



DB2 Flash Copy

Volume based backup & recovery with
IBM Enterprise Storage Server

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Different types of backup needed for a DB2 installation

Involved datasets are stored on volumes like this:

DBSxxx → System Datasets

DBLxxx → Database Logs and BSDS

DBDxxx → Databases

A volume based backup to be used in a situation when the entire system must be restored. **Flash Copy** is one solution for Volume backup.

A dataset based backup can be used instead of a volume based backup but you must be sure to copy all datasets... **Flash Copy** is one solution.

A traditional database backup to be used in situations where a database is corrupt. Yes, we are talking about **Image Copy**.

When is the right time for a backup?

For a traditional volume backup or a traditional dataset backup:

- DB2 must be stopped.

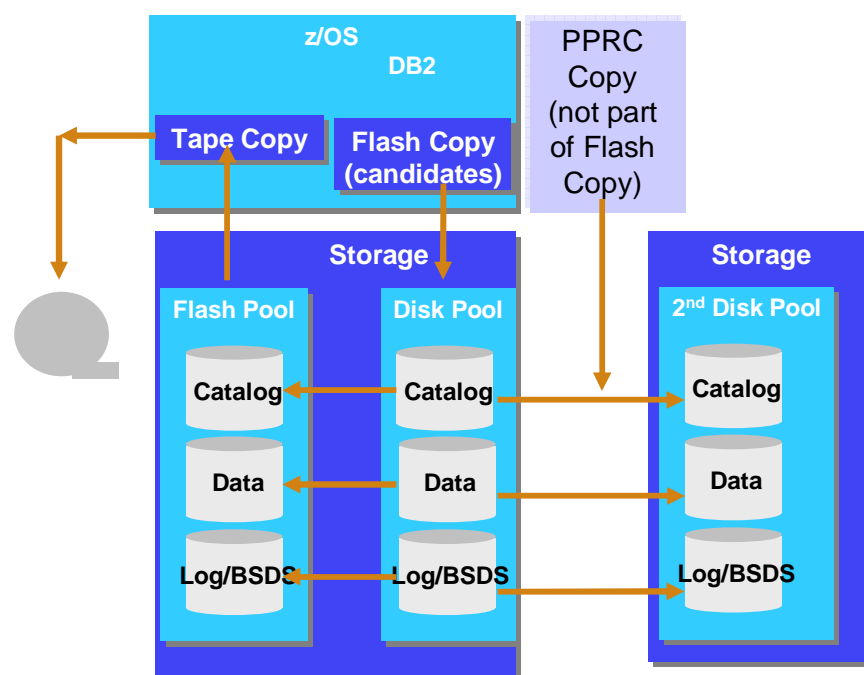
With Flash Copy installed:

- A backup can be taken at any time.
- DB2 can be up and running.

For a traditional Image Copy:

- At any time when it is needed.
- Use DB2 Automation tool (or a similar tool) on a daily basis. The tool can help you find Image Copy candidates.
 - A Image Copy should be taken at least once a week.
 - A tablespace is a candidate when xx % of data has changed.
 - ...

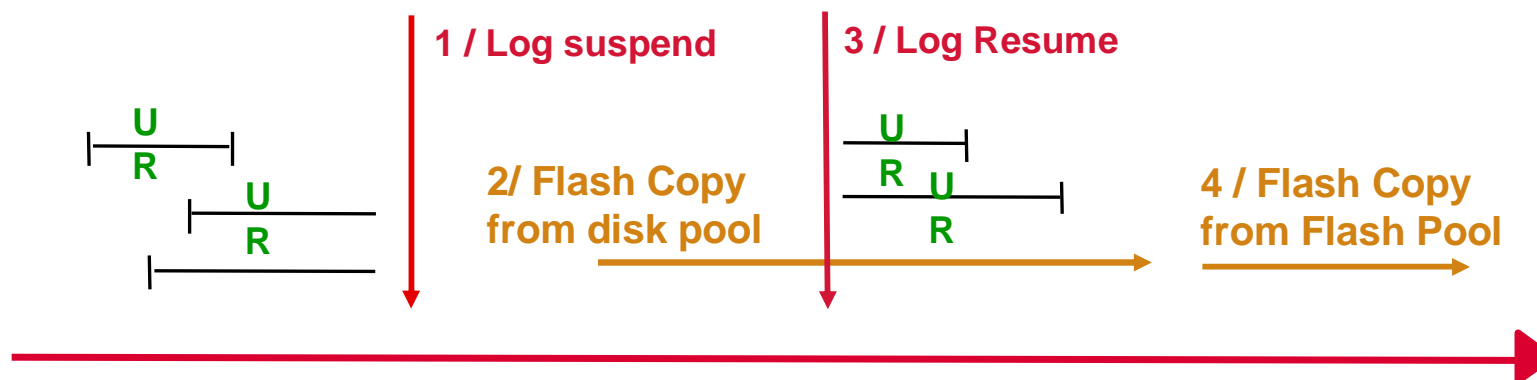
Flash Copy – How it works



Volume based Flash Copy step-by-step

A Flash Copy involves 4 steps. During those steps data will be copied from disk to a Flash Pool and later on from the Flash Pool to a tape.

The time schedule below shows all steps and when they run. Each step will be explained in detail later on.



Step 1 / Log suspend

There are two ways to avoid update activities in a DB2 system:

- Closing down DB2 is the most effective way to avoid updates. From a customer point of view this is not a good solution. Without databases the system is not operational.
- **SET LOG SUSPEND** will stop DB2 for updates. From the customer point of view this is a better and more preferable solution.
Job IKJEFT01.

Suspending a DB2 system for updates will have the following effect:

- A log-write latch will be set
- All LOG buffers will be written
- The high RBA will be written into the BSDS
- The RBA will be written in a Response Message (DSNJ372)
- Only read I/O possible.

What time does it take to suspend DB2?

- If there are no update activities in DB2, this step will take a few seconds.
- If there are update activities in DB2, a suspend will wait until those updates are finished.

Step 2 / Flash Copy

All DB2 Volumes will be copied from the Disk Pool to the Flash Pool. Flash Copy is a hardware solution taking care of all update activities from DB2 until all volumes are copied.

Candidates to be copied:

- Catalogue – DB2's system catalogues and the ICF catalogue used for involved datasets.
- Data – All databases, tables and indexes.
- Logs – DB2's LOG and Bootstrap datasets.

The time to do a Flash Copy is very short, usually not more than a few seconds. During that time, no update activities allowed. From DB2's point of view, the Copy is taken.

The timeframe to copy all volumes from the Disk Pool to the Flash Pool will keep on in the background. Time depends on the amount of data and it can keep on for a few hours. But, this is nothing we or DB2 have to think of.

Step 3 / Log Resume

Flash Copy is started. A copy of the Disk Pool is on its way to the Flash Pool. Time to start DB2 for update with job IKJEFT01.

SET LOG RESUME.

- The log-write latch is taken away
- The Response Message taken away (DSNJ372 / DSNJ373)
- DB2 read and write I/O possible.

The time to resume DB2 for update is very short,
Just a few seconds.

Step 4 / Copy Flash Pool to Tape

Flash Copy has been taken and it is time to move data from Flash Pool to Tape. This step is not time critical.

What time does it take?

- Time depends on the amount of data and it can keep on for a few hours?

Recover from a Flash Copy

The method to restore volumes dumps taken by Flash Copy is simple. The entire DB2 environment will be restored to the time for the Flash Copy.

Method:

- 1/ Stop DB2.
- 2/ Restore all volume backups.
- 3/ Start DB2.

Following datasets will look like they did when Flash Copy was taken:

- DB2 system catalogue
- Bootstrap dataset and all Logs
- Databases

What time does it take to restore an entire DB2 system?

- Time depends on the amount of data, maybe a few hours?