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Resilient Media Agent Failover in HDPS Using VSP One SDS Block

Hitachi Vantara

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About This Document

Introduction

This document presents a resilient reference architecture that leverages Hitachi Data Protection Suite (HDPS) in conjunction with GridStor, a fault-tolerant infrastructure platform.

Document Revisions

Revision Number	Date	Details
v1.0	July 2025	Initial release

Comments

Send any comments on this document to Docs-Feedback@hitachivantara.com. Include the document title, including the revision level, and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Vantara LLC.

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Introduction

With Hitachi Data Protection Suite (HDPS), powered by Commvault, Hitachi Vantara and Commvault together deliver a unified, modern offering that facilitates backup and recovery with industry-leading Virtual Storage Platform One Software-Defined Storage Block (VSP One SDS Block).

Enterprise data protection strategies depend on the uninterrupted operation of HDPS Media Agents (MAs), which manage data movement between client systems and storage destinations. When a Media Agent fails in a traditional setup, backup and restore operations can be severely impacted.

This document presents a resilient reference architecture that leverages HDPS in conjunction with GridStor, a fault-tolerant infrastructure platform. Together, they enable seamless data protection workflows even during MA failures, ensuring zero data loss and minimal downtime.

Key Components

HDPS

Hitachi Data Protection Suite is a modern and unified solution that facilitates the backup, recovery, and management of enterprise and application data. It integrates seamlessly with the processing and storage solutions of Hitachi to provide effective data protection and long-term data retention.

There are two key components in a CommCell environment: the CommServe server, and one or more MediaAgents.

CommServe

The CommServe server is the command-and-control center of the CommCell architecture that:

- Manages administrative functions.
- Communicates with Media Agents to manage media subsystems.
- Communicates with agents to initiate data protection, management, and recovery operations.
- Provides tools to administer and manage the CommCell environment.

Media Agent (MA)

- Orchestrates data movement between clients and storage targets.
- Supports writing to multiple storage media, including disk, tape, and cloud.

Storage Targets

- **VSP One SDS Block**: Acts as the storage destination for backup data, providing high performance and scalability.

Client Setup

- **ESXi Cluster**: Consists of four nodes with datastores created from the source storage system LUNs.
- **vCenter Server Appliance (VCSA)**: Manages the ESXi cluster.
- **Virtual Machines (VMs)**: 40 VMs created across the cluster, representing the workload to be protected.

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Design Objectives

This architecture is designed to achieve the following:

- **Resilience:** Maintain backup and restore capabilities despite the failure of any single Media Agent.
- **Data integrity:** Ensure that data remains complete and uncorrupted throughout failover and recovery operations.

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Reference Architecture Design

Infrastructure Layout

This section outlines the deployment structure:

- A 4-node ESXi cluster, with each host running 10 VMs (total 40 VMs).
- VMs are grouped into one sub-client:
  - **VM group:** 40 VMs
- Each Media Agent is connected to three volumes from VSP One SDS Block.
- **Library:** Includes volumes from MA1 and MA2.
- **Policy assignments:**
  - VM Group → Plan → Library
- **Access nodes configuration:**
  - **VM Group:** MA1 and MA2
- **Software configuration:**
  - Deduplication and Compression feature was disabled from both HDPS and VSP One SDS Block
  - HDPS version: 11.36.46
  - VSP One SDS Block version: 01.17.00.40

Note:

- MA1: SISHA820G3-25
- MA2: SISHA820G3-26

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Figure 1 shows the infrastructure layout with VSP One SDS Block:

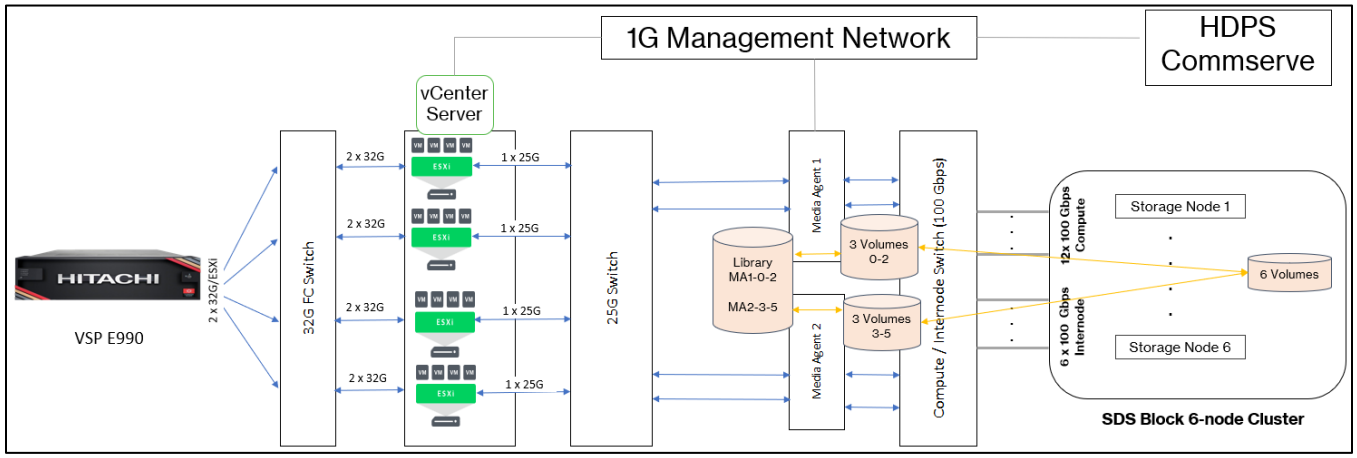
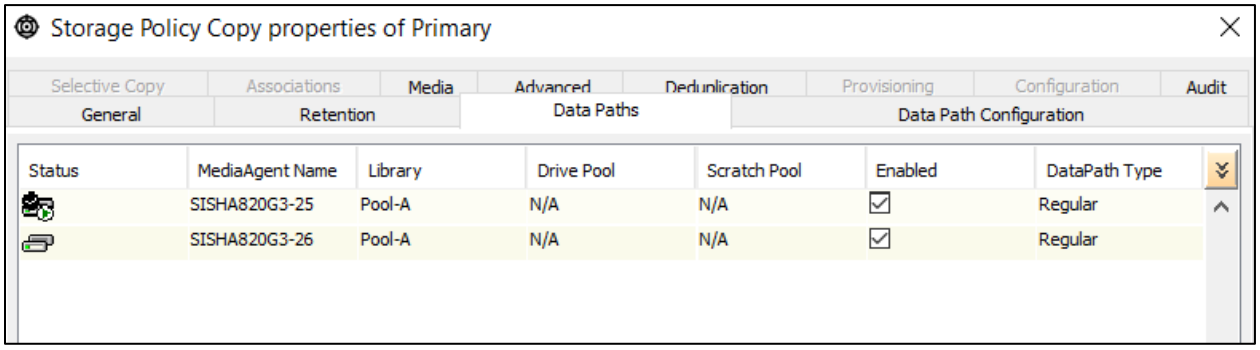


Figure 1: Infrastructure layout with VSP One SDS Block

Redundancy setup: Ensure that both MAs are in the Data Path Configuration with failover enabled.

Configure Media Agent Redundancy

1. In the CommCell Browser, select **Policies > Storage Policies**.
2. Select the Policy Name, then select **Primary > Properties**.
3. Verify that both MA1 and MA2 are listed in the Data Paths tab.



Configure the Storage Policy

In the Data Configuration tab, enable the following:

- Use Alternate Data Paths
- When Resources are Offline

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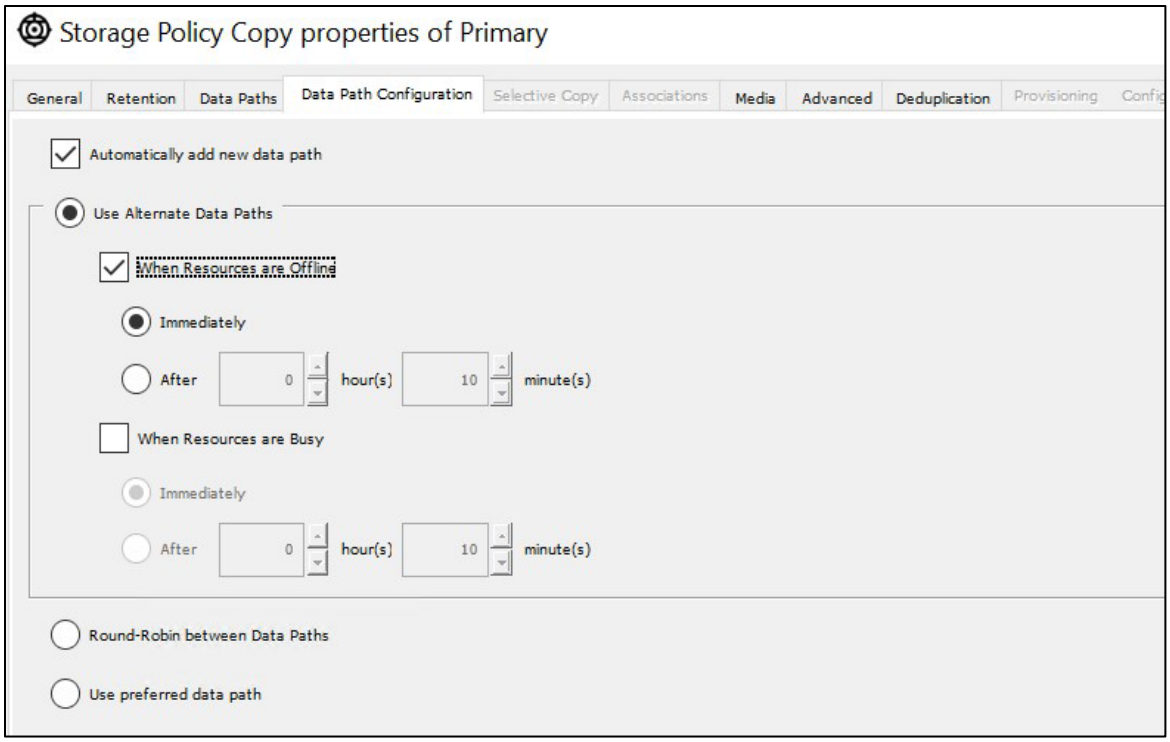

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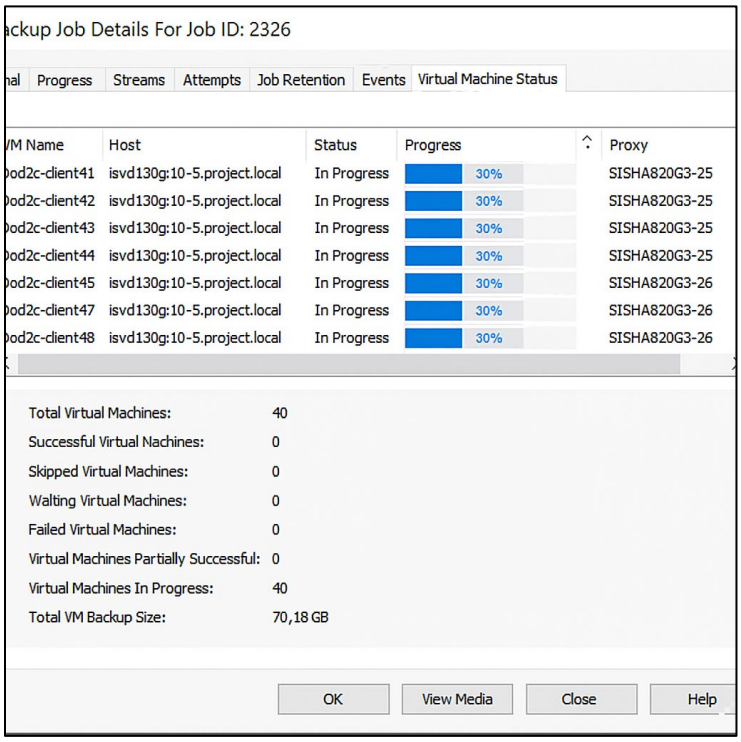
Backup Failover Process

Backup Operation

1. Initiate the backup operation.
2. Monitor job progress in the Job Controller tab.
3. Verify that all 40 VMs are backed up across the two configured access nodes (proxies).



Failure Scenario: MA1 Failure

- GridStor automatically reroutes backup traffic to MA2.
- Job Controller displays all VM proxies that are switched to MA2.

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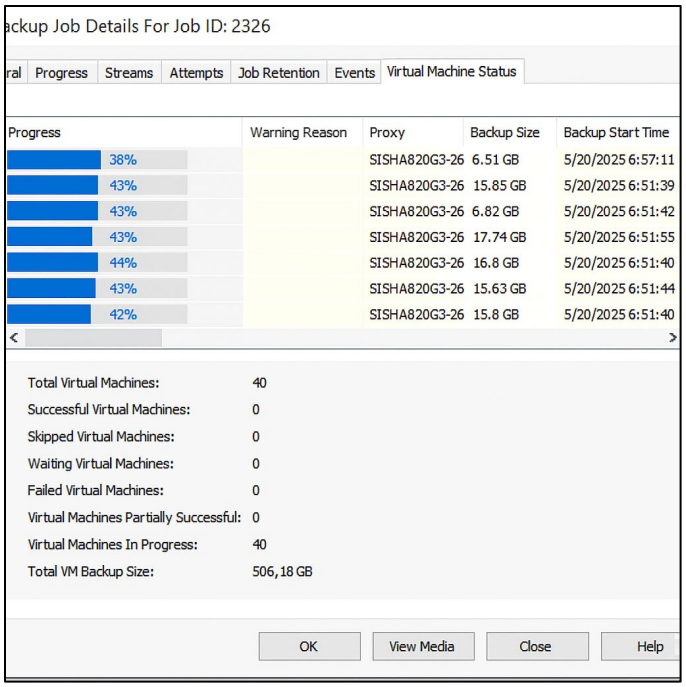

The job is in “running” state:

Restart the HDPS Service

1. Stop the MA2 HDPS service.

```
[root@SISHA820G3-26 ~]# HitachiHDS -all stop
Redirecting stopping service for Instance001 to systemd ...
Running "systemctl stop HitachiHDS.Instance001.service" ...
Stopping Data Protection Suite services for Instance001 ...
```

Job state changes to "Abnormal Termination":

2. Restart the MA2 HDPS service.

```
[root@SISHA820G3-26 ~]# HitachiHDS start
Redirecting starting service for Instance001 to systemd ...
Running "systemctl start HitachiHDS.Instance001.service" ...
[root@SISHA820G3-26 ~]#
```

Job status moves to "Pending":

3. Right-click the job and then click **Resume**.

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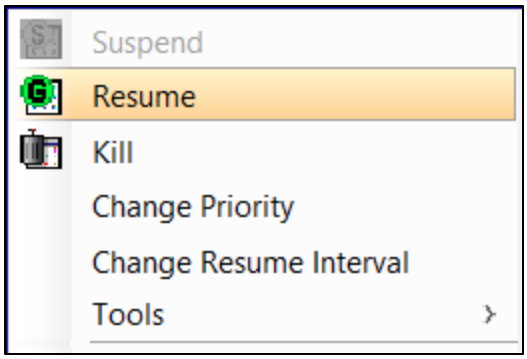


The job resumes and returns to "Running" state:

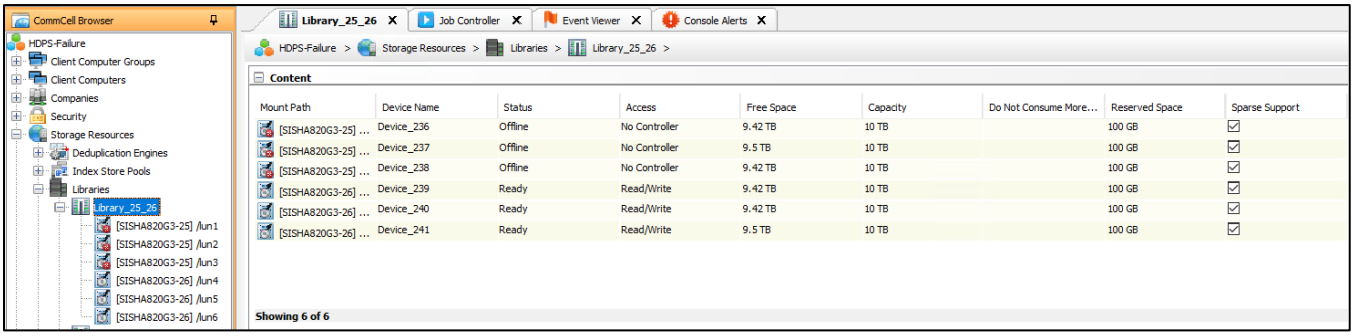
	2326	VM Admin Job(Backup)	172.23.114.9	Virtual Server	VM-B	Full	Backup	Plan2	SISHA820G3-30	Running

Restore operation with MA2 during MA1 failure

This section explains the process of restoring data using the alternate Media Agent (MA2) in the event of a failure of the primary Media Agent (MA1), following a successful backup. In addition, this section shows how to initiate the restore, ensure data integrity, and verify system functionality using MA2.

Detect Offline Mount Paths

After MA1 fails, the associated mount paths appear offline in the library.



Remap Storage to MA2

1. Stop the MA2 HDPS service.

```
[root@SISHA820G3-26 ~]#  HitachiHDS -all stop
Redirecting stopping service for Instance001 to systemd ...
Running "systemctl stop HitachiHDS.Instance001.service" ...
Stopping Data Protection Suite services for Instance001 ...
Cleaning up /var/log/hds/Log_Files/locks ...
All services stopped.
[root@SISHA820G3-26 ~]# ps -ef | grep cvd
root     1789706 1789002  0 06:05 pts/0    00:00:00 grep --color=auto cvd
[root@SISHA820G3-26 ~]#
```

2. In VSP One SDS Block, assign LUNs of MA1 to MA2.

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New LUNs appear on MA2:

```
[root@SISHA820G3-26 ~]# nvme list
Node                  Generic               SN                   Model                                    Namespace  Usage                      Format           FW Rev
--------------------- --------------------- -------------------- ---------------------------------------- ---------- -------------------------- ---------------- --------
/dev/nvme0n1          /dev/ng0n1            1-051203-0001        HITACHI SDS-System                       0x4        555.08  GB /  11.00  TB    512   B +  0 B   01.17.00
/dev/nvme0n2          /dev/ng0n2            1-051203-0001        HITACHI SDS-System                       0x5        555.17  GB /  11.00  TB    512   B +  0 B   01.17.00
/dev/nvme0n3          /dev/ng0n3            1-051203-0001        HITACHI SDS-System                       0x6        475.41  GB /  11.00  TB    512   B +  0 B   01.17.00
/dev/nvme0n4          /dev/ng0n4            1-051203-0001        HITACHI SDS-System                       0x1        555.17  GB /  11.00  TB    512   B +  0 B   01.17.00
/dev/nvme0n5          /dev/ng0n5            1-051203-0001        HITACHI SDS-System                       0x2        475.63  GB /  11.00  TB    512   B +  0 B   01.17.00
/dev/nvme0n6          /dev/ng0n6            1-051203-0001        HITACHI SDS-System                       0x3        555.35  GB /  11.00  TB    512   B +  0 B   01.17.00
/dev/nvme0n7          /dev/ng0n7            1-051203-0001        HITACHI SDS-System                       0xf          4.36  GB / 536.87  GB    512   B +  0 B   01.17.00
/dev/nvme0n8          /dev/ng0n8            1-051203-0001        HITACHI SDS-System                       0x10         3.66  GB / 536.87  GB    512   B +  0 B   01.17.00
[root@SISHA820G3-26 ~]#
```

3. Mount the LUNs on MA2. Do not format or create a file system on the mounted LUNs.

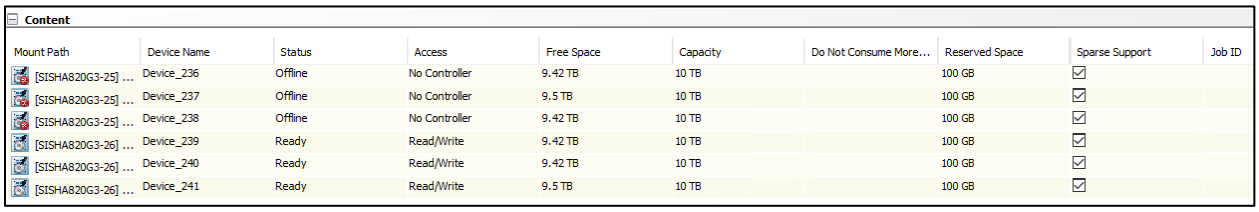
```
[root@SISHA820G3-26 ~]# mkdir /lun1 /lun2 /lun3
mount /dev/nvme0n4 /lun1
mount /dev/nvme0n5 /lun2
mount /dev/nvme0n6 /lun3
```

Reactivate Mount Paths

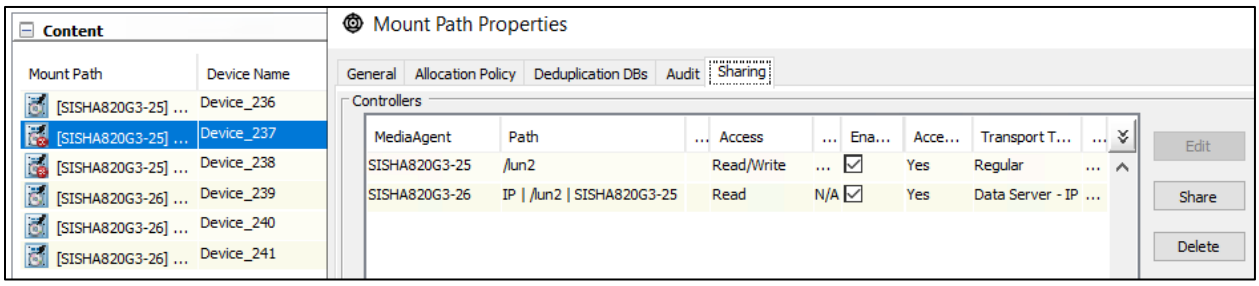
1. Start the HDPS service on MA2.

```
[root@SISHA820G3-26 ~]# HitachiHDS start
Redirecting starting service for Instance001 to systemd ...
Running "systemctl start HitachiHDS.Instance001.service" ...
[root@SISHA820G3-26 ~]# ps -ef | grep cvd
root     1790296       1  9 06:11 ?        00:00:00 /opt/hds/Base/cvd
root     1791281 1789002  0 06:11 pts/0    00:00:00 grep --color=auto cvd
[root@SISHA820G3-26 ~]#
```

2. In the CommCell Browser, navigate to **Storage Resources** and select **Libraries > Library Name**.



3. Right-click the **offline mount path** and select **Properties > Sharing**.



4. Select the path with MA2 as the controller.

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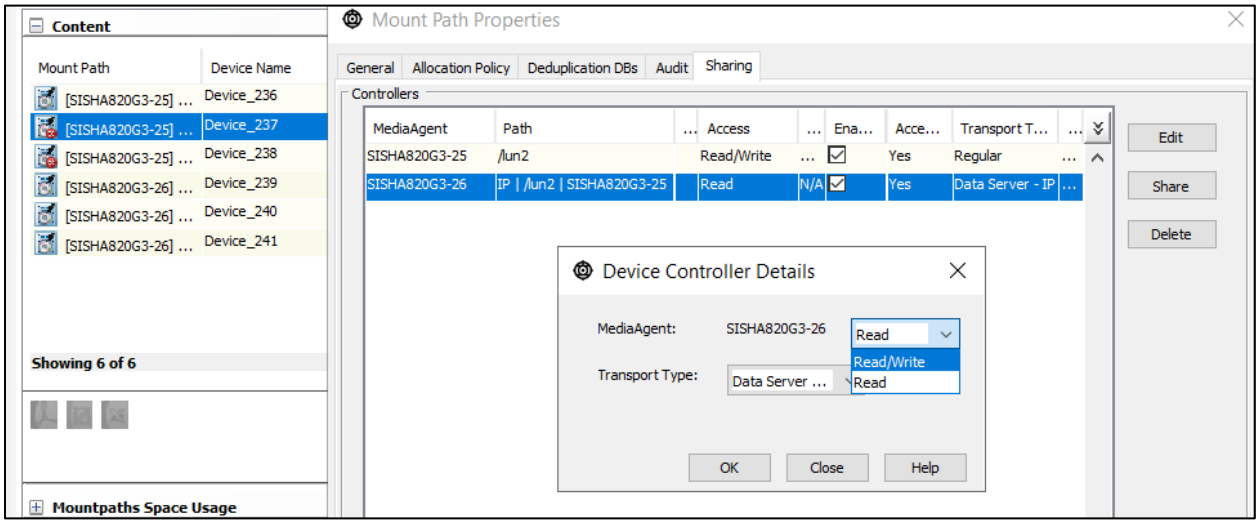
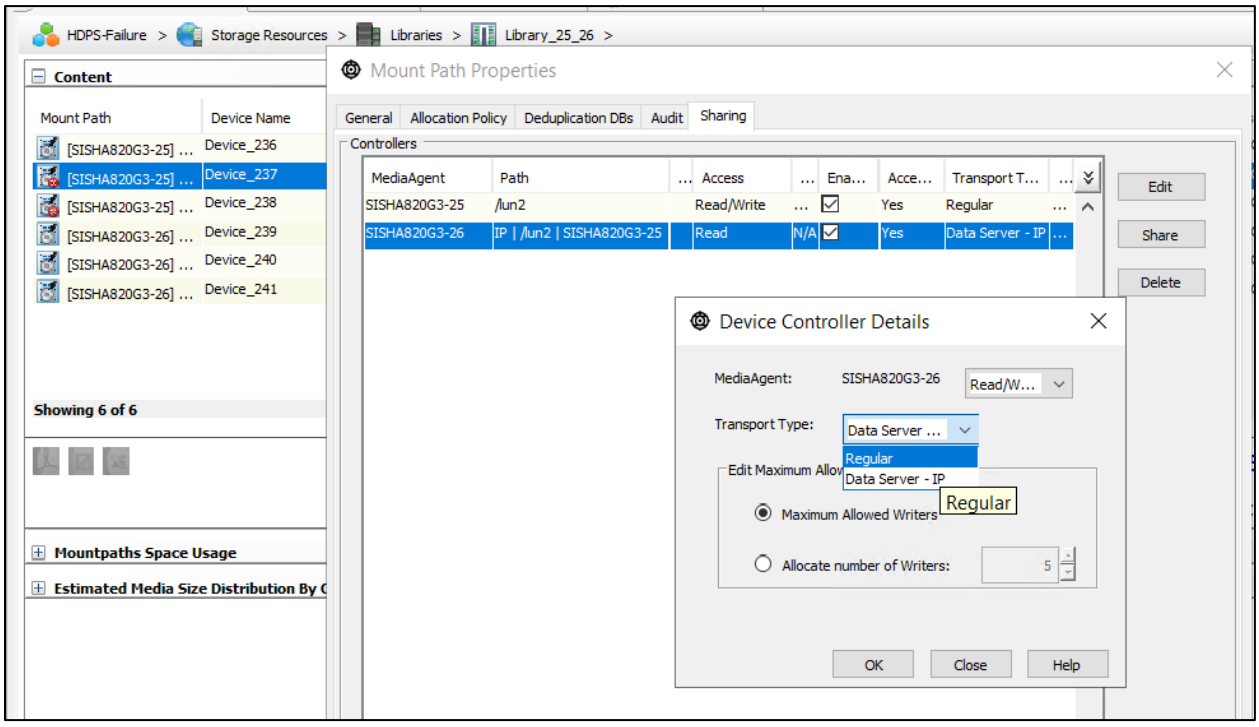
5. Set MediaAgent to **Read/Write**.



6. Change Transport Type to **Regular**.



7. Browse and select the Local Path.

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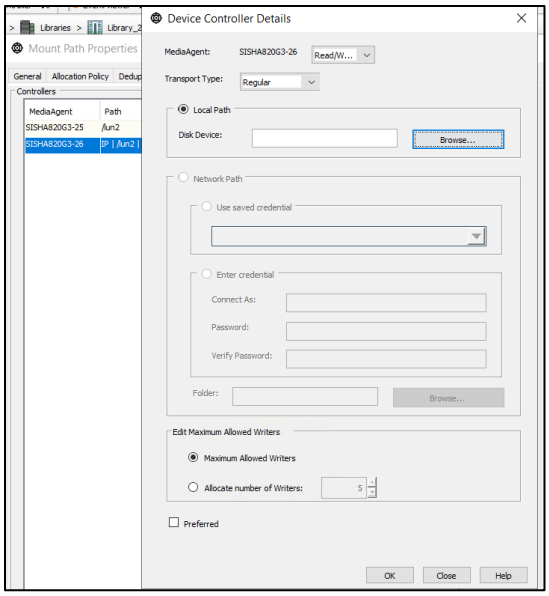
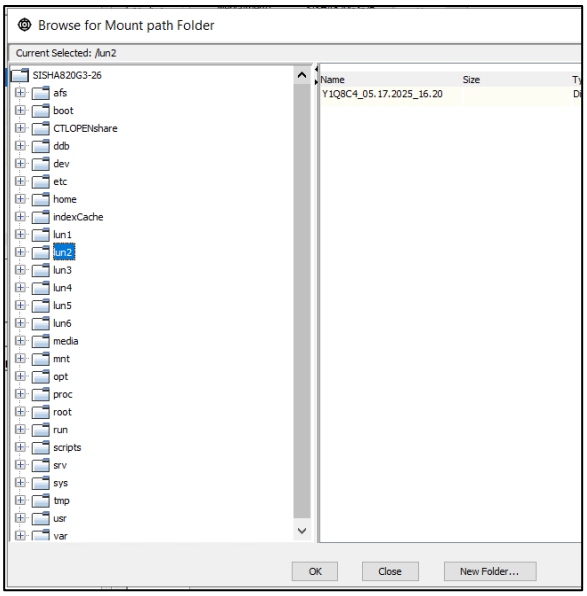
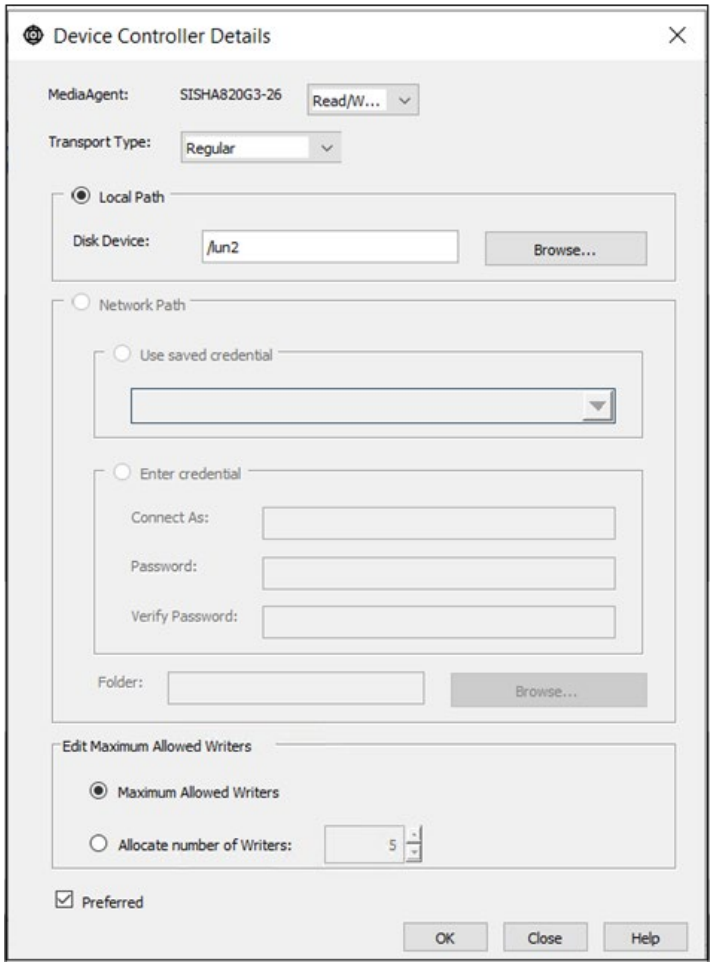




8. Click **OK**.



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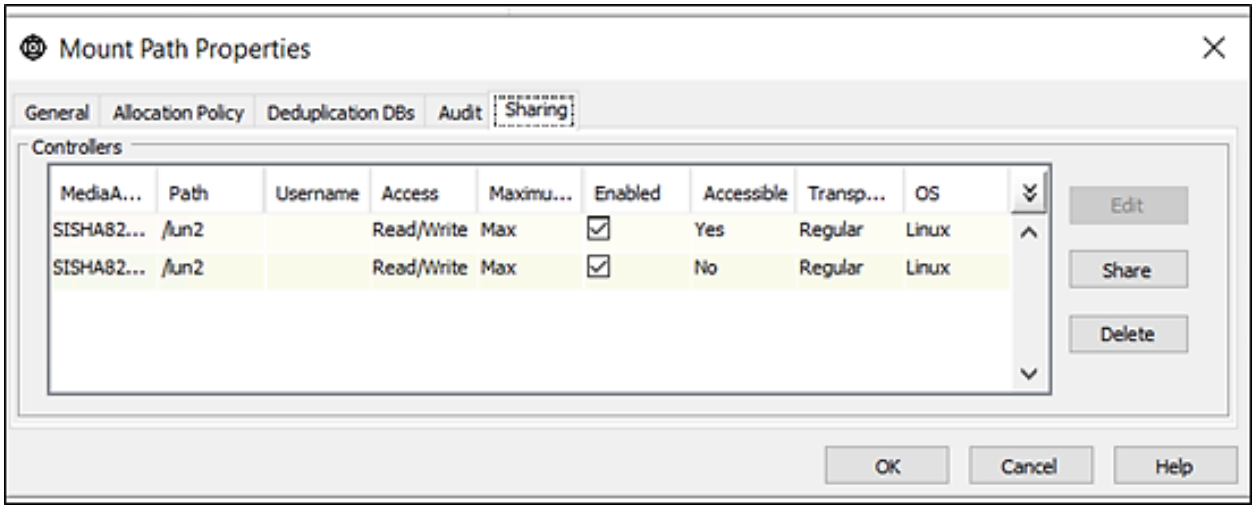
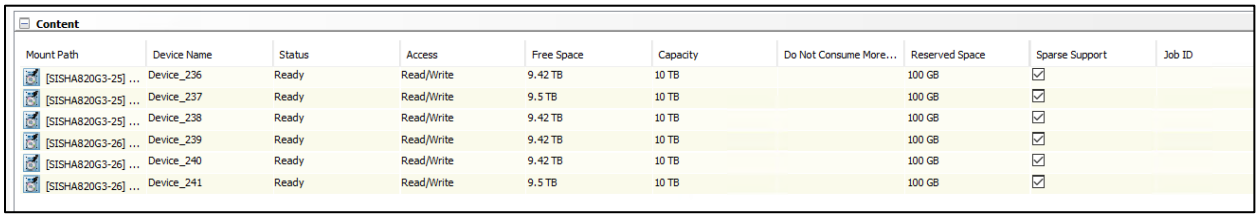
9. Click **OK**.

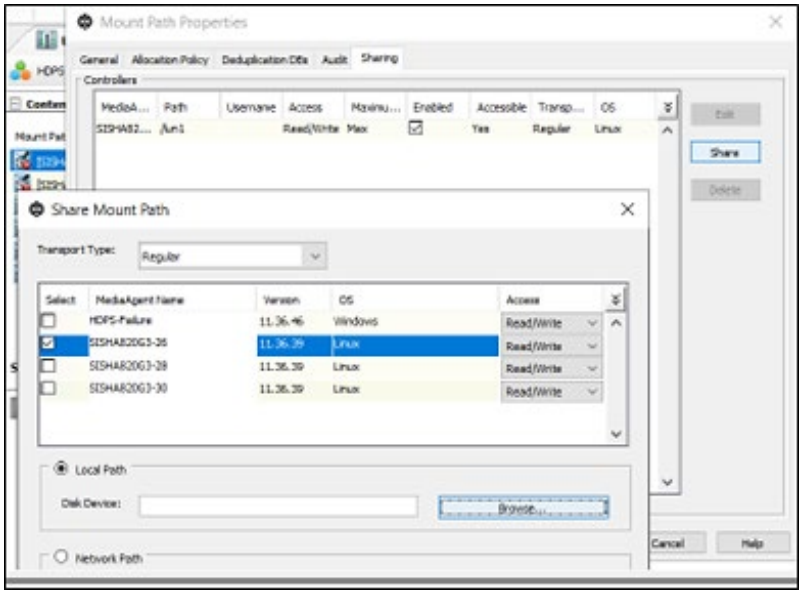


All the mount paths in the library are online:



If MA2 is not listed in the sharing tab, complete the following steps:

1. Click **Share**.



2. Select **MA2**.

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3. Set MediaAgent to **Read/Write**.
4. Browse and select the folder on MA2.

Complete the Restore Process

After all mount paths are online, complete the restore operations using MA2. You can restore the VMs that were backed up with MA1.

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Conclusion

By combining the Media Agent framework of HDPS with GridStor, enterprises can survive the failure of a Media Agent seamlessly. By optimizing resource utilization and minimizing recovery time, the architecture delivers efficient and reliable data protection across the entire backup and recovery lifecycle.

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