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## **DB2 Cloning Tool for z/OS**

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V2.2 (5655-S91, general availability 6.11.2009) makes it easy to clone a DB2 subsystem or DB2 table spaces very quickly.

### **DB2 subsystem cloning**

DB2 Cloning Tool integrates storage system volume fast-replication and automation to clone entire DB2 subsystems within the same or shared LPAR. DB2 Cloning Tool renames the data sets, updates the volume identities, and manages the DB2 metadata to allow the data to be used by a cloned DB2 subsystem quickly.

### **DB2 table space refresh**

DB2 Cloning Tool integrates storage system data set fast-replication and automation to refresh table and index spaces within the same or to a different DB2 system. DB2 Cloning Tool copies the data quickly, and automatically translates the object IDs that differ between source and target subsystems.

### **Storage blades**

The fast replication copy services outlined below can be used to create the volume copies used for DB2 system clones, or to create the data set copies used for table space and index space refreshes. A storage blade represents fast replication copy services invoked directly by DB2 Cloning Tool. DB2 Cloning Tool executes the DFSMSDss blade to issue IBM FlashCopy or STK SnapShot copy commands either by volume or by data set. When cloning DB2 systems or table spaces that reside on EMC Disk, DB2 Cloning Tool uses the EMC API to invoke TimeFinder/Clone to copy the data by volume or TimeFinder/Snap by data set. When cloning DB2 subsystems that reside on EMC Disk and use TimeFinder/Mirror, or that reside on Hitachi Storage Systems, an appropriate process is performed before DB2 Cloning Tool cloning automation is invoked and a list of copied storage volumes are passed to DB2 Cloning Tool for use in later processing steps.

#### **IBM Storage Blades**

##### IBM DFSMSDss Blade

- ADRDSSU utility invoked
- Fast replication (preferred)
- By volume or dataset
  - FlashCopy V2 (IBM, EMC, HDS)
  - Snapshot (STK, Rmac)

##### EMC storage blades

- EMC TimeFinder
  - TimeFinder/Clone
  - TimeFinder/Snap
  - EMC Consistency Technology

### **DB2 Cloning Tool functions overview:**

- DB2 Cloning Tool provides cloning and refresh solutions that automate and integrate sophisticated storage processor capabilities to:
  - Copy DB2 subsystems instantaneously to a consistent copy of production data without sacrificing availability
  - Reduce CPU and I/O costs by using the storage processor to copy the data instead of z/OS
  - Execute fast replication in a safer and more transparent manner on behalf of the DBA
- DB2 Cloning Tool can be used to:
  - Offload business processes from production to other environments. The offloaded processes can be run in parallel without affecting production DB2 systems and applications.
  - Stage data-warehouse loads.
  - Create or refresh test or quality assurance environments.
  - Direct users to read-only clones to reduce production performance impact.
  - Troubleshoot production problems from the clone.
  - Clone from a DB2 Recovery Expert or DB2 BACKUP SYSTEM system level backup.

DB2 Cloning Tool V2.2 includes the following enhancements:

- DB2 system cloning enhancements

- Support for extended address space (EAV) Disk volumes has been added.
- Incremental FlashCopy support has been added.
- For customers with EMC Disk, DB2 Cloning Tool will invoke TimeFinder/Clone to take a volume SNAP. Snap support includes both consistent and differential copies.
- Space Efficient Flashcopy support has been added.
- Consistency Group support has been added for both IBM FlashCopy and EMC TimeFinder/Clone.
- Functionality was added to allow a slow copy when FASTPREP(PREF) is specified and no fast replication is available.
- DB2 table space refresh enhancements
  - For customers with EMC Disk, DB2 Cloning Tool will invoke TimeFinder/Snap data set Snap to provide ease of use.
  - An option was added to always copy indexes for selected table spaces.
  - Includes the capability to mask column data during table space data set copy. The changes are made based on masking rules that are enabled during the copy. Examples of fields that a user might change are credit card numbers, names, and addresses.
  - A warning message has been added if the fuzzy copy option is in effect and the CI size does not equal the DB2 page size.
  - Two new commands are provided to allow users to adjust performance of DFSMSdss copy commands. These commands previously were available as settings in the parmlib and are now available as commands to provide greater flexibility. The two commands are DSNS-PER COPY(), which tells DB2 Cloning Tool how many data sets to send to DFSMSdss in a single copy command, and DSS-COPY-COMMANDS(), which tells DB2 Cloning Tool the number of DFSMSdss copy commands to send to DFSMSdss in a single invocation.
  - Seven new keywords have been added to the SET command to provide greater functionality. The keywords include:
    - DB2-PLAN provides for the specification of the DB2 plan name for source and target DB2 subsystem connects.
    - MAX-COPY-RC specifies the maximum return code for dataset copy. When the specified return code is exceeded, the job ends in error.
    - MAX-RC specifies the maximum job return code. When the specified return code is exceeded, the job ends in error.
    - MAX-SUBTASKS specifies the number of subtasks to start.
    - MERGE-PRINT message output to CKZPRINT and CKZLOG can be combined into CKZPRINT.
    - TCPIP-SERVER-PORT specifies the port the TCPIP server uses to wait for requests from the source job and the source job uses to connect to the TCPIP server job.
    - TCPIP-STC-NAME specifies the name of the TCPIP address space the source job and TCPIP server connect to.
- An ISPF interface has been added for both volume and table space cloning. This feature allows the user to create the necessary jobs using interactive panels if desired.

## **Features and benefits**

DB2 Cloning Tool offers these features and benefits:

- Quickly fixes volume conflicts (VTOC, VTOCIX and VVDS) and then renames and re-catalogs the target data sets to solve the data access problem
- Offers extended rename capability to support DB2 log and BSDS desired names
- DB2 online or offline cloning in minutes instead of days, without a separate image
- Automatic updating of DB2 internals to reflect renamed data sets
- DB2 data sharing
- DB2 data sharing many to less members
- DB2 support for either DB2 data sharing or from data sharing to non-data sharing for maximum flexibility
- Provides automatic pairing of volume characteristics (SMS and non-SMS, or by device size) that DFSMSdss doesn't do

- Allows FlashCopy, SnapShot, or TimeFinder/Clone by VOLSER masks or entire storage groups or any combination to eliminate the requirement for individual volume specification
- Provides extensive SMS options that enable you to determine how the SMS class constructs will be applied to your cloned data sets to ensure they are managed correctly
- Issuance of DFSMSDss commands or EMC TimeFinder/Clone commands within the product for ease of use
- Source volume ICF catalog information collection concurrent with FlashCopy, SnapShot, or TimeFinder/Clone initiation for rename integrity
- Early resumption of source volume activity to reduce outages
- Enhanced data set rename masking characters for flexibility
- User options to decide disposition of 'abnormal' data sets and catalog entries
- Multivolume data set and VSAM sphere integrity checks to prevent orphaned data
- Rename into existing populated ICF catalog(s) or a specific one
- Faster cataloging than conventional means
- Test for termination of FlashCopy, SnapShot, or TimeFinder/Clone relationships
- Mechanism to remove orphaned catalog entries from previous executions
- Simulate modes for most commands

<http://www-01.ibm.com/software/data/db2imstools/db2tools/db2ct-zos/>

Announcement: IBM DB2 and IMS tools expanded and enhanced to help better manage your environments (EMEA ZP09-0409 October 27, 2009): <http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?subtype=ca&infotype=an&apname=iSource&supplier=877&letternum=ENUSZP09-0409>