

## Accelerate with IBM Storage



## What's New with IBM Copy Services Management

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# Accelerate with IBM Storage Webinars



## The Free IBM Storage Technical Webinar Series Continues in 2016...

North America Technical Leadership Experts cover a variety of Storage topics

Audience: Clients who are either currently have IBM Storage products or considering acquiring IBM Storage products. Business Partners and IBMers are also welcome.

### How to sign up?

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### Information, schedules, and archives:

Located in the Accelerate with IBM Storage Blog:

<https://www.ibm.com/developerworks/mydeveloperworks/blogs/accelerate/?lang=en>

### Upcoming webinars:

March 17<sup>th</sup> - Storwize V5000 Gen2 Technical Update

# Agenda

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- CSM Overview
- CSM Product Family
- New Features in CSM 6.1
- CSM Installation
- Migration from TPC for Replication
- MultiTarget PPRC



- Rebranded from TPC for Replication
  - Offers continued support for all existing Tivoli Storage Productivity Center for Replication functions across mainframe and distributed devices
    - Easy way to migrate from TPC-R to CSM
- Replication Management Solution
  - Central place for control of replication environment
  - Simplified and automated complex replication tasks
    - Eliminates the complex scripting that could be expensive to maintain and error prone to use
  - Provides intuitive Web browser based GUI for complex solutions
  - Provides CLI for easy automation
  - Event and Alert notification
  - Provides Business Continuity
    - With Active and Standby CSM server support and HyperSwap Technology CSM provides customers with 24/7 protection to keep their businesses running.

## CSM Overview (2)

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- What does CSM support
  - Supports IBM Storage Systems and Heterogeneous Environments
    - DS8000, SVC, Storwize family, XIV
  - Coordinates advanced copy services for supported storage systems
    - Flash Copy, Metro Mirror, Global Copy, Global Mirror, Metro Global Mirror, Multi-Target solutions
  - Support for z/OS HyperSwap technology in two site and three site environments
  - CSM is Data Agnostic
    - Manage both open system volume (FB) replication and z/OS volumes (CKD) replication
  - Support for installation on all major server platforms

# CSM Product Family (1)



- **Copy Services Manager for z System V6.1**
  - Provides all supported FlashCopy, Metro Mirror, Global Copy, Global Mirror, Metro Global Mirror, and multi-target solutions.
  - Runs on z/OS
  - Program PID: 5698-E01 6.1.0
  - Available at Shopz
  - License by source Terabytes replicated
  
- **Copy Services Manager Basic Edition for z System V6.1**
  - Supports a Basic HyperSwap® session type on DS8000® hardware and FlashCopy sessions across any supported hardware platform.
    - Entitled version of CSM on z Systems for HyperSwap continuous availability support without disaster recovery capabilities
  - Runs on z/OS
  - Program PID: 5698-E02 6.1.0
  - Available at Shopz
  - License by machine

## CSM Product Family (2)

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- Copy Services Manager V6.1
  - Provides all supported FlashCopy®, Metro Mirror, Global Copy, Global Mirror, Metro Global Mirror, and multi-target solutions
  - Runs on supported distributed system platforms
  - Entitled under IBM Spectrum Control V5.2.8
    - IBM Copy Services Manager : Optional part # CN8DJEN
  - Available at IBM Passport Advantage
  - License under Spectrum Control by Total Terabytes managed
- Support for Try-and-Buy evaluation license

# Key New Features in CSM 6.1

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- New supported server platform and storage systems
- Multi-Target Metro Mirror with Global Mirror
  - Two new session types
    - Multi-Target MM-GM
    - Multi-Target MM-GM with Practice
- Support management of 256+ Global Mirror sessions on DS8000
  - Multiple CSM GM sessions 'share' the DS8K Master session
  - Designed for VM environments where each VM servers needs to be managed separately
  - Ability to Start, Suspend, Site Switch each CSM session individually
- Basic automatic restart for SVC/Storwize Global Mirror suspend operations with reason code 1720 or 1920
  - Option to automatically restart sessions on 1720/1920 suspend errors



# New Supported Server Platforms and Storage Systems



## • Server Platforms

- Windows, Linux, **Linux on IBM PowerPC**, **Linux on IBM z Systems**, zOS, AIX, **IBM iSeries**
  - IBM Copy Services Manager is now supported on IBM i systems for integration with PowerHA. Please contact the Lab Services team specializing in PowerHA tools for IBM i for installation and details on support.
- Supported Platforms and Browsers Lists for IBM Copy Services Manager:
  - <http://www-01.ibm.com/support/docview.wss?uid=ssg1S7005238>

## • Storage Systems

- DS8000, **FlashSystem V9000**, **FlashSystem V840**, SAN Volume Controller, Storwize Family including **V5000**, Spectrum Accelerate, XIV, TotalStorage ESS
- Hitachi Data Systems
  - Only Basic HyperSwap and Metro Mirror Failover/Failback with HyperSwap sessions support this storage system for mainframe attached volumes. Please contact vendor directly to confirm support of desired configuration.
- Supported Storage System Matrix for IBM Copy Services Manager 6.x:
  - <http://www-01.ibm.com/support/docview.wss?uid=ssg1S7005234>

**Red** denotes new supported server platforms or storage systems

# New Supported DS8000 Three Sites Replication Session Types



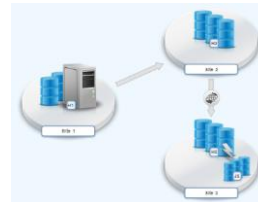
- Multi-Target MM-GM



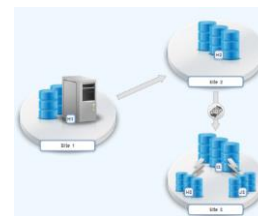
- Multi-Target MM-GM with Practice



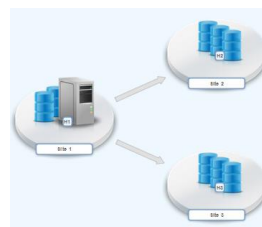
- Metro Global Mirror



- Metro Global Mirror with Practice



- Multi-Target MM-MM



Red denotes new session types

# New Feature on DS8000 Global Mirror Session Types



- Support management of 256+ Global Mirror sessions on DS8000
  - Custom consistency group name can be assigned to CSM Global Mirror sessions and Metro Global Mirror session.
    - Each custom consistency group name corresponds to a hardware consistency group.
    - Custom consistency group name is DS8000 HW session ID which must be a hexadecimal value between 0 and FF.

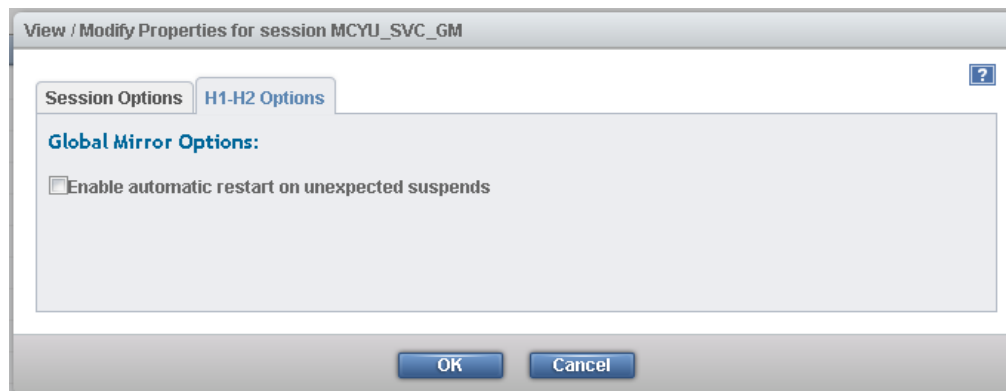


- Multiple CSM Global Mirror sessions and Metro Global Mirror sessions can be set to the same custom consistency group name.
  - Allows multiple sessions be associated with the same HW session ID on the DS8000
  - The sessions add their volumes to the same HW session ID.
- When Suspend command is issued to one of the sessions with the same consistency group name, all the sessions are temporarily suspended. The volumes of the session which the Suspend command is issued are pulled out of the consistency group consistently. The consistency group will then restart automatically. The Suspended session can be recover and failback to the other direction if needed.

# New Function on SVC/Storwize Global Mirror Session Type



- Basic automatic restart for SVC/Storwize Global Mirror suspend operations with reason code 1720 or 1920
  - New session properties option - “Enable automatic restart on unexpected suspends”
  - An automatic restart is attempted for every suspend with reason code 1720 or 1920 up to a predefined number of times within a 30-minute time period.
  - The number of times that a restart is attempted is determined by the storage server *gmlinktolerance* value.
  - Note: This option can be set only if the source and target storage servers are using the same Network Time Protocol (NTP) IP address to sync their clocks.
  - **Warning:** When you enable this option, the session is automatically restarted by the server. When this situation occurs, the secondary site is not consistent until the relationships are full resynced



## Other New Features in CSM 6.1

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- Remote CLI installation
  - Separate install code to install the CSM CLI to run on a remote system
- REST interfaces updates for integration with the IBM iSeries Advanced Copy Services Toolkit
- Authentication
  - The basic user registry for distributed systems
  - An operating system repository, such as RACF, for z/OS systems
  - LDAP repository for both distributed systems and z/OS systems
- Support for configuring LDAP authentication by using the CSM CLI

# CSM Installation on z Systems



1. Ensure that your system meets the minimum software and hardware requirements.
2. Verify you have the latest z/OS® APARs, updates, and PTFs needed to support Basic HyperSwap®.
3. Obtain CSM for z Systems install image from shopZ
4. Install Copy Services Manager with SMP/E.
  - a. Configure jobs
  - b. Run jobs without errors
5. Complete the post-installation steps for z/OS.
  - a. Configure the IWNRACT, IWNINSTL, and IWNSRV jobs.
  - b. Run the IWNINSTL installation job with no errors.
6. Start the Copy Services Manager graphical user interface (GUI)

For detailed installation instructions, see the IBM Copy Services Manager for z Systems Program Directory or the IBM Copy Services Manager Basic Edition for z Systems Program Directory.

# CSM Installation on Distributed Systems



- Fast installation and small footprint
  - Download CSM installation image on CSM Support Portal
    - [https://www-947.ibm.com/support/entry/portal/product/system\\_storage/storage\\_software/storage\\_infrastructure\\_management/ibm\\_copy\\_services\\_manager?productContext=332956944](https://www-947.ibm.com/support/entry/portal/product/system_storage/storage_software/storage_infrastructure_management/ibm_copy_services_manager?productContext=332956944)
1. Run the CSM stand alone installation setup file
  2. Provide the CSM license file on the Select License page
    - Obtain csm-license.zip file from Spectrum Control eAssembly
  3. Select “Install” option on the Select Installation Type page
  4. Provide the information requested on the installation setup pages
    - For authentication information, define a user name or accept the default, csmadmin, and define and confirm a password.
  5. After the installation completes, a message is displayed that the installation is successful.

## Migration from TPC-R for z Systems

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- TPC-R for z Systems licenses are eligible to trade-up to CSM for z Systems.
- Obtain CSM for z Systems install image from shopZ
- CSM for z Systems installation allows for an 'upgrade' install and does not require a new installation.
- The upgrade will replace the existing TPC-R installation of code.



# Migration from TPC-R on Distributed Systems (1)



- New CSM installation
  - Stand alone installation and so not an upgrade from existing TPC-R installation
- Download CSM installation image on CSM Support Portal
  - [https://www-947.ibm.com/support/entry/portal/product/system\\_storage/storage\\_software/storage\\_infrastructure\\_management/ibm\\_copy\\_services\\_manager?productContext=332956944](https://www-947.ibm.com/support/entry/portal/product/system_storage/storage_software/storage_infrastructure_management/ibm_copy_services_manager?productContext=332956944)
- Can be installed on a different server than TPC-R server
- Can be installed on the same server where TPC-R resides
  - Stop TPC-R server before CSM installation or specify to use different ports than the default ports during CSM installation
- Backup the existing TPC-R configuration before installing CSM

# Migration from TPC-R on Distributed Systems (1)



1. Issue the csmcli “mkbackup” command on the existing TPC-R server
  - This creates a zip image of TPC-R configuration.
2. Run the stand alone installation setup file
3. Provide the CSM license file on the Select License page
  - Obtain csm-license.zip file from Spectrum Control
4. Select “Migrate or restore by using existing backup” option on the Select Installation Type page
  - Identify the path to the backup zip image of TPC-R configuration that is created by the mkbackup command.
5. Provide the information requested on the installation setup pages
  - For server port configuration, use the default ports, or define different ports that are not in use.
6. After the installation completes, a message is displayed that the installation is successful.
  - Now the CSM server has the same configuration as the TPC-R server.
7. Stop the existing TPC-R server if it’s running
  - Do NOT terminate any sessions running on the TPC-R server

# Important Links

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## **CSM Support Portal:**

[https://www-947.ibm.com/support/entry/portal/product/system\\_storage/storage\\_software/storage\\_infrastructure\\_management/ibm\\_copy\\_services\\_manager?productContext=332956944](https://www-947.ibm.com/support/entry/portal/product/system_storage/storage_software/storage_infrastructure_management/ibm_copy_services_manager?productContext=332956944)

## **CSM Knowledge Center:**

[http://www-01.ibm.com/support/knowledgecenter/SSESK4/product\\_welcome/csm\\_kcwelcome.html](http://www-01.ibm.com/support/knowledgecenter/SSESK4/product_welcome/csm_kcwelcome.html)

## **CSM Support Matrix:**

<http://www-01.ibm.com/support/docview.wss?uid=ssg1S1005402>

## **CSM YouTube Channel:**

<https://www.youtube.com/channel/UC2KaP7qpv4Z9yJ75Yiol-pA>



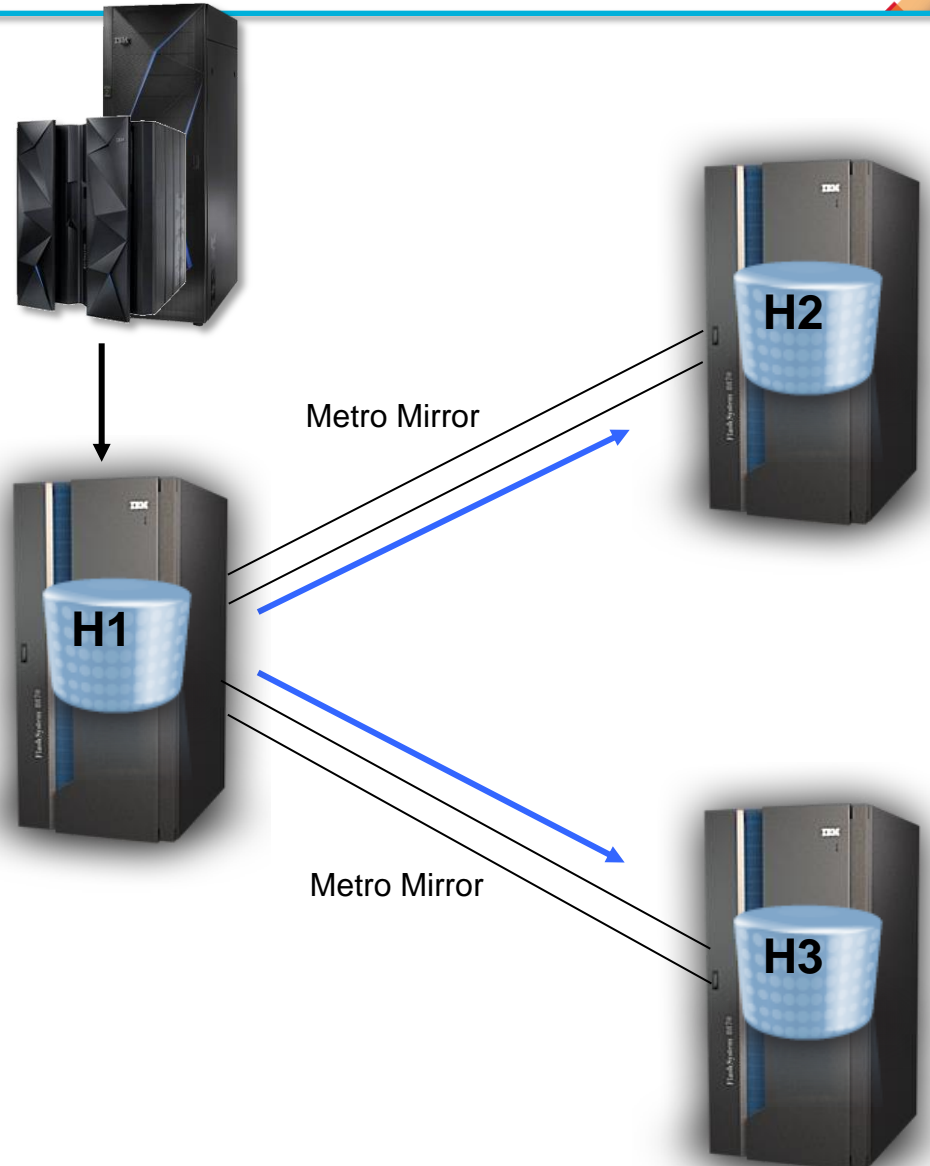
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# MultiTarget PPRC

# MultiTarget PPRC



- Single volume is the source for two separate relationships.
- DS8870 and DS8880
  - General Availability started in Release 7.4
  - DS8884 and DS8886 supported from initial Release 8.0



# Topologies

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- Two Synchronous Metro Mirror
- Synchronous Metro Mirror + Asynchronous Global Mirror
- Two Asynchronous
- MultiTarget with MGM or Mz/GM



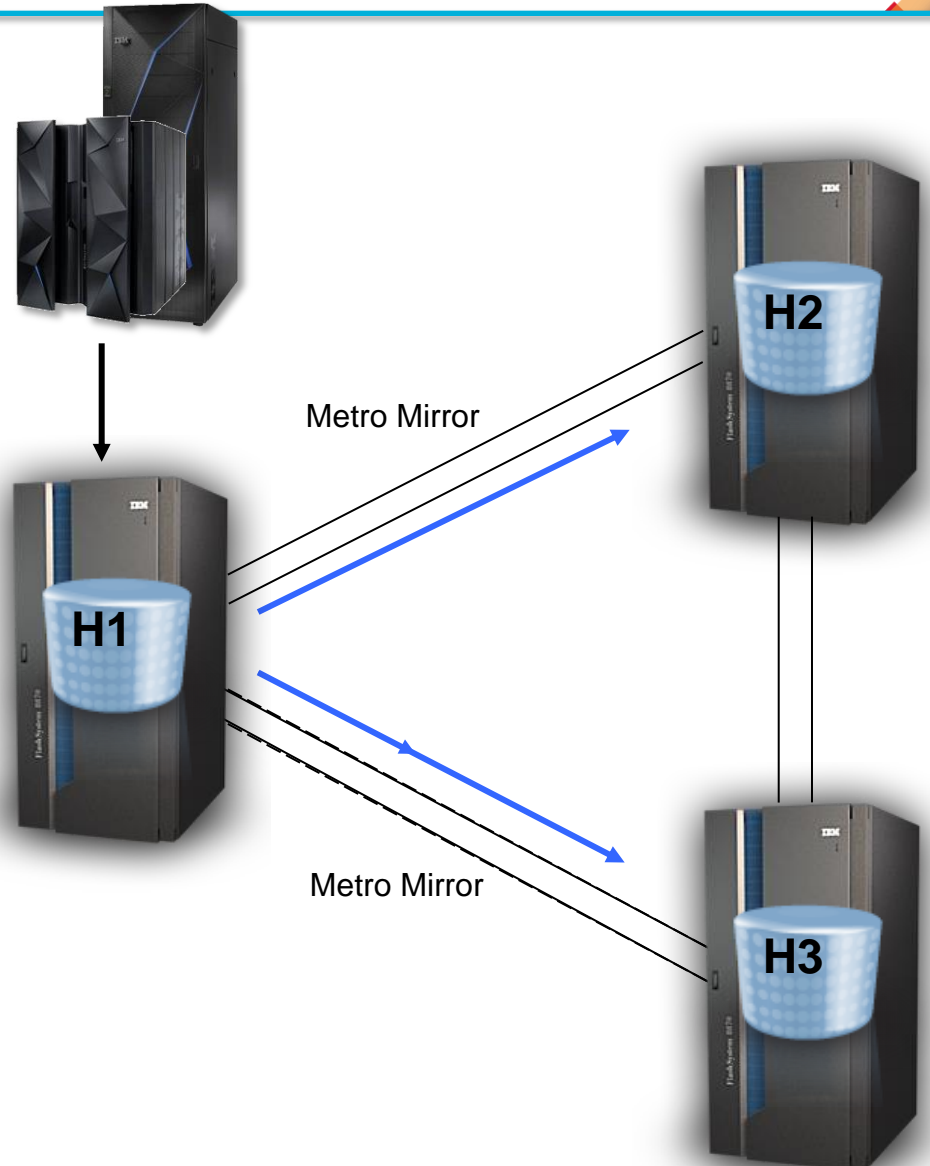
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# Metro Mirror – Metro Mirror

# MultiTarget Metro Mirror



- Data is transferred to both targets in parallel
- Pairs operate independently of each other
  - Pairs may be established, suspended or removed separately
- HyperSwap capability is maintained
- MultiTarget restored after remote site is recovered

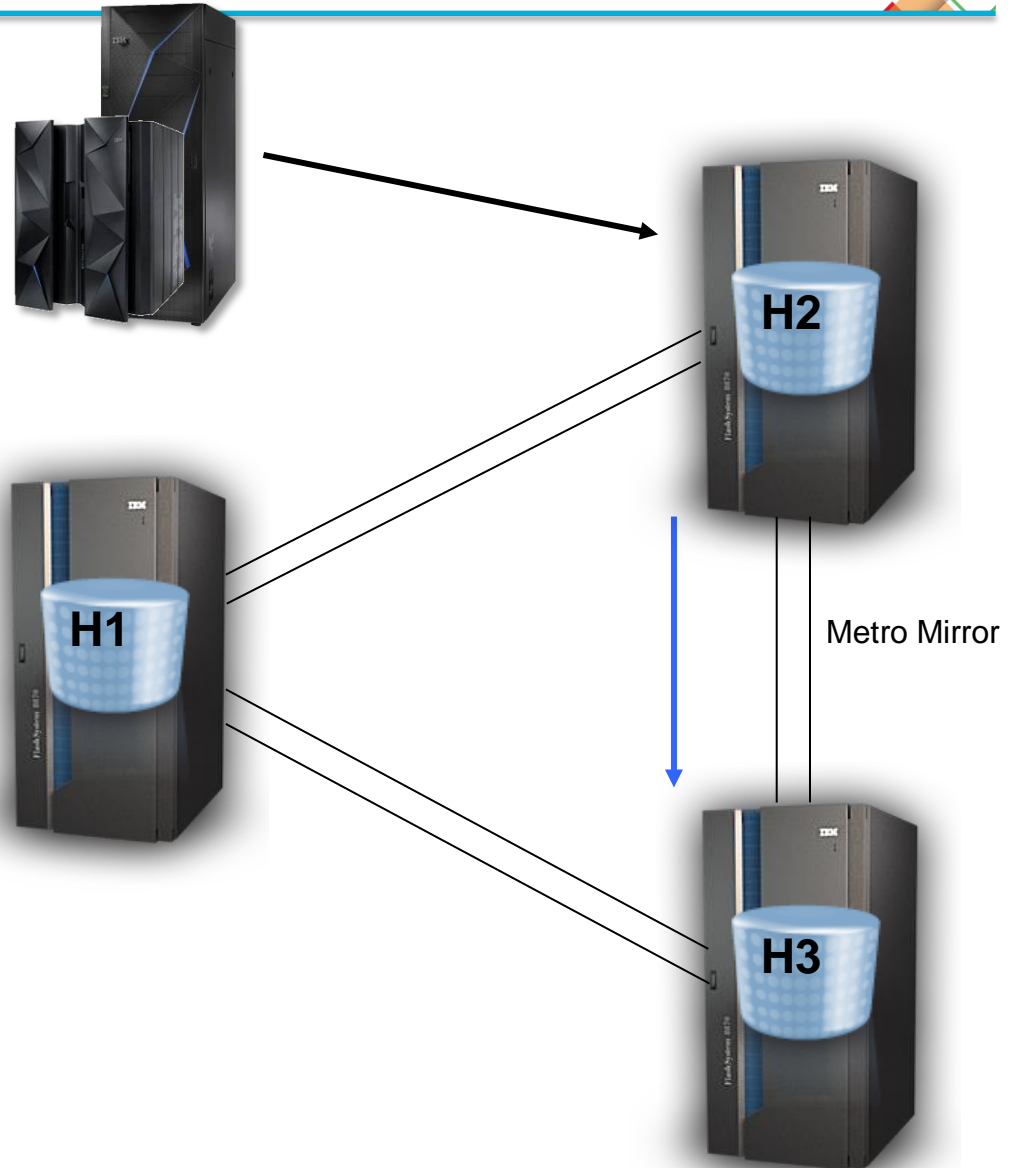




# Restore Mirroring after HyperSwap



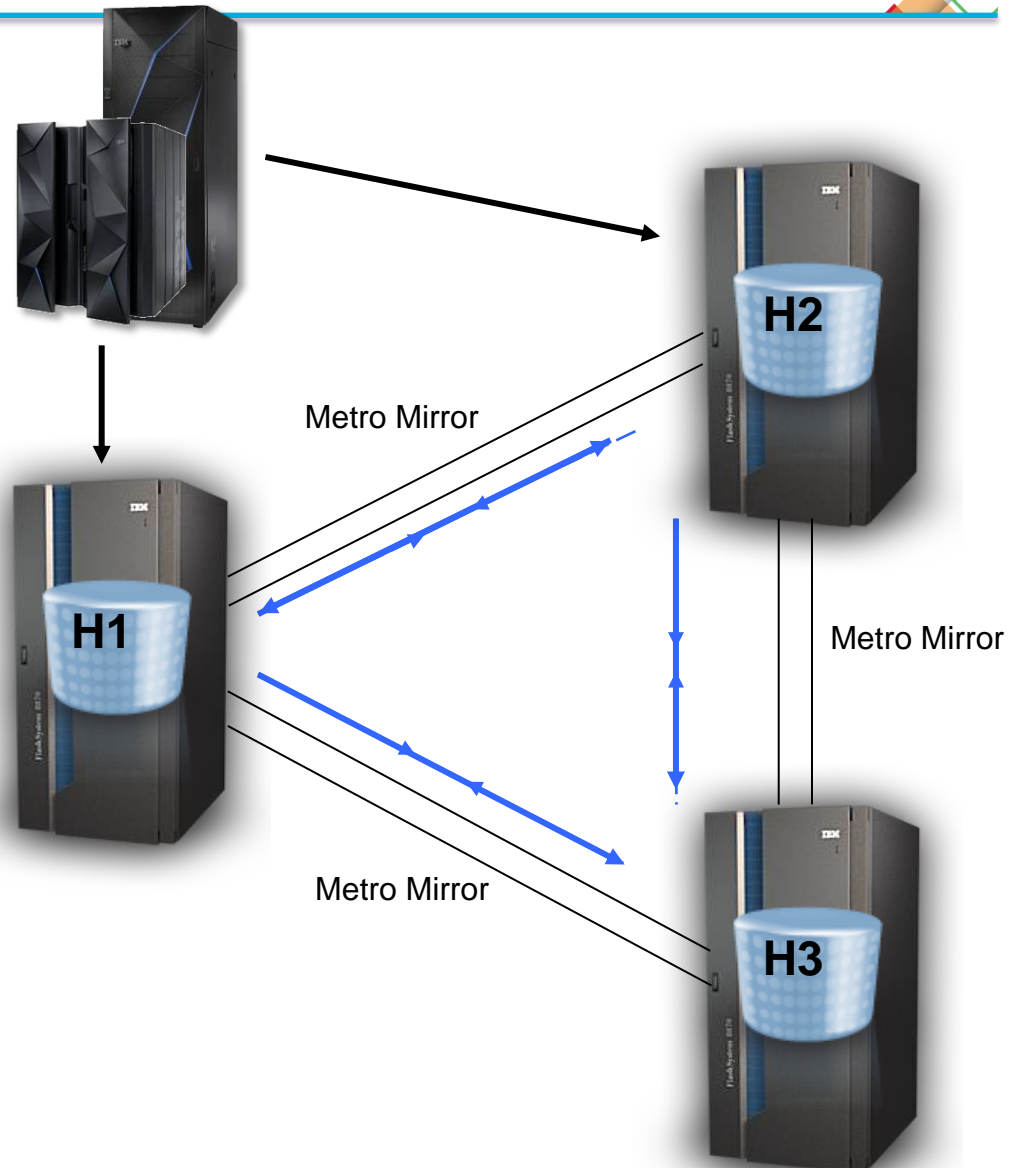
- Mirroring restored after a HyperSwap
- StartH2H3



# Recovery After H1 failure



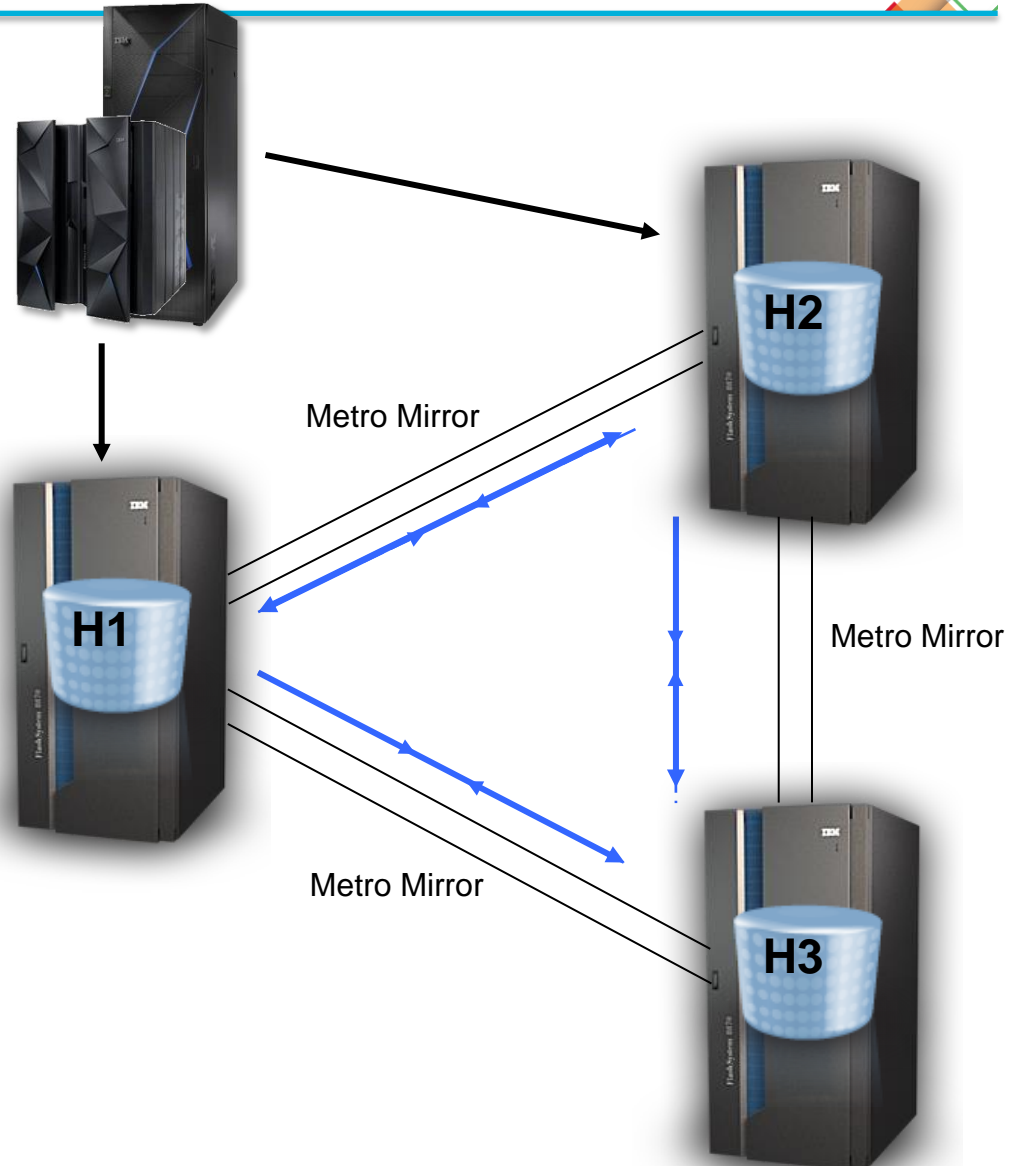
- Failure at H1
- HyperSwap to H2
- Resume H2→H3 with Incremental Resync
  - StartH2H3
  - Mirroring is quickly resumed
- Site H1 recovered
  - StartH2H1





## Return to H1

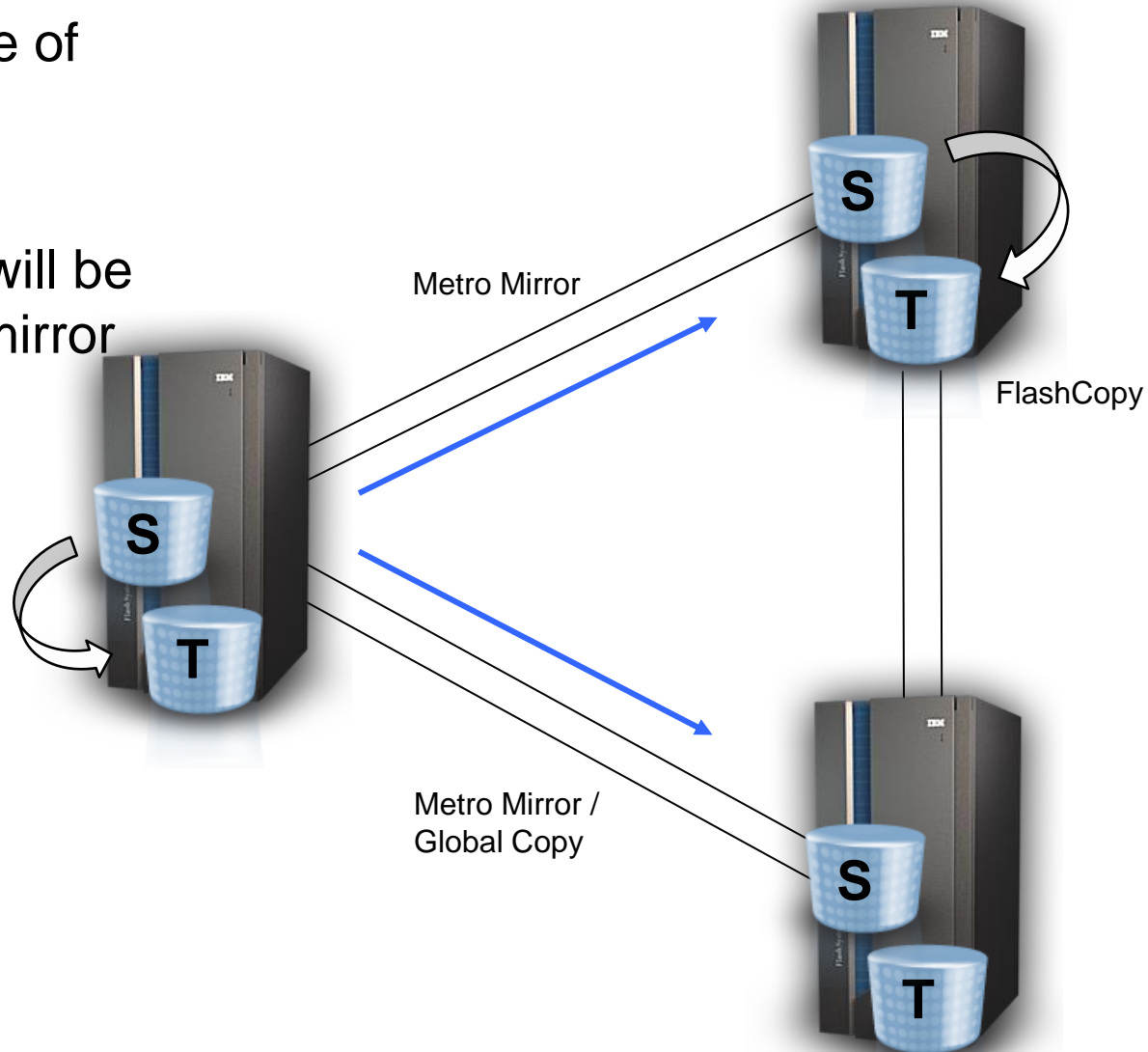
- HyperSwap to H1
  - HyperswapH1
- Resume H1 → H2 and H1 → H3 pairs.
  - StartH1H2
  - Start1H1H3



# Remote Pair FlashCopy



- FlashCopy mirrored to one of the secondary volumes.
- CSM Session Properties will be used to set the preserve mirror relationship



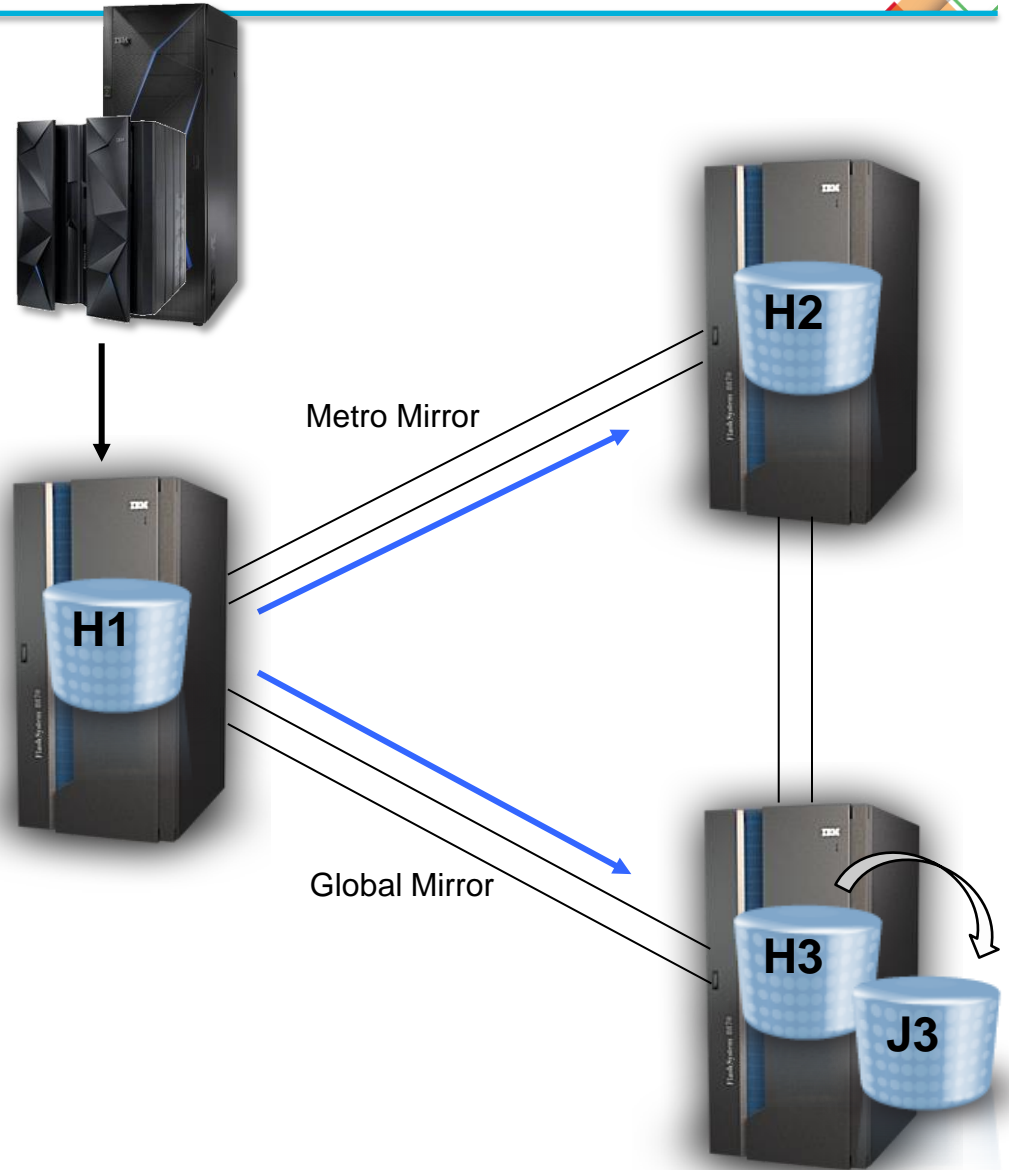


# Metro Mirror – Global Mirror

# Metro Global Mirror - MultiTarget



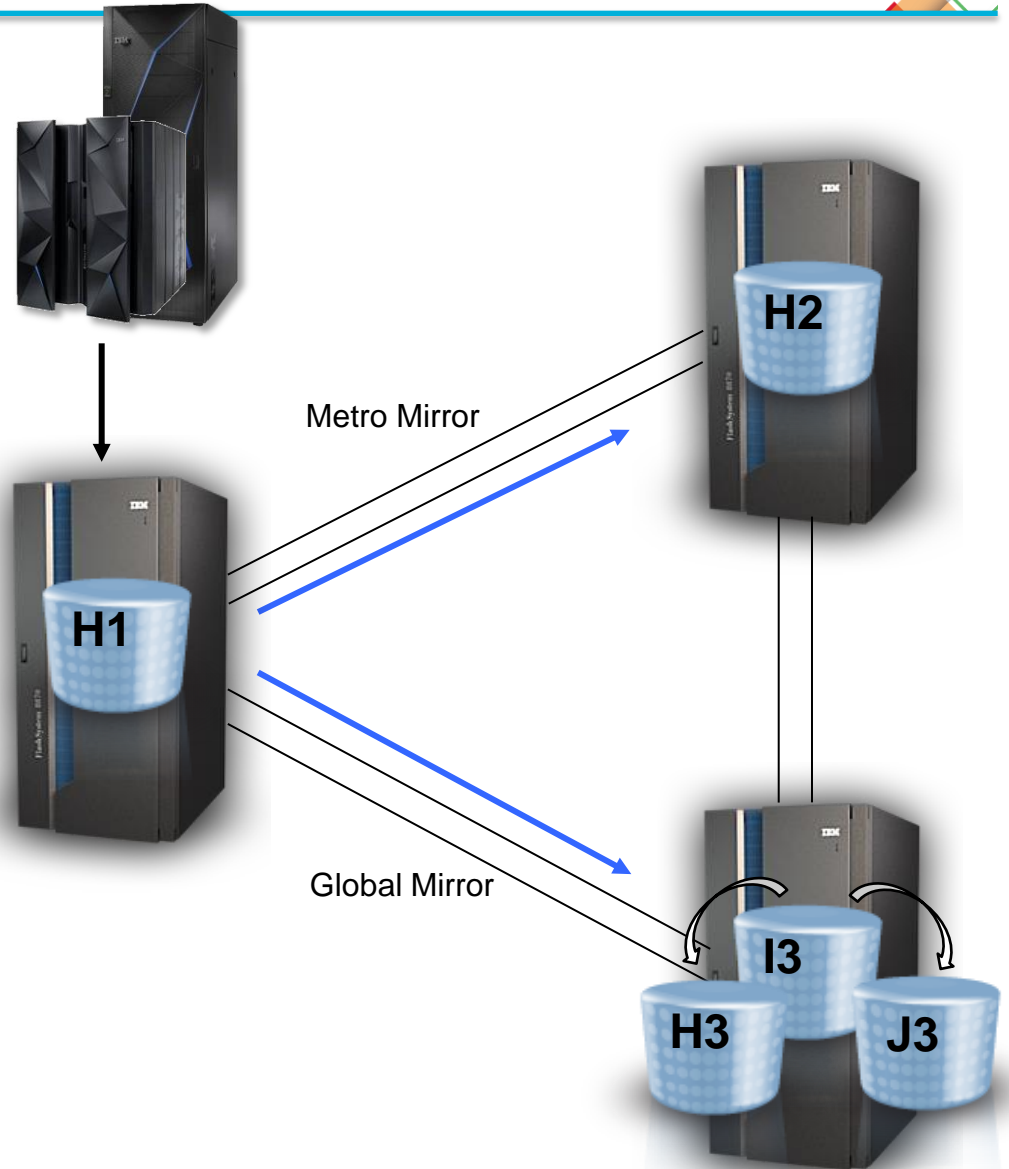
- Local HyperSwap capability
- Asynchronous replication
  - Out of region DR capability



# Metro Global Mirror - MultiTarget



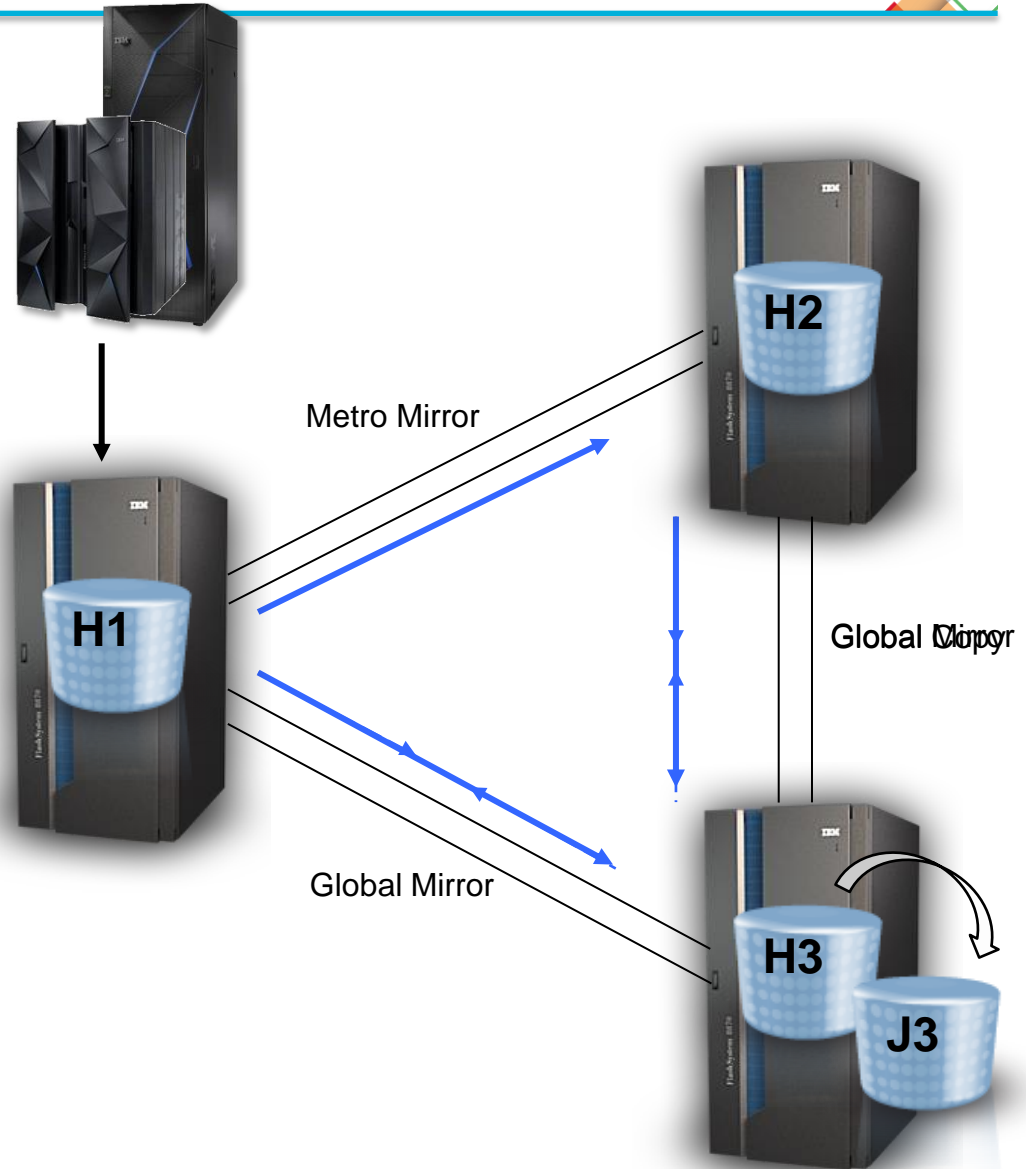
- Local HyperSwap capability
- Asynchronous replication
  - Out of region DR capability
- Additional support for a Global Mirror practice session



# MultiTarget to Cascaded Conversion



- StartH1H2H3

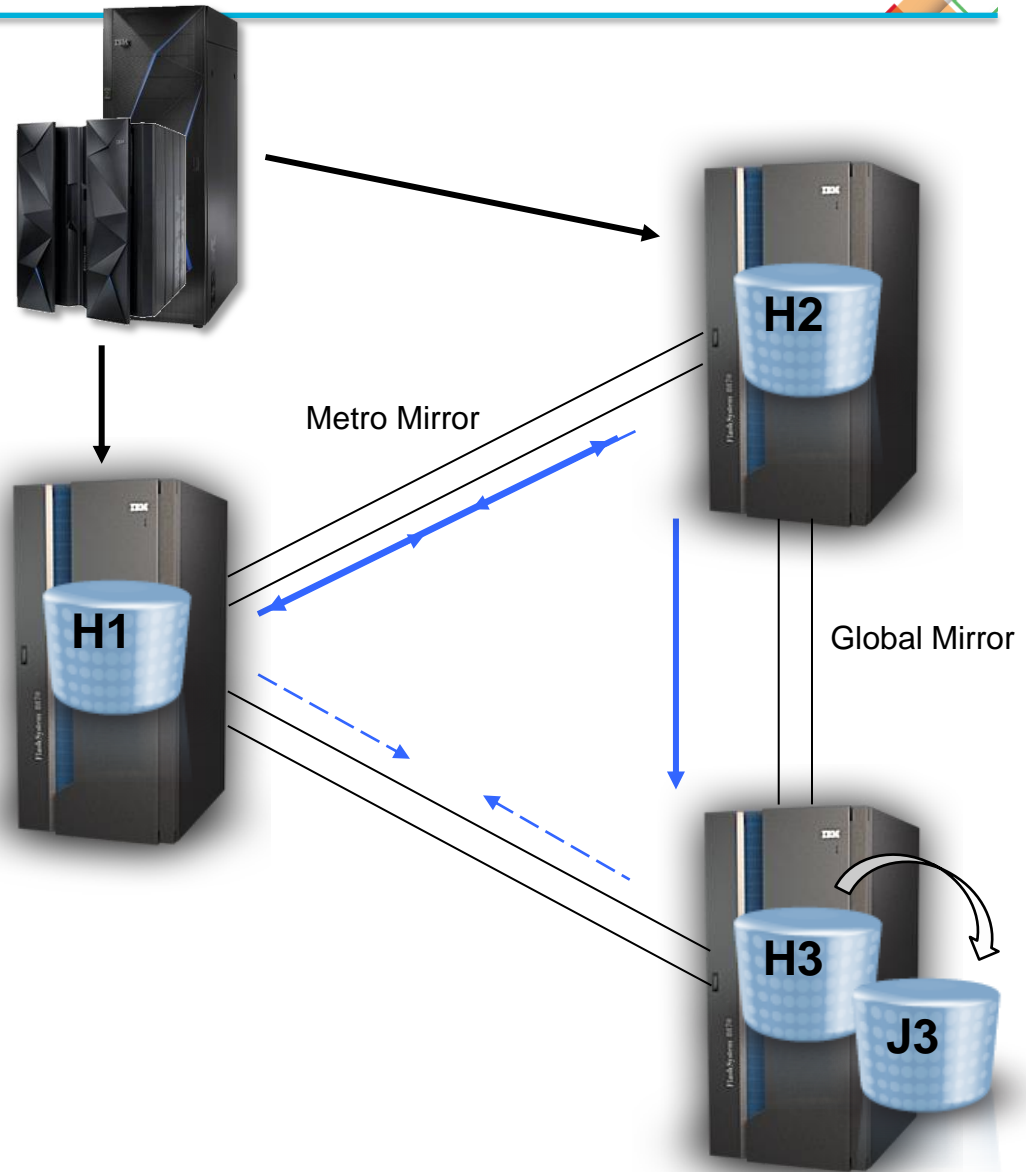




# Cascaded to MultiTarget Conversion



- HyperSwap to H2
- StartH2H1



# MGM – Cascaded Improvement



- MultiTarget simplifies MGM Cascaded scenario

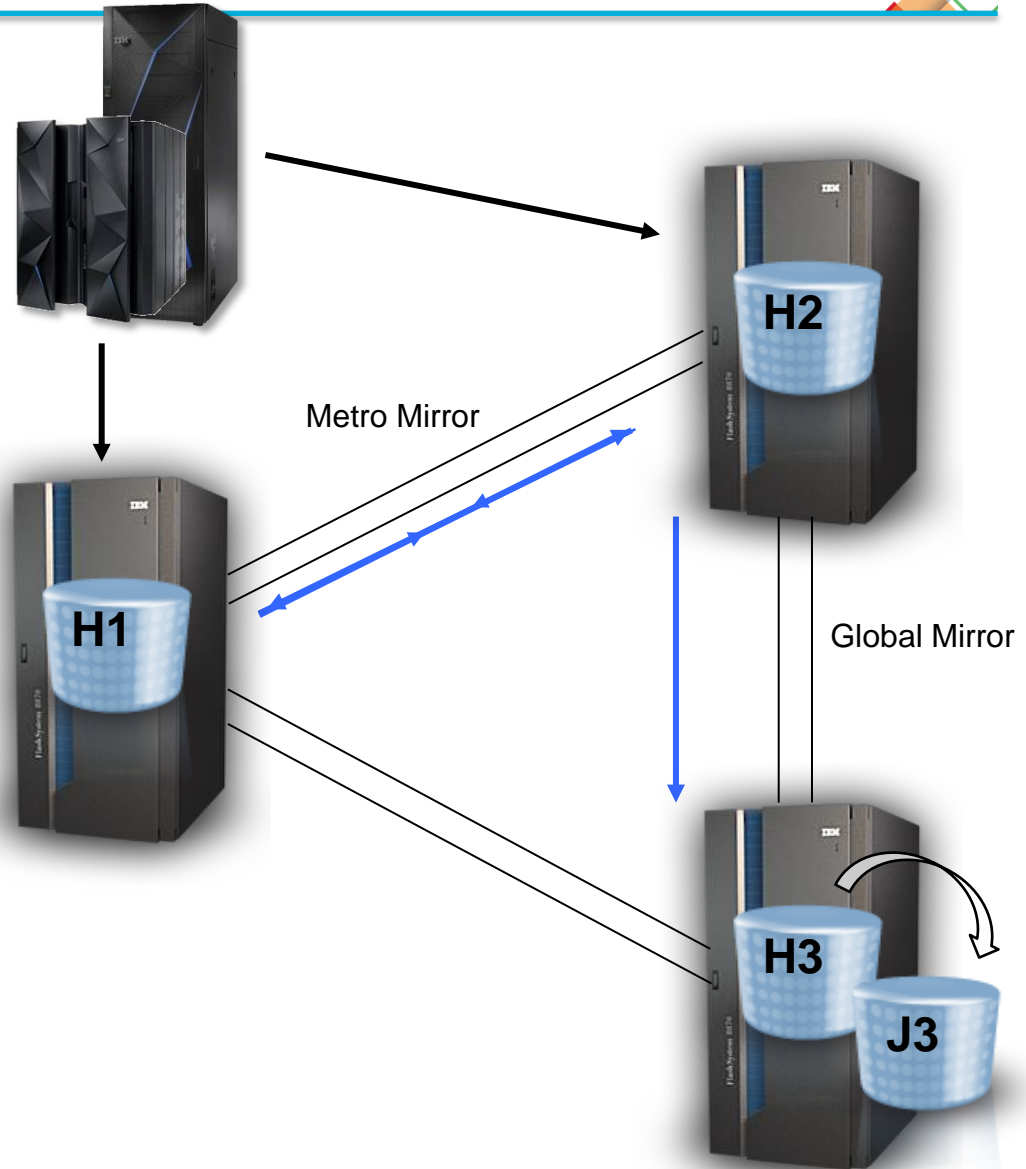
- Failure at H1
- HyperSwap to H2

- When H1 is recovered
  - StartH2H1

- HyperSwap back to H1
  - HyperswapH1

- StartH1H2H3

- *Global Mirror to H3 runs throughout*





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? Questions ?

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