Adding IASP disk units to an existing DS8000 IASP Copy Services Manager (ICSM) environment

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When increasing the capacity of an existing IASP Copy Services Manager environment you need to plan carefully to ensure the current environment is protected throughout the entire process.

There are different ways of adding disk units into an existing configuration. This document outlines the preferred approach which keeps the IASP available to the system while preserving the HA/DR copy.

The process described is the fastest and least disruptive manner in which to add new volumes into an ICSM environment. The HA/DR copy of the IASP is protected during the process because the PPRC relationship on the existing volumes continues while the new volumes are included in the PPRC relationship before they are added to the IASP.

Fast format versus slow format

When adding disk units on an IBM i partition (either SYSBAS or IASP volumes), the DS8000 will default to using an internal quick initialization. This function allows the DS8000 to quickly return a "format completed" status to the IBM i partition making the volumes available to the host.

However, if a PPRC relationship is active on a volume the DS8000 cannot use the quick initialization function and reverts to a much slower sector-by-sector format procedure. This process can be very time consuming and resource intensive. Due to the extended duration and potential negative impact on production performance this formatting procedure should be avoided.

Notes:

−   If a PPRC relationship exists on the new volumes, but the new volumes have not been "initialized and formatted" (Step 3) then end any PPRC relationship that was started on the new volumes.

−   If the system is IPL'd after the disk units have been "initialized and formatted" (Step 3) but before the disk units have been "added to the IASP" (Step 9), the process must be restarted at Step 3. However before continuing at Step 3 end any PPRC relationship that was started on the new volumes.

−   Run STRASPBAL (Start ASP Balance) on the IASP after successfully adding the new volumes to the IASP (in order to prevent disk subsystem performance issues)

−   Considerations for configuring new volumes:
    ▪   The same Logical Subsystem (LSS) pair that make up the IASP should be used.
    ▪   The new volume IDs should follow the last existing volume ID such that a contiguous volume range is maintained. This results in DSCLI scripts that are simple and easy to maintain.

−   After the new volumes have been added to the IASP on the production node they will remain as non-configured disk units on the FLASH, MMIR, and GMIR nodes until a STRFLASH or SWPPRC operation is performed. The new volumes will not appear on the LUN-level switch node until a SWPRRC operation is performed.

−   The production cluster node may need to be ended if the environment has experienced SWPPRC operations in which the IASP was made available to a non-production cluster node, but that non-production cluster node has not been IPL'd since the IASP was switched back to the production node. In such a case an error message will indicate the "Independent ASP is in use".

Recommended process

1. Display Cluster Information and verify node status
   Run DSPCLUINF (Display Cluster Information)
   Ensure all nodes are Active in the cluster.
   Ensure all nodes are Active in the device domain.

2. Configure the new volumes and attach to the various IBM i partitions in the environment.
   The new volumes should appear as non-configured disks units in SST.
     o STRSST (System Service Tools) and sign on
     o Select 3. Work with disk units
     o Select 1. Display disk configuration
     o Select 4. Display non-configured units
     o Exit SST

   Verify non-configured disk units appear on all cluster nodes in the device domain.

3. Initialize and format new disk units:
   DS8000 installations – run on production node only. V7000 installations – run on all nodes.
     o STRSST and sign on
     o Select 3. Work with disk units
     o Select 3. Work with disk unit recovery
     o Select 2. Disk unit problem recovery procedures
     o Select 1. Initialize and format disk unit
     o Select 1 on the new disk units, press Enter and F10 to confirm
     o Wait for message "Initialize and format completed successfully"
     o Exit SST

   This process sets a "flag" informing the IBM i OS the disk unit has been formatted. If the system is IPL'd (before successfully completing steps 4-9) this information is lost and you will be required to initialize and format the new disk units again.

4. Start replication on the new volumes (mkpprc)
   Metro Mirror – type is *mmir*. Global Mirror – type is *gcp*.

5. List the status of the replication on the new volumes (lspprc -l)
   Metro Mirror environment – wait for *State* to have a *Full Duplex* status
   Global Mirror environment – wait for *Out of Sync Tracks* to approach zero and *First Pass Status = True*

6. Complete Global Mirror configuration if applicable
     o Create the Global Mirror Consistency Group (CG) Flash Copy volumes
     o Create the Flash Copy relationship for the CG volumes
     o Add new volumes into the existing Global Mirror session
     o List session (lssession) and verify *Status* of *CG In Progress* for the new volumes

7. Run ENDFLASH to end any active Flash Copy operations. If the OS version is i 7.1 or later run WRKASPCPYD (Work with ASP Copy Descriptions) on any active cluster node and verify there are no ICSM Session Type *FLASHCOPY. If a Flash Copy session is active, use Option 24 to end the session and remove the Flash Copy relationship.

8. Release IASP IO on all Flash Copy nodes
   Ensure IASP is varied off on Flash Copy node(s).
   Run QZRDHASM/RLSASPIO IASPNAME(*iaspname*) TYPE(*FLASH)
   This will ensure the Independent ASP is not in use by another cluster node.
   If the PPRC relationship is active on the existing IASP volumes a RLSASPIO is not required on the HA/DR node (as the volumes are already target host inhibited).

9. Add new disk units to ASP (on production node only)
   - STRSST and sign on
   - Select 3. Work with disk units
   - Select 2. Work with disk configuration
   - Select 2. Add units to ASPs
   - Select 3. Add units to existing ASPs
   - Specify the existing IASP number to each new drive and press Enter
   - Press Enter to confirm your choice for Add units.
   - Wait for message "Selected units have been added successfully"
   - Exit SST

10. Reset IASP IO on all Flash Copy nodes
    Run QZRDHASM/RESETASPIO IASPNAME(*iaspname*) on all FlashCopy nodes

11. Modify the IASP Copy Services Manager environment (on production node)
    Metro Mirror environment if applicable
    - ADDLIBLE QZRDHASM
    - WRKCSE (Work with Copy Services Environment)
    - Select 2 (Change) on the MMIR environment and press Enter
    - Press Enter to display the "Add, Change or Delete Volume" screen
    - Select 2 (Change) on the volume range to be modified, update the volume range and press Enter.

12. Modify the IASP Copy Services Manager environment (on production node)
    Global Mirror environment if applicable
    - ADDLIBLE QZRDHASM
    - WRKCSE (Work with Copy Services Environment)
    - Select 2 (Change) on the GMIR environment and press Enter
    - Press Enter to display the "Add, Change or Delete Volume" screen
    - Select 2 (Change) on the volume range to be modified, update the volume range and press Enter.

13. Modify the IASP Copy Services Manager environment (on production node)
    LUN-level switch environment if applicable
    - ADDLIBLE QZRDHASM
    - WRKCSE (Work with Copy Services Environment)
    - Select 2 (Change) on the LUN environment and press Enter
    - If the new volumes were added to existing volume groups then no change is required.
    - If the new volumes were added to new volume groups then Select 1 (Add).
      Specify the new volume group, production node host connection, and HA node host connection and press Enter.

14. Modify the IASP Copy Services Manager environment (on Flash Copy node)
    Flash Copy environment if applicable
    - ADDLIBLE QZRDHASM
    - WRKCSE (Work with Copy Services Environment)
    - Select 2 (Change) on the FLASH environment and press Enter
    - A message should appear indicating "The source and/or target Copy Descriptions does not match the Advanced Copy Services data…"
      This is expected due to the mismatch with the PPRC environment
    - Press F10 to continue and press Enter
    - Press Enter to display the "Add, Change or Delete Volume" screen
    - Select 2 (Change) on the volume range to be modified, update the volume range and press Enter.

15. Run WRKASPCPYD (Work with ASP Copy Descriptions) on any cluster node
    o Select 5 (Display copy) to verify the new volume range has been updated to the respective ASP Copy Description

16. Run CHKPPRC on the HA/DR node to verify switch readiness.

17. Run STRFLASH on the FlashCopy node as required.