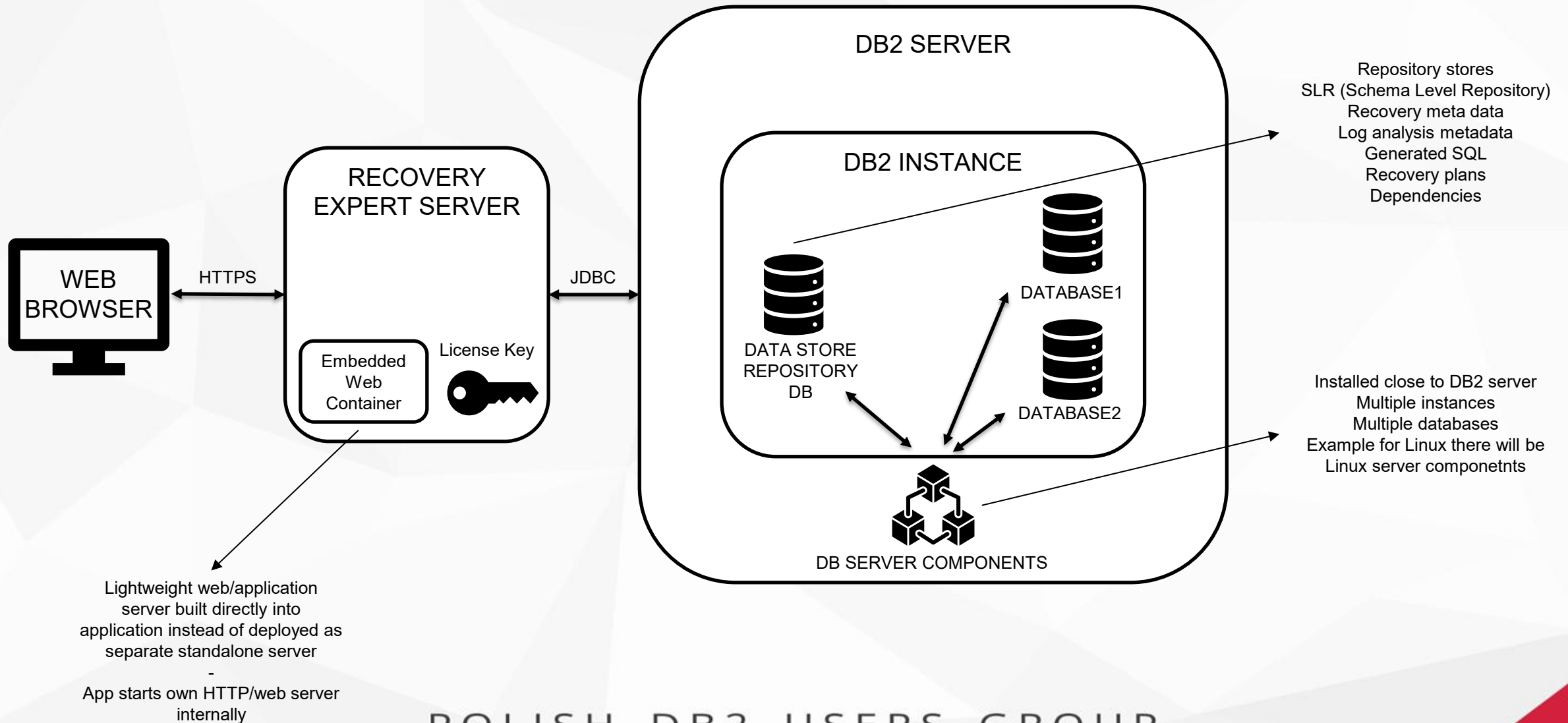
» More expensive

- » DB2 recovery is not just:
 - » Restore
 - » Rollforward to time
- » It is ..
 - » Identifying what exactly was lost
 - » Understanding dependencies
 - » Reconstructing a consistent recovery plan under time pressure

- » What is it NOT
 - » Not replacement for backups
 - » Not a one-click disaster recovery button
 - » Not magic log reconstruction without limits
 - » Not effective for all storage models (column organized – BLU)

- » It does NOT replace DB2 recovery mechanism
- » **It automates decision-making layer**
- » **It turns recovery from emergency improvisation into controlled procedure**

HOW IT WORKS



- » Backup metadata analysis
 - » Backup history and chains
 - » Timestamps
 - ✓ Identifies valid recovery paths and PIT options
- » Archive log analysis
 - » Active and archive logs
 - » Transaction history
 - ✓ determines what changed, when, and recovery time windows
- » Dependency Analysis
 - » Foreign keys, indexes, tablespaces, schemas
 - ✓ prevents inconsistent or partial recovery data corruption
- » Recovery plan generation
 - » Based on backups, logs and dependencies
restore sequences ; rollforward steps ; recovery and validation
 - ✓ automates recovery planning

- » Tools:
 - » VMware® Workstation Pro 25H2u1
 - » Red Hat Enterprise Linux 10.1
 - » DB2 v12.1.4.0 - SERVER
 - » Db2 Recovery Expert LUW 5.5.0.1

 Memory	2 GB
 Processors	2
 Hard Disk (NVMe)	20 GB

» PREREQUISITES

- » Starting, stopping, and administering the Db2 Recovery Expert Server – user identity that was used for installation
- » Requirements (DB Access)
 - » RE requires a user (or group) with: DBADM, DATAACCESS, CONNECT + create/execute privileges
 - » Additional EXECUTE rights on system procedures/functions are needed
 - » For datastores on another instance: SYSADM or SYSCTRL
 - » Authorities can be managed only by the creator or a SECADM user
 - » Access to managed DBs requires at least DBADM, DATAACCESS, CONNECT (more for recovery)

» Successful Recovery

- » Requires archive logging and access to logs & backups (via RHF*)
- » Data must be fully logged (NOT LOGGED operations limit recovery options)
- » Backups must be available and up-to-date (required after LOAD/REORG)
- » Sufficient resources: memory (Java)**, disk space, STMTHEAP***
- » Limitations: no support for circular logging****, tape direct access, partial partition recovery

*RHF – recovery history file **JAVA_HEAP_SZ 16384 ***STMTHEAP 4096 4K pages ****LOGARCHMETH1 = LOGRETAIN

- » Recommended resource limits
 - » Recovery expert behaves like a heavy processing service
 - » Processing backups, logs, temp data
 - » Many connections (JDBC, DB2)
 - » Memory usage (Java)

It is recommended to change default linux limits

```
ulimit -n 8000      # open files (min requirement)
ulimit -f unlimited # file size
ulimit -d unlimited # data segment size (>= 2GB, unlimited preferred)
ulimit -v unlimited # virtual memory (>= 2GB, unlimited preferred)
```

User Selection Panel

Specify the authentication information for the IBM Db2 Recovery Expert for Linux, UNIX, and Windows V5.5. The user ID that you specify does not need to already exist.

User Name: bartek

Password:

Confirm Password:

=====

Port Number

Specify port numbers for http and https connections for the Web interface to use with IBM Db2 Recovery Expert for Linux, UNIX, and Windows V5.5.

Http Port Number: (Default: 13080):

Https Port Number: (Default: 13081):

```
=====
Start up Server
-----
```

Select whether you want to start the server.

- >1- Yes
- 2- No

ENTER THE NUMBER OF THE DESIRED CHOICE, OR PRESS <ENTER> TO ACCEPT THE
DEFAULT: 1

```
=====
Web interface for IBM Db2 Recovery Expert for Linux, UNIX, and Windows V5.5
-----
```

Please use URLs below to access the web interface for IBM Db2 Recovery Expert
for Linux, UNIX, and Windows V5.5:

- <http://192.168.133.128:13080/recoveryexpert>
- <https://192.168.133.128:13081/recoveryexpert>

PRESS <ENTER> TO CONTINUE: █

```

root@localhost:/opt# ls
db2  ibm  linux
root@localhost:/opt# cd /opt/ibm/RE/
root@localhost:/opt/ibm/RE# ls
ARYServerPackages  Db2_Recovery_Expert_LUW_InstallLog.txt  ibm-java  logs  samples  Uninstall
bin                dscomponents                            jars      readme.txt  support  wlp
Config            dsutil                                  license   re.properties  swidtag  work
root@localhost:/opt/ibm/RE# cd bin
root@localhost:/opt/ibm/RE/bin# ls
arydsman.sh          IBMDB2RELUWServerw.exe  productinit.bat      server-startup.sh    stop.sh
arylum              init.bat                productinit.sh       start.bat            SunOS.rc
cmdutil.bat         init.sh                 product.sh            startservice.bat     updatemetadb.bat
createinstance.sh   installservice.bat      removeservice.bat    start.sh             updatemetadb.sh
heartbeat.bat       Linux.rc                restart.bat           status.bat
heartbeat.sh        log.bat                 restart.sh            status.sh
HP-UX.rc            log.sh                  serverenv.bat         stop.bat
IBMDB2RELUWServer.exe  product.bat             serverenv.sh          stopservice.bat
root@localhost:/opt/ibm/RE/bin# ./status.sh

```

dsserver_home: /opt/ibm/RE

port: 13080

https.port: 13081

status.port: 13082

SERVER STATUS: ACTIVE

```
root@localhost:/opt/ibm/RE/bin#
```

Home

Red Hat Enterprise Linux ...

May 15 9:46 AM

Restore Session

IBM Db2 Recovery Expert

Not Secure

http://192.168.133.128:13080/console/recovery/index.jsp#tasks=arywelcome%2Ccrecovery&activeTask=recovery

IBM Db2 Recovery Expert

Open

Welcome

Recovery

Overview

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.

Dependencies:

View dependent objects and specify related tables for recovery.

Recovery plan:

Generate a recovery plan, review and choose a plan, then launch the selected recovery session.

Status:

Review the result.

Click **Save** in the Recovery Advisor to create a loadable specification containing the current Recovery Advisor configuration.

After you click **Run** to start a Recovery session, you can click **Save** to preserve the session. The session is saved as a recovery plan.

You can reopen a running or saved session later to review the results.

☐ Skip this page next time

Trial license

Thank you for choosing to evaluate the IBM Db2 Recovery Expert product. Your trial license will soon expire and result in the inactivation of the product. In order to prevent any future disruptions, a permanent license will need to be installed.

License validity

License type

Number of days remaining:

✓

Trial

90

OK

```
db2inst1@localhost:~$ db2 "create database DATASTOR pagesize 16 k"
DB20000I  The CREATE DATABASE command completed successfully.
db2inst1@localhost:~$ db2 "UPDATE DB CFG FOR DATASTOR USING LOGPRIMARY 25"
DB20000I  The UPDATE DATABASE CONFIGURATION command completed successfully.
db2inst1@localhost:~$ db2 "UPDATE DB CFG FOR DATASTOR USING LOGSECOND 200"
DB20000I  The UPDATE DATABASE CONFIGURATION command completed successfully.
db2inst1@localhost:~$ db2 "UPDATE DB CFG FOR DATASTOR USING LOGFILSIZ 8192"
db2inst1@localhost:~$ db2 "UPDATE DB CFG FOR DATASTOR USING LOGARCHMETH1 LOGRETAIN"
DB20000I  The UPDATE DATABASE CONFIGURATION command completed successfully.
```

Use this page to select a relational database as the repository or to update connection information for the repository. The repository database stores data, such as database connections and data server setup information, that products use to manage databases. The repository database should have at least DBADM WITH DATAACCESS privileges.

It is required to set up a repository database before using most Db2 Recovery Expert features.

Important: The existing database connections and other contents and settings are not retained if you set up a new configuration repository data product, you must add managed databases to the new repository.

No repository database has been selected. [Learn more](#)

Specify Repository Database

Add Database Connection Profile

Host	* 192.168.133.128
Database name	* DATASTOR
Database port	* 25010 ^v
Username	* db2inst1
Password	*
JDBC security	Clear text password v

Test connection

OK

Cancel

Open ▾

Welcome ×

Configuration Repository ×

Managed Databases ×

Object History ×

Operations - BARTEK ×



Overview

Location

SLR Information

Options

Operations

Status

Choose one of the available operations to create and maintain the Schema Level Repository (SLR).

Host: 192.168.133.128, Instance: db2inst1, Target database: BARTEK, Db2 version: 12.1.4, Tenant: SYSTEM

Create

Rebuild

Update

Start date

2026 - 04 - 18 ▾

Apply

Backup images

Backup
timestamp

Start time

End time

Location

First log

Last log

Storage
type

No items to display

NO BACKUP – NO POINT FOR RECOVERY

End point

Recent time ▾

1

days ▾

```
db2inst1@localhost:~/db2inst1$ db2 backup db bartek online to /opt/db2/sqlllib/db2dump/

Backup successful. The timestamp for this backup image is : 20260518081609

db2inst1@localhost:~/db2inst1$ date
Mon May 18 08:16:33 AM EDT 2026
db2inst1@localhost:~/db2inst1$
```

Open ▾

Welcome ✕

Configuration Repository ✕

Managed Databases ✕

Object History ✕

Operations - BARTEK ✕



Overview

Location

SLR Information

Options

Operations

Status

Choose one of the available operations to create and maintain the Schema Level Repository (SLR).

Host: 192.168.133.128, Instance: db2inst1, Target database: BARTEK, Db2 version: 12.1.4, Tenant: SYSTEM

Create

Rebuild

Update

Prune

Start date

2026 - 04 - 18 ▾

Apply

Backup images

Backup timestamp	Start time	End time	Location	First log	Last log	Storage type	Type	Sessions	Comment
20260518081609	2026-05-18 08:16:09	2026-05-18 08:16:10	/opt/db2/sqlllib/db2dump	S0000001.LOG	S0000001.LOG	DISK	Full online	1	DB2 BACKUP BARTEK ONLINE

Select the database objects or patterns to be included or excluded from the log analysis report. Dependent objects will not be implicitly included within the report.

Host: 192.168.133.128, Instance: db2inst1, Target database: BARTEK, Db2 version: 12.1.4, Tenant: SYSTEM

Available objects

Include

Exclude



- Database Partition Groups
- Schemas
- Tables
 - DB2INST1
 - Pattern
 - TEST_SIMPLE
 - SYSIBM
 - SYSTOOLS

Selected objects

- Table DB2INST1.TEST_SIMPLE

Properties

Property	Value
Schema	DB2INST1

IBM Db2 Recovery Expert

Open ▾

Welcome ×

Object History ×

Log Analysis ×

Filters - BARTEK × 

- Overview
- Location
- Details
- Objects
- Filters**
- Options
- Status
- Result

Select additional filters that allow further refinement of the activity to be included in the log analysis report.

Host: 192.168.133.128, Instance: db2inst1, Target database: BARTEK, Db2 version: 12.1.4, Tenant: SYSTEM

Operations

- ☒ Inserts
- ☒ Updates
- ☒ Deletes

☒ Exclude System and Tool objects

Transactions

- ☒ Committed
- ☐ Partial
- ☐ Uncommitted
- ☐ Rolled back

Operation		Type
No items to display		

IBM Db2 Recovery Expert

- Open ▾
- Welcome ×
- Object History ×
- Log Analysis ×

Status - BARTEK × 

- Overview
- Location
- Details
- Objects
- Filters
- Options
- Status
- Result

Display the status of the log analysis operation that was performed.

Host: 192.168.133.128, Instance: db2inst1, Target database: BARTEK, Db2 version: 12.1.4, Tenant: SYSTEM

Operation	Summary	Status 	Session completed successfully.
Session ID	1		
Start time	2026-05-28 06:55:42		
End time	2026-05-28 06:55:55		

Status		
Status messages 1 - 142 out of 142		
Time	Database Partition	Message
2026-05-28 06:55:54	0	Indexing report table SYSTOOLS.ARY_OPERATIONS_001
2026-05-28 06:55:55	0	Indexing report table SYSTOOLS.ARY_APP_SUMMARY_001
2026-05-28 06:55:55	0	Ordering report transactions
2026-05-28 06:55:55	0	Log analysis completed.

Display the Log Analysis results where one can view report statistics, set post filters to modify the report data, and see the report details.

Host: 192.168.133.128, Instance: db2inst1, Target database: BARTEK, Db2 version: 12.1.4, Tenant: SYSTEM

Support...

Statistics

Post filters

Report

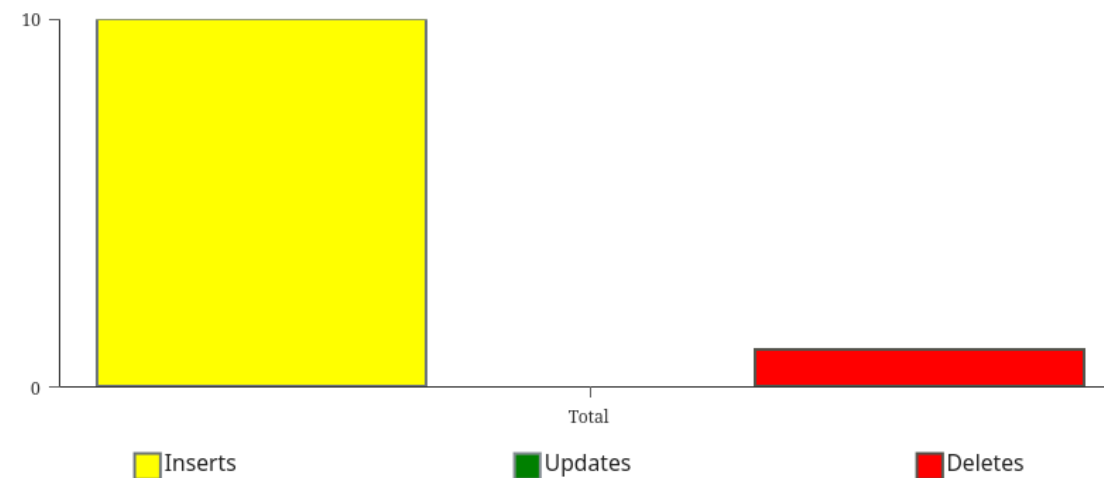
Totals

Operation	Count
Inserts	10
Updates	0
Deletes	1
Total	11

Database Partition Groups

Tablespaces

Tables



☒ Show totals

☐ Stacked

Save...

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Run

Open Welcome Object History Log Analysis

Result - BARTEK

Overview

Location

Details

Objects

Filters

Options

Status

Result

Display the Log Analysis results where one can view report statistics, set post filters to modify the report data, and see the report details.

Host: 192.168.133.128, Instance: db2inst1, Target database: BARTEK, Db2 version: 12.1.4, Tenant: SYSTEM

Support...

Statistics

Post filters

Report

Tables

DB2INST1.TEST_SIMPLE

Transactions 1 out of 1

Local Transaction ID	Transaction start LSO	Transaction LSO	Start date	Start time	End date	End time	Status
0000000013CE	00000000057FAB81	00000000057FAC03			2026-05-28	06:48:53000001	Committed

Operations 1 out of 1

LSO	Action	Database Partition	Database Partition Group	Tablespace	Table
00000000057FAB81	Delete	0	IBMDEFAULTGROUP	USERSPACE1	DB2INST1.TEST_SIMPLE

INSERT INTO "DB2INST1"."TEST_SIMPLE" ("ID", "COL1", "COL2", "COL3", "COL4", "COL5", "COL6", "COL7", "COL8", "COL9") VALUES (1, 'A1', 'B1', 10, 100.50, '2026-05-18-08.45.09.057419', 'A', 5, 'Test1', 1)

Display...

Export

Run SQL...

Details

Undo SQL

Open ▾

Welcome ✕

Object History ✕

Recovery ✕

Objects - BARTEK ✕ +

Overview

Location

Objects

Point in time

Options

Dependencies

Recovery plan

Status

Select one or more database objects or patterns to be recovered. All dependent objects will be determined and included for recovery in the Dependencies step.

Host: 192.168.133.128, Instance: db2inst1, Target database: BARTEK, Db2 version: 12.1.4, Tenant: SYSTEM

Available objects

Include



- ▶ Functions
- ▶ Modules
- ▶ Database Partition Groups
- ▶ Schemas
- ▶ Sequences
- ▶ SQL procedures
- ▶ Storage groups
- ▼ Tables
 - ▼ DB2INST1
 - ▶ Pattern
 - ▶ TEST_SIMPLE

Selected objects

Table DB2INST1.TEST_SIMPLE

Properties

Property

Value

Schema

DB2INST1

Name

TEST_SIMPLE

Save...

```
db2inst1@localhost:~$ date
```

```
Thu May 28 10:10:47 AM EDT 2026
```

```
db2inst1@localhost:~$ db2 "select count(*) from DB2INST1.TEST_SIMPLE"
```

```
1
```

```
-----
```

```
10
```

```
1 record(s) selected.
```

```
db2inst1@localhost:~$ db2 list tables for schema db2inst1
```

Table/View	Schema	Type	Creation time
TEST_SIMPLE	DB2INST1	T	2026-05-28-10.06.12.881494

```
1 record(s) selected.
```

```
db2inst1@localhost:~$ db2 drop table test_simple
```

```
DB20000I The SQL command completed successfully.
```

```
db2inst1@localhost:~$ date
```

```
Thu May 28 10:11:51 AM EDT 2026
```

Open ▾

Welcome ×

Object History ×

Recovery ×

Point in time - BARTEK ×

+

Overview

Location

Objects

Point in time

Options

Dependencies

Recovery plan

Status

Select the point in time from which a database object is to be recovered.

Host: 192.168.133.128, Instance: db2inst1, Target database: BARTEK, Db2 version: 12.1.4, Tenant: SYSTEM

Point in time options

Select this option when you want to recover to a previous point in time.

☒ Timestamp

Select backup time...

 or specify

2026 - 05 - 28 ▾

10 : 11 : 00 ▴ ▾

000000

Select this option when you want to recover data that is logically consistent, but has a physical error or other corruption.

☐ End of logs

IBM Db2 Recovery Expert

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Welcome ✕

Object History ✕

Recovery ✕

Recovery plan - BARTEK ✕ 

Overview

Location

Objects

Point in time

Options

Dependencies

Recovery plan

Status

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

Host: 192.168.133.128, **Instance:** db2inst1, **Target database:** BARTEK, **Db2 version:** 12.1.4, **Tenant:** SYSTEM

Created on 2026-05-28 10:15:12 Status  Recovery scenario was generated successfully

Session ID 8

Active scenario

Re-create object definitions from the SLR and generate Redo SQL (1) ▾

Scenario steps			Restore all
Step	Description	Database Partition	
2	APPLY_SQL	0	
3	CREATE_OBJECTS	0	
4	CREATE_OBJECTS	0	
5	CREATE_OBJECTS	0	

Status messages

Message

ARY0312I: Generate scenario based on: Extract data from backup image and generate Redo SQL

```
db2inst1@localhost:~$ db2 list tables for schema db2inst1
```

Table/View	Schema	Type	Creation time
------------	--------	------	---------------

```
0 record(s) selected.
```

```
db2inst1@localhost:~$ date
```

```
Thu May 28 10:14:58 AM EDT 2026
```

```
db2inst1@localhost:~$ db2 list tables for schema db2inst1
```

Table/View	Schema	Type	Creation time
------------	--------	------	---------------

TEST_SIMPLE	DB2INST1	T	2026-05-28-10.15.15.741475
-------------	----------	---	----------------------------

```
1 record(s) selected.
```

```
db2inst1@localhost:~$ date
```

```
Thu May 28 10:15:26 AM EDT 2026
```

```
db2inst1@localhost:~$ db2 "select count(*) from DB2INST1.TEST_SIMPLE"
```

```
1
```

```
-----
10
```

```
1 record(s) selected.
```

- » [IBM Support: Fix Central](#) – db2 recovery expert download
- » [VMware Workstation Pro 25H2u1](#)
- » [Db2 Version 12.1 Mod 4 Fix Pack 0 for Linux, UNIX, and Windows](#)
- » [Red Hat Enterprise Linux | Product trial](#)

🔍 Type to search



tain history information about objects in your database.

cations for log files and backups.

Status: Review the result status.

Click **Save** in the Object History Advisor to create a loadable specification containing the current SLR settings.

After you click **Run** to start an SLR session, you can click **Save** to preserve the session results. The session continues running on the database server until it is complete.

You can reopen a running or saved session later to review the results.

☐ Skip this page next time

Save...

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Run

```
db2inst1@localhost:~$ db2 "drop table db2inst1.test_simple"
```

IBM Db2 Recovery Expert x Problem loading page x Problem loading page x +

db2inst1@localhost:~\$ db2 "drop table db2inst1.test_simple"

db2inst1 Log Out | Preferences | IBM.

Important resources

ation Center

ted Data Management products

ted Data Management: Managing data

its lifecycle

itim support

**Having backups
does not mean..**



**you are
recoverable.**

**"It's not so bad...At least
the parachute opened!"**

» Lab presentation

? QUESTIONS ?

???