


PIT Recovery® for DB2 z/OS

Get out of the PITs fast

TAKE CONTROL

- Automate a point in time recovery for ERP and CRM systems
- Determine the most efficient method of recovery, i.e., offline backup, IC, or V8 backup
- Recall migrated data sets in advance
- Submit and control all recovery jobs
- Support all in-house backup strategies without any changes
- Provide a training mode
- Guarantee the fastest recovery possible, speeding up a V8 RESTORE as well
- Require no QUIESCE to establish PIT
- Care for DDL changes and handles LOG NO events
- Clean up obsolete logs and image copies
- Automate and control the steps required for V8 BACKUP RESTORE

Overview

 **PIT Recovery** automates, controls, and speeds up all the necessary actions needed for a point in time (PIT) recovery of ERP and CRM systems like Peoplesoft, SAP, and Siebel.


What is special about an ERP or CRM recovery

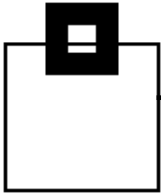
Customers of ERP and CRM software packages are increasing the support of 24x7 environments. In contrast to internally written DB2 applications, an uninterrupted operation of a black box DB2 application with thousands of table spaces and indexes makes it extremely difficult to prepare for a point in time (PIT) recovery. A PIT recovery requires:

- Highly skilled specialists with in-depth experience in DB2 recovery techniques.
- A well prepared recovery scenario that is ready to use.
- Many manual interventions in a precise order.

A PIT recovery is always needed when unwanted and irreversible SQL updates are made to the DB2 database, e.g., a program error or a flawed operational procedure such as running a batch application twice or using bad input. Subsequent SQL update processing makes the situation even worse because it may result in additional erroneous data. In a situation like this, pinpointing the corrupted table spaces and indexes is especially difficult with ERP and CRM because the referential constraints (RI) are ruled by the application, instead of using the physical RI feature of the DB2 database. Therefore, a DBA cannot be certain that all data tables are logically consistent with each other when recovering just a subset of the ERP and CRM tables.

The alternative solution is a recovery of **all** table spaces and indexes of an ERP or CRM system to a prior point. With tens of thousands of objects, this implies a very disruptive outage for several hours and makes this scenario impractical.

Because the need for a point in time recovery is never entirely eliminated,  **PIT Recovery** was developed to address and solve the problems with a PIT recovery for all black box DB2 applications running on all versions of DB2 since V5.



How easy is PiT Recovery . . .

. . .so easy that all you need to do is enter the timestamp to which you want to recover the system back to.

▢ **PiT Recovery** can be explained in the following short summary.

- An online “to do” list containing all the necessary actions to prepare a recovery is presented and controlled in the required sequence, thus eliminating error prone manual actions.

```
PiT Recovery for DB2 z/OS ---- Prepare Selection -----
Command ==>
MODE=PROD MENU=ON AUTO=20                                DB2: D810
Primary cmd: R(eset), R(eset) ALL, AUTO

Select options 1 through 6 in sequence. Press ENTER to continue.

DONE 1. SHUTDOWN DB2      - Stop the ERP/CRM system and DB2 system D810
DONE 2. START DB2         - Start DB2 in restricted access mode MAINT
DONE 3. ANALYZE PIT       - Specify PIT and analyze the recovery impact(*)
DONE 4. SHOW RECOVERY     - Show TS/IX to be recovered
5. STOP DB2              - Stop the DB2 system D810
6. BACKUP BSDS+LOG       - Save BSDS and all active logs

(*) You may additionally specify an offline backup that was made before
the PIT specified. In this case, the costs of using regular DB2
(online) copies are compared with the recovery costs of using the
offline backup.
```

A step by step action-oriented list controls and guides you through the recovery preparation process.

- The recovery selection and execution process works as follows:
 - ✓ Simply enter the PIT timestamp. No QUIESCEs required.
 - ✓ If another type of backup is available, e.g., FLASHCOPY or V8 BACKUP, it will automatically be considered.

```
PiT Recovery for DB2 z/OS ---- Specify PIT -----
Command ==>
MODE=PROD                                                DB2: D810
Specify point in time to which the system is to be reset:

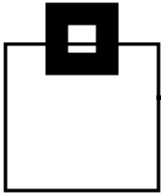
PIT TIMESTAMP . . 2004-04-15-15.00.00
                  (YYYY-MM-DD-HH.MM.SS)

Optional: Additionally, specify timestamp/LRSN of an offline backup
(DFSMSdss, RVA SnapShot, ESS FlashCopy, etc.) that covers all
DB2 table spaces and indexes, including the DB2 directory and
catalog. In this case, the costs of using regular DB2 (online)
copies will be compared with the recovery costs of using the
offline backup. Using this comparison, the user can see which
recovery method is best.

TIMESTAMP or LRSN . 2004-04-15-00.00.00 - Timestamp/LRSN when the
                                         offline backup was started
```

Simply enter the desired PIT.

- ✓ SYSLGRNX analysis finds the table spaces to be recovered. The size of these objects and their related indexes is obtained through SPACEMAP analysis. All of this information is provided online and represents the scope of the recovery.



- ✓ If both online copies and other types of backups are available, the most efficient recovery method is determined. The Show Recovery Summary presents a summary of the objects to be recovered for the specified point in time. If two methods are being considered, a comparison of the recovery impact allows you to choose the most efficient recovery method.

```
PiT Recovery for DB2 z/OS ---- SHOW RECOVERY SUMMARY -----
Command ==>
MODE=TEST MENU=ON                                     DB2: D810
Primary cmd: M(enu off)
Line   cmd: Z(oom), S(elect)

PIT SPECIFIED . . . . . : 2004-04-15-15.00.00
PIT SELECTED  . . . . . : 2004-04-15-15.00.00

OFFLINE TIMESTAMP or RBA . . . : 2004-04-15-00.00.00

LOGS READ FOR COMPENSATION . . : 3                      Logs read to write
                                                                compensation records
Recovery using:  _ ONLINE COPY  ! _ OFFLINE BACKUP      (*)
-----+-----
SUM TS . . . . : 1524          ! 624          Number of tablespaces
SUM TS PAGES . : 5431122      ! -          Tablespace pages (4K)
SUM IX . . . . : 3967         ! 1387       Number of indexes
SUM IX PAGES . : 2433198     ! -          Index pages (4K)
SUM LOG SCANS . : 6371       ! 2902      Number of log scans
-----+-----

(*) The data amount to be restored from the offline backup isn't displayed.
```

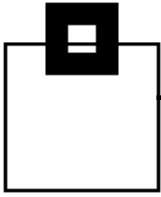
A summary of the recovery is shown. If an offline backup was made, the recovery methods are compared.

- ✓ Recovery of specific objects, e.g., large logging tables, can be delayed until after all other objects have been recovered and the ERP or CRM system has been started up. When an object is delayed, all other objects belonging to it, e.g., all indexes belonging to a table space, will also be delayed
- ✓ An online “to do” list containing all the necessary actions to perform a recovery is presented and controlled in the required sequence, thus eliminating error prone manual actions.

```
PiT Recovery for DB2 z/OS ----- Execute Selection -----
Command ==>
MODE=TEST MENU=ON AUTO=20                               DB2: D810
Primary cmd: AUTO, M(enu off)
Select options 1 through 7 in sequence. Press ENTER to continue.

DONE  1. CRESTART          - Create a conditional restart control record
DONE  2. START DB2         - Start DB2 in restricted access mode MAINT and
                             DSNZPARM member with DEFER ALL parameter
DONE  3. RECOVER DB2       - Recover DB2 directory and catalog
      4. RECOVER DATA     - Investigate dropped and newly created objects
                             Recover ERP/CRM table spaces and indexes
      5. UTILITIES         - Terminate/Restart DB2 utility in progress
      6. STOP DB2         - Stop the DB2 system D810
      7. STARTUP DB2      - Start DB2 system D810 and ERP/CRM system
```

A step by step action-oriented list controls and guides you through the recovery execution process.



- ✓ An online execution facility automatically controls the job submission and status of each generated recovery job.

```
PiT Recovery for DB2 z/OS --- Job Submit List ----- Job 00002 of 00018
Command ==>
MODE=TEST MENU=ON AUTO=OFF DB2: D810
Primary cmd: SUB(mit), AUTO, J(ob status), G(et failed job), EXIT
Line cmd: V(iew), E(dit), R(eset status)

Member Prompt Size Created StatusTime Status
-----
S0000002 64 2001/08/07 2001/08/07 09:32:00 CC=0000
S0000003 67 2001/08/07 2001/08/07 09:32:00 CC=0000
S0000004 66 2001/08/07 2001/08/07 09:33:00 SUBMIT
S0000005 65 2001/08/07 2001/08/07 09:33:00 SUBMIT
S0000006 65 2001/08/07 2001/08/07 09:33:00 SUBMIT
S0000007 66 2001/08/07 2001/08/07 09:33:00 SUBMIT
S0000008 65 2001/08/07 2001/08/07 09:33:00 SUBMIT
S0000009 65 2001/08/07 2001/08/07 09:32:00 GENERAT
S0000010 66 2001/08/07 2001/08/07 09:32:00 GENERAT
S0000011 66 2001/08/07 2001/08/07 09:32:00 GENERAT
S0000012 65 2001/08/07 2001/08/07 09:32:00 GENERAT
S0000013 65 2001/08/07 2001/08/07 09:32:00 GENERAT
S0000014 65 2001/08/07 2001/08/07 09:32:00 GENERAT
S0000016 58 2001/08/07 2001/08/07 09:32:00 GENERAT
S0000017 58 2001/08/07 2001/08/07 09:32:00 GENERAT
S9999999 33 2001/08/07 2001/08/07 09:32:00 NOTIFY
```

A step by step action-oriented list controls and guides you through the recovery execution process.

- ✓ Newly created and dropped objects are handled as well.
- ✓ An alternative recovery is generated for objects affected by LOG NO utilities.
- ✓ Only those DB2 table spaces and indexes that have been updated since the selected PIT are recovered. This significantly reduces the time needed for a PIT recovery because only a subset of the DB2 application data must be restored. Especially, ERP and CRM systems using thousands of table spaces and indexes will massively benefit from this partial PIT recovery.
- ✓ Utilities are cleaned up that were active at the point in time of recovery.
- ✓ Obsolete DB2 copies and archives logs are cleaned up.
- A special "training" mode is provided to exercise a PIT recovery scenario without disturbing the normal DB2 production activity.
- The in-house solution for database maintenance can still be used without any changes.

Key Points

- *Ready to use when you need it*
- *No special set up required, e.g., no traces and no special backups*
- *Fastest and most reliable PIT recovery on the market*



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