COHESITY

Version 3.1

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Use Cohesity for Your Commvault Storage Libraries

Leverage Cohesity's Web-scale Architecture for Commvault Storage Libraries

ABSTRACT

Cohesity's web-scale architecture provides the ideal platform to use as a storage library for your Commvault backups and recoveries. Learn how to implement Commvault backups using Cohesity and take advantage of Cohesity as a globally deduplicated-compressed and encrypted, web-scale storage target to maximize your storage efficiency and reduce TCO.

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Using Cohesity with Commvault

Commvault offers premiere software for backup and recovery of enterprise environments. This software-based solution allows you to use your compute and storage resources to run the backup and recovery tasks and store your data. Being storage-agnostic, Commvault supports a wide range of storage library types that offer various benefits.

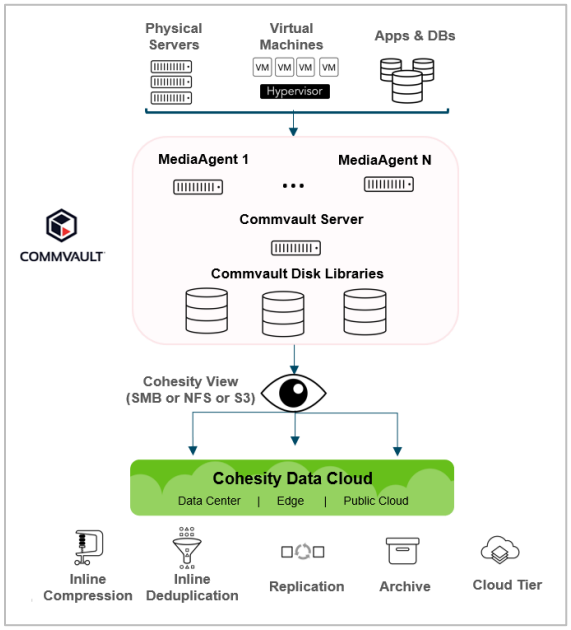
When Commvault customers use Cohesity as the storage library for backups, they enhance their capabilities from the following Cohesity features:

- **Web-scale**. Capacity grows with your business.
- **Performance**. Improved backup and restore times.
- **Storage efficiency**. Extremely high storage efficiency with global variable-length deduplication, and compression.
- **Lower-cost Cloud Storage**. Store your protected data in any of the major cloud vendors (AWS, Azure, and GCP), any S3-compatible storage, or on NAS.
- **Security**. Your data is always secure and encrypted–both at rest and in flight.
- **Resilience**. Highly resilient, fault-tolerant architecture.

Together, these features provide a complete, reliable web-scale data protection solution.

In our solution, Cohesity's SMB and NFS Views are used as a single or scale-out storage library for Commvault. Combining Commvault with Cohesity provides a comprehensive, highly scalable, and flexible backup solution that fits the data protection needs of any size organization.

Figure 1: Use Cohesity as a Commvault Storage Library



You can deploy Commvault using either a single storage library or a scale-out storage library (SoSL). To take full advantage of Cohesity's web-scale architecture, we recommend you use SoSLs for increased throughput and reduced backup & restore windows. SoSLs are also an extremely effective way for organizations of all sizes to extend storage libraries when they run out of space. Instead of the long and cumbersome relocation of backups, users can add new storage libraries on demand to increase their storage capacity.

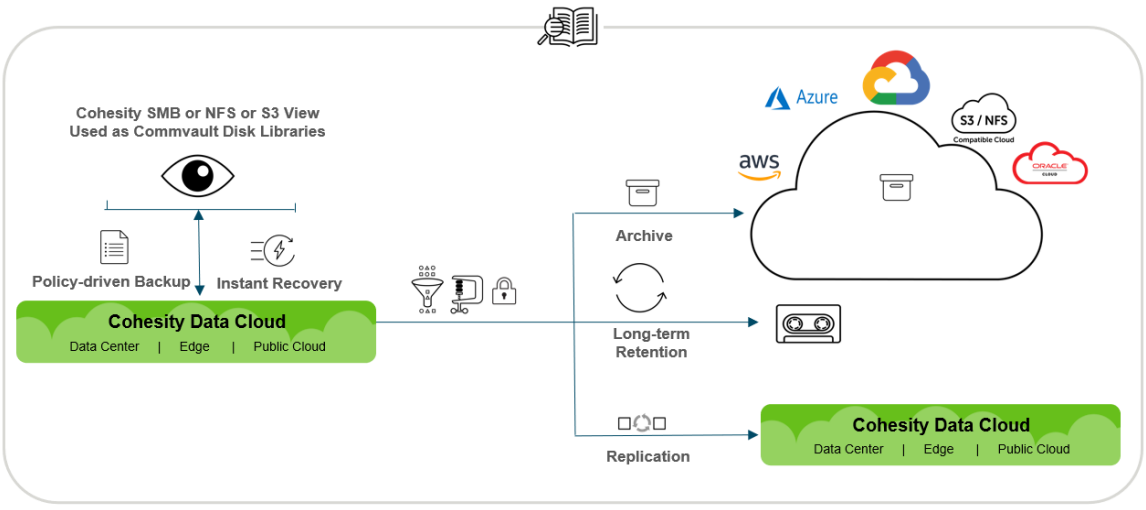
Benefits of Using Cohesity as a Commvault Scale-out Storage Library

Once you start using Cohesity as a scale-out storage library (SoSL) in Commvault, you can immediately take advantage of Cohesity's powerful features, including:

- Inline deduplication and compression.
- Application-aware storage efficiency.*
- Single namespace.
- Policy-based data replication from one cluster to another cluster for disaster recovery.
- CloudArchive, and Cloud Retrieve your data for long-term retention and disaster recovery in AWS, Azure, GCP, NAS, and S3-Compatible storage platforms.
- Use Cloud Tier to reduce TCO.

* In Cohesity version 6.4, Cohesity introduced the dedicated *Backup Target Commvault* QoS policy that is specifically optimized to intelligently detect and exclude application-specific markers to achieve better deduplication when the CommVault backup application is writing to a Cohesity View. For this solution, Cohesity strongly recommends using Cohesity version 7.0 or later. See Appendix A: Benefits of App-aware Storage Efficiency below for details.

Figure 2: Benefits of Using Cohesity as a Commvault Storage Library



These features make Cohesity an excellent choice as a Commvault SoSL. A scale-out approach increases parallelism among backup tasks and processes, reduces the time to run backups, and allows you to configure as many SMB shares or NFS mounts or S3 Views as you have nodes in the Cohesity cluster.

What's more, Cohesity cluster nodes have a shared-nothing topology and there are no single points of failure or inherent bottlenecks. As a result, both performance and capacity can scale linearly as more nodes are added to the cluster.

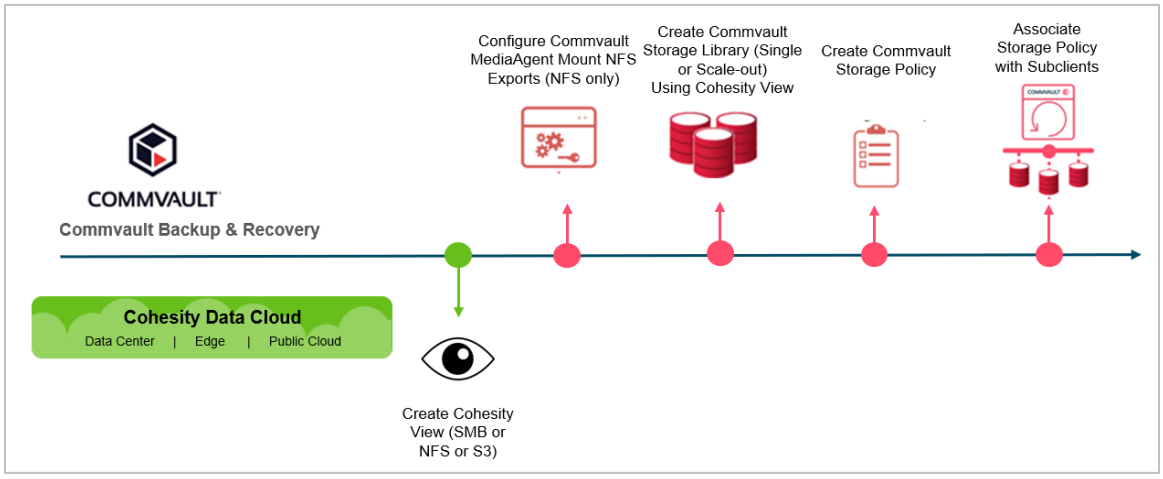
Configure Data Protection with Commvault and Cohesity

To protect data using Commvault, you need to associate a storage policy with subclients and then invoke backups that use the settings in the storage policy. Among many things, the storage policy defines the Commvault storage library, which defines the storage location. Cohesity provides this storage location with a Cohesity View — our web-scale, globally deduplicated, compressed storage — via SMB or NFS or S3.

To use a Cohesity View as a storage library for Commvault, you need to complete a few tasks:

- Create a Cohesity SMB View (for Windows) or NFS View (for Linux/Unix) or S3 Views.
- If you choose:
  - **SMB**, create an SMB storage library or scale-out storage library.
  - **NFS**, create an NFS storage library or scale-out storage library.
  - **S3**, create an S3 storage library or scale-out storage library.
- Create a Commvault storage policy.
  - Optimize the storage policy for best performance with Cohesity.
- Associate the storage policy with your Commvault subclients.

Figure 3: Configure Cohesity's Solution for Commvault



NOTE: For detailed Commvault installation instructions, see The Installation Process in the Commvault documentation.

As you implement this solution, you will have to make two choices:

- **Protocol**. Will you be using SMB or NFS or S3 to connect Commvault to Cohesity?
- **Commvault storage library type**. Will you be creating a scale-out storage library (SoSL) or a single storage library?

We recommend using an SoSL. An SoSL delivers improved I/O performance on Cohesity as it uses all the nodes in your cluster in parallel.

Table 1: Single Storage Library or Scale-out Storage Library (SoSL) for Commvault

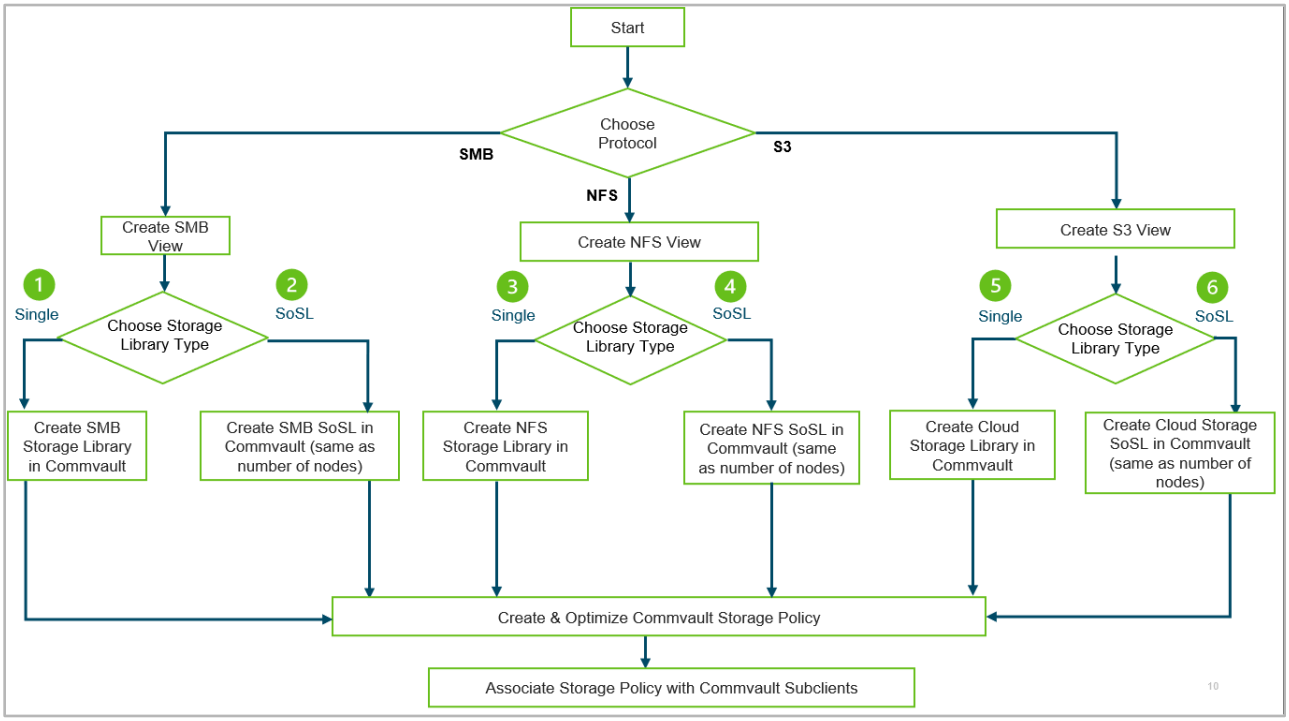
COMMVAULT STORAGE LIBRARY	PROTOCOL	ACCESS METHOD	NOTES
Single Storage Library	SMB, NFS, S3	Access via FQDN	• Not recommended for Cohesity storage.
Scale-out Storage Library	SMB, NFS, S3	Access via dedicated VIPs	• Increases parallelism among backup runs, and thus reduces the backup window. • Allows the user to configure as many SMB paths as the number of nodes in the Cohesity cluster. • Recommended storage library type for Cohesity. • Recommend configuring one S3 view for S3 Library

NOTE: If your network gear supports LACP, Cohesity recommends that you configure your Cohesity network data ports to use it. Although not required, it can provide additional network throughput to and from the Cohesity cluster, as well as among the nodes of the cluster. To take advantage of this, both the network switches as well as the Cohesity cluster need to be configured for LACP.

For instructions, see the Cohesity Networking Quick Start Guide.

Use the decision tree in Figure 4 below to find the steps that apply to your environment.

Figure 4: Choose Protocol & Commvault Storage Library Type



- **SMB**: If you decide to use SMB, you will first create a Cohesity SMB View. After that, you can choose which type of Commvault storage library to create for SMB:
  1. Create an SMB storage library.
  2. Create an SMB SoSL. (*Recommended*)
- **NFS**: If you decide to use NFS, you will first create a Cohesity NFS View. After that, you can choose which type of Commvault storage library to create for NFS:
  1. Create an NFS storage library.
  2. Create an NFS SoSL. (*Recommended*).
- **S3**: If you decide to use S3, you will first create a Cohesity S3 View. After that, you can choose which type of Commvault storage library to create for NFS:
  1. Create S3 storage library
  2. Create S3 SoSL (*Recommended)*

Create Cohesity SMB View for Commvault

To use Cohesity storage as a Commvault storage library via SMB, you'll create a Cohesity View, choose the *Backup Target Commvault* QoS policy, and configure the View for SMB.

To create an SMB share to store Commvault backups:

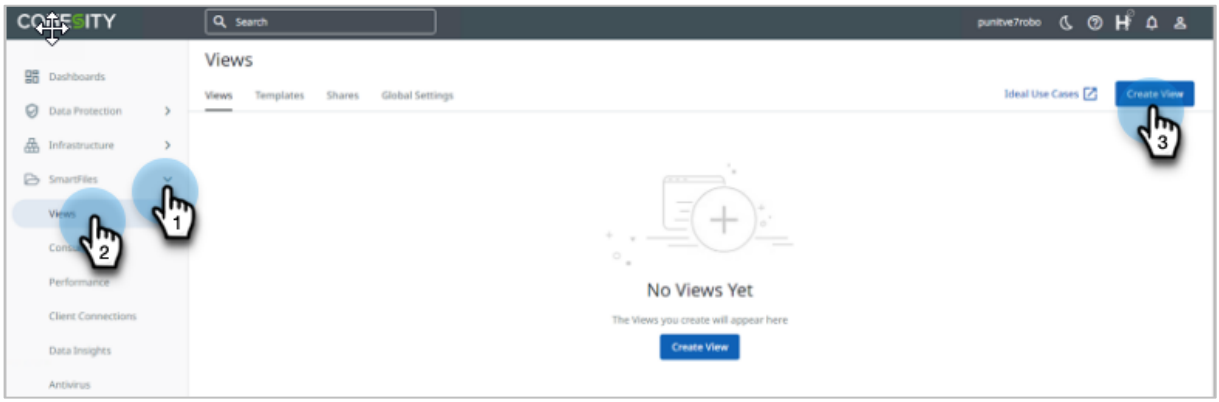
1. Create a Cohesity View, select the *Backup Target Commvault* QoS policy, set SMB access type and permissions, and add the IP addresses for your Commvault MediaAgents.
2. Tune your Cohesity cluster settings to optimize SMB View performance.
3. Create:
   - An SMB storage library on Commvault.
   - A scale-out SMB storage library on Commvault.
4. Create a storage policy that uses the storage library you created.
5. Associate the storage policy with your Commvault subclients.

IMPORTANT: Before you create your View, ensure that Cohesity cluster is joined into Active Directory. For instructions on doing so, see Join Active Directory in the online Help.

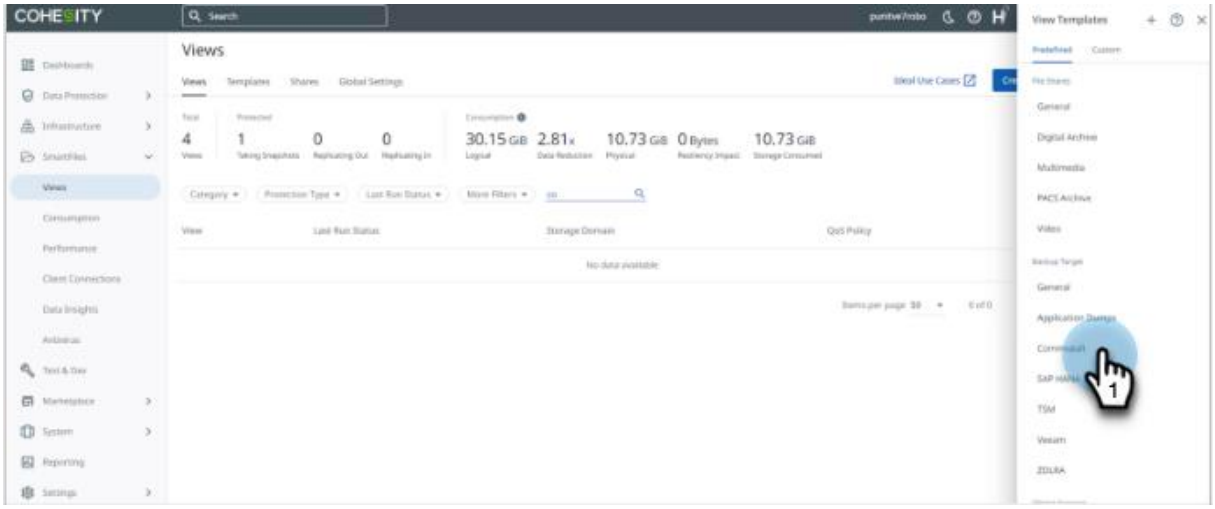
For this solution, Cohesity recommends enabling inline deduplication and inline compression on the Cohesity Storage Domain in which you create the View. For details, see Create or Edit Storage Domains in the online Help.

To create an SMB View for Commvault:

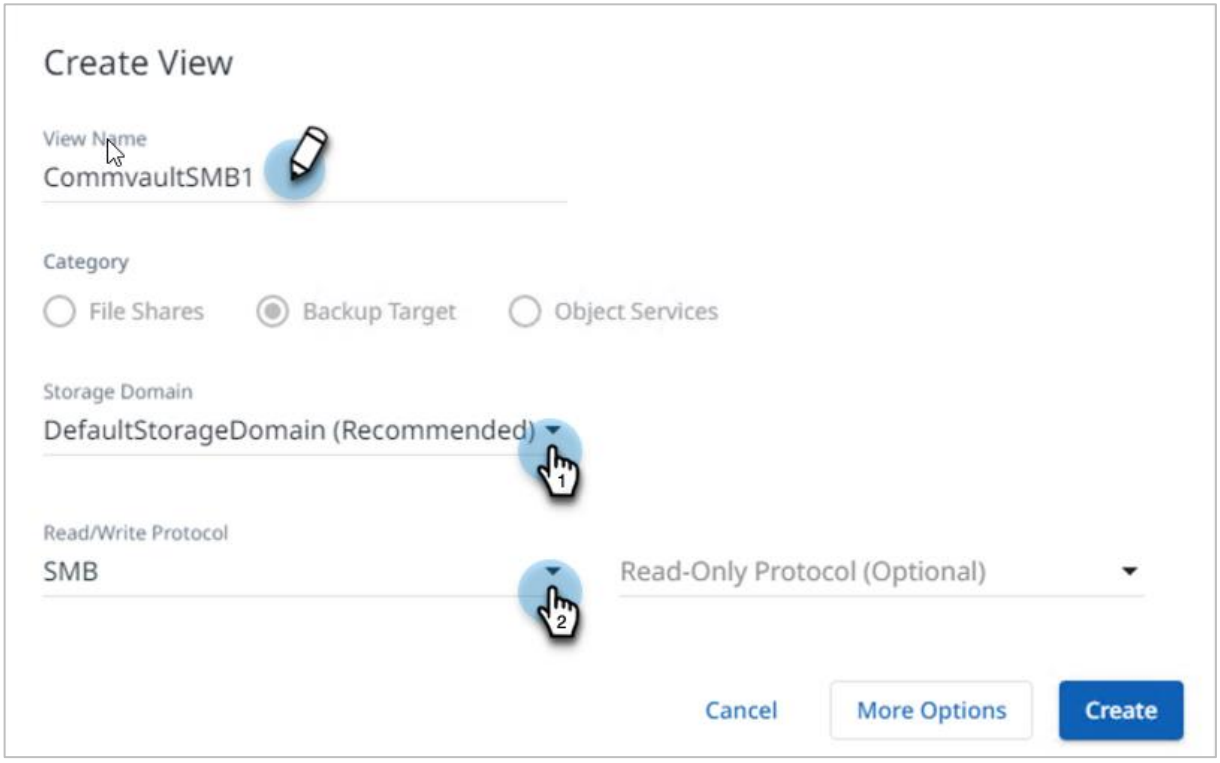
1. Log in to Cohesity and navigate to **SmartFiles > Views**. On the **Views** page, click **Create View**.



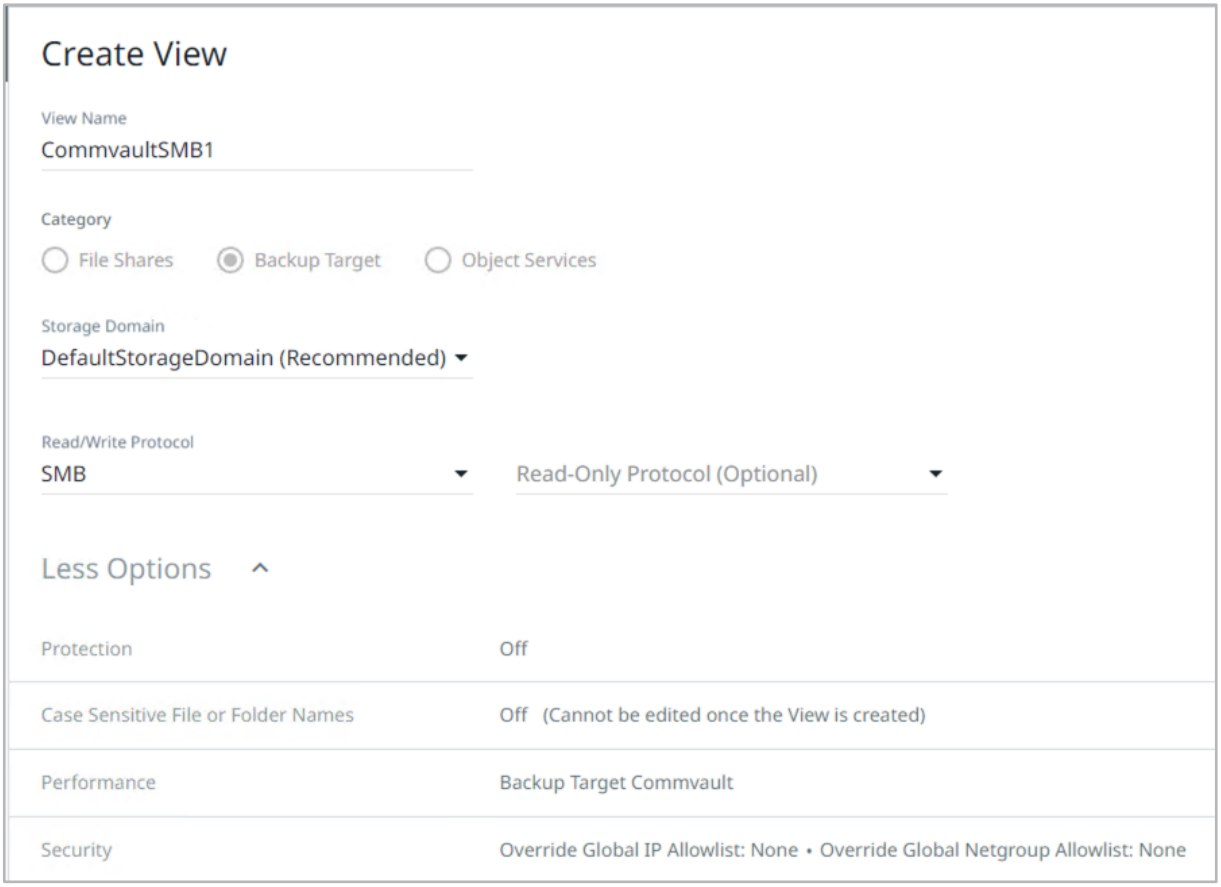
2. In the **Create View** page, under the Backup Target section, click **Commvault**.



3. In the **Create View** page, enter the **View Name**, choose a **Storage Domain** (with inline deduplication and compression enabled), and for **View Protocol**, select **SMB Only**.

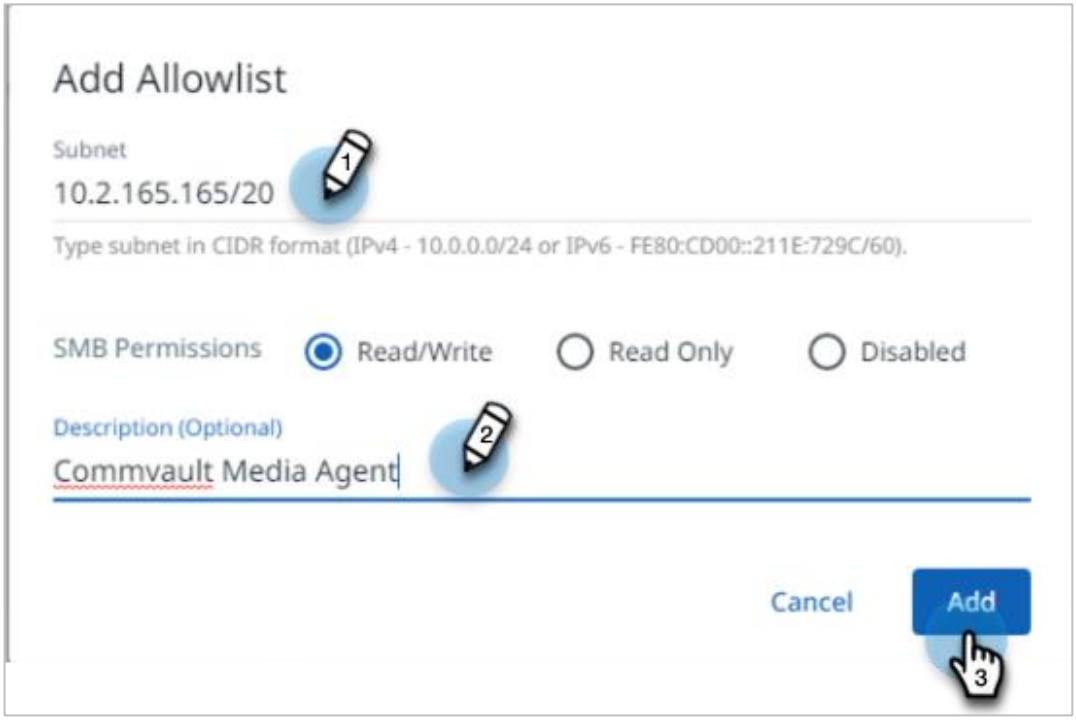


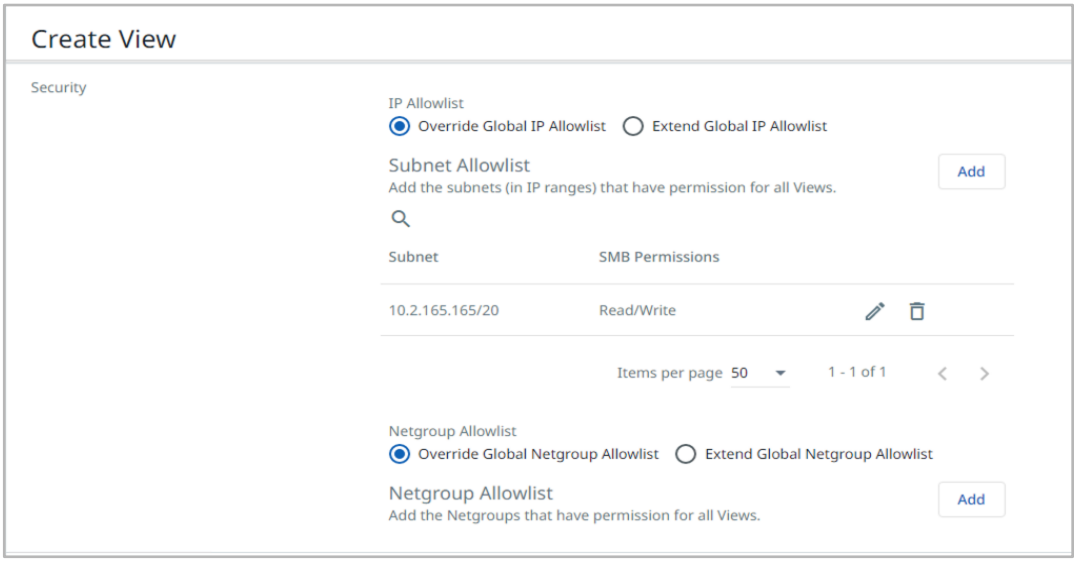
4. In the same form, under **More Options > Performance > QoS Policy**, select **Backup Target Commvault**.



NOTE:If you are using a version of Cohesity before version 6.4, select **TestAndDev High** for best performance.

5. In the **Create View** form under **Security**, click **Add Allowlist**, enter the **Subnet IP** range for your Commvault Backup server and MediaAgent, enter a **Description**, and click **Add**.

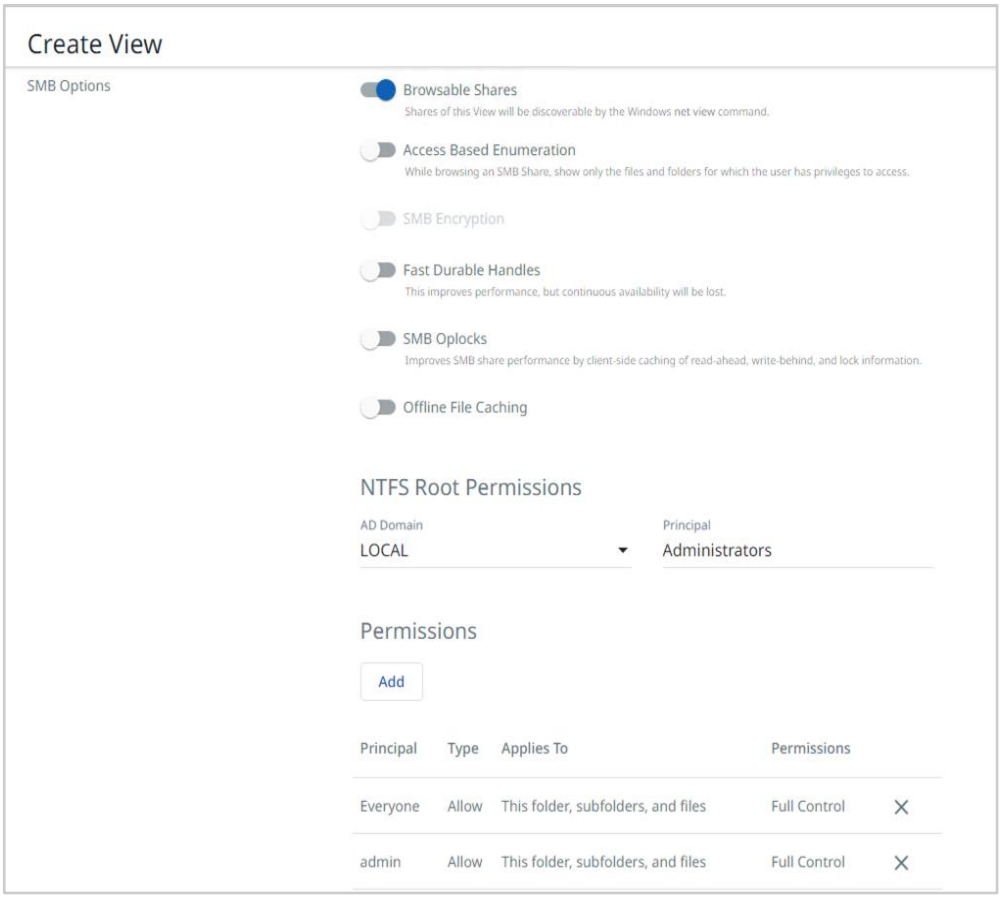




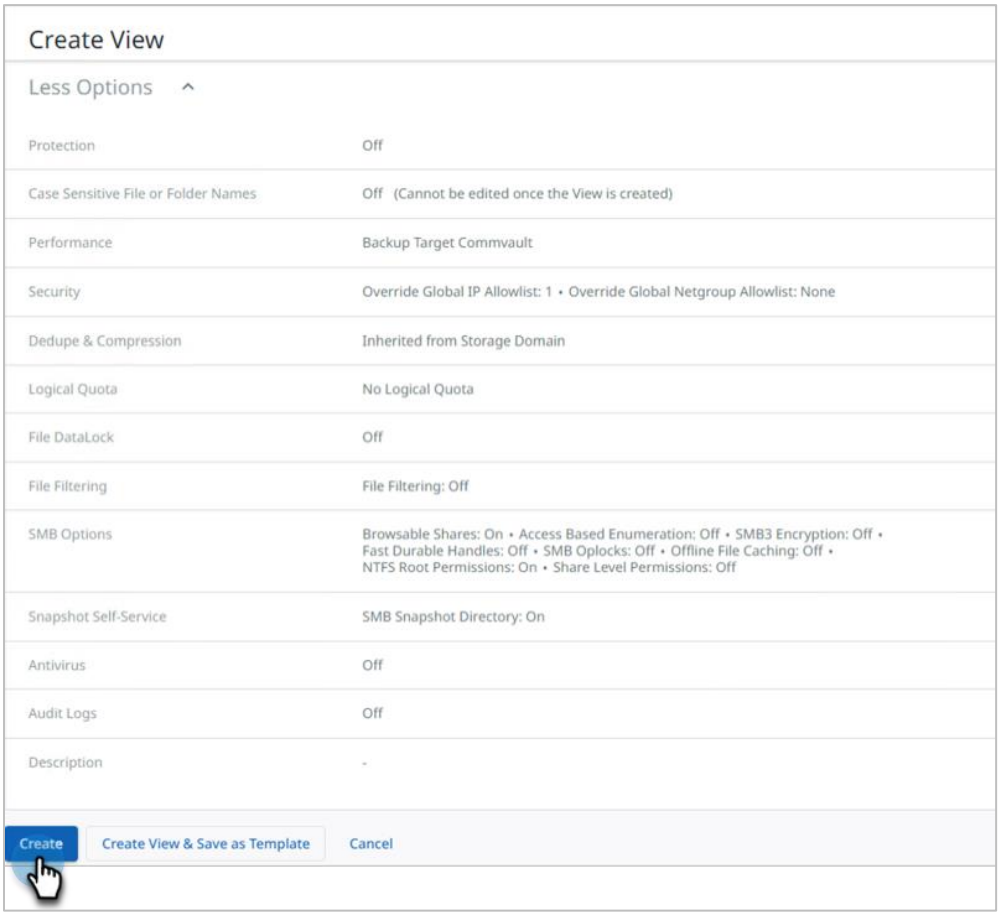
NOTES:

- You can also authenticate SMB via Active Directory. For instructions, see Join Active Directory in the online Help.
- If you add more Commvault MediaAgents in the future, ensure that they are added to the share Allowlist in this View.

6. In the same form, under **SMB Options > NTFS Root Permissions**, click **Add Principal**. Select the domain and user, select *Type* **Allow**, select *Applies To* **This folder, subfolders, and files**, and for *Permissions*, select **Full Control**. On that row, click **Add**.



7. Finally, at the bottom of the form, click **Create View**.



Now that you have created the Cohesity SMB View, verify that the SMB share (which has the same name as the View) is accessible by the Commvault server using the ***<vip>******<Viewname>*** format.

> **TIP**: Should you encounter access issues, which appear most commonly as '*Access Denied*' and '*Can't open for writing*' error messages in Commvault server, the most likely cause is an issue with the IP whitelist or Active Directory permissions. To troubleshoot these issues, use Cohesity filer audit logging on the Cohesity View, which will indicate the cause. For instructions, see Enable File Services Audit Logs in the online Help.

Once you complete this procedure, you'll gain access to the newly created SMB shares. To verify, access the shares via VIP address and/or FQDN.

Now you're ready to optimize the new SMB View for performance in the next section.

Optimize SMB Performance

Cohesity recommends that you tune your Cohesity system settings to optimize SMB performance. To do so, See Recommended settings when using Cohesity as a filer. Now that you have created and optimized your Cohesity SMB View for Commvault, you are ready to create an SMB storage library on Commvault in the next chapter.

Create Commvault SMB Storage Library

When you use a Cohesity SMB share to create an SMB storage library on Commvault, you will need to choose the type of storage library. To store the data that you back up using Commvault, you can create:

- A single SMB storage library.
- A scale-out SMB storage library (SoSL).

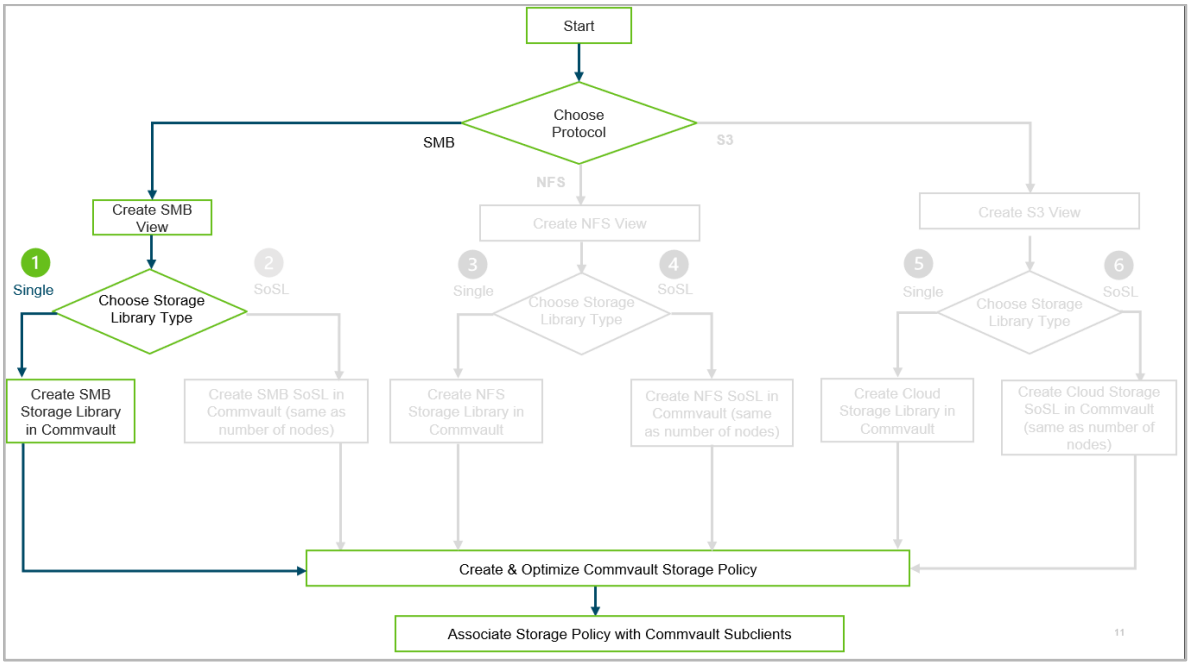
Cohesity recommends using an SoSL, as it delivers improved I/O performance on Cohesity because it uses all the nodes in your cluster in parallel.

NOTE: To connect to the Cohesity SMB View, you will need to have Commvault MediaAgents running on Windows. If you do not, install them before you start the next procedure.

Create Single SMB Storage Library on Commvault

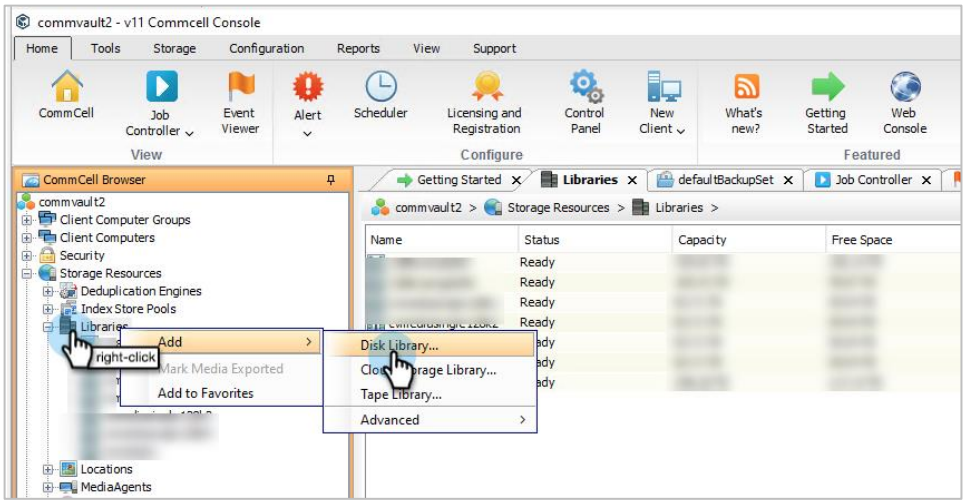
If you add a single SMB path to your Commvault storage library, Cohesity recommends that you access it via the Cohesity cluster's FQDN for maximum I/O throughput.

Figure 5: Create Single SMB Storage Library on Commvault

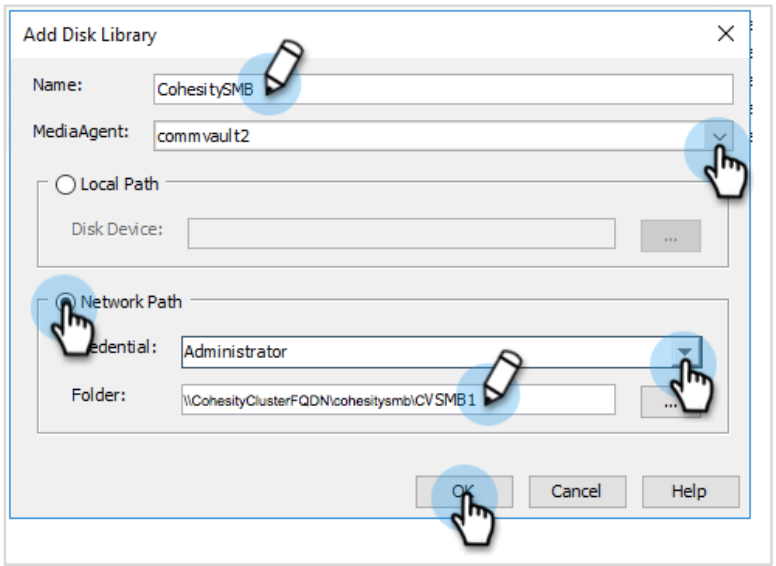


To create a single SMB storage library in Commvault:

1. Log in to your CommCell Console and navigate to **Storage Resources**. Right-click **Libraries** and select **Add > Disk Library** to create a storage library.



2. Enter the library **Name** and select the **MediaAgent**. Select **Network Path**, choose the appropriate **Credential** role*, and, under **Folder,** enter the SMB path using the Cohesity cluster's FQDN. Finally, click **OK**.



* If you do not already have a credentialed account, you can add it here.

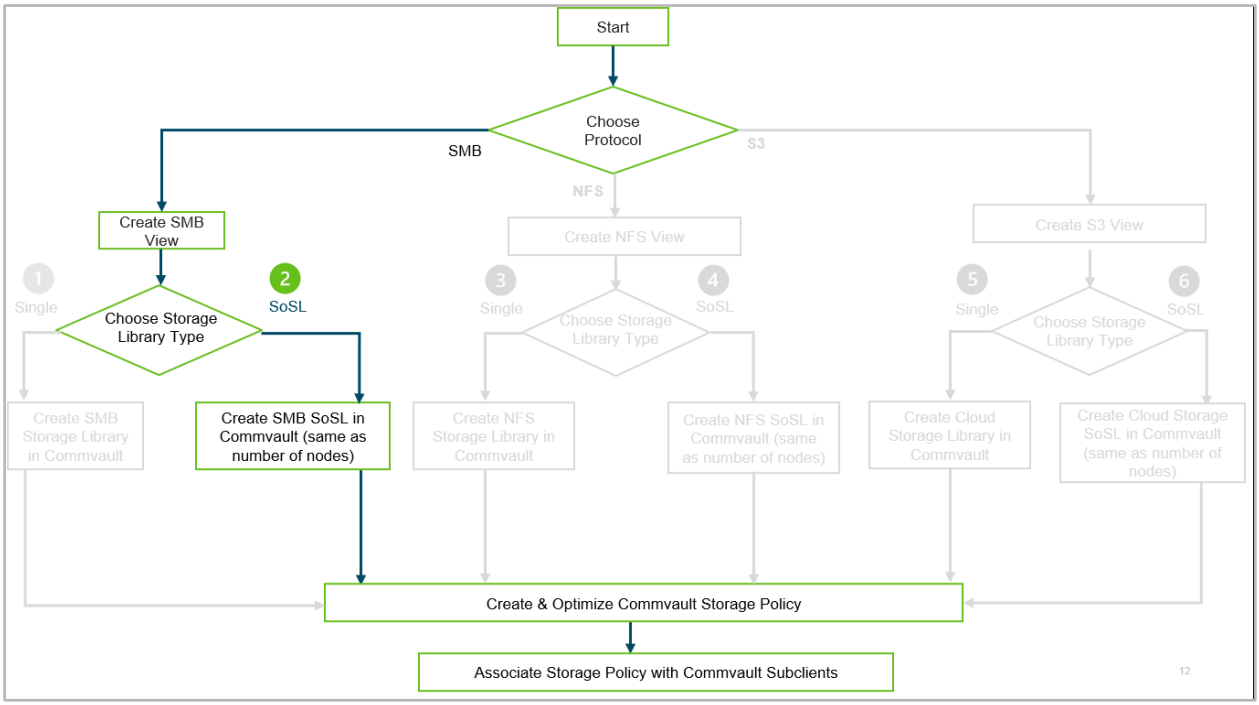
You have successfully created a single SMB storage library for your Commvault backups. The next step is to create a Commvault storage policy. After you optimize the storage policy, you'll associate it with your Commvault subclients.

If you prefer a scale-out storage library, as we recommend, proceed to the next section.

Create Scale-out SMB Storage Library on Commvault

As scale-out storage libraries deliver the best I/O performance by accessing all nodes of the cluster in parallel via their VIPs, Cohesity strongly recommends using a scale-out storage library (SoSL).

Figure 6: Create SMB SoSL on Commvault



To create an SMB SoSL for Commvault:

1. Follow the steps to create a single SMB storage library and then add an SMB path for each node in the cluster by accessing the share name using the VIP address of each node.

   For example, if you have a four-node cluster and the Cohesity SMB share is 'CommvaultSMB1,' create a single disk library using one of the node VIPs and add three more SMB paths using each node's unique VIP address with the same SMB share name. To maximize throughput in our solution, Cohesity recommends that you set up at least *two* Commvault MediaAgents for every *four* Cohesity cluster nodes.

   IMPORTANT: On the additional MediaAgents, be sure to share the same mount paths with each MediaAgent. In the Commcell Console, expand **Storage Resources > Libraries > *<Cohesity_Disk_Library>***, then right-click each mount path to select **Share Mount Path**. Select the Read/Write access type to use the mount path for both read and write operations on all MediaAgents.

   For more on sharing mount paths, see Disk Libraries - Mount Path in the Commvault documentation

In our example of a four-node cluster, use the following Cohesity SMB share paths to connect to the Commvault SMB storage library:

\\<***vip01***>\CommvaultSMB1

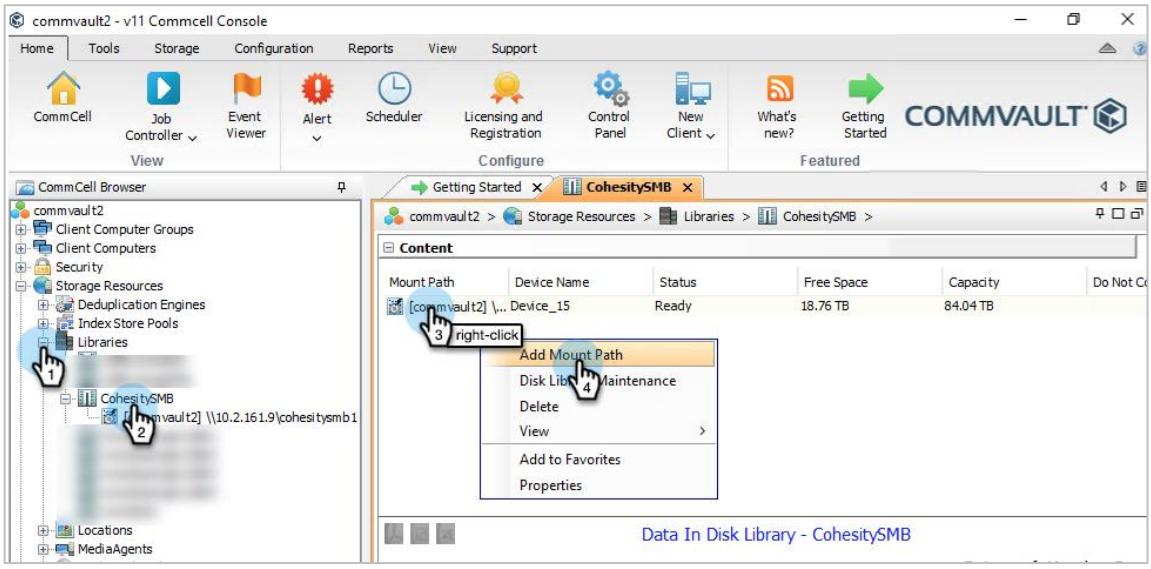
\\<***vip02***>\CommvaultSMB1

\\<**vip03**>\CommvaultSMB1

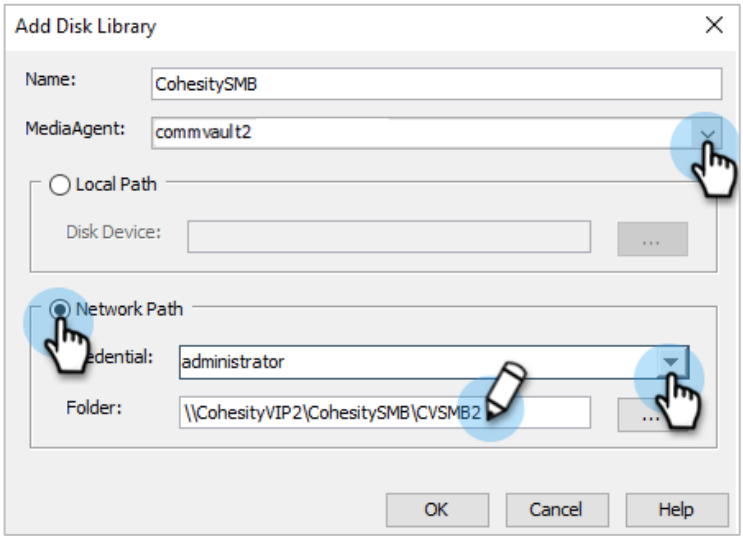
\\<***vip04***>\CommvaultSMB1

To find the VIP of each of your Cohesity nodes, see Appendix B: Identify Cohesity Node VIPs below.

2. Log in to your CommCell Console and under **Storage Resources**, navigate to **Libraries** > <***Cohesity_SMB_library***>. Right-click the storage library that you created and select **Add Mount Path**.

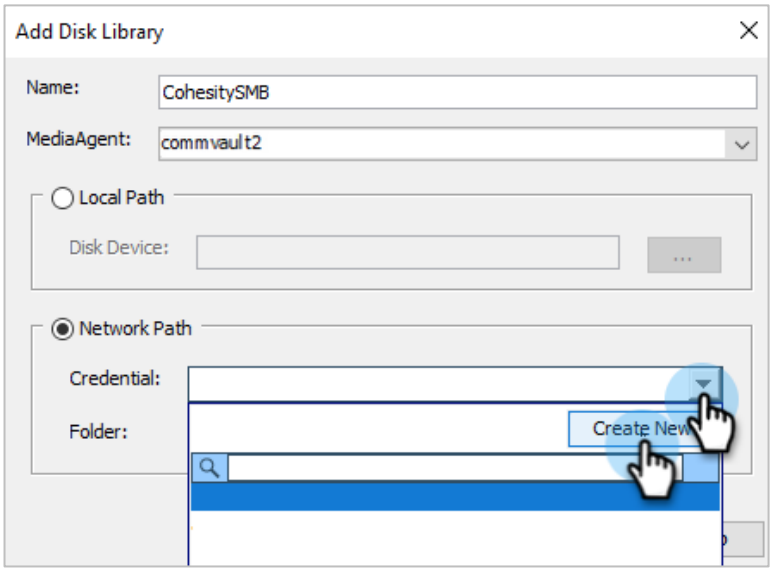


3. Select the **MediaAgent** and **Network Path**. Select the **Credential** account that has access to the SMB share*. For **Folder**, use the first Cohesity node VIP to build the path.

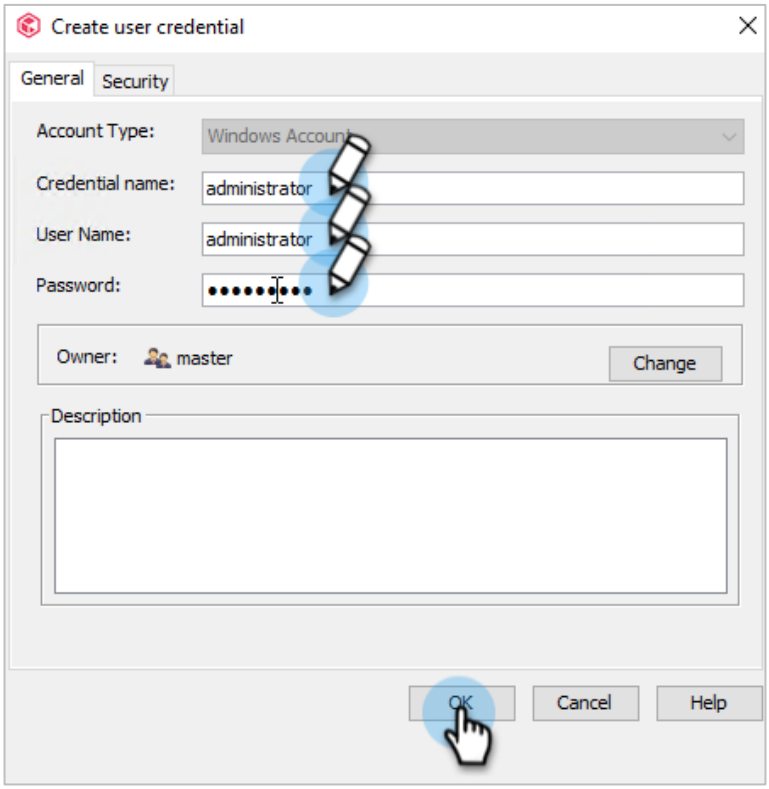


* If you do not already have a credentialed account, you can add it here.

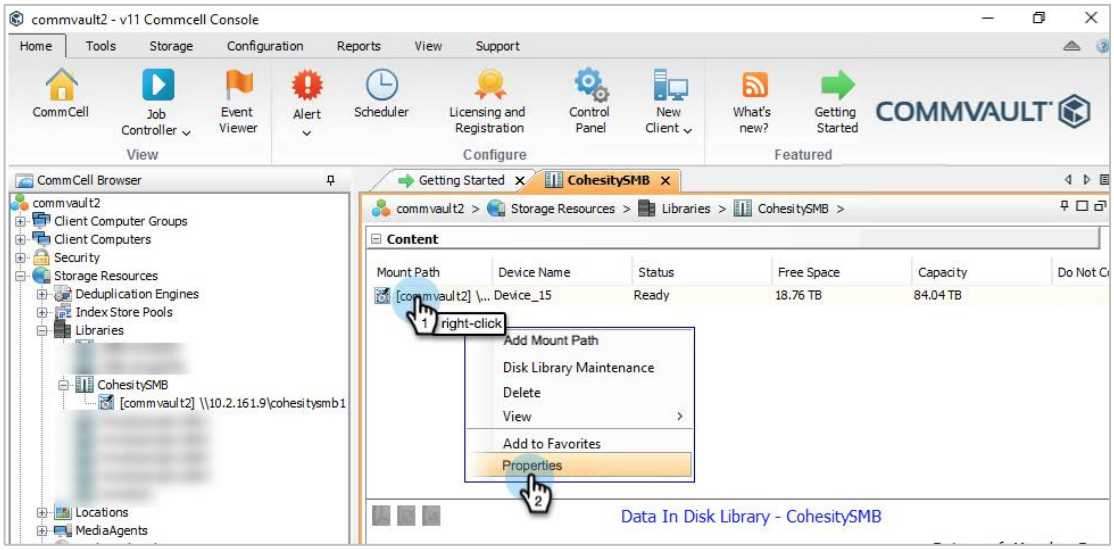
a) Open the **Credential** menu and click **Create New**.



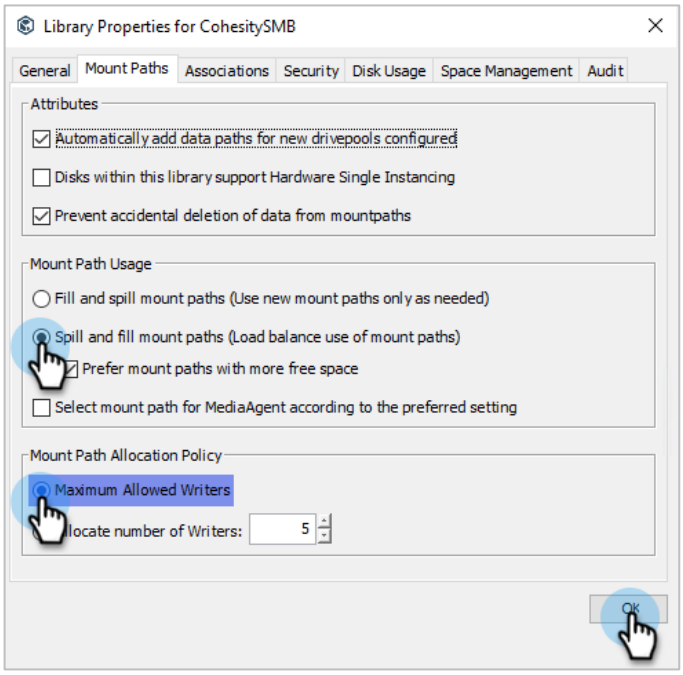
b) Enter the account's **Credential name** along with the **User Name** and **Password** required to access the SMB share. Then click **OK**.



4. Now, to ensure maximum I/O throughput, you need to add an SMB path using each node's VIP in your Cohesity cluster. Repeat the above steps to add the additional SMB paths with the VIP of each node.
5. Back in the **Libraries** view in your Commcell Console, right-click the storage library again and select **Properties.**



6. On the **Mount Paths** tab, select **Spill and fill mount paths** to enable load balancing among the SMB shares. Under **Mount Path Allocation Policy**, select **Maximum Allowed Writers** and click **OK**.



You have successfully created a scale-out SMB storage library for your Commvault backups. The next step is to create a Commvault storage policy. After you optimize the storage policy, you'll associate it with your Commvault subclients.

Create Cohesity NFS View for Commvault

To use Cohesity storage as a Commvault storage library via NFS, you'll create a Cohesity View, choose the *Backup Target Commvault* QoS policy, and configure the View for NFS.

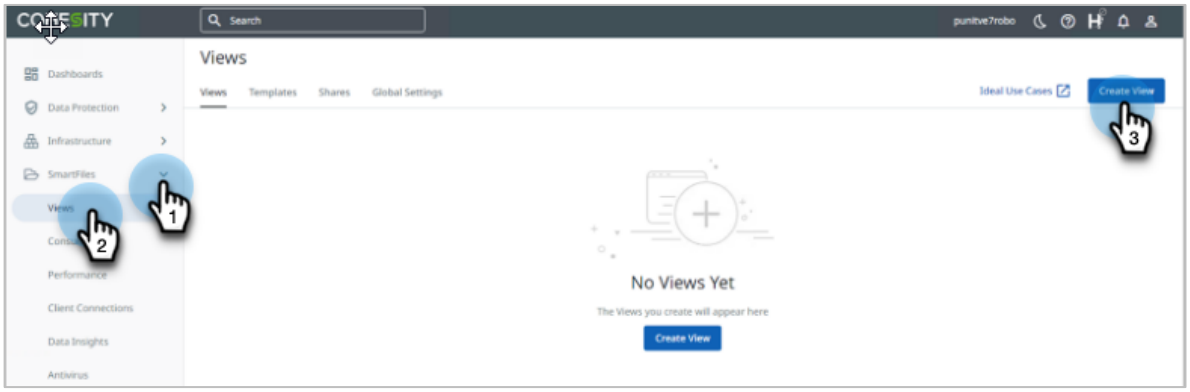
To create an NFS export to store Commvault backups:

1. Create a Cohesity View, select the *Backup Target Commvault* QoS policy, and add all the MediaAgent IPs to the View's security whitelist.
2. Create:
   - A single NFS storage library on Commvault.
   - A scale-out NFS storage library on Commvault.
3. Create a storage policy that uses the storage library you created.
4. Configure Associate the storage policy with your Commvault subclients.

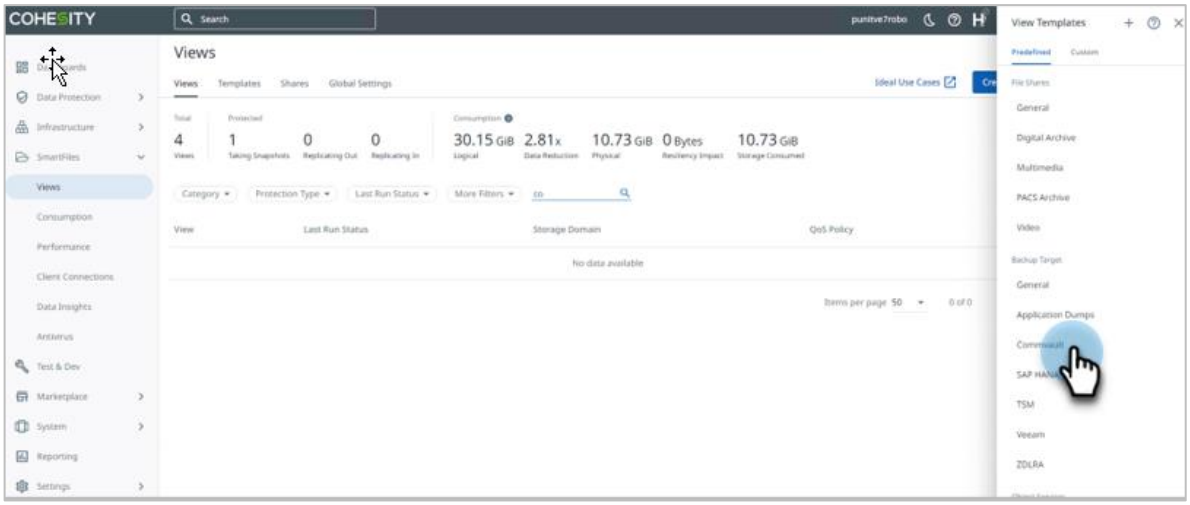
For this solution, Cohesity recommends enabling inline deduplication and inline compression on the Cohesity Storage Domain in which you create the View. For details, see Create or Edit Storage Domains in the online Help.

To create an NFS View for Commvault:

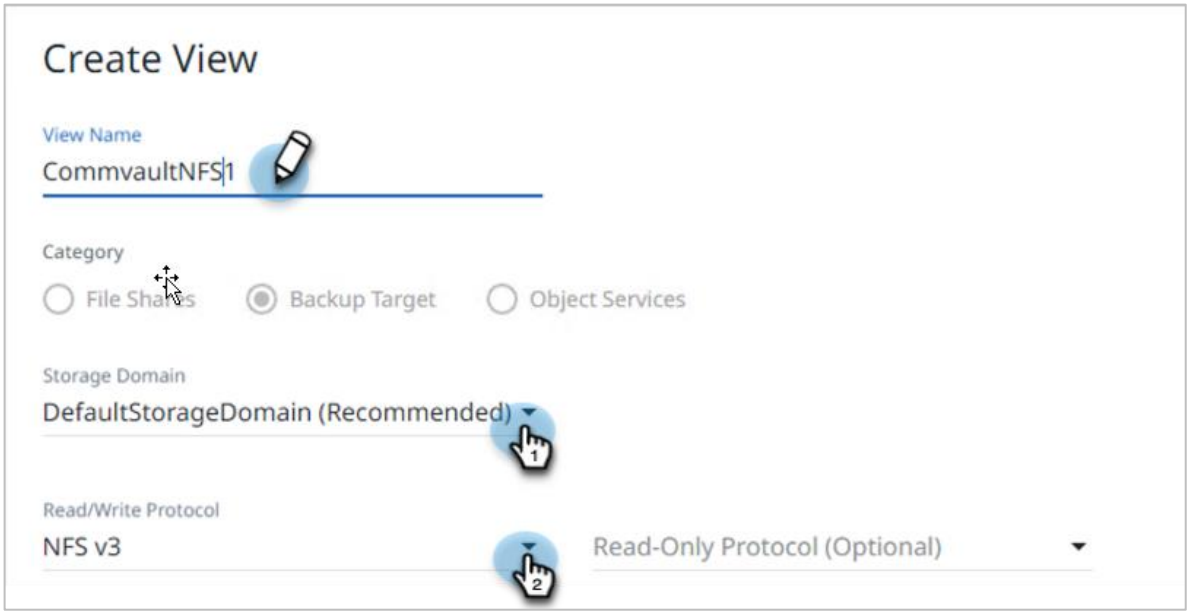
1. Log in to Cohesity and navigate to **SmartFiles > Views**. On the **Views** page, click **Create View**.



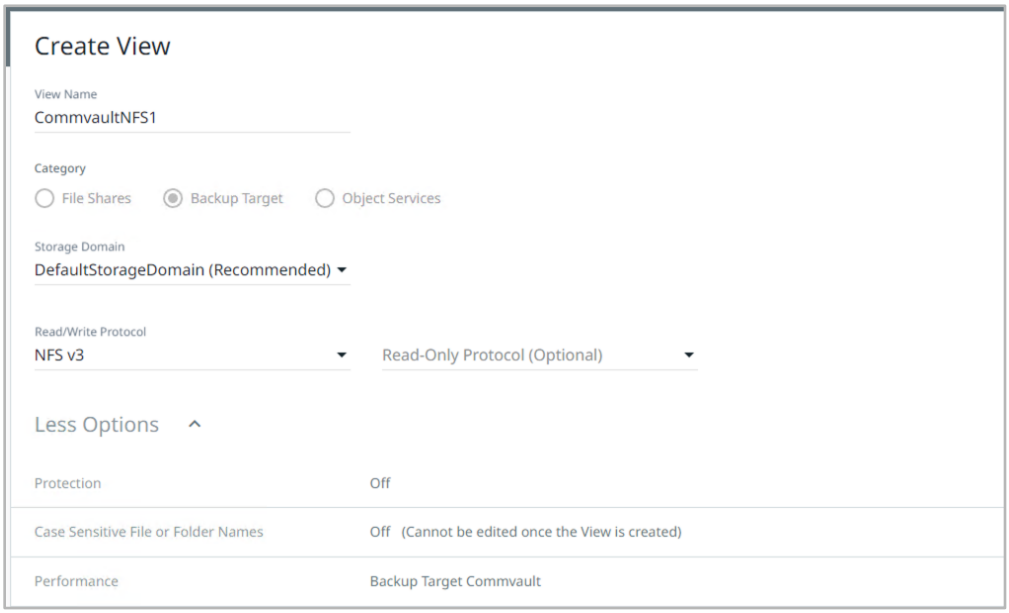
2. In the **Create View**, under the Backup Target section, click **Commvault**.



3. In the **Create View** form, enter the **View Name**, choose a **Storage Domain** (with inline deduplication and compression enabled), and for **View Protocol**, select **NFS Only**.

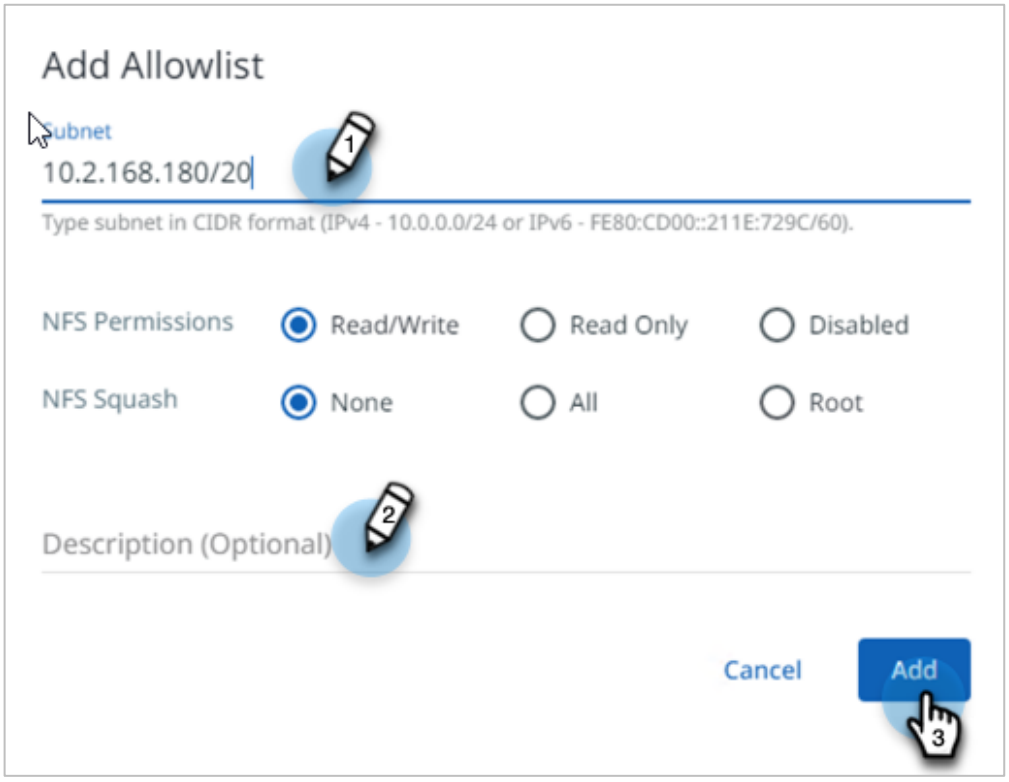


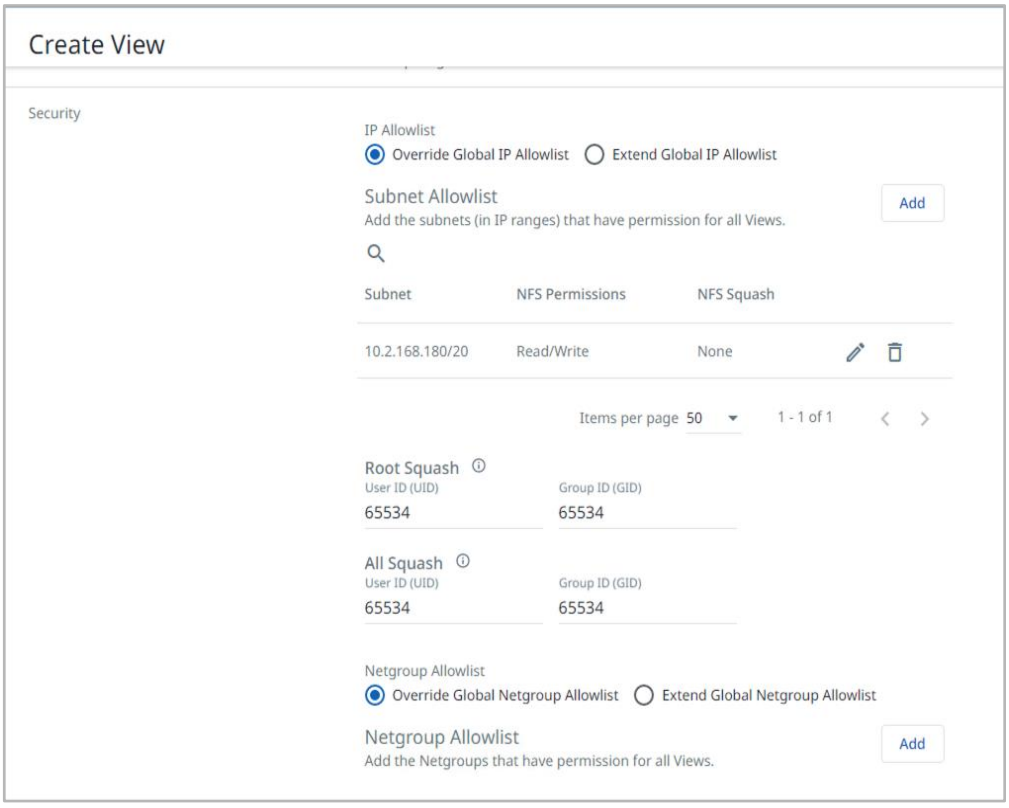
4. In the same form, under **More Options > Performance > QoS Policy**, select **Backup Target Commvault**.



NOTE: If you are using a version of Cohesity before version 6.4, select **TestAndDev High** for best performance.

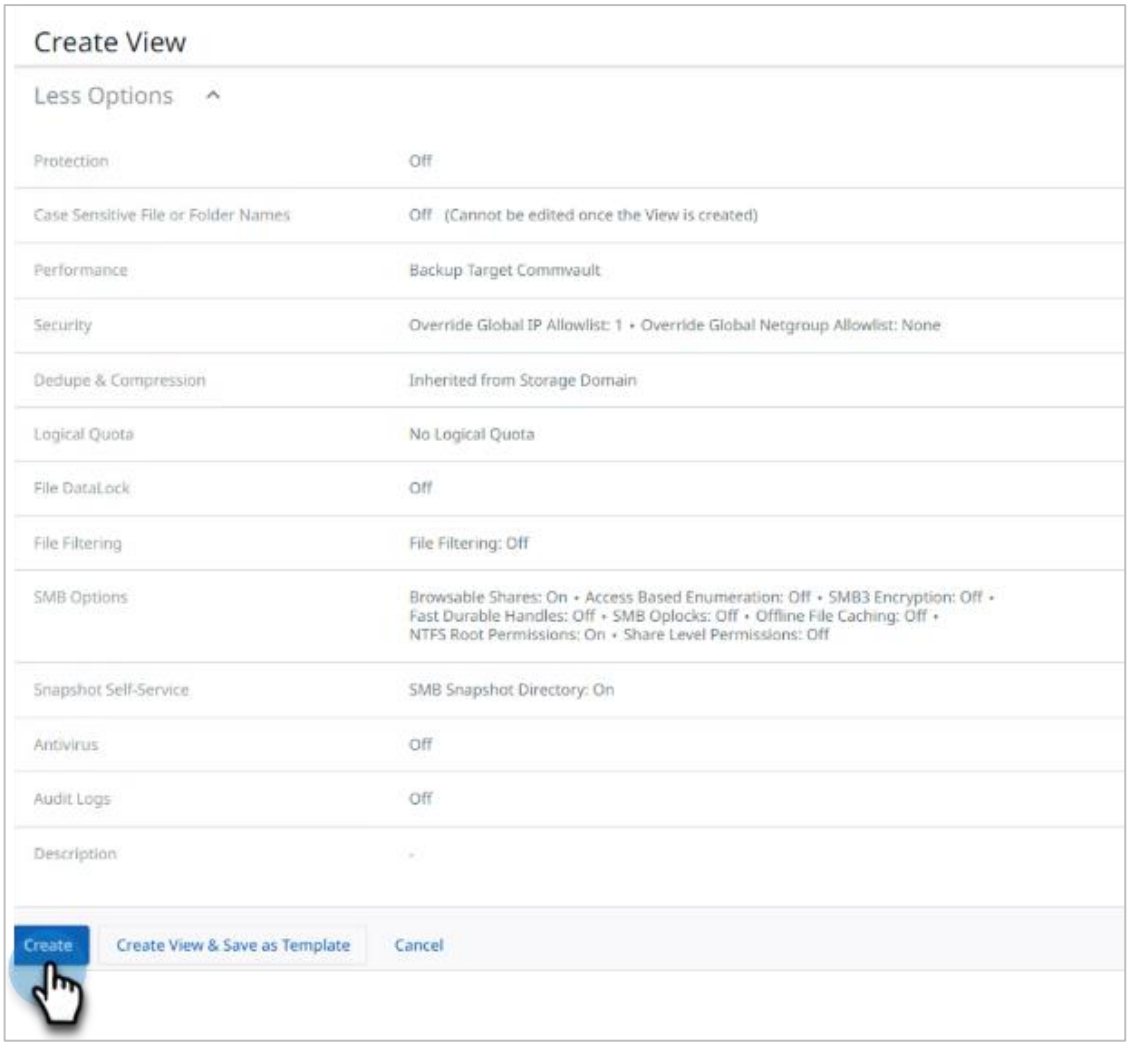
5. In the same form, under **Security**, click **Add Allowlist**, enter the **Subnet** IP range for your Commvault backup server and MediaAgent, enter a **Description**, and click **Add**.





NOTE: If you add more MediaAgents in the future, make sure to add them to the NFS security whitelist in this View.

6. Finally, at the bottom of the form, click **Create View**.



Now that you have created the NFS View on Cohesity, you can create the Commvault storage library that will use the NFS View as storage in the next chapter.

Create Commvault NFS Storage Library

When you create a Cohesity NFS View to use with a Commvault storage library, the next step is to configure an existing (or install a new) Commvault MediaAgent on the same network as your Cohesity cluster to mount the Cohesity NFS View. When you have your MediaAgent, you are ready to:

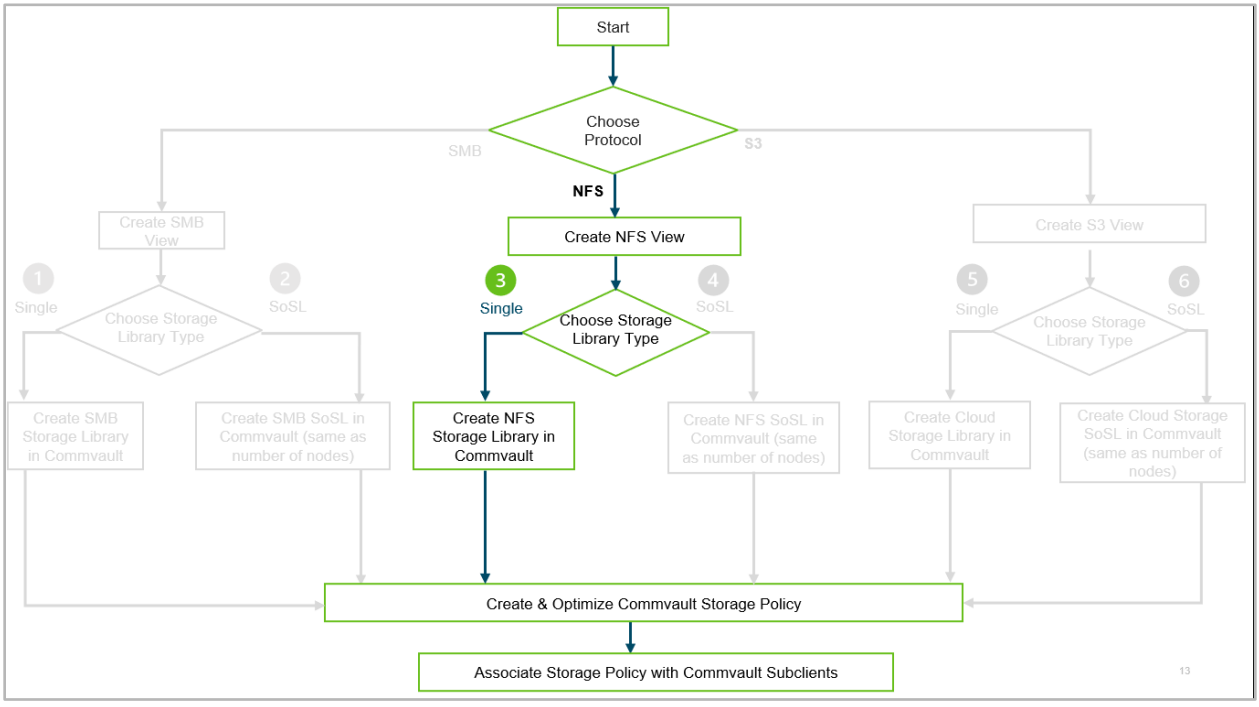
- Create a single NFS storage library.
- Create an NFS scale-out storage library (SoSL).

NOTE: To connect to the Cohesity NFS View, you will need to have Commvault MediaAgents running on Linux. If you do not, install them before you start the next procedure.

Create Single NFS Storage Library on Commvault

If you add a single NFS path to your Commvault storage library, Cohesity recommends that you access it via the Cohesity cluster's FQDN for maximum I/O throughput.

Figure 7: Create Single NFS Storage Library on Commvault



Identify a Commvault MediaAgent on the same network as the Cohesity cluster and:

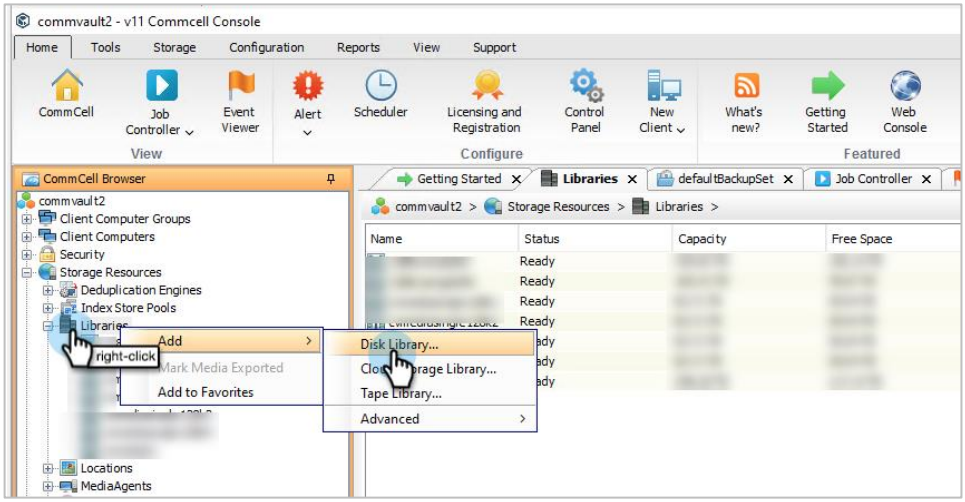
1. Log in to the MediaAgent.

2. Mount the Cohesity NFS exports using the Cohesity cluster's FQDN and the View name in this Linux command:

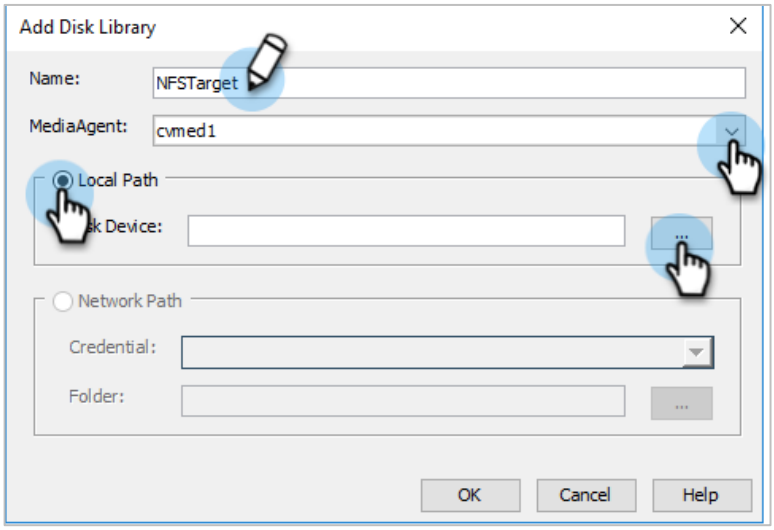
```
$ mount -t nfs -o
noatime,vers=3,proto=tcp,rsize=1048576,wsize=1048576,timeo=10000,hard,intr,nol
ock <CohesityFQDN>:/<ViewName> /cvdir1/cvfolder1
```

IMPORTANT: Add NFS mount entries in `/etc/fstab` for persistent mounts across reboots of the MediaAgent server.

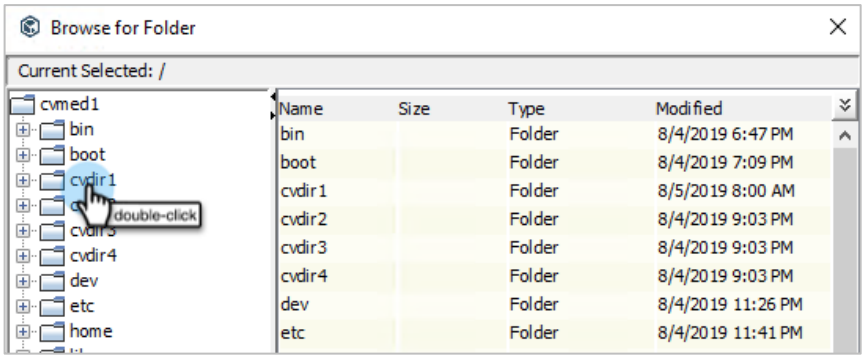
3. In your CommCell Console, navigate to **Storage Resources** > **Libraries**. Right-click **Libraries** and select **Add** > **Disk Library** to create a storage library.



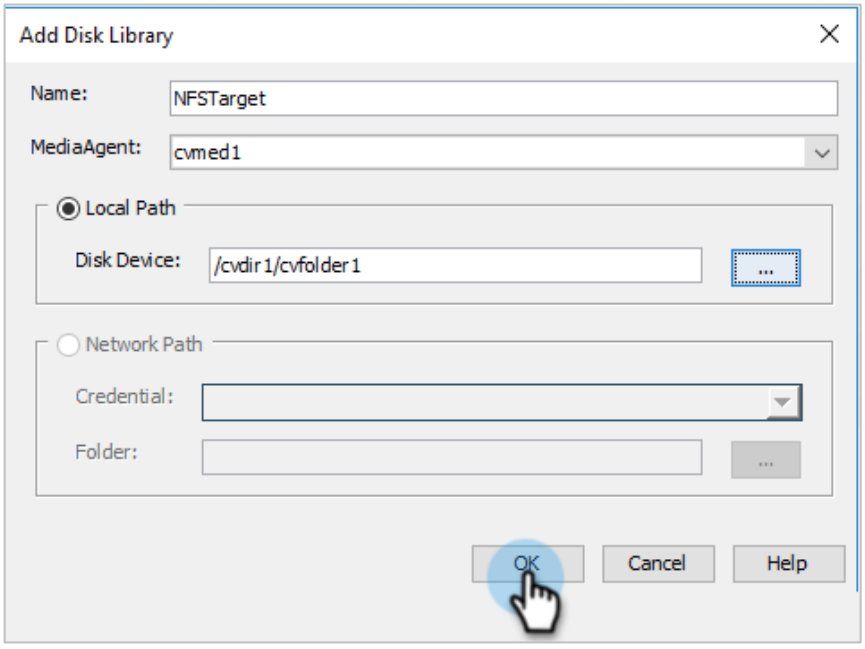
4. Enter the library **Name** and select the **MediaAgent**. Select **Local Path** and click the '**…**' **Browse** button to choose a **Disk Device**.



5. Double-click the NFS mount point where you mounted the Cohesity NFS View.



6. Click **OK**.



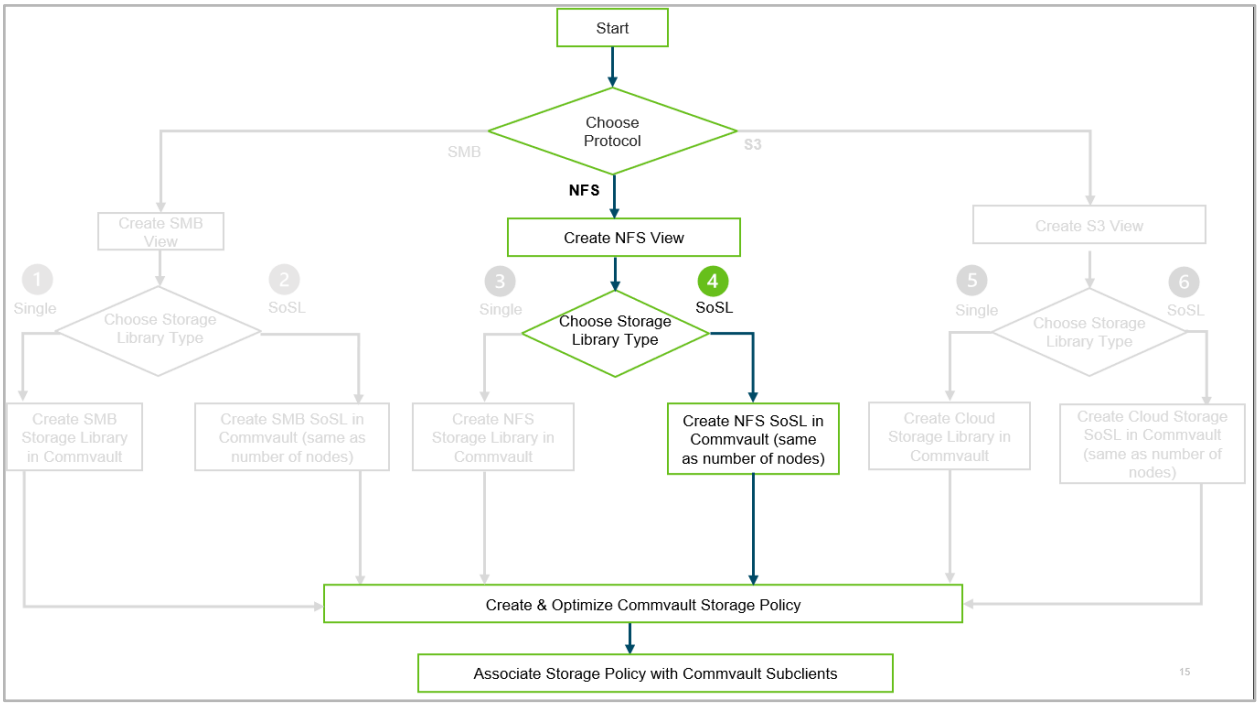
You have successfully created a single NFS storage library for your Commvault backups. The next step is to create a Commvault storage policy. After you optimize the storage policy, you'll associate it with your Commvault subclients.

If you prefer a scale-out storage library, as we recommend, proceed to the next section.

Create Scale-Out NFS Storage Library on Commvault

As scale-out storage libraries deliver the best I/O performance by accessing all the nodes of the cluster in parallel via their VIPs, Cohesity strongly recommends using a scale-out storage library (SoSL).

Figure 8: Create NFS SoSL on Commvault



To create an NFS scale-out storage library for Commvault:

1. Follow the steps to create a single NFS storage library and then add an NFS mount path for each node in the Cohesity cluster by accessing the View name using the VIP address of each node.

   For example, if you have a four-node cluster and the Cohesity NFS View is 'CommvaultNFS1', create a single disk library using one of the node VIPs for the first mount path and add three more mount paths using each node's unique VIP address with the same NFS view name. To maximize throughput in our solution, Cohesity recommends that you set up at least two Commvault MediaAgents for every four Cohesity cluster nodes.

   IMPORTANT: On the additional MediaAgents, be sure to share the same mount paths with each MediaAgent. In the Commcell Console, expand **Storage Resources > Libraries > *<Cohesity_Disk_Library>***, then right-click each mount path to select **Share Mount Path**. Select the Read/Write access type to use the mount path for both read and write operations on all MediaAgents.

   For more on sharing mount paths, see Disk Libraries - Mount Path in the Commvault documentation.

In our example of a four-node cluster, use the following Linux **mount** commands to mount the NFS exports on the MediaAgent:

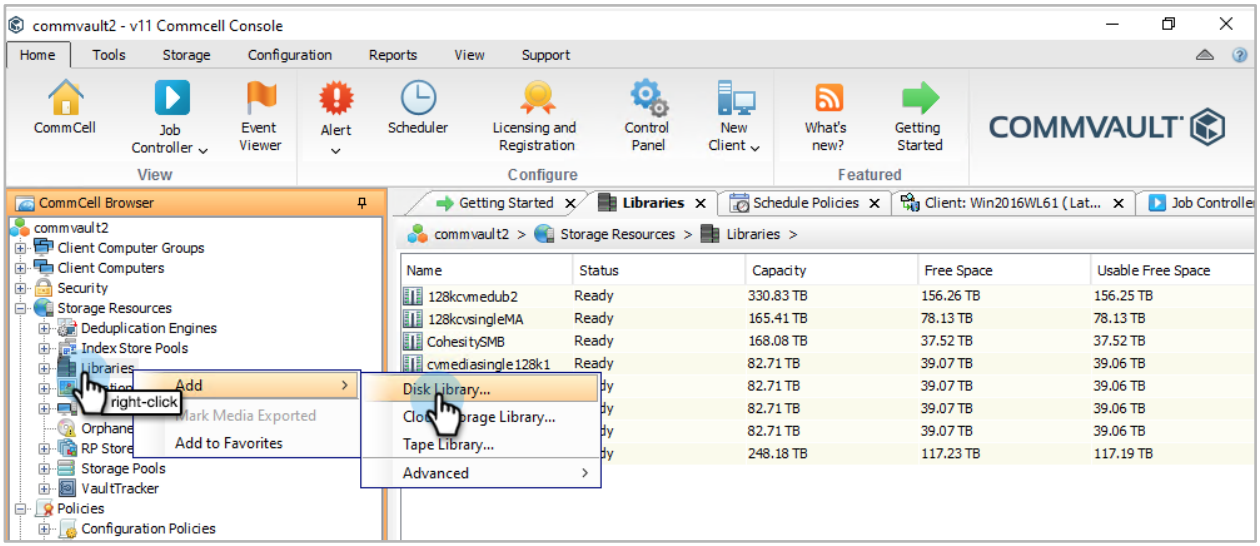
```
mount -t nfs -o
noatime,vers=3,proto=tcp,rsize=1048576,wsize=1048576,timeo=10000,hard,intr,no
lock <CohesityVIP1>:/<NFSViewName>/cvdir1/cvfolder1
mount -t nfs -o
noatime,vers=3,proto=tcp,rsize=1048576,wsize=1048576,timeo=10000,hard,intr,no
lock <CohesityVIP2>:/<NFSViewName> /cvdir1/cvfolder2
mount -t nfs -o
noatime,vers=3,proto=tcp,rsize=1048576,wsize=1048576,timeo=10000,hard,intr,no
lock <CohesityVIP3>:/<NFSViewName> /cvdir1/cvfolder3
mount -t nfs -o
noatime,vers=3,proto=tcp,rsize=1048576,wsize=1048576,timeo=10000,hard,intr,no
lock <CohesityVIP4>:/<NFSViewName> /cvdir1/cvfolder4
```

For more instructions, see How to Connect Linux NFS Client to Cohesity NFS Export in the Support Knowledge Base.

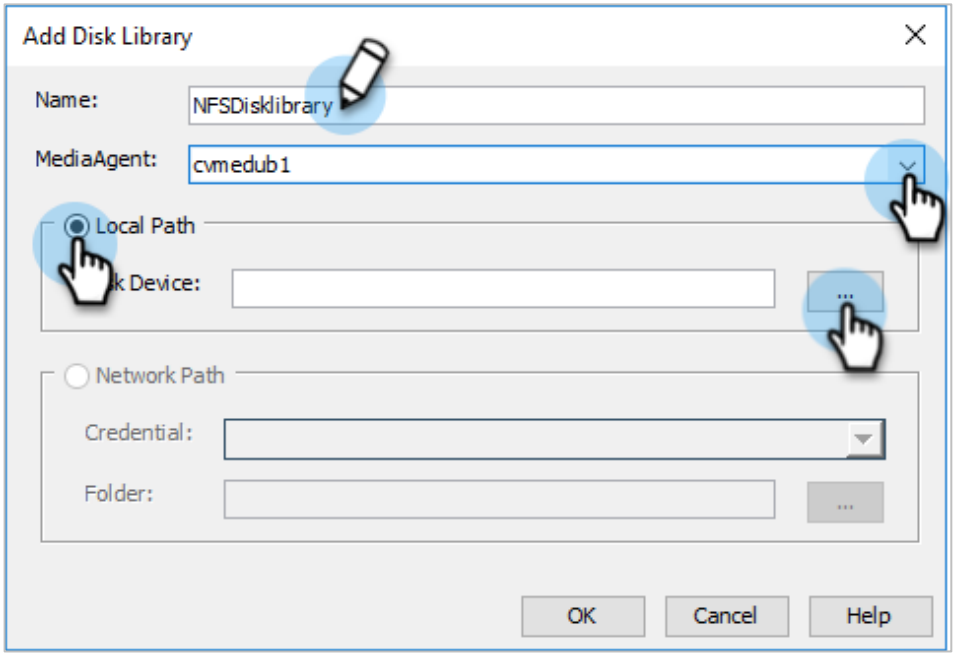
IMPORTANT: Add NFS mount entries in `/etc/fstab` for persistent mounts across reboots of the MediaAgent server.

To find the VIP of each of your Cohesity nodes, see Appendix B: Identify Cohesity Node VIPs below.

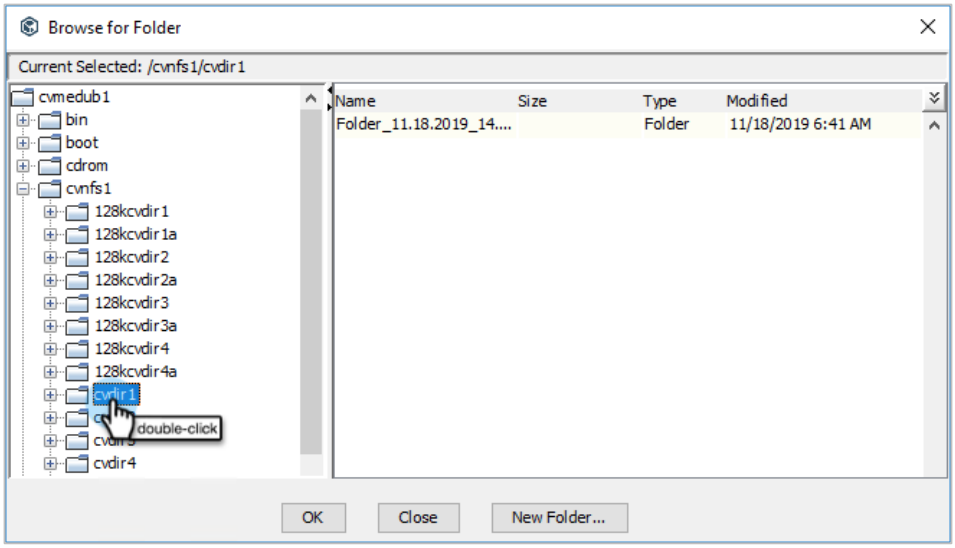
2. Log in to your Commcell Console and under **Storage Resources**, right-click **Libraries** and select **Add > Disk Library**.



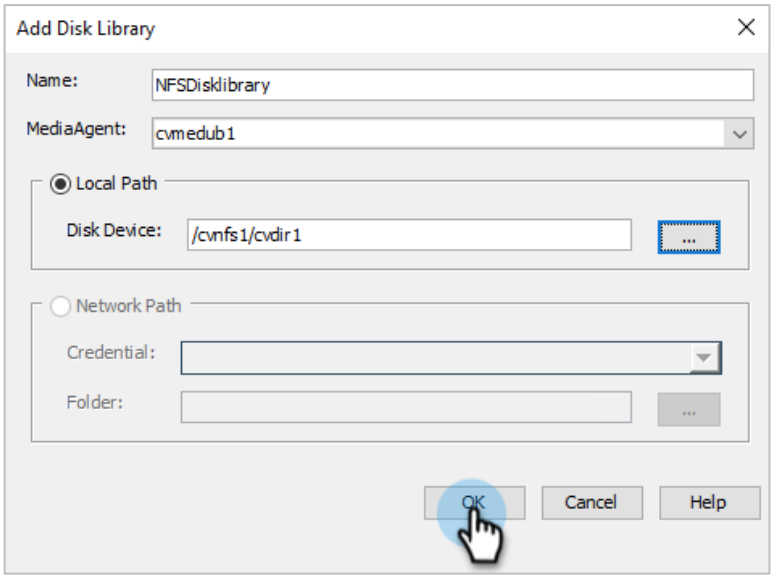
3. Enter the library **Name** and select the **MediaAgent**. Select **Local Path** and click the '**…**' **Browse** button to choose a **Disk Device**.



4. Double-click the NFS mount point where you mounted the Cohesity NFS View.

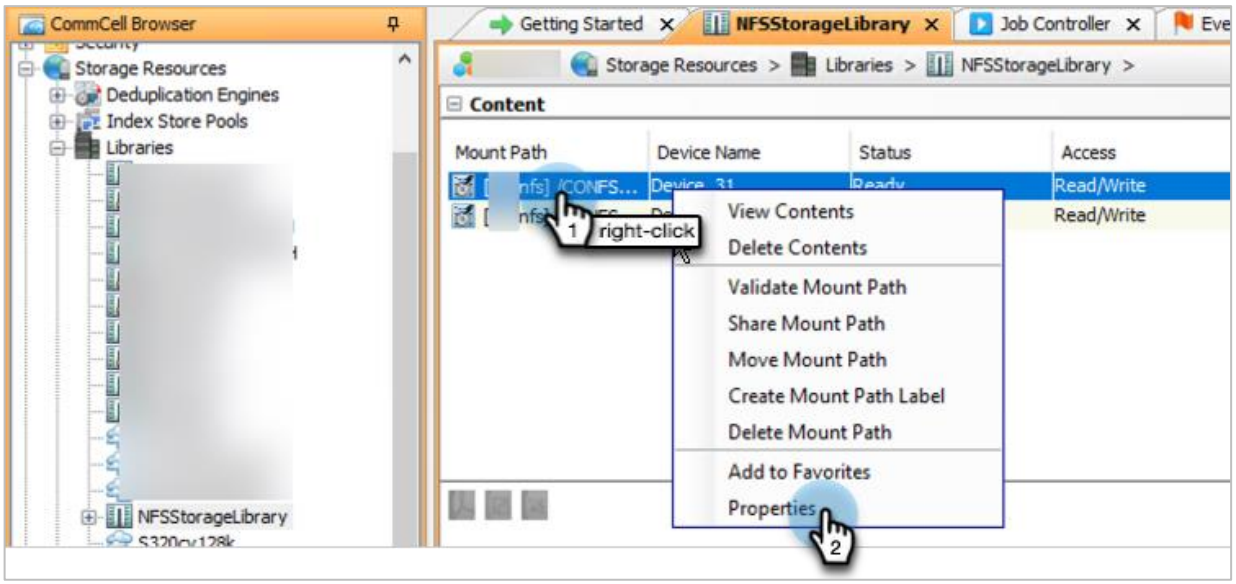


5. Click **OK**.

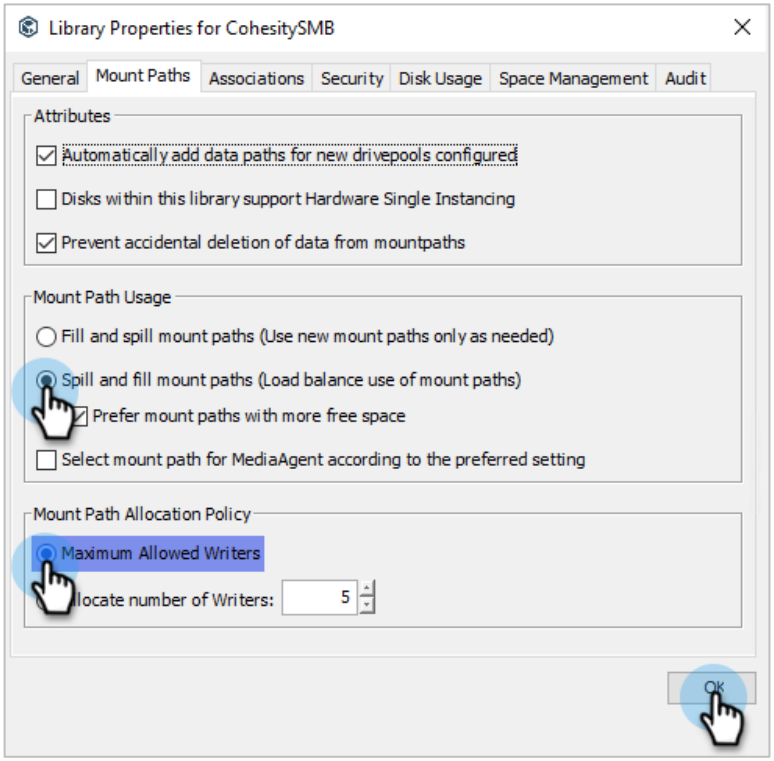


6. Repeat the above steps to add the additional disk devices that point to the NFS mount path for each node in the cluster.

7. Back in the **Libraries** view in your Commcell Console, right-click the storage library again and select **Properties.**



8. On the **Mount Paths** tab, select **Spill and fill mount paths** to enable load balancing among the NFS mount points. Under **Mount Path Allocation Policy**, select **Maximum Allowed Writers** and click **OK**.



Now that you have set up the scale-out storage library, the next step is to create a storage policy for Commvault.

Create Cohesity SmartFiles S3 View for Commvault

To use Cohesity storage as a Commvault storage library via S3, you'll create a Cohesity SmartFile View, choose the *Backup Target Commvault* QoS policy, and configure the View for SmartFile S3.

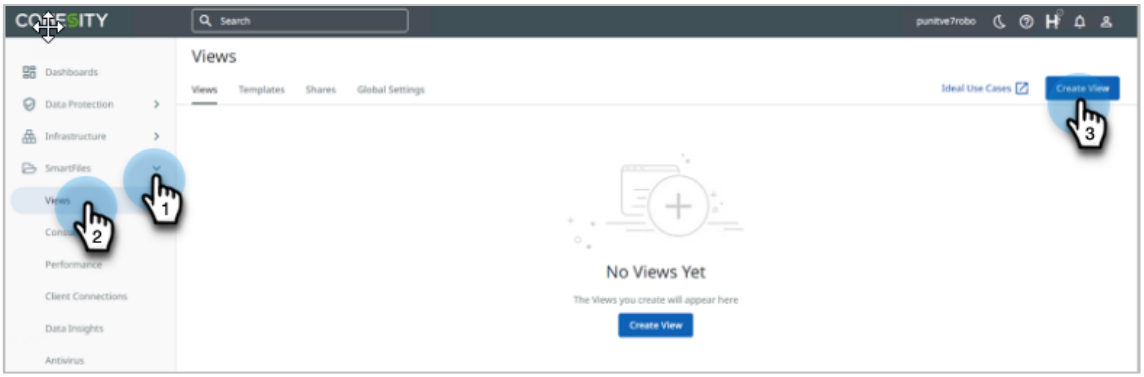
To create a SmartFile S3 View to store Commvault backups:

1. Create a SmartFile S3 Cohesity View, select the *Backup Target Commvault* QoS policy, add the IP addresses for your Commvault MediaAgents.
2. Create:
   - An S3 storage library on Commvault.
   - A scale-out S3 storage library on Commvault.
3. Create a storage policy that uses the storage library you created.
4. Associate the storage policy with your Commvault subclients.

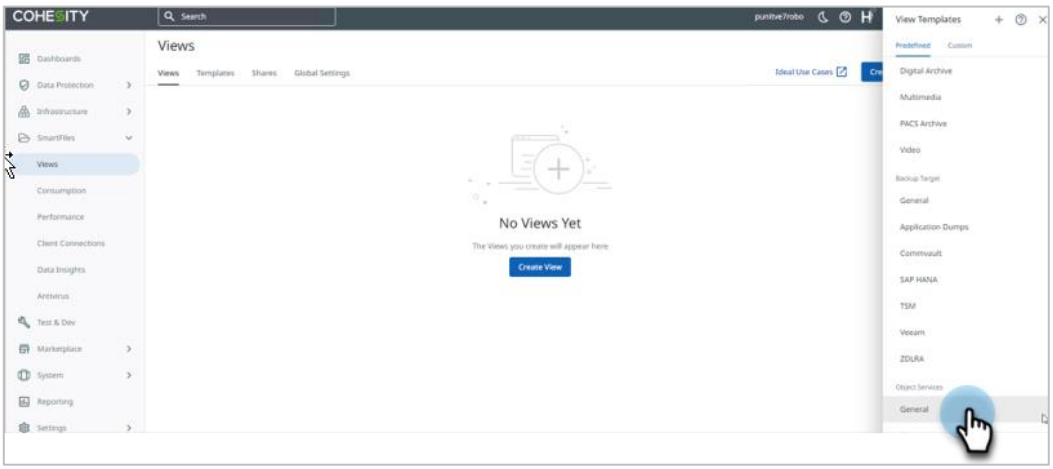
For this solution, Cohesity recommends enabling inline deduplication and inline compression on the Cohesity Storage Domain in which you create the View. For details, see Create or Edit Storage Domains in the online Help.

To create a SmartFile S3 View for Commvault:

1. Log in to the Cohesity and navigate to **SmartFiles > Views**. On the **Views** page, click **Create View**.

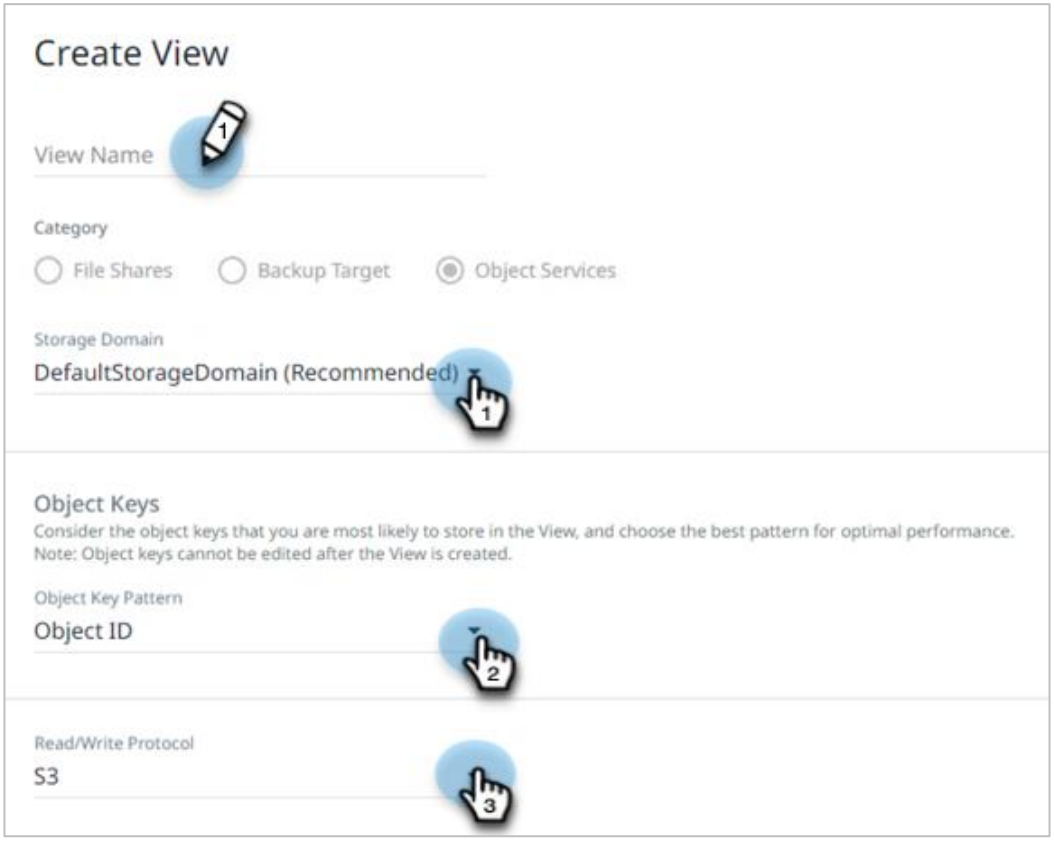


2. On the **Views** page, click **"Create View"** and click **General** in Object Services**.**

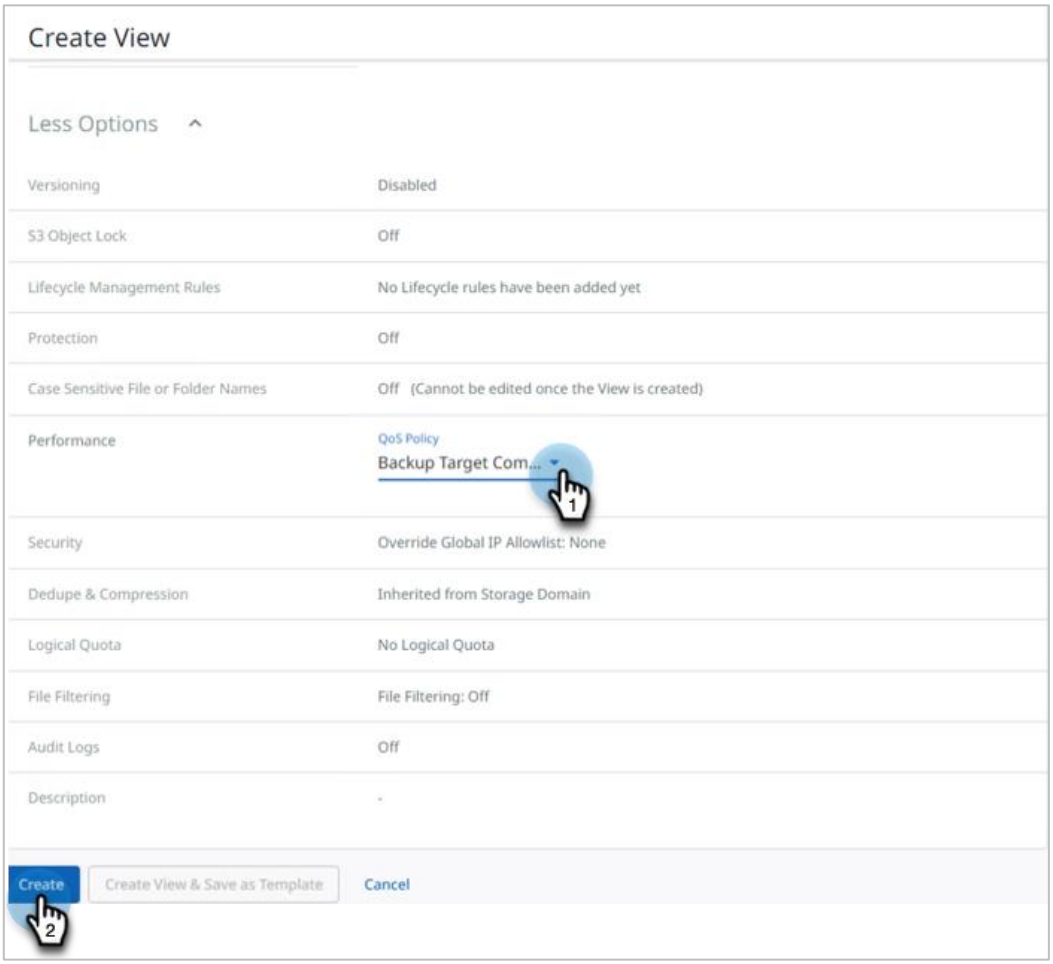


3. In the **Create View** form, enter the **View Name**, Select **Object Services** choose a **Storage Domain** (with inline deduplication and compression enabled), and Select Object Key Pattern as **Object ID** and **Read/Write Protocol**, select **S3**.

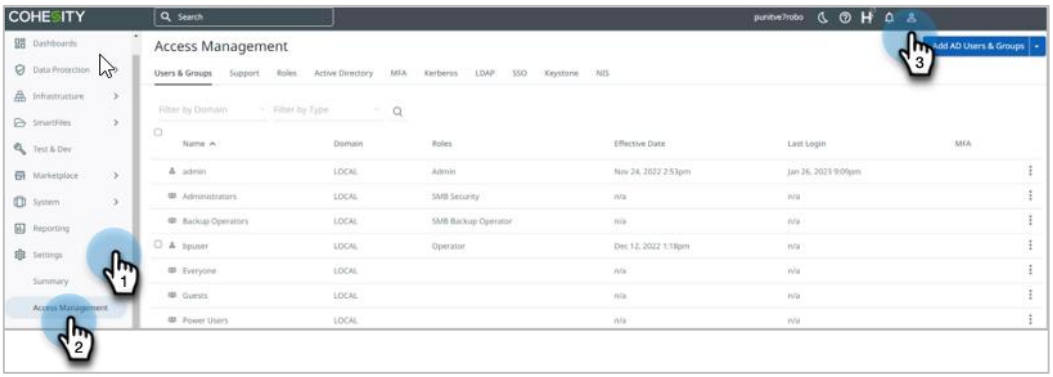
> **NOTE:** From Cohesity Cluster Version 7.0, Cohesity recommends **Object ID** as the object Key pattern.



4. In the same form, click **More Options,** and under **Performance > QoS Policy**, select **Backup Target Commvault** and click **Create**.



5. Navigate to **Settings > Access Management** and click on the User on the right by which you log in while creating the Cohesity SmartFile S3 View (Example: in our case, it is Admin).



6. Click on the user and it will redirect to the details of the user. Copy the Access Key ID and Secret Access Key.

Now that you have created the Cohesity SmartFile S3 View, verify that the connectivity between the Commvault Backup server, and media agent is working fine. Verify the Connectivity between the Commvault server, media agent server, and Cohesity cluster on ports 3000 and 443.

Cohesity SmartFile S3 View is accessible by the Commvault server using the URL by using the User Access Key ID and Secret Access Key.

https://VIP_Cohesity _Cluster:3000/View_name

Once you complete this procedure, you'll gain access to the newly created SmartFile S3 View.

Create Commvault S3 Storage Library

When you use a Cohesity SmartFiles S3 View to create an S3 storage library on Commvault, you will need to choose the type of storage library. To store the data you backup using Commvault, you can create:

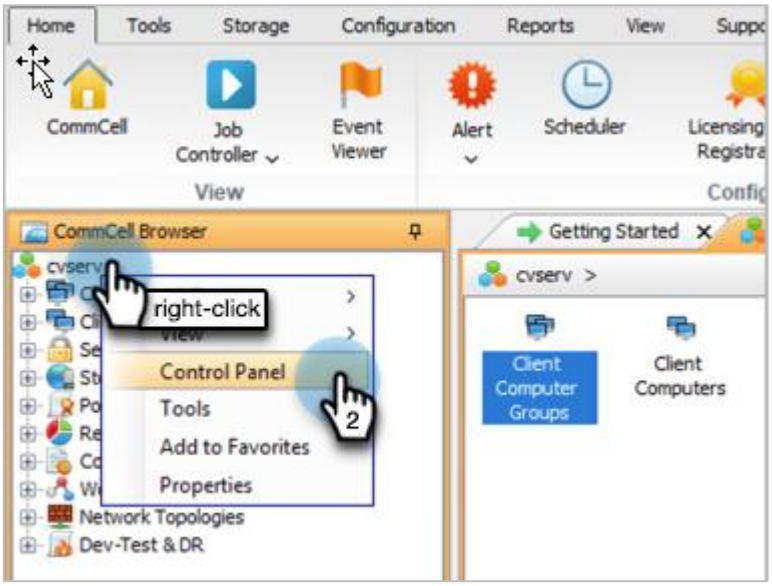
- A single S3 storage library.
- A scale-out S3 storage library (SoSL).

Cohesity recommends using an SoSL, as it delivers improved I/O performance on Cohesity because it uses all the nodes in your cluster in parallel.

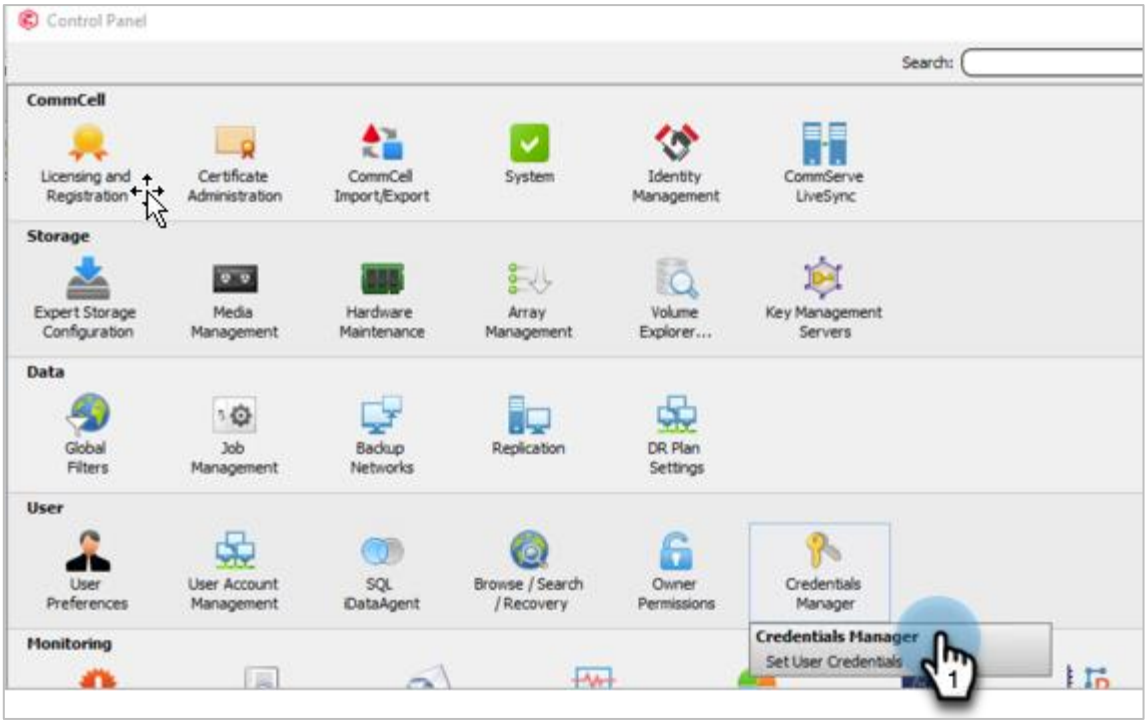
Create User Credentials for S3 Cloud Storage Library

To create a Cloud Storage library, the first step is to create a user, which provides the authorization and authentication to the Cohesity SmartFile S3 View. To create credentials, follow these steps:

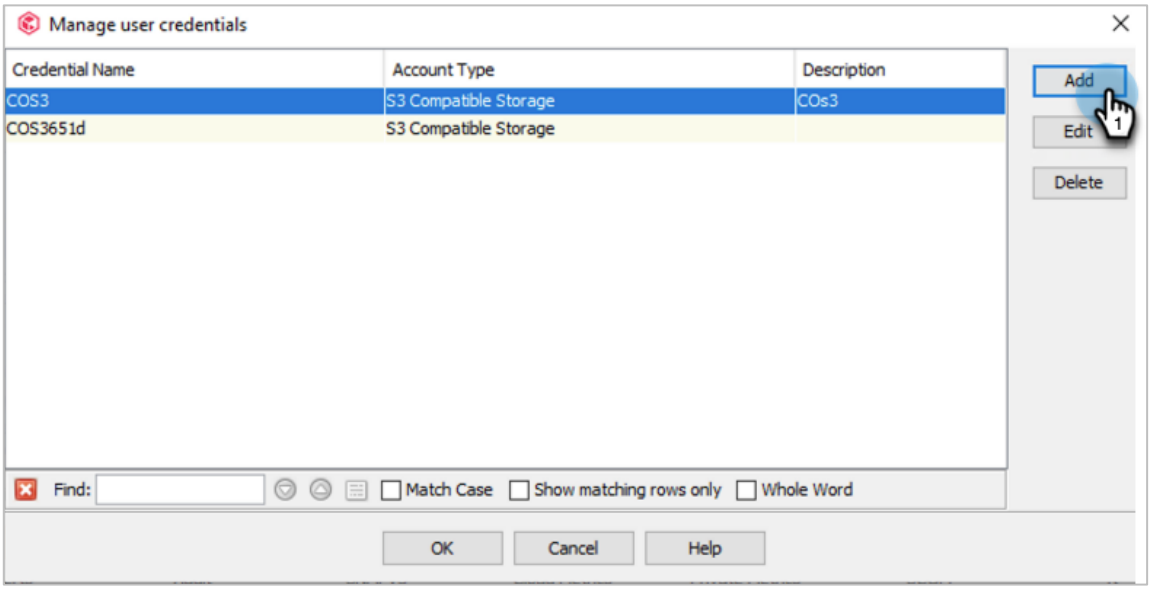
1. Log in to your CommCell Console and navigate to the Commvault server. Right-click on Commcell and click **Control Panel**.



2. Click **Credentials Manager**.



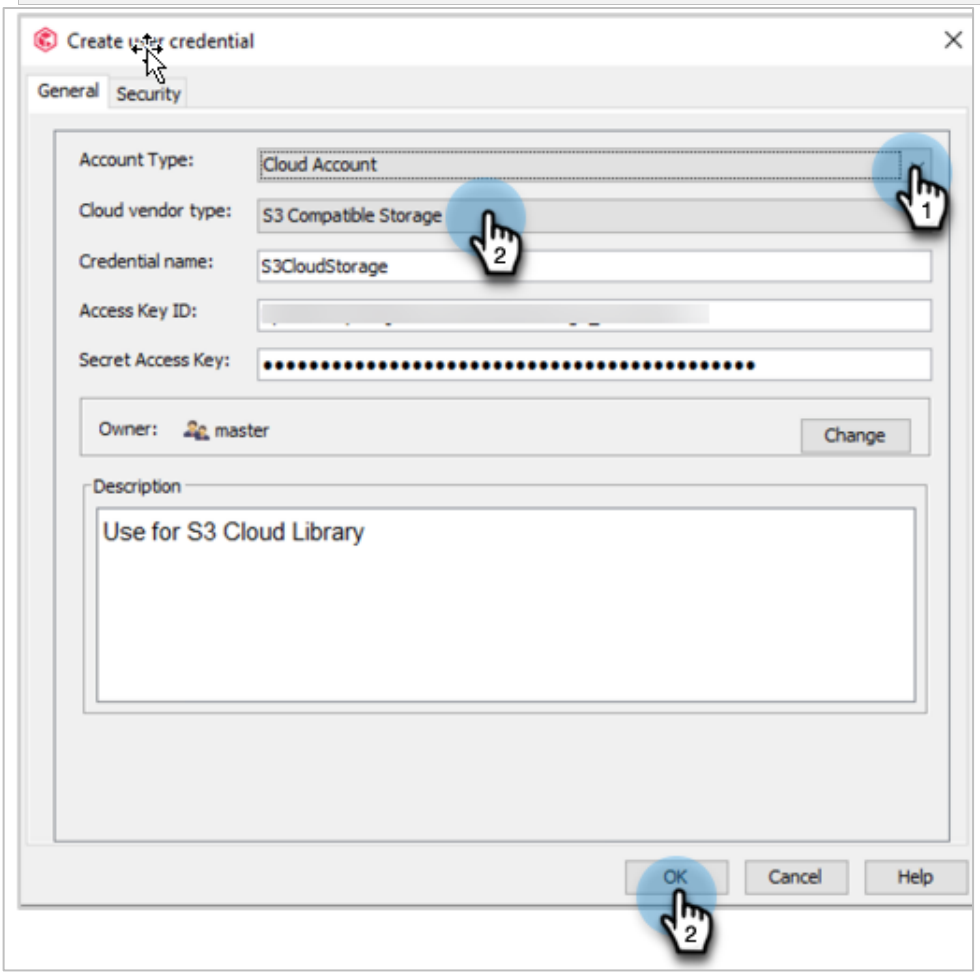
3. In **Manage user credentials** Window, click **Add**.



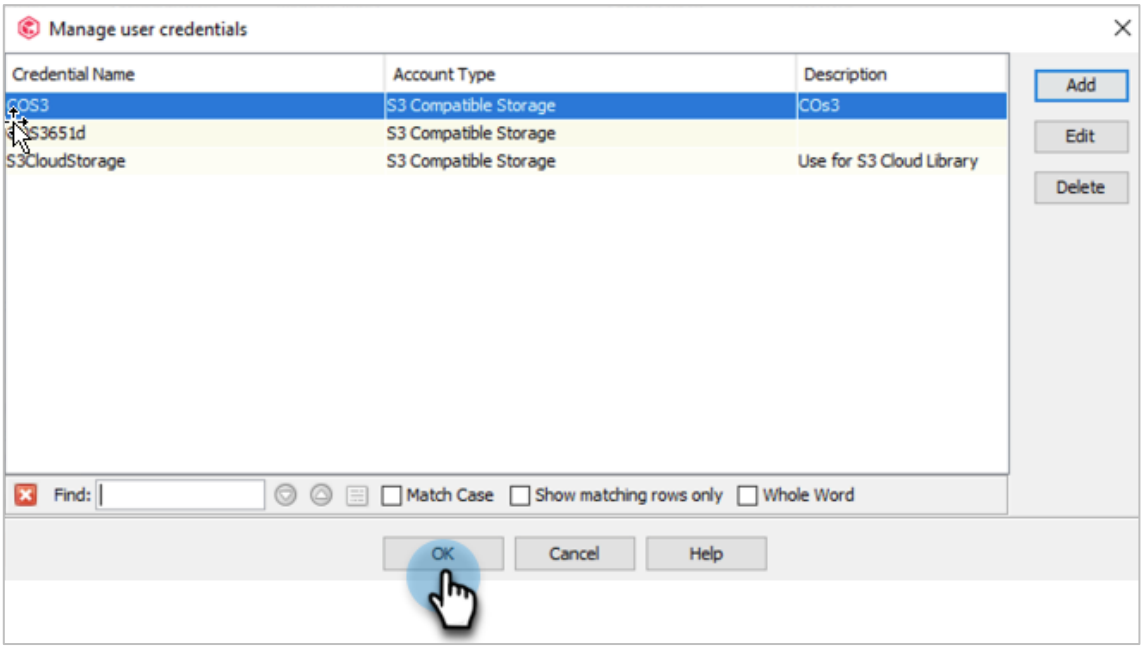
4. In the Create user credential window, enter the following information and choose **Account Type** as **Cloud Account** and Cloud vendor type **S3 Compatible Storage**. Click **OK**.
   - Account Type: Cloud Account
   - Cloud Vendor type: S3 Compatible Storage
   - Credential Name: <Enter the Credential name>

- Access Key ID
- Secret Access Key

NOTE: Access Key ID and Secret Access key is taken from the Cohesity UI user. Refer to section 9.1 and follow Step 5 and Step 6.

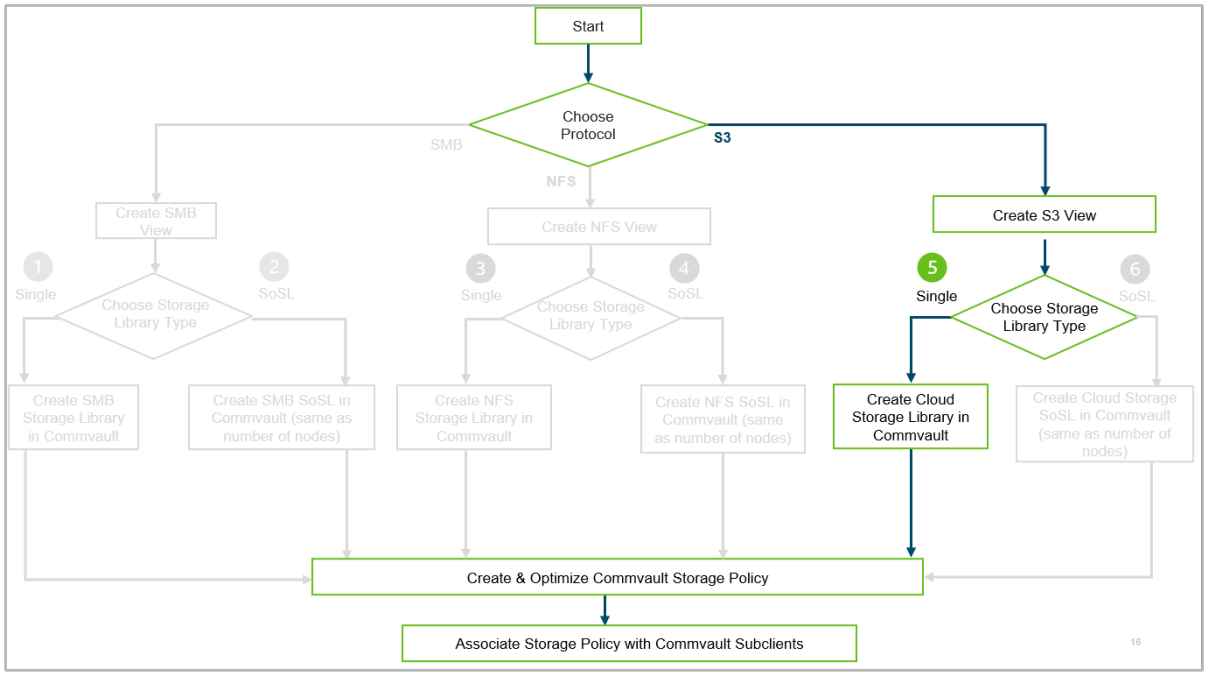


5. In the **Manage User Credentials** window, click **OK**.



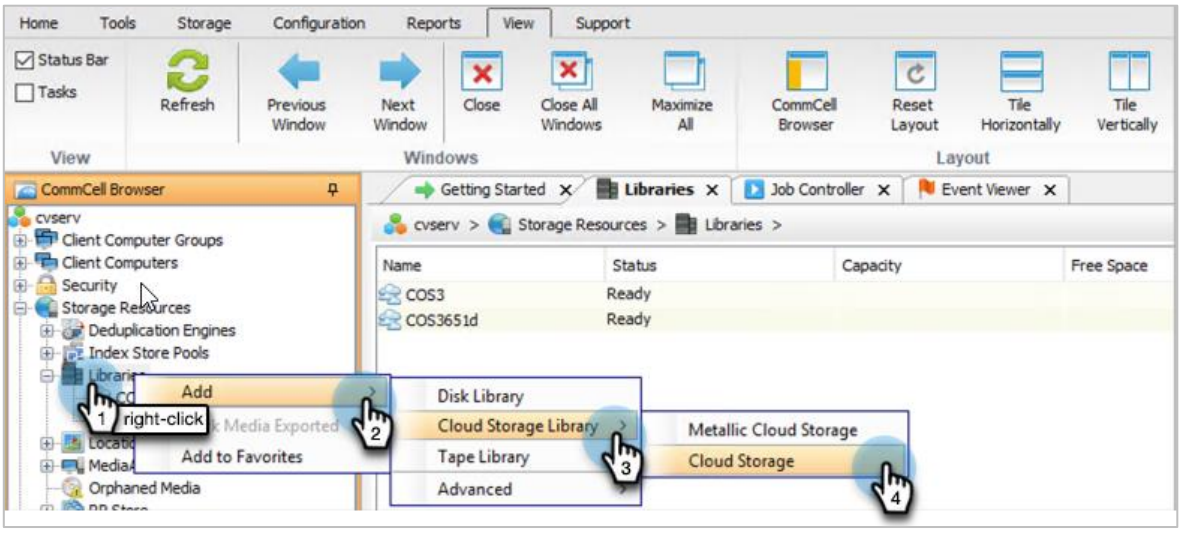
Create Single S3 Cloud Storage Library on Commvault

If you add a single SmartFile S3 View path to your Commvault storage library, Cohesity recommends that you access it via the Cohesity cluster's FQDN for maximum I/O throughput.
Figure 9: Create Single S3 Storage Library on Commvault



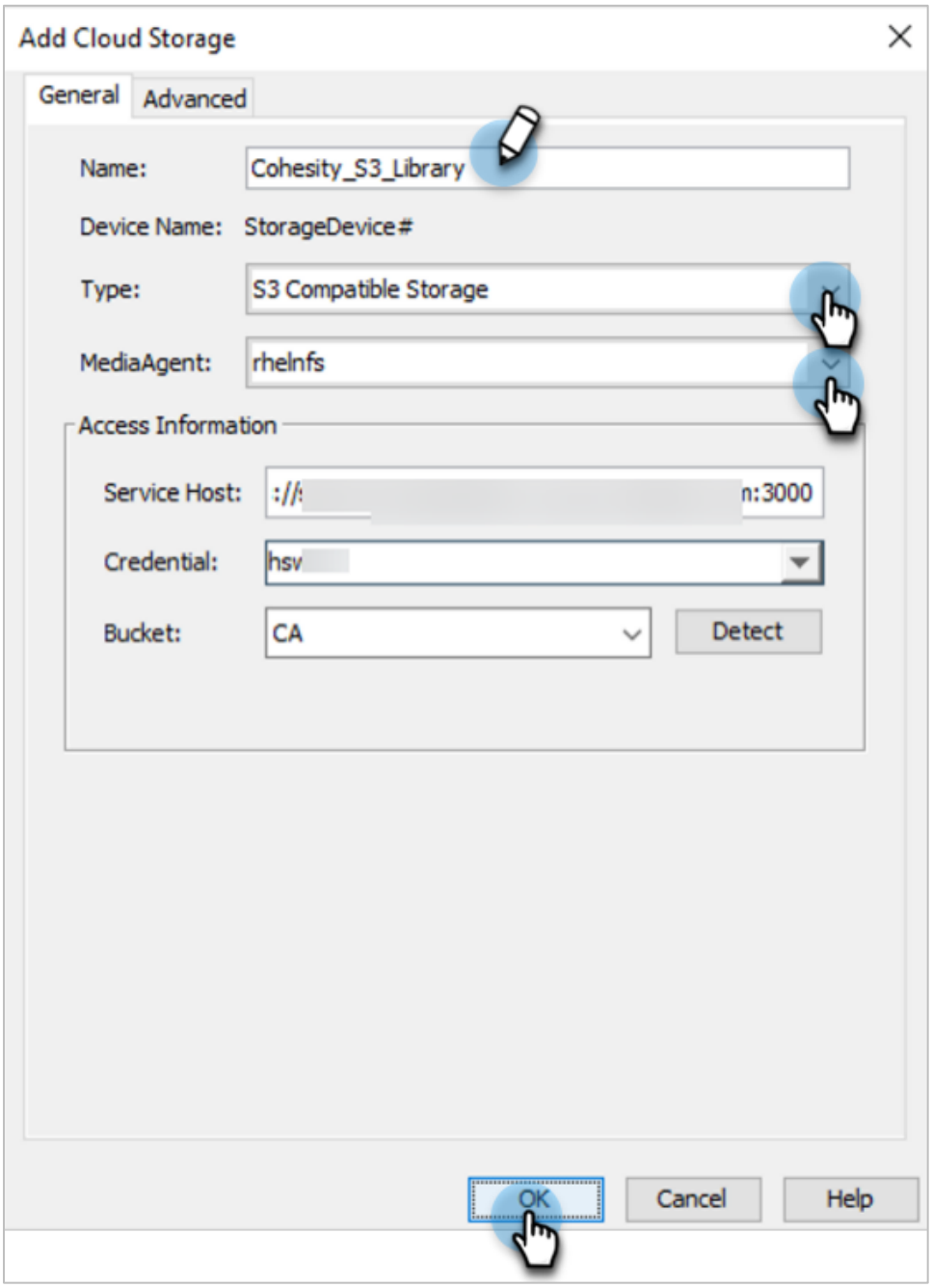
To create a single S3 storage library in Commvault:

1. Log in to your CommCell Console and navigate to **Storage Resources**. Click on the "+" sign. Right-click **Libraries** and select **Add > Cloud Storage Library > Cloud Storage** to create an S3 storage library.



2. Enter the library **Name** and select the Type as **S3 Compatible Storage,** select the **MediaAgent**. Provide the following access information and click on **OK**.
   - Service Host: https://VIP_COHESITY_CLUSTER:3000
   - Credentials: Select Cloud Credentials created in section 9.1
   - Click on **Detect** to select the Cohesity SmartFile S3 View (The same is the name of the bucket).
   - Select the SmartFiles S3 View name in the Bucket (Created in Section 8)

NOTE: During the configuration if you face the SSL/TLS error. See Knowledge Base.



You have successfully created a single S3 Cloud library for your Commvault backups.

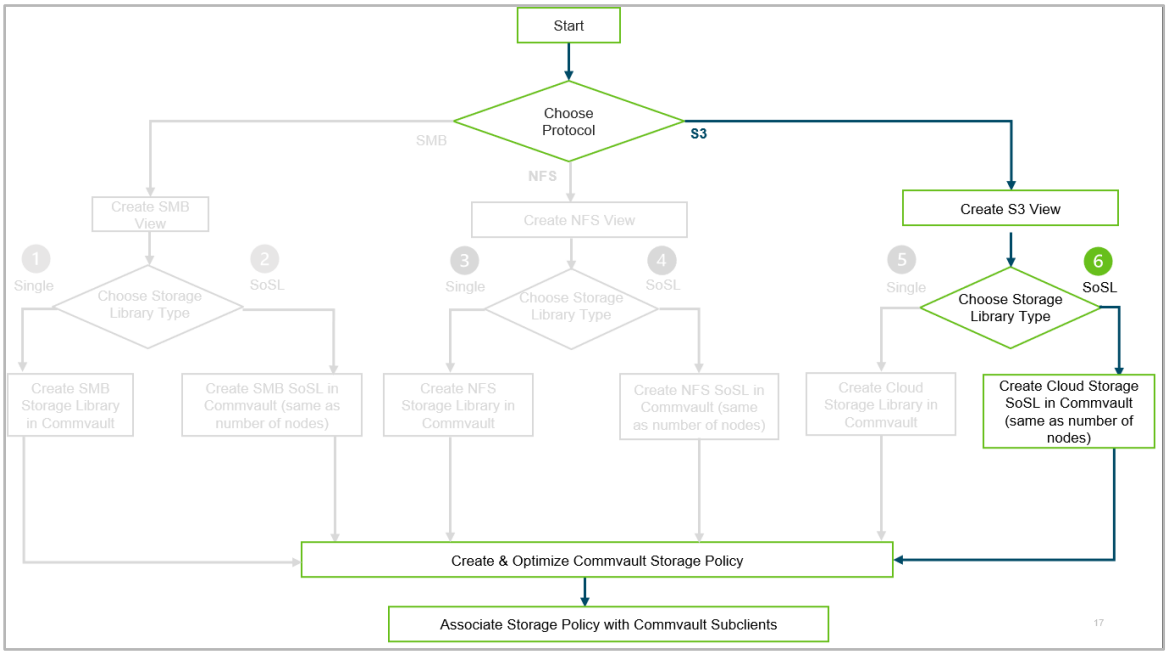
The next step is to create a Commvault storage policy. After you optimize the storage policy, you'll associate it with your Commvault subclients.

If you prefer a scale-out storage library, as we recommend, proceed to the next section.

Create Scale-out S3 Cloud Storage Library on Commvault

As scale-out storage libraries deliver the best I/O performance by accessing all nodes of the cluster in parallel via their VIPs, Cohesity strongly recommends using a scale-out storage library (SoSL).

Figure 10: Create S3 SoSL on Commvault



To create an SmartFiles S3 SoSL for Commvault:

1. Follow the steps to create a single S3 Cloud storage library and then add an S3 path for each node in the cluster by accessing the share name using the VIP address of each node.

   For example, if you have a four-node cluster and the Cohesity SmartFile S3 View is 'CommvaultS3View1,' create a single disk library using one of the node VIPs and add three more S3 View using each node's unique VIP address with the same Cohesity SmartFile S3 View name. To maximize throughput in our solution, Cohesity recommends that you set up at least *two* Commvault MediaAgents for every *four* Cohesity cluster nodes.

   IMPORTANT: On the additional MediaAgents, be sure to share the same mount paths with each MediaAgent. In the Commcell Console, expand **Storage Resources > Libraries > *<Cohesity_Disk_Library>***, then right-click each mount path to select **Share Mount Path**. Select the Read/Write access type to use the mount path for both read and write operations on all MediaAgents.

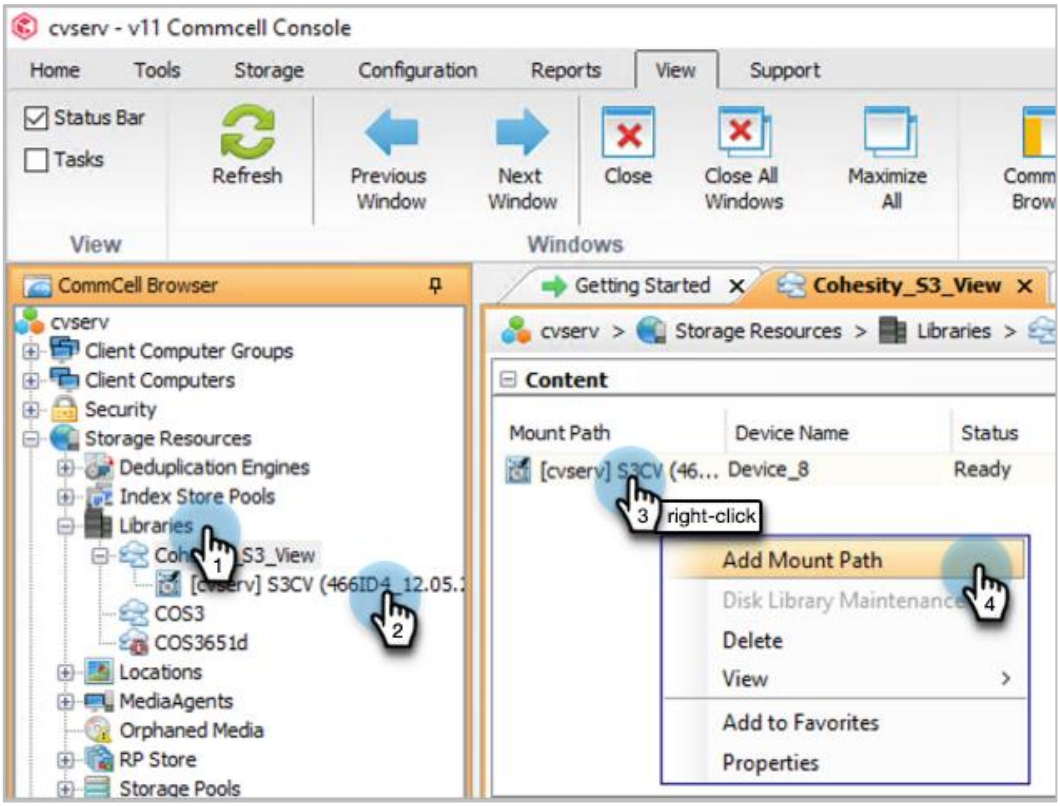
   For more on sharing mount paths, see Disk Libraries - Mount Path in the Commvault documentation.

In our example of a four-node cluster, use the following Cohesity SmartFile S3 View paths to connect to the Commvault S3 cloud storage library. it is recommended to use the configuration as below for best performance.

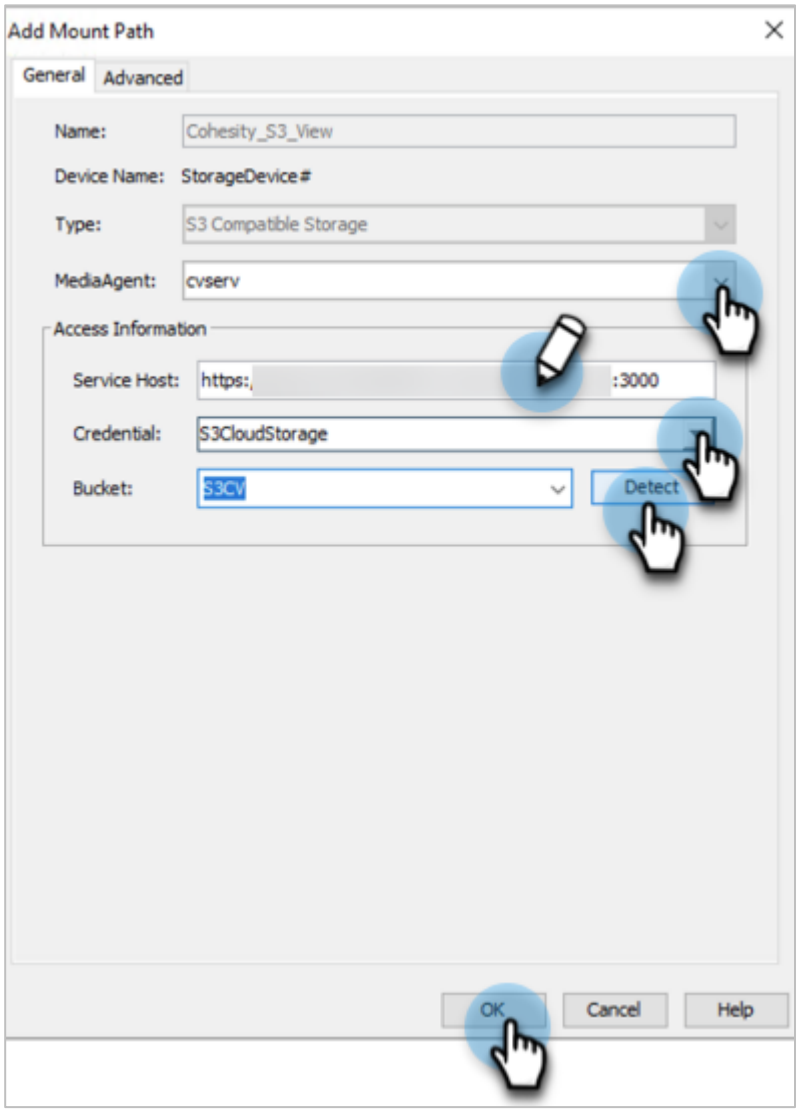
<vip01>\CommvaultS3View1
<vip02>\CommvaultS3View1
<vip03>\CommvaultS3View1
<vip04>\CommvaultS3View1

To find the VIP of each of your Cohesity nodes, see Appendix B: Identify Cohesity Node VIPs below.

2. Log in to your CommCell Console and under **Storage Resources**, navigate to **Libraries > *<Cohesity_S3_library>***. Right-click the storage library that you created and select **Add Mount Path**.



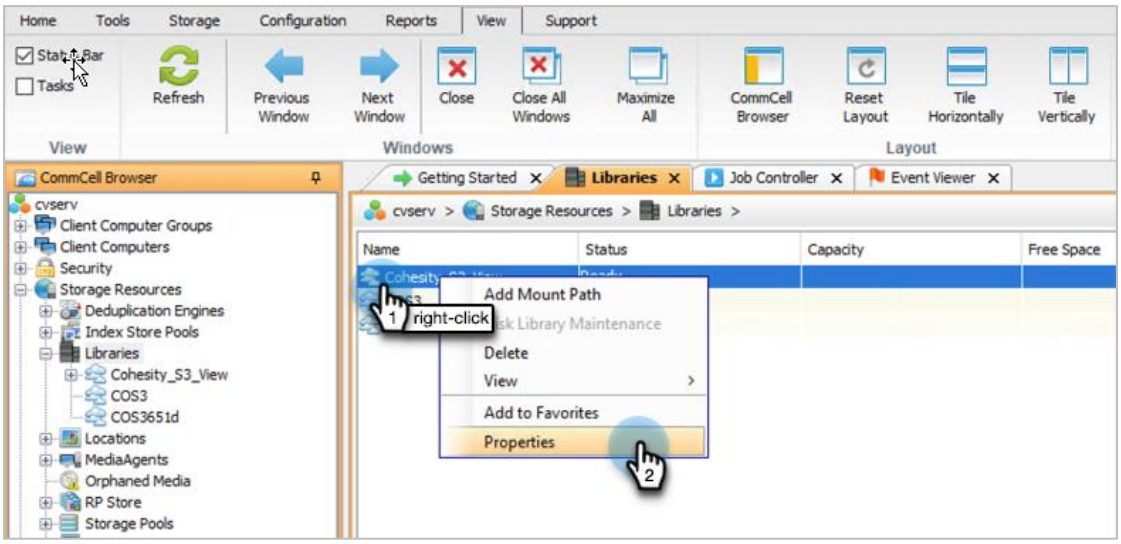
3. Select the **MediaAgent** and Provide **Access Information**. Enter Service Host and select the **Credential** account that has access to SmartFile S3 View, and then click **Detect**. Select the Bucket and then click **OK**.



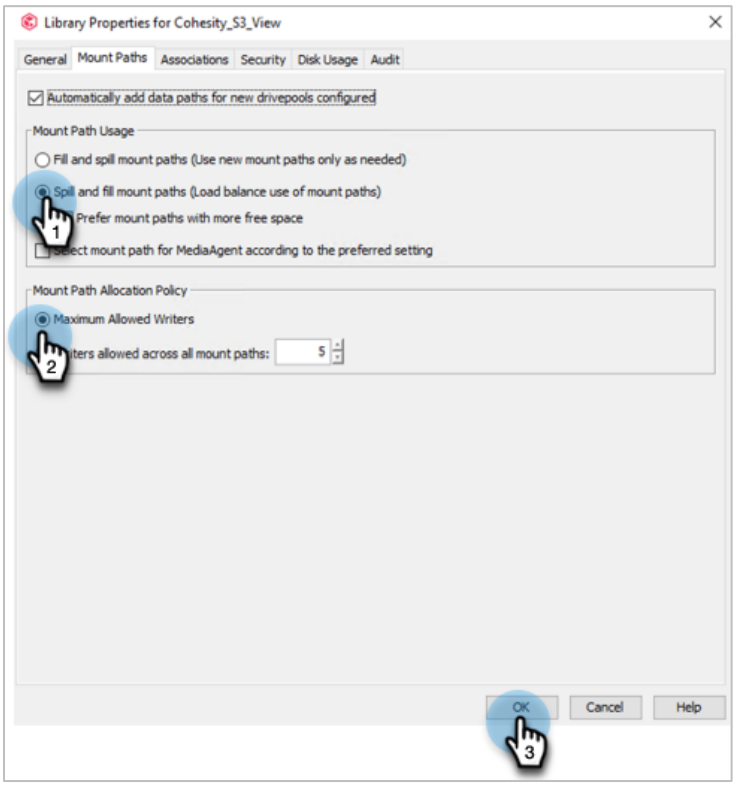
* If you do not already have a credentialed account, you can refer to Section.

4. Now, to ensure maximum I/O throughput, you need to add a SmartFiles S3 View for each node's VIP in your Cohesity cluster. Repeat the above steps to add the additional SmartFiles S3 View with the VIP of each node.

5. Back in the **Libraries** view in your Commcell Console, right-click the storage library again and select **Properties**.



6. On the **Mount Paths** tab, select **Spill and fill mount paths** to enable load balancing among the SmartFile S3 Views. Under **Mount Path Allocation Policy**, select **Maximum Allowed Writers**, and click **OK**.



You have successfully created a scale-out S3 Cloud storage library for your Commvault backups. The next step is to create a Commvault storage policy. After you optimize the storage policy, you'll associate it with your Commvault subclients.

Create Commvault Storage Policy

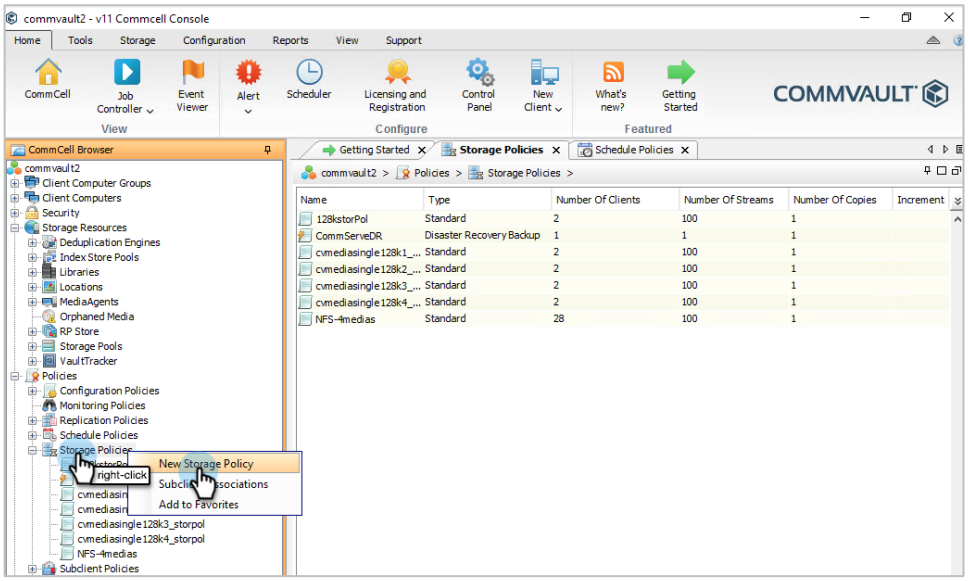
A Commvault storage policy is the logical data management module that defines the data lifecycle management of protected data with rules. A storage policy defines the data path, storage library, number of streams, retention settings, deduplication, compression, and encryption of the data in protected storage.

Now that you have your SMB or NFS storage library, you need to create a Commvault storage policy to:

1. Associate the storage library.
2. Select the MediaAgent.
3. Configure the number of device streams.
4. Disable Commvault deduplication and encryption.
5. Optimize the storage policy for best performance with Cohesity.

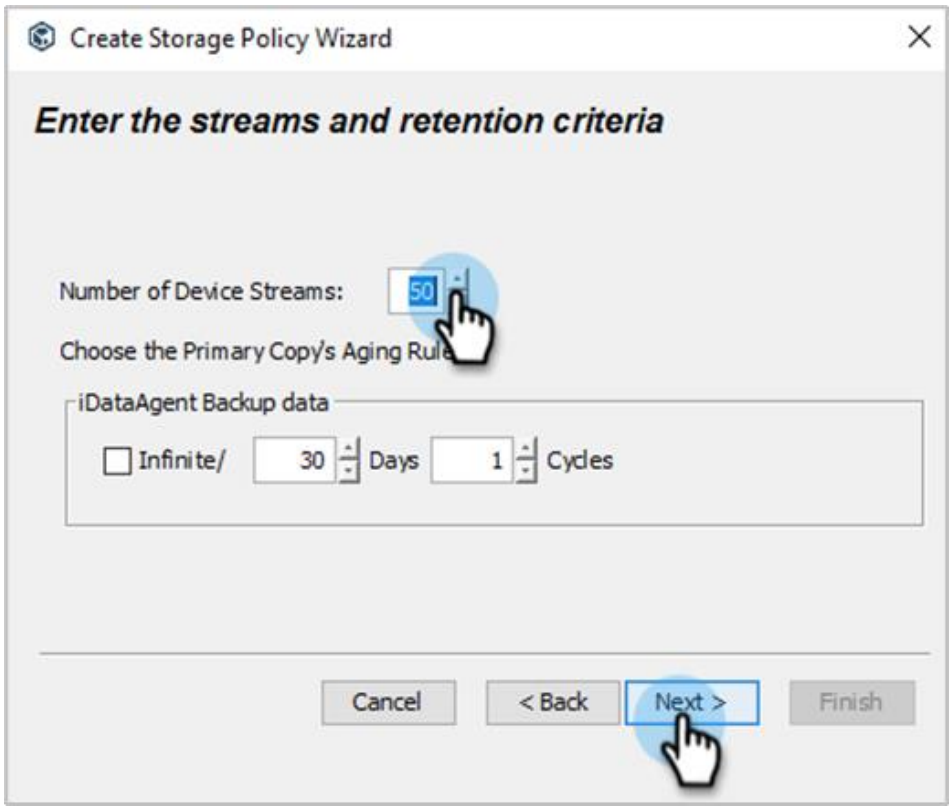
To create a storage policy for your SMB or NFS storage Library:

1. In your Commcell Console, right-click **Storage Policies** and select **New Storage Policy**.



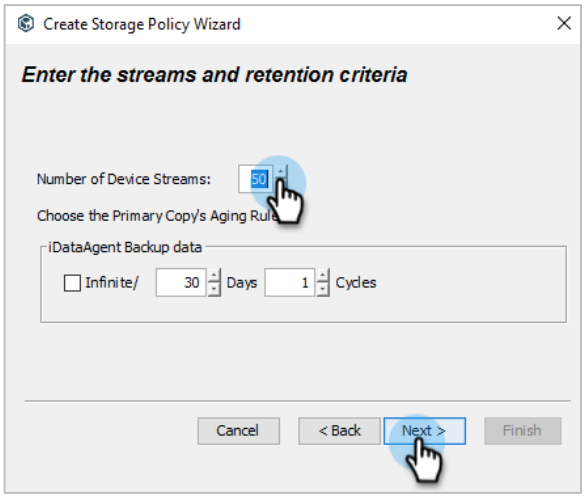
2. In the next two steps:
   a) Select Data Protection and Archiving and click Next.
   b) Enter the **Storage Policy Name** and click **Next**.

3. Uncheck the “Use Existing Storage Pool” and click **Next**.



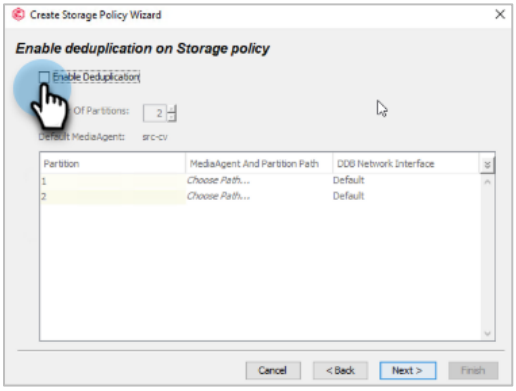
NOTE: If you cannot see the Use Existing Storage Pool checkbox, you need to set the value of the parameter Allow Creating Storage Policy or Copy Using Library to 1 in the service configuration of media management configuration. Reach out to Commvault support for updating it.

4. Select the Cohesity storage library you created (SMB or NFS or S3) as the **Library for Primary Copy**.
5. Select the **MediaAgent** you set up earlier and click **Next**.

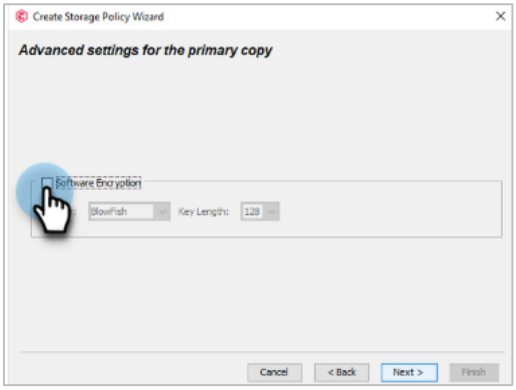


6. In the next two steps, disable deduplication and encryption:

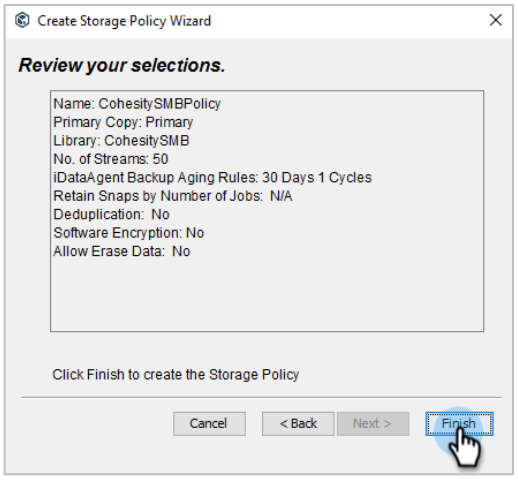
   a) Uncheck **Enable deduplication on Storage policy**.



   b) Uncheck **Software Encryption**.



5. Review your selections and click **Finish**.



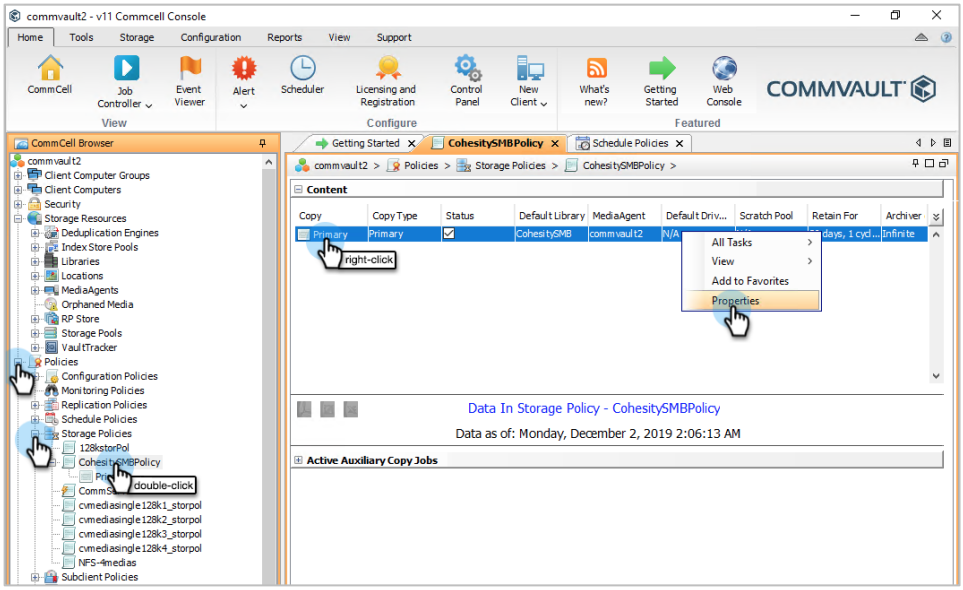
You have created the storage policy for your storage library. Next, you need to optimize that storage policy.

Optimize Storage Policy

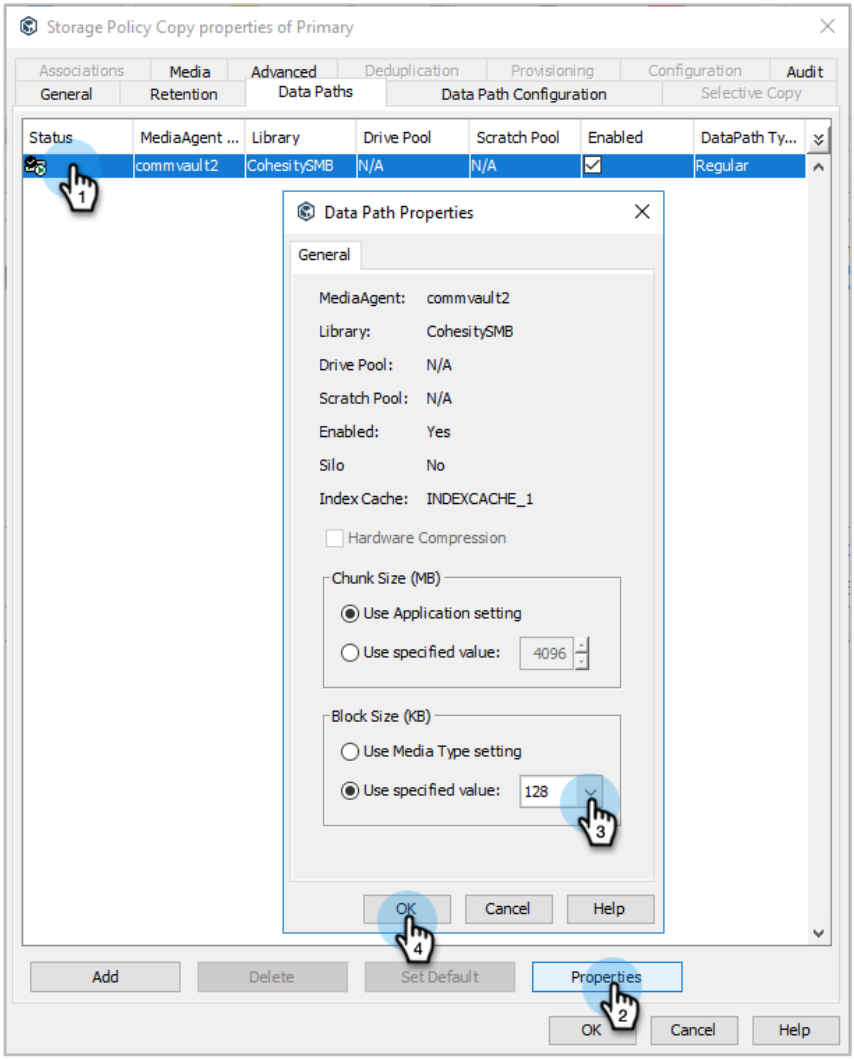
A Commvault storage policy gives you specific control over a Disk Library's block size. Based on our internal testing, to produce the best read and write performance in both SMB shares and NFS exports, Cohesity recommends setting the block size to 128 KB.

To configure the data path block size in a Commvault storage policy:

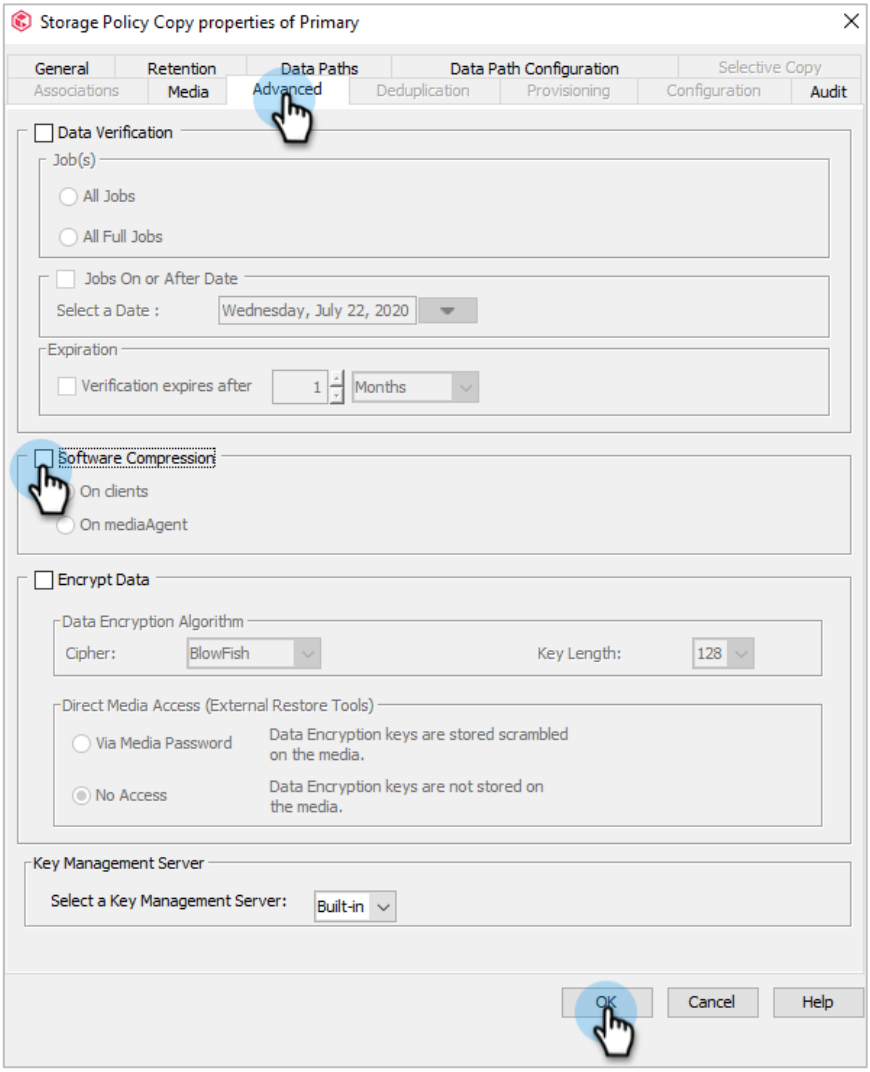
1. In your Commcell Console, navigate to **Policies > Storage Policies**. Double-click your Cohesity storage policy. In the storage policy, right-click **Primary** and select **Properties**.



2. Under **Data Paths**, select the disk library and click **Properties.** Under **Block Size (KB)**, select **Use specified value** and set it to **128**, then click **OK.**



3. To take full advantage of Cohesity's storage efficiency, disable Commvault compression. In the storage policy **Properties** dialog, under **Advanced**, deselect Commvault **Software Compression**.



Your storage policy is now optimized for the best I/O performance with Cohesity by disabling the de-duplication, compression and updating the block size in comcell console.

Appendix A: Benefits of App-aware Storage Efficiency

Commvault supports a powerful feature–app markers–that periodically inserts unique markers into the protected data. As compelling as they are, app markers can often also affect deduplication devices that seek commonality, severely reducing their storage efficiency. However, Cohesity detects these markers intelligently and automatically handles them, thereby retaining both the storage efficiency and throughput performance that is gained from our global deduplication technology.

As of version 6.4, Cohesity supports a dedicated QoS policy, *Backup Target Commvault***,** that intelligently detects and excludes application-specific markers to achieve better deduplication when the CommVault backup application is writing to a Cohesity View. The data is written to SSD and has the same priority and latency as the *TestAndDev High* QoS policy, delivering optimized storage efficiency at the code level.

We ran a test to compare Cohesity Views with the *Backup Target Commvault* QoS policy with Views that are not optimized for Commvault. Table 2 below compares the storage consumed and storage reduction generated by deduplication and compression of each of these Views.

Table 2: Storage Reduction with and without App-aware Intelligence

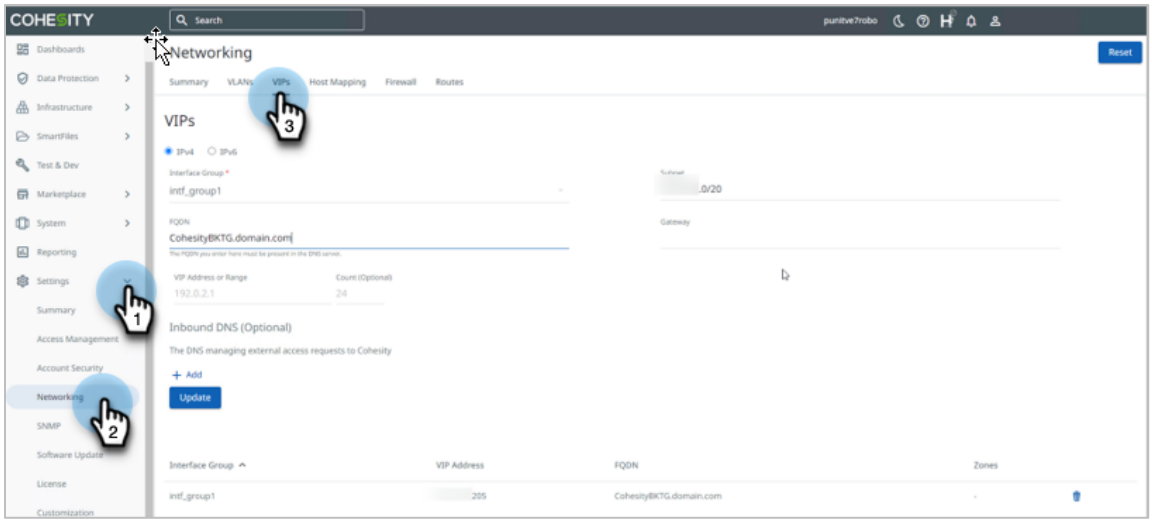
QOS POLICY	LOGICAL DATA SIZE	STORAGE CONSUMED	STORAGE REDUCTION
Test&Dev High (No app-aware intelligence)	3.5 TiB	991.8 GiB	3.6x
Backup Target Commvault	3.5 TiB	155.3 GiB	23.1x

As you can see from these metrics, the benefits of using the dedicated *Backup Target Commvault* QoS policy multiplies the benefits of using Cohesity. For this reason, Cohesity strongly recommends using Cohesity version 6.4 or later.

Appendix B: Identify Cohesity Node VIPs

When you use Cohesity for your Commvault storage libraries, it is important to use the unique VIP for each node in the Cohesity cluster.

To find the VIP of each of your Cohesity nodes, log in to Cohesity, navigate to **Settings >Networking** and click the **VIPs** tab. Find the IP address of each node next to **Interface Group ID** and **right-click > Copy** it from there.



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2.1	Aug 2021	Cohesity rebranding updates
2.0	July 2020	Major content update
1.1	May 2018	Updated content
1.0	Nov 2016	First release

ABOUT COHESITY

Cohesity is a leader in AI-powered data security and management. Aided by an extensive ecosystem of partners, Cohesity makes it easier to protect, manage, and get value from data – across the data center, edge, and cloud. Cohesity helps organizations defend against cybersecurity threats with comprehensive data security and management capabilities, including immutable backup snapshots, AI-based threat detection, monitoring for malicious behavior, and rapid recovery at scale. Cohesity solutions are delivered as a service, self-managed, or provided by a Cohesity-powered partner. Cohesity is headquartered in San Jose, CA, and is trusted by the world's largest enterprises, including six of the Fortune 10 and 44 of the Fortune 100.

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