TPF Users Group Fall 2007
Title: DASD External Copy Services
Subtitle: Group Update -- APAR PJ31865

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Venue: System Control Program Subcommittee
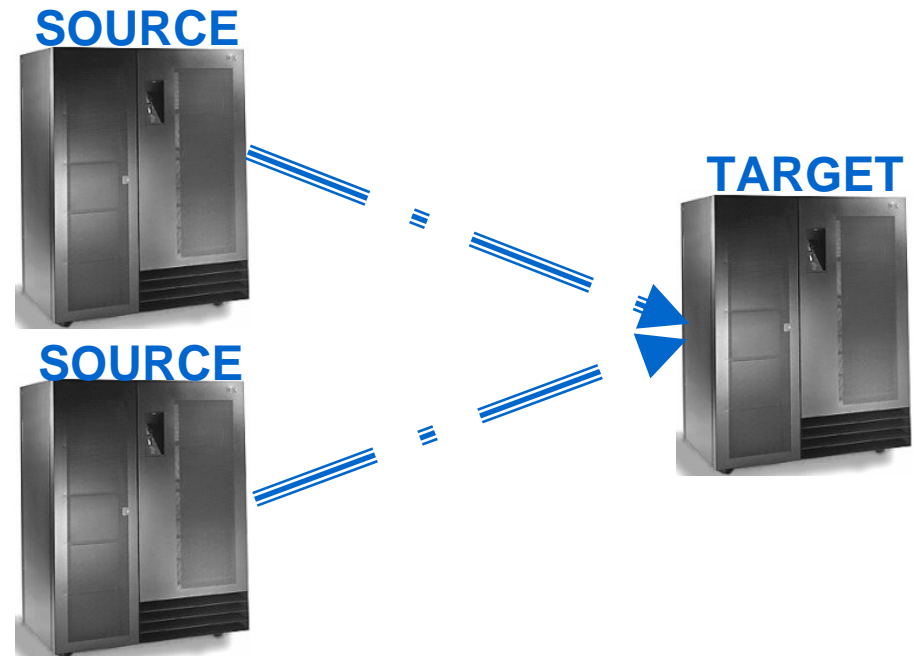
AGENDA

- **Overview of Copy Services**

- **Copy Services Enhancements**

    - Configuration display support

    - Dynamic database management

    - Improved error handling

Overview of Copy Services

- **FlashCopy® (Local)**
  - Point-in-time copy

- **Peer-to-Peer Remote Copy (Remote)**
  - IBM TotalStorage® Metro Mirror (Sync)
  - IBM TotalStorage® Global Copy (XD)
  - Both are continual copy environments

- **Benefits and Uses**
  - Creation of test systems
  - Disaster/Recovery
  - "Tapeless" Capture and Restore

SOURCE

SOURCE

TARGET

TPF Terminology

- **Hardware Configuration -** Hardware (path and volume) definitions / config file

- **Copy Relationship -** A device source/target pair

- **Set -** A collection of copy relationships for an MDBF subsystem

- **Group -** A collection of sets

- **Master Configuration -** Copy relationship, set and group correlations

- **Active Configuration -** Copy relationship and path definitions for individual groups

Active Display Support

- **What is it?**
  - Show as list of all active groups
  - Show the Active Configuration for a running group.

- **Why do we need it?**
  - Allows you to see all active groups, their mode and current state
  - Allows you to view what copy relationships and paths are currently part of a group.

- **How do we use it?**
  - New ZXCPY DISPLAY ACTIVE Command

Dynamic Database Management

- **What is it?**
  - A way to change the Active Configuration of a running **REMOTE** group "on the fly".

- **Why do we need it?**
  - Allows you to add and remove copy relationships without stopping the group.
  - Allow you to redefine the paths that are in use while a copy is still in progress.

- **How do we use it?**
  - Alter the group configuration in the Master Configuration Database
    - Series of existing ZXCFG Commands
  - Update the group configuration in the Active Configuration Database
    - New ZXCPY REMOTE SESSION UPDATE Command

Difference Display Support

- **What is it?**

  - Difference Display -- Show the differences between the Master Configuration and the Active Configuration for a **REMOTE** group.

- **Why do we need it?**

  - Allows you to review pending configuration changes prior to performing an update.

- **How do we use it?**

  - New ZXCPY DISPLAY DIFFERENCE Command

Putting It All Together

1. **Display a list of running copy groups**

```
AAES0008I 00 ==> zxcpy display active group-*
XCPY0087I 09.59.42 THE FOLLOWING GROUPS ARE ACTIVE:


GROUP NAME                            TYPE     CURRENT STATE

ALLGROUP                              REMOTE   COPY STOPPED

TPF1                                  REMOTE   INITIAL COPY COMPLETE

TPF2                                  LOCAL    FLASH COPY COMPLETE


END OF DISPLAY+
```

Putting It All Together

2. Display the Active Configuration of the <u>REMOTE</u> group

```
AAES0008I 00 ==> zxcpy display active group-TPF1
XCPY0084I 09.51.07 ACTIVE CONFIGURATION FOR REMOTE GROUP TPF1:
SUMMARY:
      NUMBER OF PATHS:  2
      NUMBER OF COPYRELS:  2


PATH INFORMATION:
          SOURCE_____ TARGET_____
TYPE   SERIAL_NUM WWNN                    SSID/LSS SERIAL_NUM WWNN                    SSID/LSS
FCP    0000005791 5005076303FFC0B2 107F/0F  0000022217 5005076300C09461 1040/00
       LINKS:  0200 008C, 0331 000C
FCP    0000022217 5005076300C09461 1043/03  0000005791 5005076303FFC0B2 107D/0D
       LINKS:  000C 0331, 008C 0200


COPY RELATIONSHIPS FROM CU 0000005791 TO CU 0000022217
          SOURCE_____ TARGET_____
COPYREL   SSID VOLNAME  SDA  VSN      SSID VOLNAME  SDA  VSN
FD4A400B 107F DV107F0A FD4A ZL0002  1040 TJ10400B 400B UNKNWN

COPY RELATIONSHIPS FROM CU 0000022217 TO CU 0000005791
          SOURCE_____ TARGET_____
COPYREL   SSID VOLNAME  SDA  VSN      SSID VOLNAME  SDA  VSN
40C3FCD4 1043 DV104303 40C3 ZL0007  107D TB107D14 FCD4 UNKNWN
```

Putting It All Together

3. **Update the Hardware Configuration Database**
   1. Change the offline config file and load it TPF
   2. ZXCFG CONFIG RECEIVE command

4. **Change the Master Configuration for the <u>REMOTE</u> group**
   - Add new copy relationships and sets
     - ZXCFG DEFINE command
     - ZXCFG ADD command
   - Remove old copy relationships and sets
     - ZXCFG DELETE command
     - ZXCFG UNDEFINE command

5. **Load the new Master Configuration for the <u>REMOTE</u> group**
   - ZXCFG CONFIG LOAD

Putting It All Together

6. **Display the difference between Master and Active Configuration for the <u>REMOTE</u> group**

```
AAES0008I 00 ==> zxcpy display difference group-TPF1

XCPY0085I 09.55.57 CONFIGURATION DIFFERENCES FOR REMOTE GROUP TPF1:


SUMMARY:

      NUMBER OF PATHS STARTED:  1

      NUMBER OF PATHS REMOVED:  1

      NUMBER OF COPYRELS ADDED:  1

      NUMBER OF COPYRELS REMOVED:  1


THE FOLLOWING PATHS WILL BE STARTED:
   SOURCE_____ TARGET_____

TYPE   SERIAL_NUM WWNN                SSID/LSS SERIAL_NUM WWNN                SSID/LSS

FCP    0000005791 5005076303FFC0B2 107F/0F   0000005791 5005076303FFC0B2 107B/0B

      LINKS:  0200 0331, 0331 020


THE FOLLOWING PATHS WILL BE REMOVED:
         SOURCE_____ TARGET_____

TYPE   SERIAL_NUM WWNN                SSID/LSS SERIAL_NUM WWNN                SSID/LSS

FCP    0000005791 5005076303FFC0B2 107F/0F   0000022217 5005076300C09461 1040/00

      LINKS:  0200 008C, 0331 000C
```

Putting It All Together

```
THE FOLLOWING COPY RELATIONSHIPS WILL BE ADDED:

COPY RELATIONSHIPS FROM CU 0000005791 TO CU 0000005791

          SOURCE_____    TARGET_____

COPYREL   SSID VOLNAME  SDA   VSN     SSID VOLNAME   SDA   VSN

FD4CFC41 107F DV107F0C FD4C ZL0006   107B TJ107B01 FC41 UNKNWN


THE FOLLOWING COPY RELATIONSHIPS WILL BE REMOVED:

COPY RELATIONSHIPS FROM CU 0000005791 TO CU 0000022217

          SOURCE_____    TARGET_____

COPYREL   SSID VOLNAME  SDA   VSN     SSID VOLNAME   SDA   VSN

FD4A400B 107F DV107F0A FD4A ZL0002   1040 TJ10400B 400B UNKNWN


END OF DISPLAY+
```

Putting It All Together

7. Perform the update of the <u>REMOTE</u> group

```
AAES0008I 00 ==> zxcpy remote session update group-TPF1

XCPY0088I 10.08.04 UPDATE STARTED FOR GROUP TPF1+

XCPY0089I 10.08.04 UPDATE FOR GROUP TPF1 IN PROGRESS. 1 OUT OF 1 PATHS
                   HAVE BEEN SUCCESSFULLY STARTED+

XCPY0090I 10.08.05 UPDATE FOR GROUP TPF1 IN PROGRESS. 1 OUT OF 1 COPY

                   RELATIONSHIPS HAVE BEEN SUCCESSFULLY STOPPED+

XCPY0091I 10.08.05 UPDATE FOR GROUP TPF1 IN PROGRESS. 1 OUT OF 1 COPY

                   RELATIONSHIPS HAVE BEEN SUCCESSFULLY STARTED+

XCPY0092I 10.08.05 UPDATE FOR GROUP TPF1 IN PROGRESS. 1 OUT OF 1 PATHS
                   HAVE BEEN SUCCESSFULLY STOPPED+

XCPY0093I 10.08.05 GROUP TPF1 HAS BEEN SUCCESSFULLY UPDATED+
```

Improved Error Handling

- **What is it?**
  - Allows the group to continue running in the event of most errors.

- **Why do we need it?**
  - I/O can fail and currently these errors may cause the group to halt.

- **How do we use it?**
  - Error tolerance built into most **REMOTE** commands:
  - Use the new ZXCPY UPDATE Command to remove copy relationships that have failures or are out of sync with the **REMOTE** group.

Summation of Benefits

- View the information of running copy groups

- Respond to hardware configuration changes
  - Planned and unplanned module down
  - Bringing new devices online
  - Rolling control units in and out of a complex

- Flexibility in tolerating errors
  - Loss of PPRC paths
  - Timeouts due to long response times from the control unit

Questions

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