Veritas Access NetBackup Solutions Guide

Linux

7.4.1

VERITAS™

Veritas Access NetBackup Solutions Guide

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Veritas Services and Operations Readiness Tools (SORT)

Veritas Services and Operations Readiness Tools (SORT) is a website that provides information and tools to automate and simplify certain time-consuming administrative tasks. Depending on the product, SORT helps you prepare for installations and upgrades, identify risks in your datacenters, and improve operational efficiency. To see what services and tools SORT provides for your product, see the data sheet:

https://sort.veritas.com/data/support/SORT_Data_Sheet.pdf

Contents

Chapter 1

Veritas Access integration with NetBackup

This chapter includes the following topics:

About Veritas Access

Veritas Access is a software-defined scale-out network-attached storage (NAS) solution for unstructured data that works on commodity hardware. Veritas Access provides resiliency, multi-protocol access, and data movement to and from the public and private cloud based on policies. You can reduce your storage costs by using low-cost disks and by storing infrequently accessed data in the cloud.

About Veritas Access as a NetBackup client

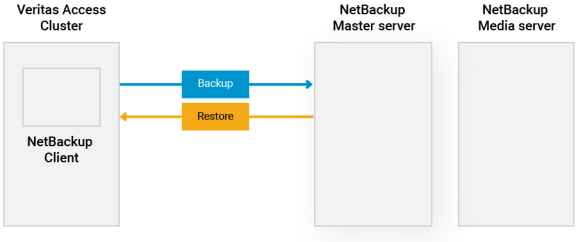
Veritas Access is integrated with Veritas NetBackup so that a NetBackup administrator can back up your Veritas Access file systems to NetBackup master or media servers and retain the data as per your company policy. Once data is backed up, a storage administrator can delete unwanted data from Veritas Access. The NetBackup master and media servers that run on separate computers from Veritas Access are licensed separately from Veritas Access.

You configure NetBackup domain information using any one of the following Veritas Access interfaces:

- CLISH
  The Veritas Access CLISH has a dedicated `Backup>` menu. From the `Backup>` menu, register the NetBackup client with the NetBackup domain. Information is saved in the `bp.conf` file on Veritas Access.
- GUI
  Settings > NetBackup Configuration
  See the online Help for how to configure NetBackup using the GUI.
- RESTful APIs
  See the *Veritas Access RESTful API Guide*.

Consolidating storage reduces the administrative overhead of backing up and restoring many separate file systems. Critical file data can be backed up and restored through the NetBackup client on Veritas Access.

Figure 1-1 Backing up Veritas Access using NetBackup



If Veritas Access is configured with IPv6 addresses, you have to configure IPv6 support for the NetBackup host as well.

Perform the following steps to configure IPv6 support for the NetBackup host :

- Set the `IP_ADDRESS_FAMILY` option in the `NetBackup bp.conf` file for the host to *AF_UNSPEC*.

  ```
  # bpsetconfig IP_ADDRESS_FAMILY = AF_UNSPEC
  ```

- You can view the current setting by executing the `bpgetconfig` command.

  ```
  # bpgetconfig
  IP_ADDRESS_FAMILY = AF_UNSPEC
  ```

- Restart the services after making this change.

About Veritas Access as backup storage for NetBackup

This document describes how Veritas Access fulfills the needs of NetBackup customers looking for a cost-effective solution for moving away from tape backups, yet retain the backed-up data for the long term.

NetBackup is an enterprise-class heterogeneous backup and recovery application. It provides cross-platform backup functionality to a large variety of Windows, UNIX, and Linux operating systems.

Veritas Access is based on the rock-solid and industry-proven Veritas CFS stack. It offers an AWS-compatible S3 protocol as object storage for NetBackup.

Veritas Access is integrated with OpenDedup. OpenDedup is OpenSource software that lets you deduplicate your data to on-premises or cloud storage. OpenDedup installs on top of a NetBackup media server or Veritas Access; it performs data deduplication and stores deduplicated data on Veritas Access over S3.

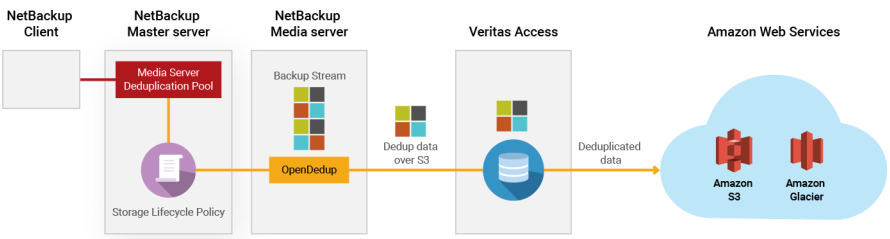
Use cases for long-term data retention

The following are the use cases for long-term data retention (LTR) with OpenDedup:

Use Case 1: OpenStorage Technology (OST) and OpenDedup hosted on a NetBackup master and/or media server

- OST and OpenDedup hosted on a NetBackup master and/or media server sends deduplicated backup data to Veritas Access over the S3 protocol. Veritas Access can move this data to supported public or private clouds, based on the LTR policy configured.
  See “Use case 1: Backing up deduplicated data (OpenDedup and NetBackup) using the S3 protocol to Veritas Access” on page 15.

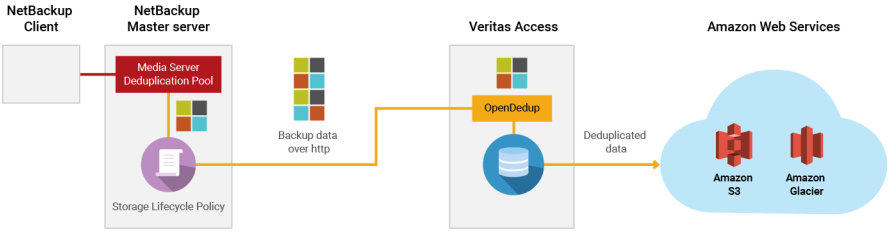
Figure 1-2 OST and OpenDedup hosted on a NetBackup master and/or media server



Use Case 2: OST hosted on a NetBackup master and/or media server

- OST hosted on a NetBackup master and/or media server sends backup data to OpenDedup hosted on Veritas Access, which deduplicates the data and sends this data over the S3 protocol to Veritas Access. Veritas Access moves this deduplicated data to AWS S3 or Glacier.
  See "Use case 2: Backing up data (NetBackup) and deduplicating the data (OpenDedup) on Veritas Access" on page 16.

Figure 1-3 OST hosted on a NetBackup master and/or media server

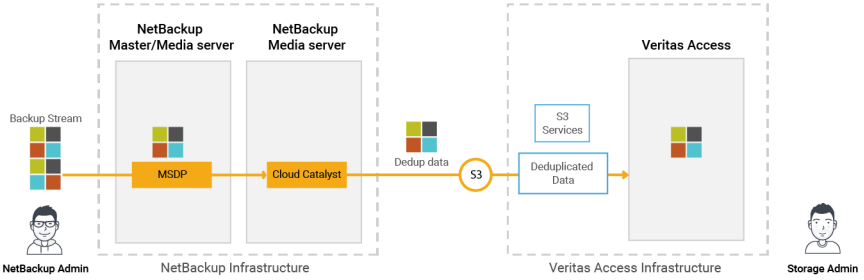


Use Case 3: Veritas Access with CloudCatalyst

- Primary backup data is deduplicated by MSDP and stored on the NetBackup server.
- The same deduplicated data is moved to Veritas Access through SLP using CloudCatalyst.

See "Creating an S3 bucket on Veritas Access for storing deduplicated backup data from NetBackup" on page 45.

Figure 1-4 Primary backup data deduplicated by MSDP and stored on the NetBackup server



Use Case 4: Veritas Access as an S3 connector

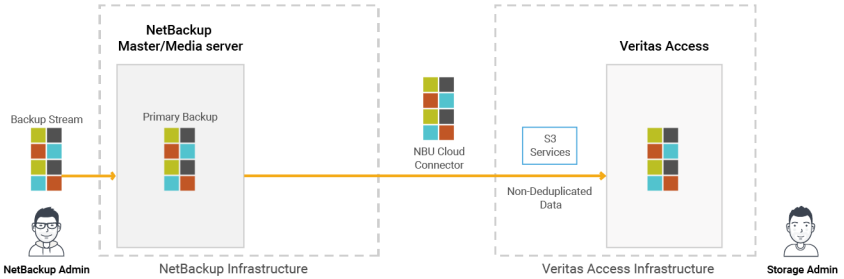
- Backup data is stored in non-deduplicated format on the NetBackup server as primary backup. The same primary backup data is moved to Veritas Access through SLP over the Veritas Access S3 protocol.

Or

- Primary backup data is deduplicated by MSDP and stored on the NetBackup server. The deduplicated data is rehydrated and then moved to Veritas Access through SLP over the Veritas Access S3 protocol.

See "Configure Veritas Access as a cloud storage server on NetBackup server" on page 47.

Figure 1-5 Backup data stored in non-deduplicated format on the NetBackup server as primary backup



Benefits of using Veritas Access with NetBackup and OpenDedup/CloudCatalyst

- Low-cost, flexible alternative for long-term data retention.
- Eliminate the need for cumbersome, time-consuming tape management.
- Cost-effective and resilient solution that is scale-out (linear performance) and elastic (grow/shrink on demand).

Chapter 2

System requirements

This chapter includes the following topics:

System requirements for OpenDedup installation

The system requirements for OpenDedup installation are:

- 64GB of base memory + 256MB RAM per TB of unique storage
- 200 MB/s local disk speed
- 2K IOPS of disk (local or attached) for the `/opt` directory
- 0 .2 % of local disk of logical storage
- 0.2% of local disk storage of unique data

Expected performance of the system based on the above parameters:

- 120 MB/s per CPU core

Supported configurations and versions for NetBackup with OpenDedup

Table 2-1 Supported versions

OpenDedup	Veritas Access	Veritas NetBackup servers	OST
7.4.1	7.4.1	7.7.3 8.0 8.1 8.1.1 (Linux only)	2.2.9

Download links:

Veritas Access: Veritas Access 7.4.1 DVD

OpenDedup:

https://sort.veritas.com/public/patchcentral/Linux/7.4/access/access-rhel7_x86_64-7.4.1sdfs.tar.gz

OpenStorage Technology (OST):

https://sort.veritas.com/public/patchcentral/Linux/7.4/access/access-rhel7_x86_64-7.4.1ost.tar.gz

Supported configurations and versions for NetBackup with CloudCatalyst

Table 2-2 Supported versions

Veritas Access	Veritas NetBackup servers
7.4.1	8.1 8.1.1 (Linux only)

Download links:

Veritas Access: Veritas Access 7.4.1 DVD

Cloudprovider.xml Version 2.3.1 supports Veritas Access.

https://www.veritas.com/support/en_US/article.000125094

Update the mappings file.

Unix/Linux: http://www.veritas.com/docs/000025759

Note: NetBackup 8.1 does not have the Veritas Access S3 Cloud provider support. Hence, the Cloud Configuration Package needs to be updated for listing the Veritas Access S3 server in the list of Cloud Storage providers. The details for updating the Cloud Configuration Package are present at"

https://www.veritas.com/support/en_US/article.000125094

https://www.veritas.com/support/en_US/article.100015983

Chapter 3

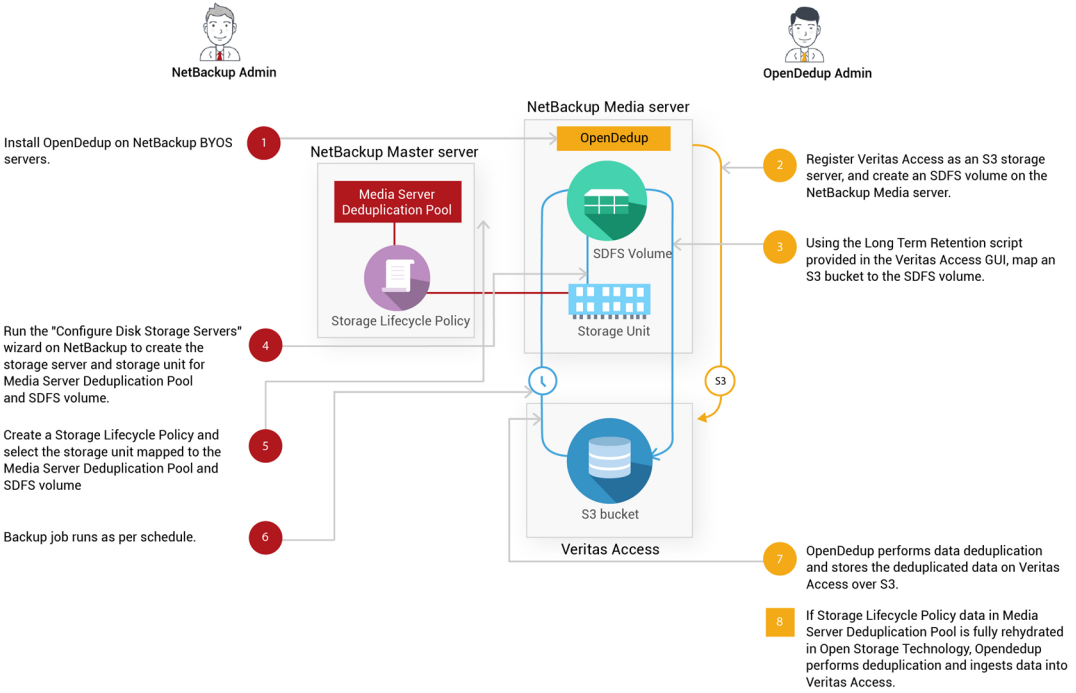
Configuring Veritas Access backup over S3 with OpenDedup and NetBackup

This chapter includes the following topics:

Workflow for OpenDedup

Figure 3-1 illustrates the workflow for OpenDedup for Veritas Access.

Figure 3-1 Workflow for OpenDedup



Use case 1: Backing up deduplicated data (OpenDedup and NetBackup) using the S3 protocol to Veritas Access

SDFS is an inline deduplication-based file system.

To download and install the OST and SDFS rpms

1. On a standard NetBackup master and/or media server, run the following commands to install sdfs:

```
# wget https://sort.veritas.com/public/patchcentral/Linux/7.4/access/
access-rhel7_x86_64-7.4.1sdfs.tar.gz
# tar -zxvf access-rhel7_x86_64-7.4.1sdfs.tar.gz
# cd rpms/
# rpm -ivh sdfs-7.4.1.0-1.x86_64.rpm
```

2. Run the following commands to install OST.

```
# wget https://sort.veritas.com/public/patchcentral/Linux/7.4/access/
access-rhel7_x86_64-7.4.1ost.tar.gz
# tar -zxvf access-rhel7_x86_64-7.4.1ost.tar.gz
# cd rpms/
# tar -zxvf access-rhel-Patch-7.4.1.0ost.tar.gz
# cd dist/
# ./media-install.sh
```

3. Restart the NetBackup service on the NetBackup media server.

```
# /etc/init.d/netbackup stop
# /etc/init.d/netbackup start
```

Use case 2: Backing up data (NetBackup) and deduplicating the data (OpenDedup) on Veritas Access

SDFS is an inline deduplication-based file system.

To download and install the OST

- On a standard NetBackup master and/or media server, run the following commands to install the OST:

```
# wget https://sort.veritas.com/public/patchcentral/Linux/7.4/access
/access-rhel7_x86_64-Patch-7.4.1ost.tar.gz
# tar -zxvf access-rhel7_x86_64-7.4.1ost.tar.gz
# cd rpms/
# tar -zxvf access-rhel-Patch-7.4.1.0ost.tar.gz
# cd dist/
# ./media-install.sh
```

Creating an S3 bucket on Veritas Access for storing deduplicated backup data from NetBackup

To create an S3 bucket on Veritas Access for storing deduplicated backup data from NetBackup

1. Log on to the Veritas Access GUI as the master user using the following URL:

   `https://`*`Veritas Access Management console IP`*`:14161/.`

   You can obtain the Veritas Access Management console IP by logging on to the CLISH using the `su - master` command on the Veritas Access cluster.

2. Create a storage pool for the S3 buckets.

   Click **NAS Infrastructure** in the GUI navigation on the left.

   Select the disks that you want to use for the S3 bucket, and click the **Add to Storage Pool** button to invoke the wizard for storage pool creation.

   Follow the steps in the wizard for creating a new storage pool or adding the disks to an existing pool.

3. Click **Settings > User Management > Configure Active Directory** to configure AD.

   Enter the required information, such as the **DNS Domain**, **DNS Name Servers**, **AD Domain**, **AD Domain Controller**, and the **AD Admin** and **Password**.

4. Click **Settings > S3 Management** to configure and enable the S3 server.

   Edit the default parameters that are required for the S3 server, such as the storage pool name, underlying S3 bucket layout, and the default size of the bucket.

5. Double-click **S3 Server Status** to start the S3 server.

6 Log out from the GUI, and log in again as an AD user.

Note: Log in using the *domainname**username* format.

Click on the **Create keys** button to generate the access key and the secret key for the Veritas Access S3 bucket.

Save the access key and secret key in a safe location, as Veritas Access does not allow retrieval of keys after initial creation.

7 Log out from the GUI, and log on again as the master user.

8 Registration of supported public cloud service is optional, and is only required in case you need to add an AWS cloud as a storage tier. Without this, backups are stored locally in Veritas Access S3 buckets.

Click **Settings > Cloud Storage Registration > Add Cloud Subscription** to register the supported public or private cloud service.

Enter information for the cloud service provider, name of subscription, access key, and secret key.

9 Activate the long-term data retention (LTR) policies.

Click **Policies > LTR Policy**.

Click **Activate** for either the **LTR On-Premises + Cloud** policy or the **LTR On-Premises** policy and provide the storage pool when prompted.

10 Provision the NetBackup bucket using the policy.

Under **Quick Actions**, click **Provision Storage**. Select **S3 Storage for NetBackup** and click **Next**.

Provide the bucket size, underlying layout of the bucket, the access key, and the secret key of the Veritas Access S3 server generated as the AD user in step 6.

If you selected the **LTR On-Premises + Cloud** policy, add information such as which data should be moved to the AWS cloud tier, AWS region, cloud tier type (S3/Glacier), and when the data movement to the cloud should occur.

11 Monitor the progress of the task under **Recent Activity**.

Make a note of the scale-out file system name that was used for the bucket creation.

12 Click **File Systems**.

For the scale-out file system that is created, ensure that the **S3 Bucket** column displays **Yes** to indicate that the S3 bucket is enabled.

You may need to wait for some time for this change to be reflected in the GUI.

13 Right-click the ellipses (additional options), and click **Configure LTR Script**.

14 A pop-up window appears with the following options:

Do you want to Run the LTR script?

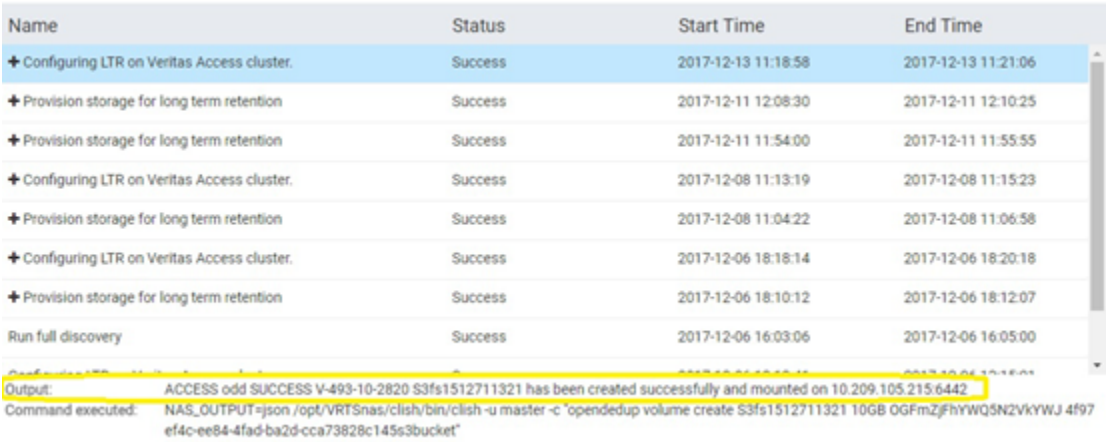
Do you want to Download the LTR script?

- Select the **Do you want to Run the LTR script?** option if OpenDedup is hosted on Veritas Access. You will be prompted to enter you access key. Enter the access key and click **Next**. Wait for the task to be completed. The rest of the configuration steps are done automatically.
  After the configuration is completed successfully, the output message shows the IP address and the port number on which the OpenDedup volume is mounted on Veritas Access. The IP address and port number are required later during OST configuration.

Note: This operation creates/expands a new file system named `odd_cache_fs` to store the OpenDedup cache data. The default size of this file system is 24 GB. Veritas recommends that you expand the file system to the required size. See the *OpenDedup documentation* for more details.

Note: The `Configure LTR` script randomly chooses a virtual IP from the available Veritas Access virtual IPs. If you are using Veritas Access in mixed mode having both IPv4 and IPv6 addresses, you may need to update virtual IP address used by OpenDedup using the `network> IP addr modify` command from CLISH. If your NetBackup server is running on IPv4, make sure that OpenDedup uses the Veritas Access IPv4 virtual IP. If your NeBackup server is running on IPv6, make sure that OpenDedup uses the Veritas Access IPv6 virtual IP.

Go to step 21.



- Select the **Do you want to Download the LTR script?** option if OpenDedup is hosted on the NetBackup master and/or media server. Click **Next**. Wait for the task to be completed.

15 Copy the LTR script to the host where OpenDedup is installed. It can be the host where the NetBackup media server is installed.

16 Run the downloaded LTR script. The LTR script requires the Veritas Access S3 keys (access and secret key) as arguments that were generated as the AD user.

The LTR script creates the OpenDedup file system and prompts for the entry in the `/etc/hosts` file for the bucket to IP address mapping.

Output of LTR script execution:

```
[root@host1 ~]# sh LTRscript_<fsname/volname>_<bucketname>.sh
<Access key> <Secret Key>
========================================================================
Insert the below details in /etc/hosts file
10.100.100.1 4f459a2d-736e-4be5-9c5a-f821fbc198fds3bucket.s3.access
========================================================================
Attempting to create SDFS volume ...
Volume [S3fs1497356186] created with a capacity of [10.00GB]
check [/etc/sdfs/S3fs1497356186-volume-cfg.xml] for configuration
details if you need to change anything
```

Note: The volume name highlighted above and its equivalent .xml file are used to mount and update the SDFS volume parameters in later steps.

17 Add the IP associated with the virtual hosted-style bucket name (generated from the LTR script) in the `/etc/hosts` file on the media server.

Note: The `Configure LTR` script randomly choose a virtual IP from the available Veritas Access virtual IPs. If you are using Veritas Access in mixed mode having both IPv4 and IPv6 addresses, you may need to update the `/etc/hosts` entries. If your NetBackup server is running on IPv4, make sure that the `/etc/hosts` entry has IPv4 Veritas Access virtual IP. If your NeBackup server is running on IPv6, make sure that the `/etc/hosts` entry has IPv6 Veritas Access virtual IP. Alternatively, you can also modify the virtual IP on a Veritas Access cluster to an IPv4 or IPv6 address using the `network> ip addr modify` command from CLISH and add the modified IP to the `/etc/hosts` file.

---

18 Mount the SDFS volume under `/opendedupe/volumes/` on the host where OpenDedup is installed.

```
# mkdir /opendedupe/volumes/filesystem_name
```

```
# mount -t sdfs filesystem_name /opendedupe/volumes/filesystem_name
```

The `mount` command mounts a bucket on the Veritas Access cluster or the NetBackup media server.

Note: After mounting the SDFS volume, it will start listening on a specific port, usually starting from 6442.

Port information can be found using the `mount` command.

Example:

```
[root@host1 ~]# mount | grep opendedupe
sdfs:/etc/sdfs/S3fs1497346133-volume-cfg.xml:6443 on
/opendedupe/volumes/S3fs1497346133 type fuse
(rw,nosuid,nodev,allow_other,allow_other)
sdfs:/etc/sdfs/S3fs1497258807-volume-cfg.xml:6442 on
/opendedupe/volumes/pool1 type fuse
(rw,nosuid,nodev,allow_other,allow_other)
```

19 Update the `/etc/rc.local` script with the following:

```
/scripts/mount-opendedupe.sh || exit 1
exit 0
```

20 Create the `mount-opendedupe.sh` script and `/scripts` directory.

```
cat mount-opendedupe.sh
!/bin/sh
mount -t sdfs <volume_name> /opendedupe/volumes/<volume_name>
```

21 Execute the following commands:

```
chmod +x /scripts/mount-opendedupe.sh
chmod +x /etc/rc.d/rc.local
```

22 Update the URL tag in the `/etc/sdfs/ostconfig.xml` present on the NetBackup media server based on the following two cases:

Use case 1: OpenDedup on a NetBackup server

```
<URL>
http://localhost:6442/
</URL>
```

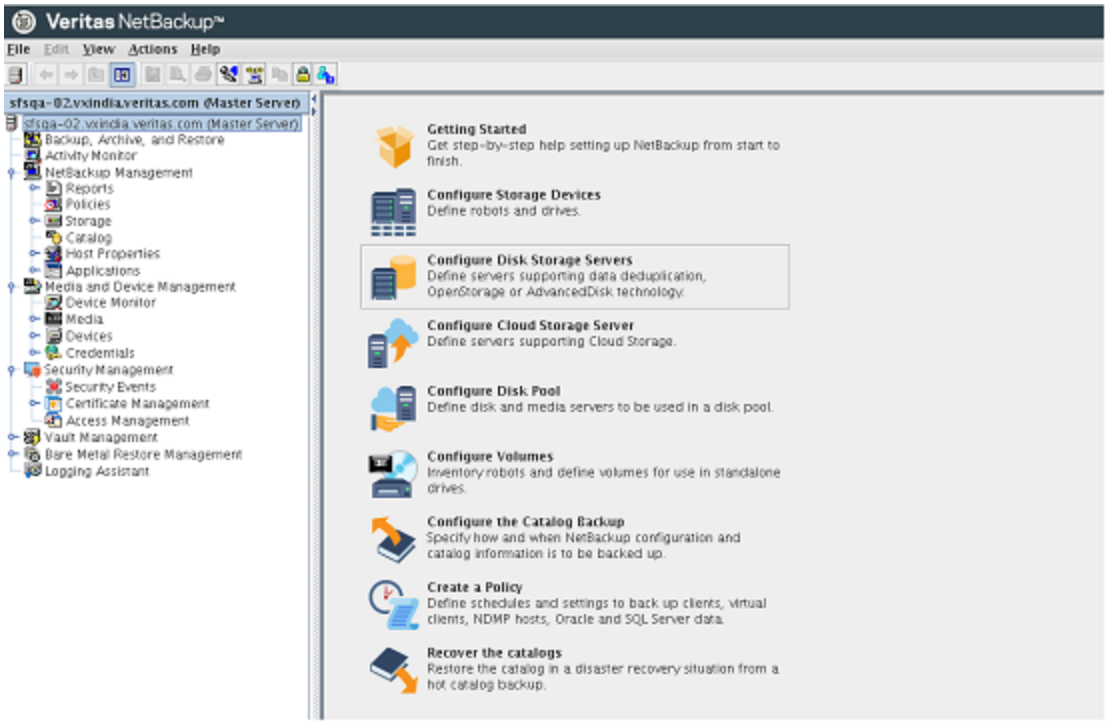
Use case 2: OpenDedup on Veritas Access

```
<URL>
http://<IP address that was specified in step 14>:<port number that
                                        was specified in step 14>/
</URL>
```

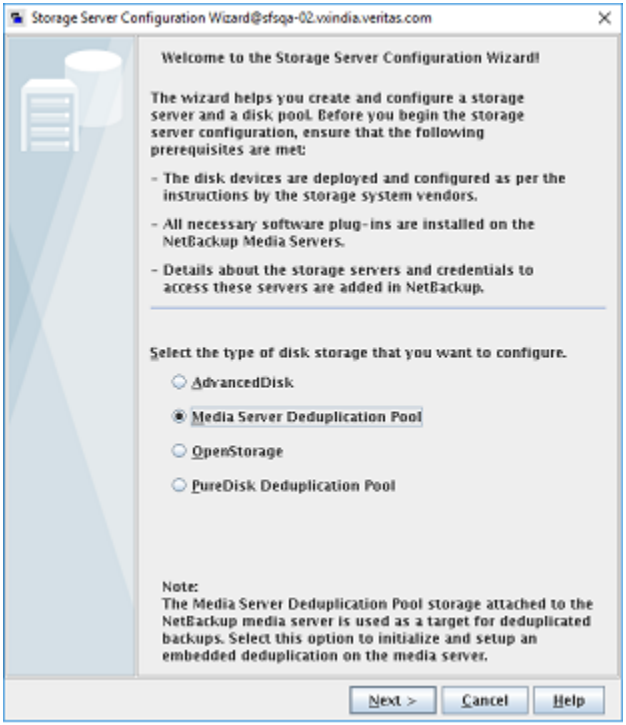
Creating a Media Server Deduplication Pool (MSDP) for primary backup using NetBackup

To create an MSDP disk pool and storage unit (STU) in the NetBackup console

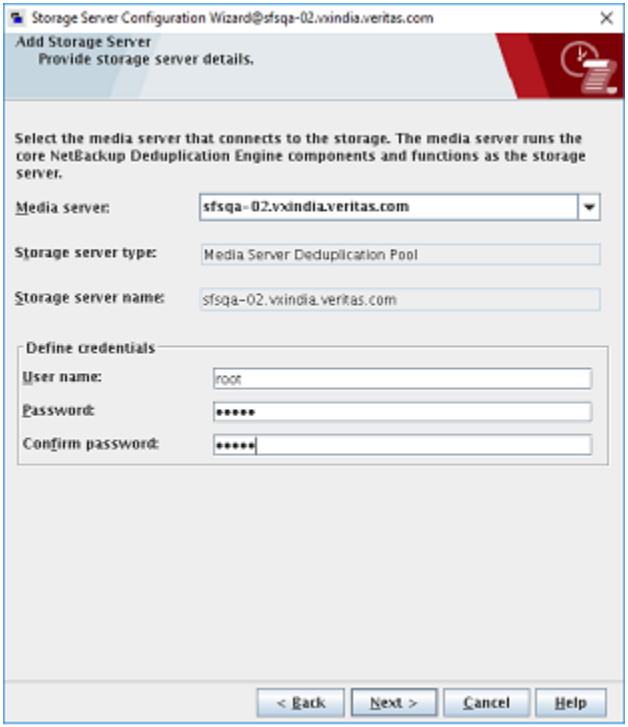
1 Log on to the NetBackup master server from the Java console.



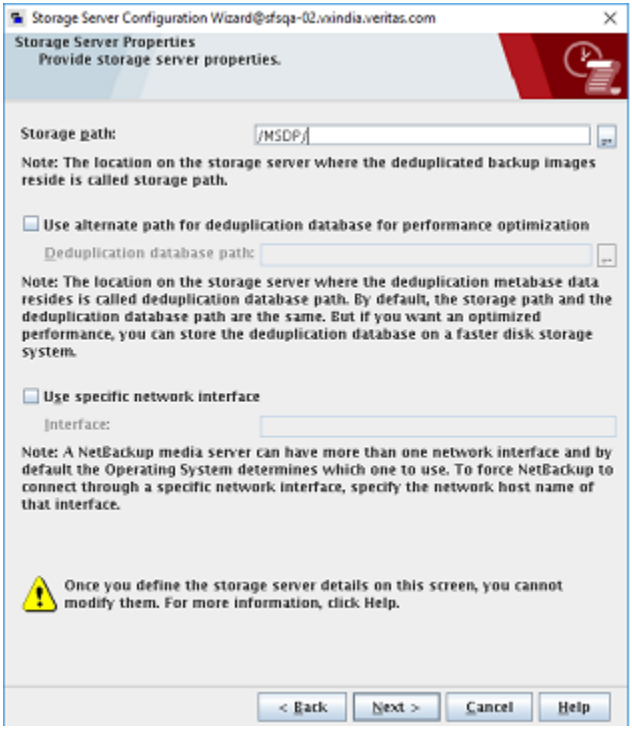
2 Select **Media Server Deduplication Pool**.



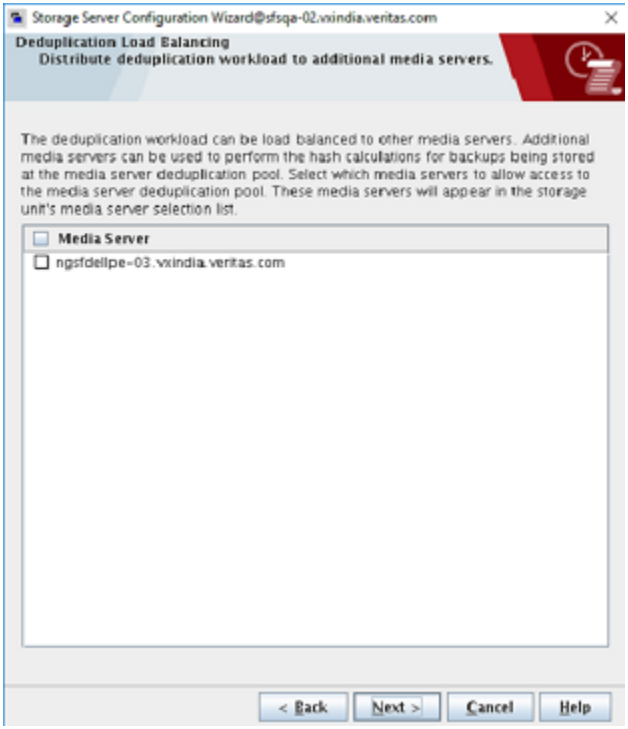
3 Enter the user name, password, and other required details.



4 Enter the storage path for MSDP.

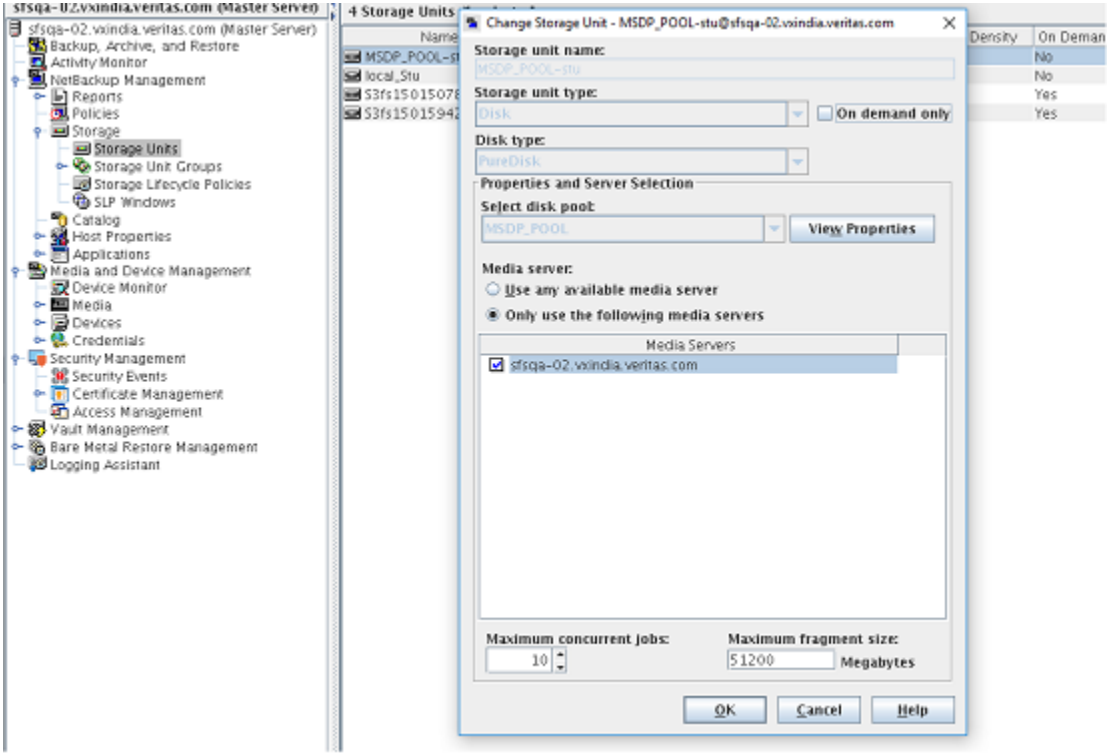


5 Enter the load balancing options to distribute the workload.

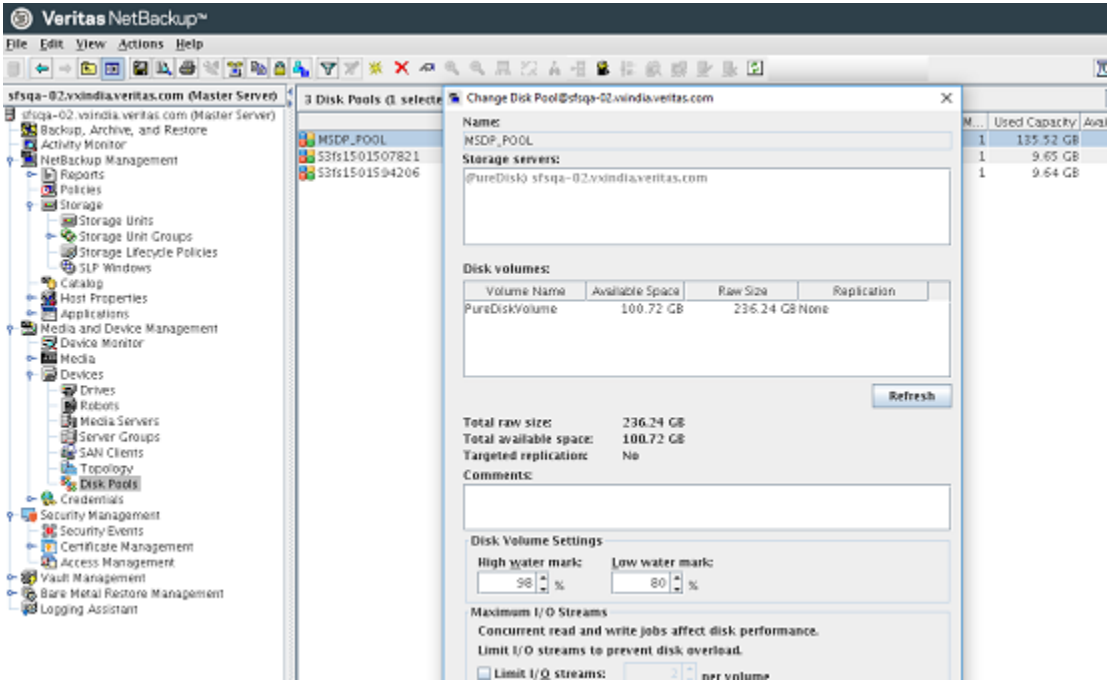


6 Verify the storage server configuration summary.

7 Verify that the storage unit is created for MSDP.



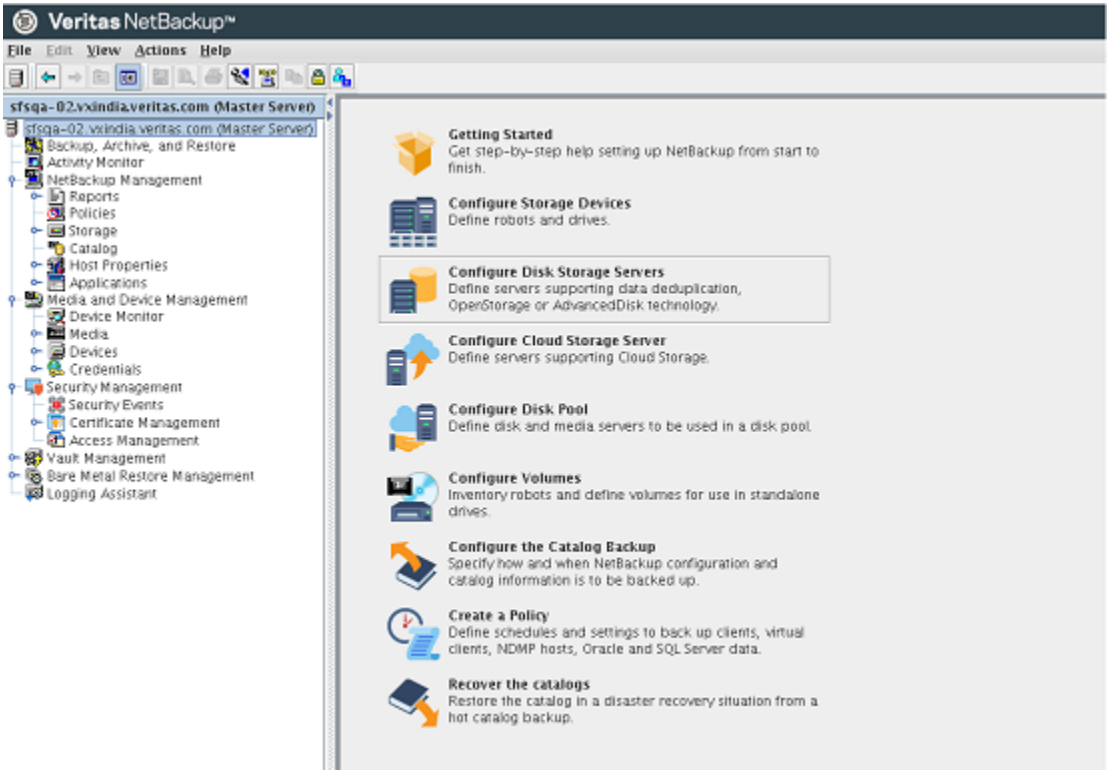
8 Verify that the disk pool is create for MSDP.



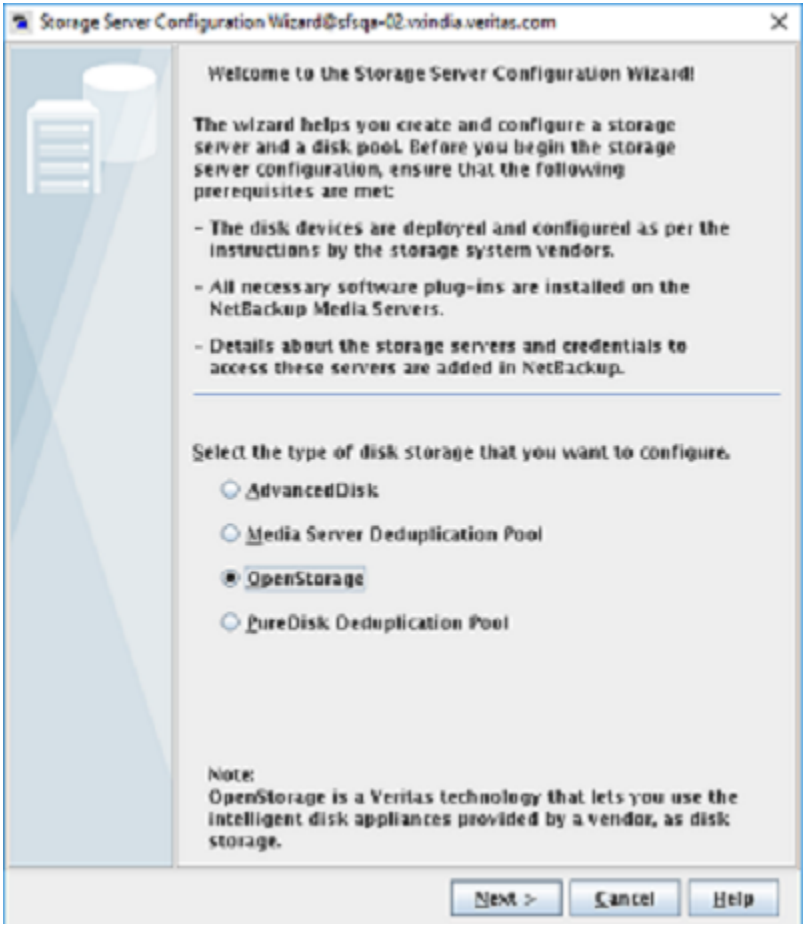
Creating an OST disk pool and STU in the NetBackup console

To create an OpenStorage Technology (OST) disk pool and storage unit (STU) in the NetBackup console

1. Log on to the NetBackup master server from the Java console.
2. Select **Configure Disk Storage Servers**.



3 Select the **OpenStorage** option from the **Select the type of disk storage that you want to configure** section of the dialog.



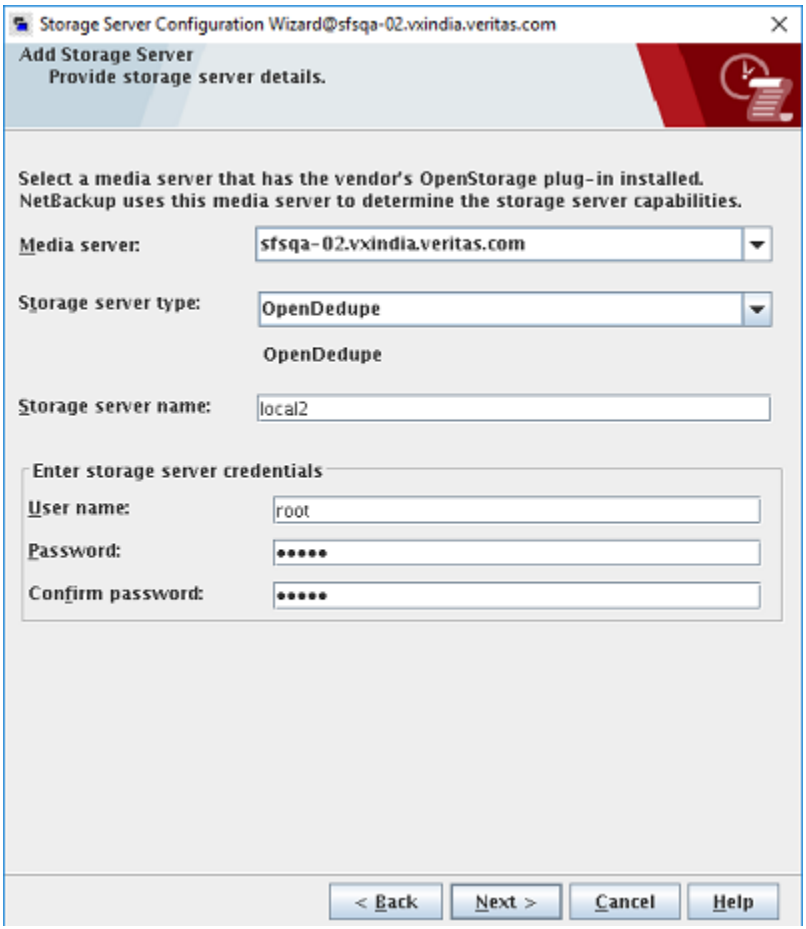
4 Add the following options to the **Storage Server Details**:

- **Storage server type**: OpenDedupe

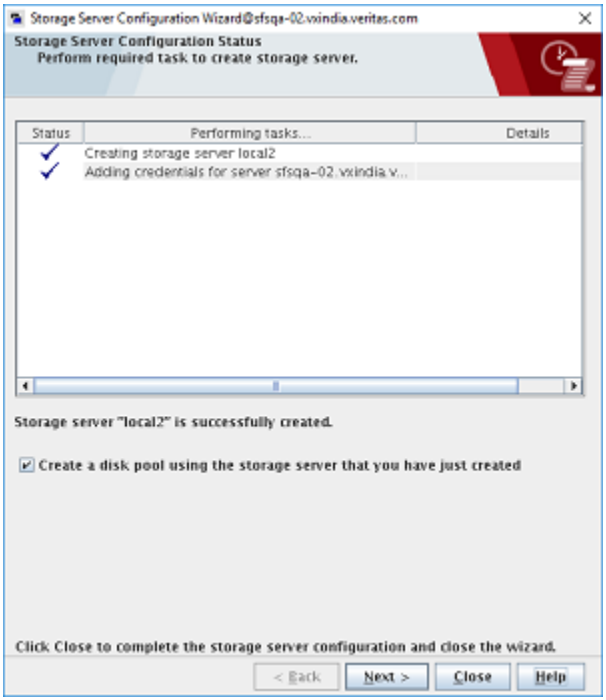
  Note: The **Storage server type** field is case-sensitive. **OpenDedupe** has to be entered exactly as shown in the screen shot.

- **Storage Server name**: The name in the <NAME></NAME> tag in the `/etc/sdfs/ostconfig.xml` file. This is `local` by default.

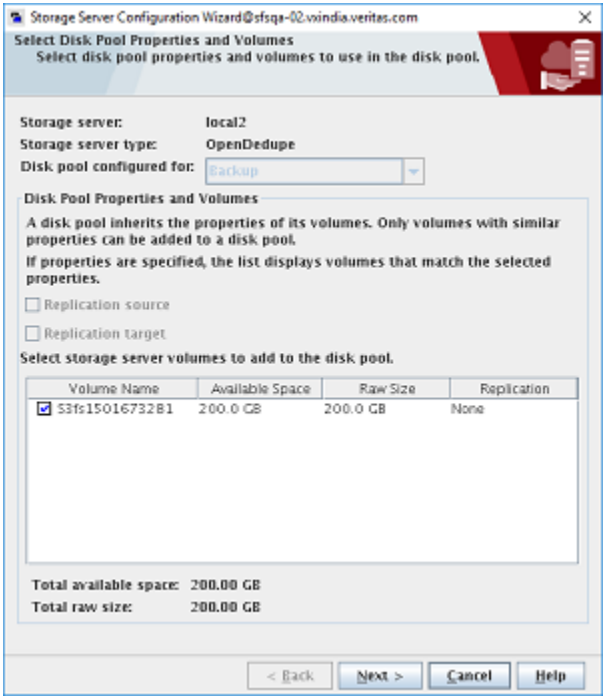
- **Username**: Anything can go in this field. It is not used.
- **Password/Confirm Password**: Anything can go in this field as well.



5 Finish supplying entries for the storage configuration wizard and make sure **Create a disk pool using the storage server that you just created** is selected.



6 Select the storage pool that was just created.

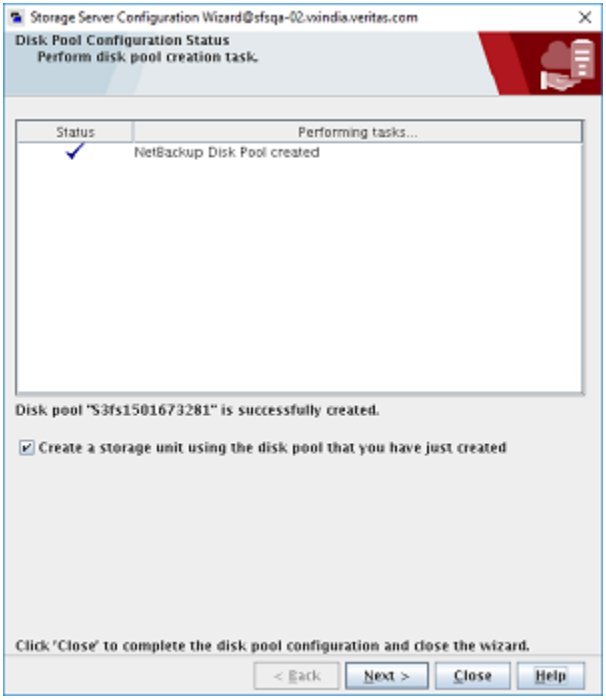


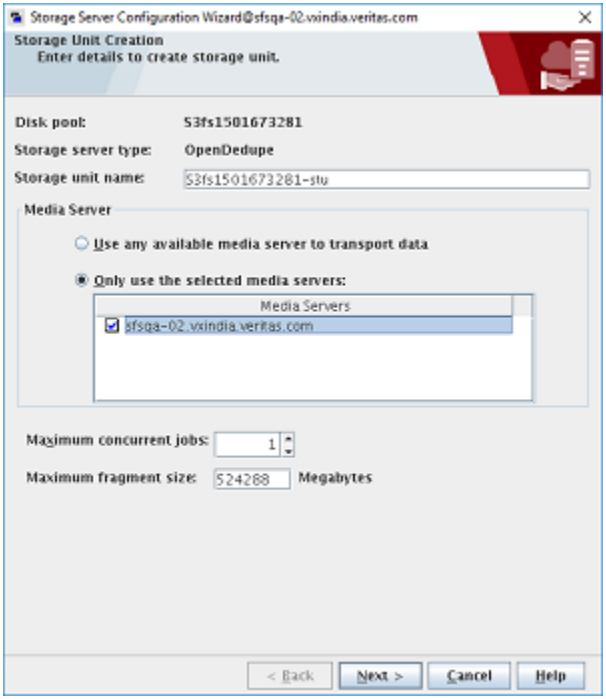
7 Add a disk pool name.

8 Finish the wizard entries and select **Create a storage unit using the disk pool that you just created**.

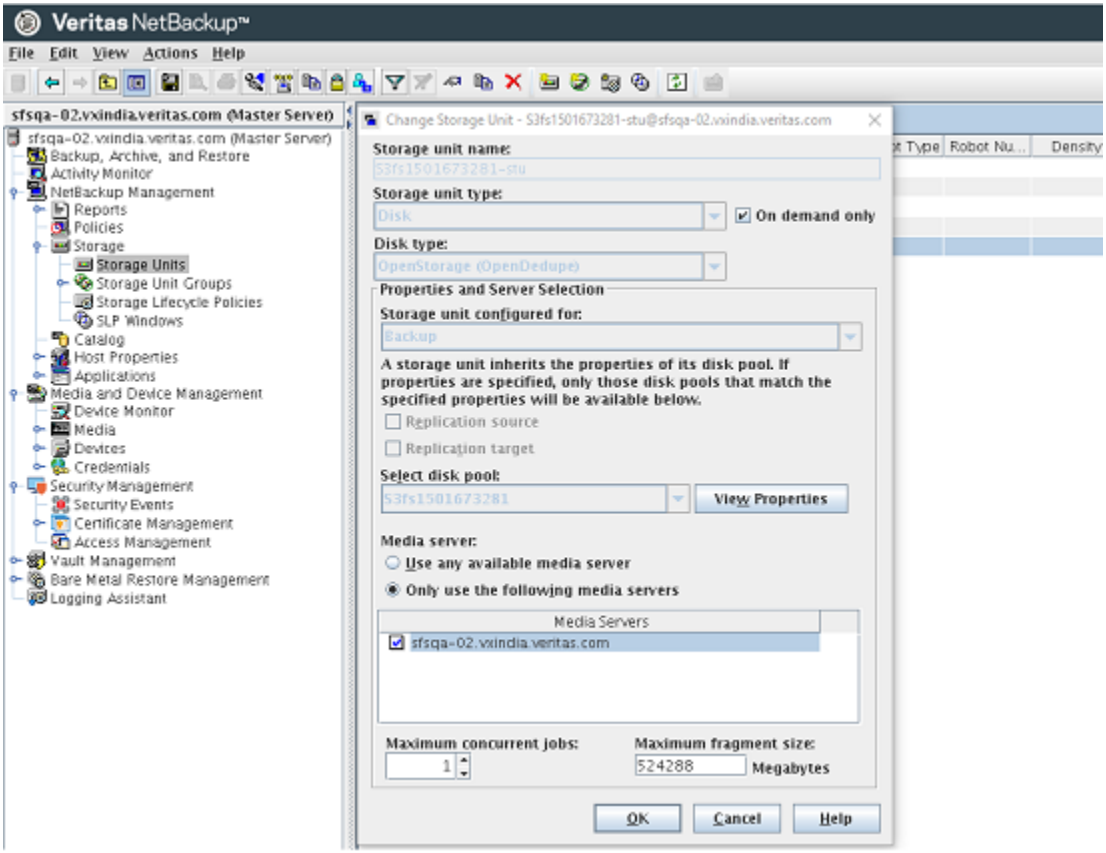
9 In the **Storage Unit Creation** page, select **Only use the selected media servers** and select the media server that the storage was created on. For maximum concurrent jobs select **8**.

Note: If you plan to run concurrent jobs for this STU, increase the **Maximum concurrent jobs** count to the desired value.

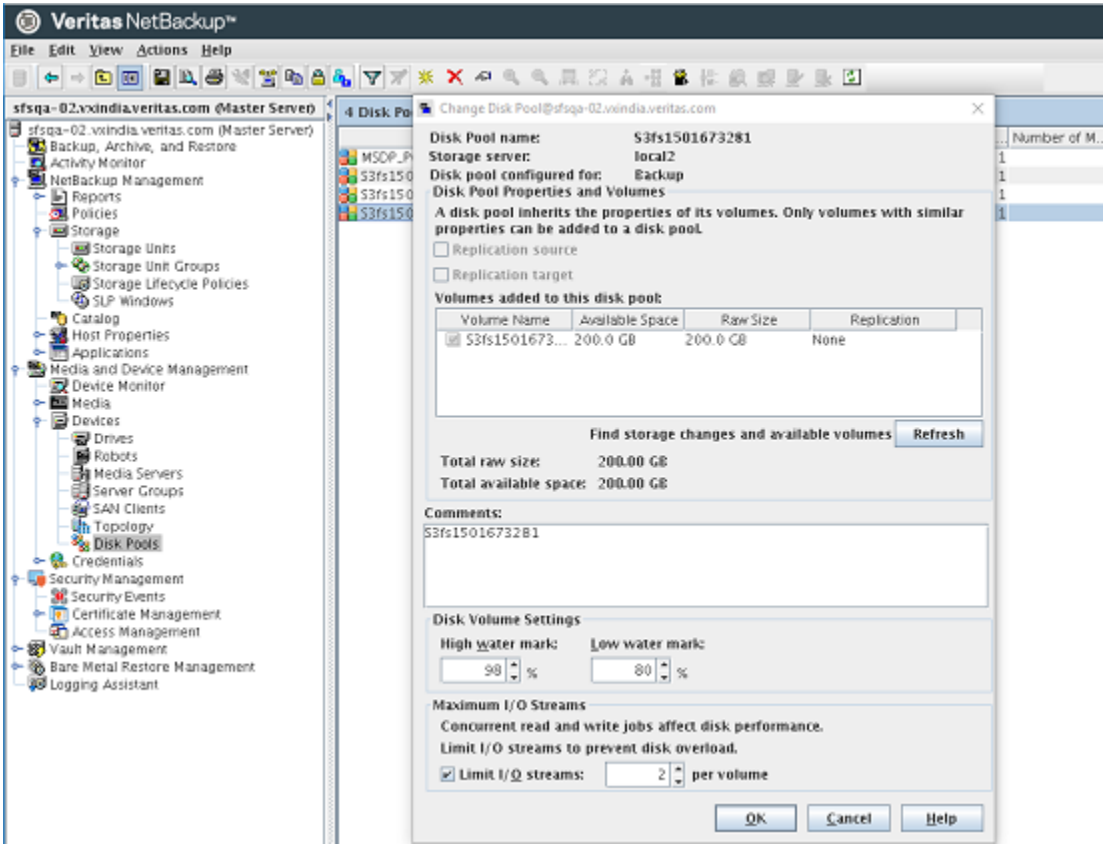



Storage Server Configuration Wizard@sfsqa-02.vxindia.veritas.com
Storage Unit Creation
Enter details to create storage unit.
Disk pool:
S3fs1501673281
Storage server type:
OpenDedupe
Storage unit name:
S3fs1501673281-stu
Media Server
Use any available media server to transport data
Only use the selected media servers:
Media Servers
sfsqa-02.vxindia.veritas.com
Maximum concurrent jobs:
1
Maximum fragment size:
524288
Megabytes
< Back
Next >
Cancel
Help

10 Verify that the storage unit is added.



11 Verify that the disk pool is added.



Setting up multiple NetBackup media servers in the same domain

To set up the OST connector on multiple NetBackup media servers in the same domain, additional steps must be taken on each NetBackup media server before adding the storage pools in NetBackup.

To set up multiple NetBackup media servers in the same domain

1. Follow the instructions for setting up the OST connector on each media server that uses the OST connector.

   See "Use case 1: Backing up deduplicated data (OpenDedup and NetBackup) using the S3 protocol to Veritas Access" on page 15.

2. Edit `/etc/sdfs/ostconfig.xml` and change the <name> tag to something unique in the NetBackup domain, such as the host name with an incremented number, for example:

   ```
   <NAME>hostname-0</NAME>
   ```

3. Follow the instructions in the "Creating an OST disk pool and STU in the NetBackup console" section and use the name in the <NAME> tag as the **Storage Server** name.

   See "Creating an OST disk pool and STU in the NetBackup console" on page 31.

   See "Use case 1: Backing up deduplicated data (OpenDedup and NetBackup) using the S3 protocol to Veritas Access" on page 15.

Setting up multiple SDFS volumes on a NetBackup media server

The OST connector supports multiple SDFS volumes on the same media server but additional steps are required to support this configuration.

To set up multiple SDFS volumes on a NetBackup media server

1. Follow the instructions for setting up the OST connector on each NetBackup media server that uses the OST connector.

   See "Use case 1: Backing up deduplicated data (OpenDedup and NetBackup) using the S3 protocol to Veritas Access" on page 15.

2 Edit the `/etc/sdfs/ostconfig.xml` and add a new <CONNECTION> tag inside of the <CONNECTIONS> tag for the new volume.

Add a name that is unique to the <NAME> tag and specify the new volume name in the <LSU_NAME> tag (pool1).

In the new <CONNECTION> tag, add the port number identified by running the `mount` command to the <URL> tag (http://localhost:6443/) as shown in the example output.

```
[root@host1 ~]# mount | grep opendedupe
sdfs:/etc/sdfs/S3fs1497346133-volume-cfg.xml:6443 on
/opendedupe/volumes/S3fs1497346133 type fuse
(rw,nosuid,nodev,allow_other,allow_other)
sdfs:/etc/sdfs/S3fs1497258807-volume-cfg.xml:6442 on
/opendedupe/volumes/pool1 type fuse
(rw,nosuid,nodev,allow_other,allow_other)
```

The following is a complete example of an `ostconfig.xml` file with two volumes.

```
<!-- This is the config file for the OST connector for opendedup and Netbackup -->
<CONNECTIONS>
<CONNECTION>
<!--NAME is the local server name that you will reference within Netbackup -->
<NAME>
local
</NAME>
<LSU_NAME>
svol4
</LSU_NAME>
<URL>
http://localhost:6442/
</URL>
<!--PASSWD - The password of the volume if one is required for this sdfs volume -->
<PASSWD>admin</PASSWD>
<!-
<SERVER_SHARE_PATH>
A_SUBDIRECTORY_UNDER_THE_MOUNT_PATH
</SERVER_SHARE_PATH>
-->
</CONNECTION>
<!-- Below is the new volume-->
<CONNECTION>
<!--NAME is the local server name that you will reference within Netbackup -->
<NAME>
```

```
hostname0
</NAME>
<LSU_NAME>
svol10
</LSU_NAME>
<URL>
http://localhost:6443/
</URL>
<!--PASSWD - The password of the volume if one is required for this sdfs volume -->
<PASSWD>admin</PASSWD>
<!--
<SERVER_SHARE_PATH>
A_SUBDIRECTORY_UNDER_THE_MOUNT_PATH
</SERVER_SHARE_PATH>
-->
</CONNECTION>
</CONNECTIONS>
```

Chapter 4

Configuring Veritas Access as a cloud storage server with NetBackup CloudCatalyst

This chapter includes the following topics:

Creating an S3 bucket on Veritas Access for storing deduplicated backup data from NetBackup

To create an S3 bucket on Veritas Access for storing deduplicated backup data from NetBackup

1. Log on to the Veritas Access GUI as the master user using the following URL:

   `https://`*`Veritas Access Management console IP`*`:14161/.`

   You can obtain the Veritas Access Management console IP by logging on to the CLISH using the `su - master` command on the Veritas Access cluster.

2. Create a storage pool for the S3 buckets.

   Click **NAS Infrastructure** in the GUI navigation on the left.

   Select the disks that you want to use for the S3 bucket, and click the **Add to Storage Pool** button to invoke the wizard for storage pool creation.

   Follow the steps in the wizard for creating a new storage pool or adding the disks to an existing pool.

3. Click **Settings > User Management > Configure Active Directory** to configure AD.

   Enter the required information, such as the **DNS Domain**, **DNS Name Servers**, **AD Domain**, **AD Domain Controller**, and the **AD Admin** and **Password**.

4. Click **Settings > S3 Management** to configure and enable the S3 server.

   Edit the default parameters that are required for the S3 server, such as the storage pool name, underlying S3 bucket layout, and the default size of the bucket.

5. Click the button in front of **S3 Server Status** to start the S3 server.

6. Log out from the GUI, and log in again as an AD user.

   Click on the **Create keys** button to generate the access key and the secret key for the Veritas Access S3 bucket.

   Save the access key and secret key in a safe location, as Veritas Access does not allow retrieval of keys after initial creation.

   Note: Log in using the *domainname**username* format.

   ---

7. Log out from the GUI, and log in again as the master user.

8 Registration of supported public cloud service is optional, and is only required in case you need to add an AWS cloud as a storage tier. Without this, backups are stored locally in Veritas Access S3 buckets.

Click **Settings > Cloud Storage Registration > Add Cloud Subscription** to register the supported public cloud service.

Enter information for the cloud service provider, name of subscription, access key, and secret key.

9 Activate the long-term data retention (LTR) policies.

Click **Policies > LTR Policy**.

Click **Activate** for either the **LTR On-Premises + Cloud** policy or the **LTR On-Premises** policy and provide the storage pool when prompted.

10 Provision the NetBackup bucket using the policy.

Under **Quick Actions**, click **Provision Storage**. Select **S3 Storage for NetBackup** and click **Next**.

Provide the bucket size, underlying layout of the bucket, the access key, and the secret key of the Veritas Access S3 server generated as the AD user in step 6.

If you selected the **LTR On-Premises + Cloud** policy, add information such as which data should be moved to the AWS cloud tier, AWS region, cloud tier type (S3/Glacier), and when the data movement to the cloud should occur.

11 Monitor the progress of the task under **Recent Activity**.

Make a note of the scale-out file system name that was used for the bucket creation.

12 Click **File Systems**.

For the scale-out file system that is created, ensure that the **S3 Bucket** column displays **Yes** to indicate that the S3 bucket is enabled.

You may need to wait for some time for this change to be reflected in the GUI.

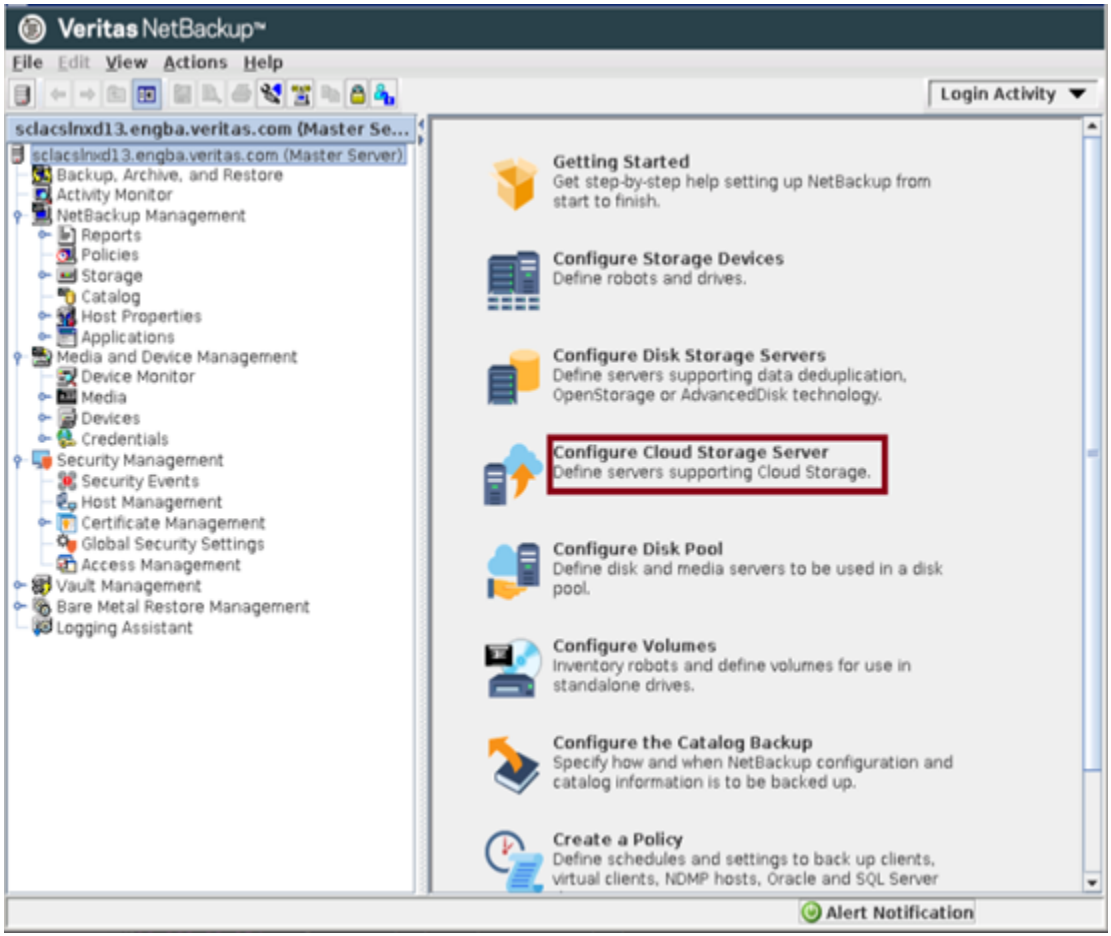
Creating a Media Server Deduplication Pool (MSDP) for primary backup using NetBackup

To create a Media Server Deduplication Pool (MSDP) for primary backup using NetBackup, See "Creating a Media Server Deduplication Pool (MSDP) for primary backup using NetBackup" on page 23.

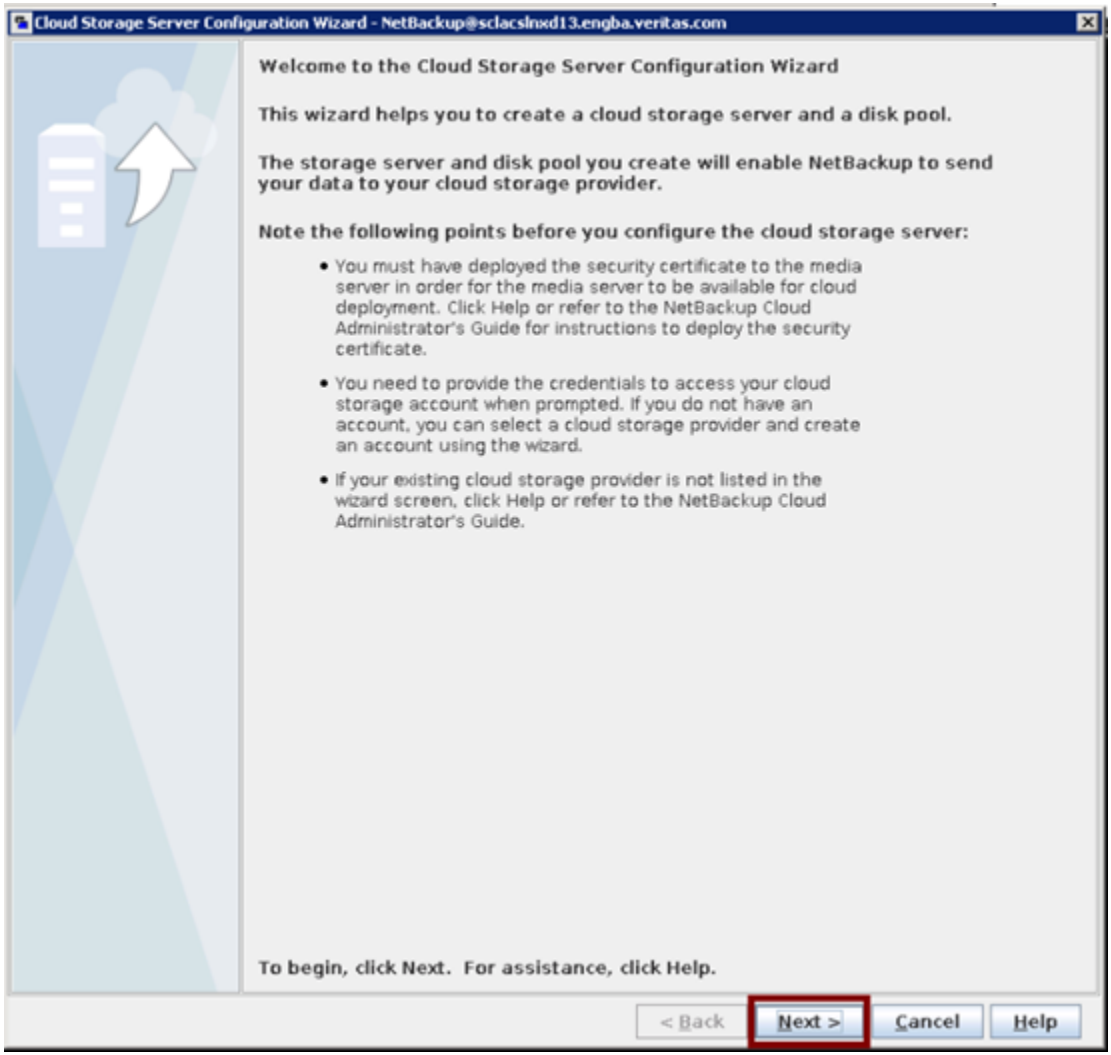
Configure Veritas Access as a cloud storage server on NetBackup server

To configure Veritas Access cluster as a cloud storage server and create an OpenStorage Technology (OST) disk pool and storage unit (STU) from the NetBackup console

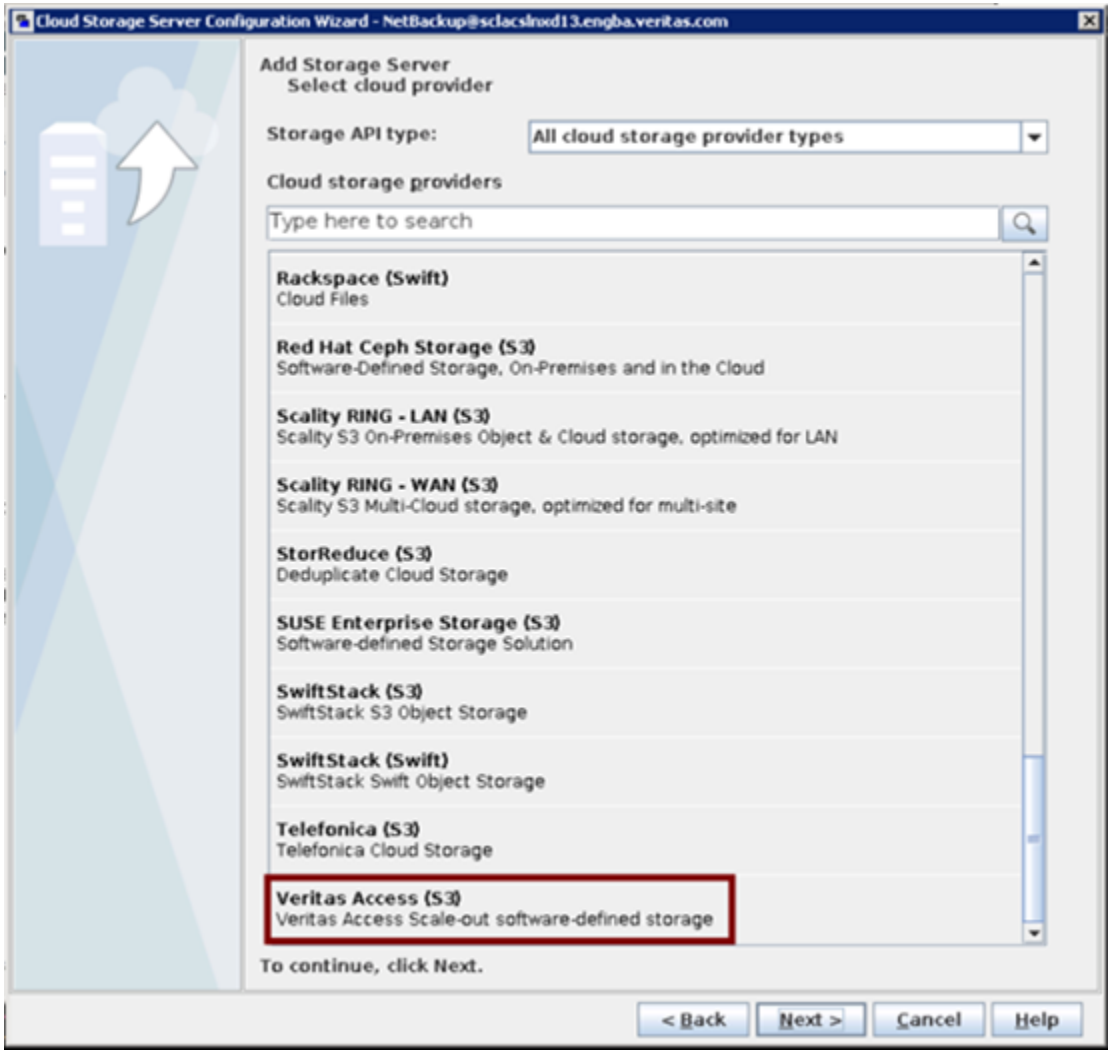
1. Log on to the NetBackup master server from the Java console.
2. Select **Configure Cloud Storage Servers**.



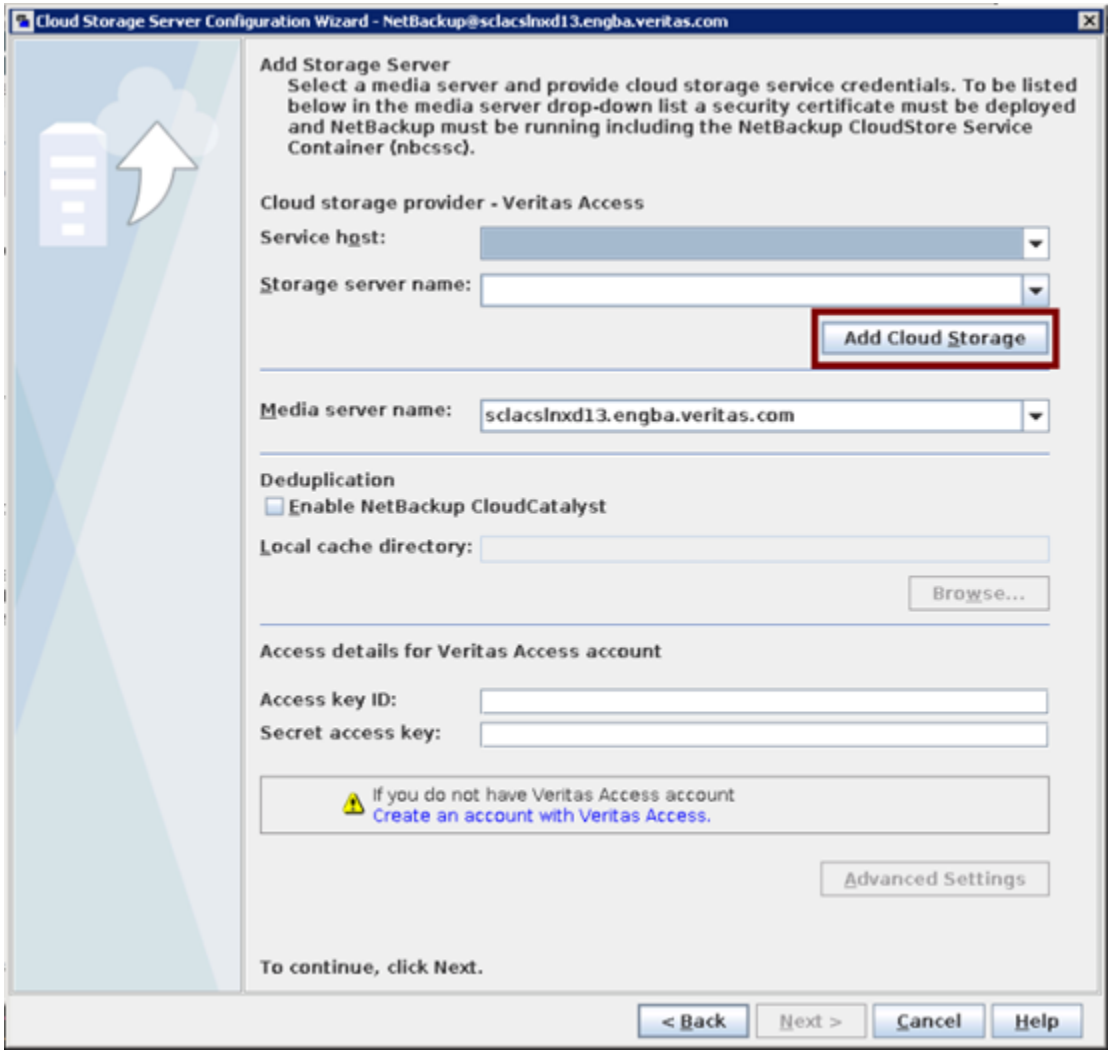
3 The **Welcome to cloud storage server configuration** wizard appears. Click **Next**.



4 Select **Veritas Access** in the cloud provider list. Click **Next**.



5 On the **Add storage server** form, click on **Add Cloud Storage**.

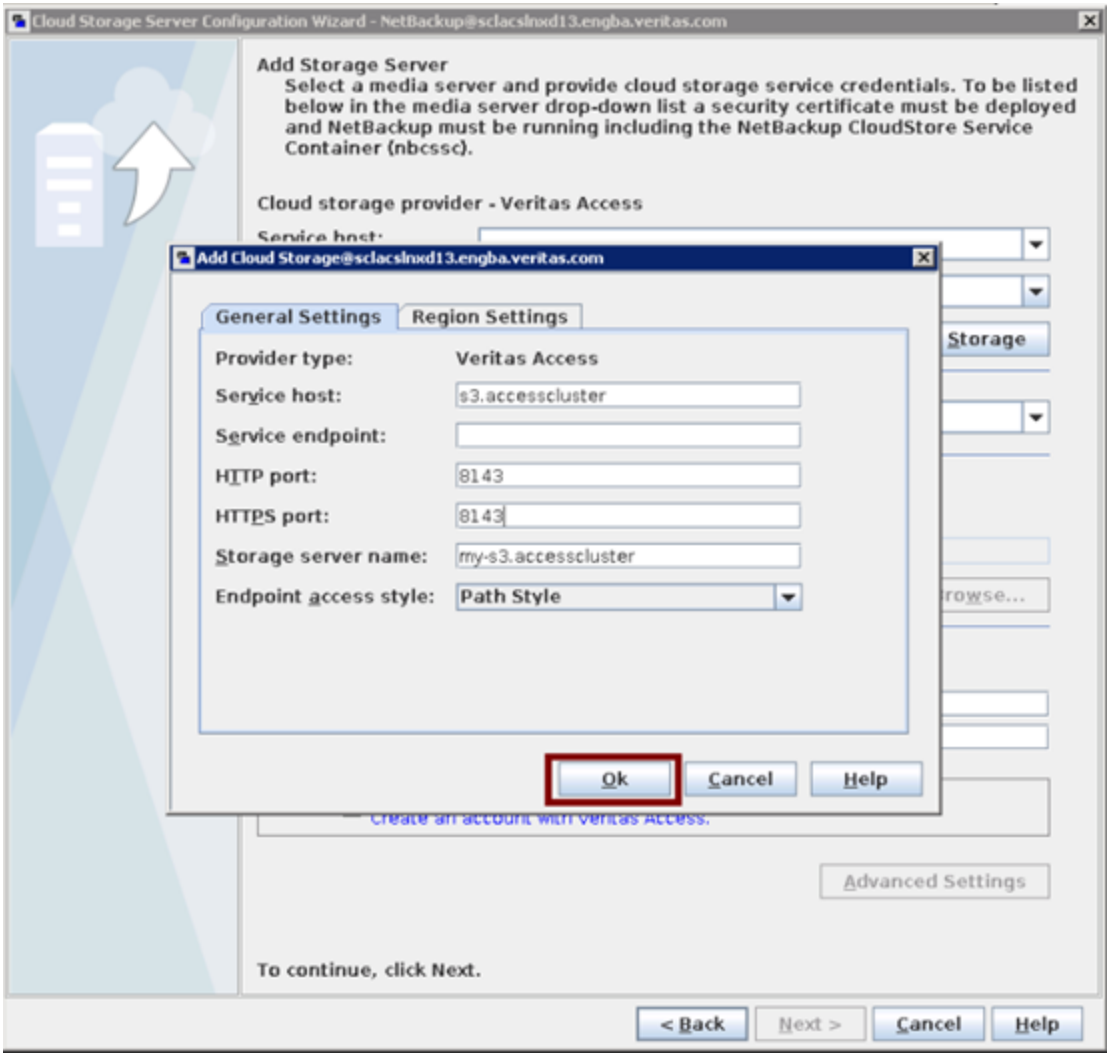


6 In the **Add cloud storage** wizard, enter the required information.

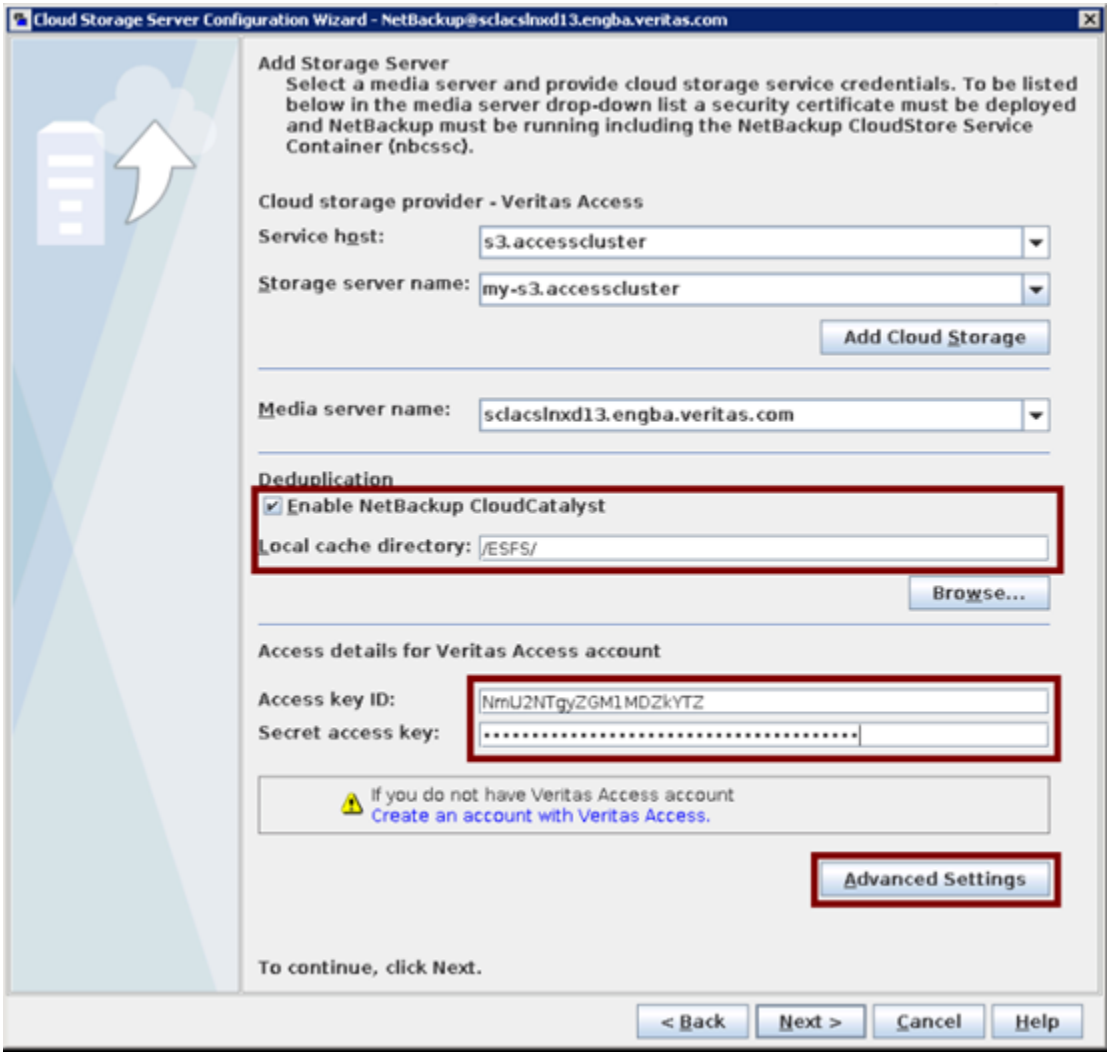
- Service host: s3.<veritas_access_cluster_name>
- HTTP port: 8143
- Https Port: 8143
- Storage server Name: Any string or any auto-generated name.

For example, *my-s3.<veritas_access_cluster_name>*

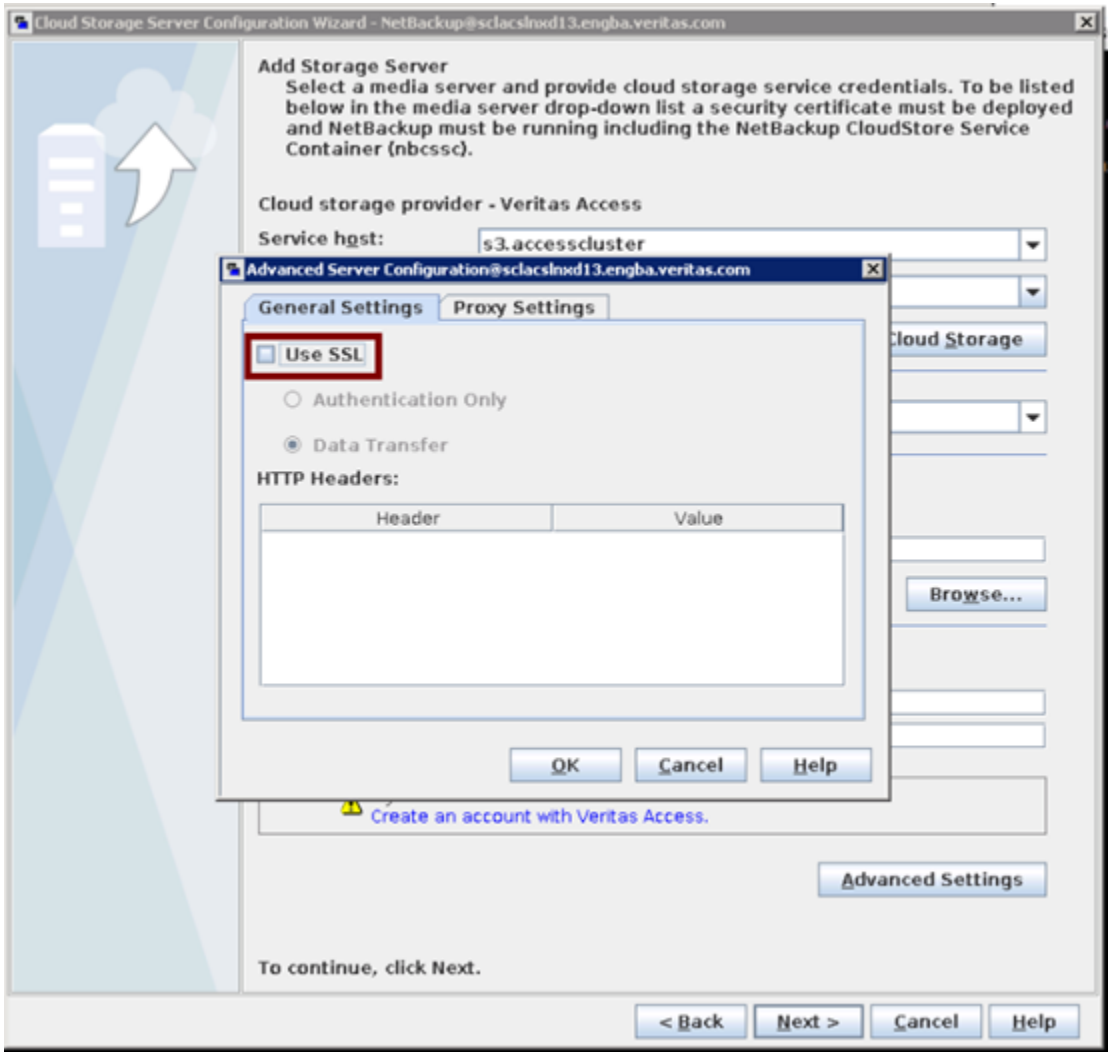
Click **Ok**.



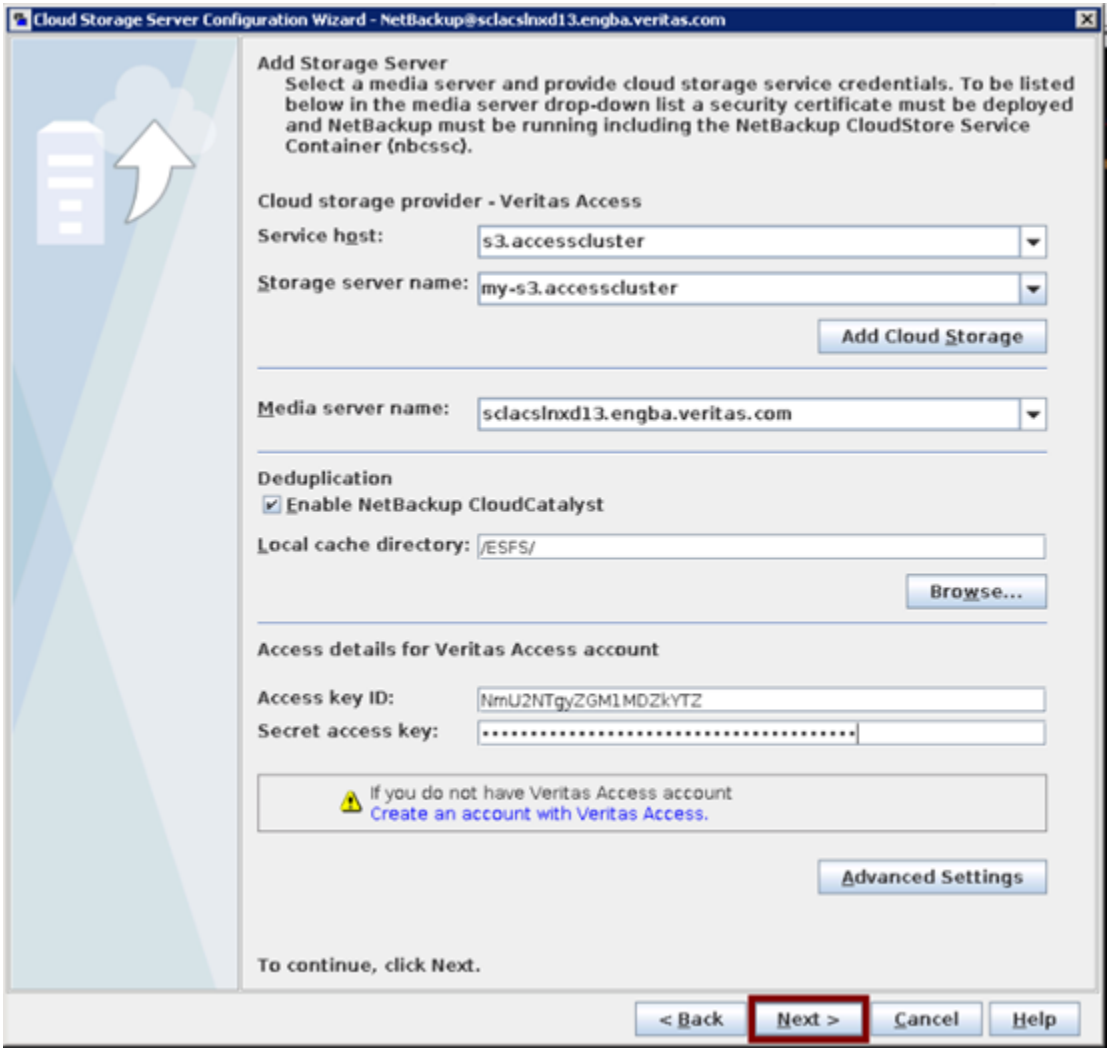
7 Select **Media server** from the **Media server name** drop-down box. Select the **Enable NetBackup CloudCatalyst** check box if you want to store the deduplicated MSDP backup data on Veritas Access's ObjectAccess bucket. Specify the path of local cache directory for CloudCatalyst. Enter the access key and secret key using which the bucket is created on Veritas Access. For SSL-related settings, click on **Advance Setting**.



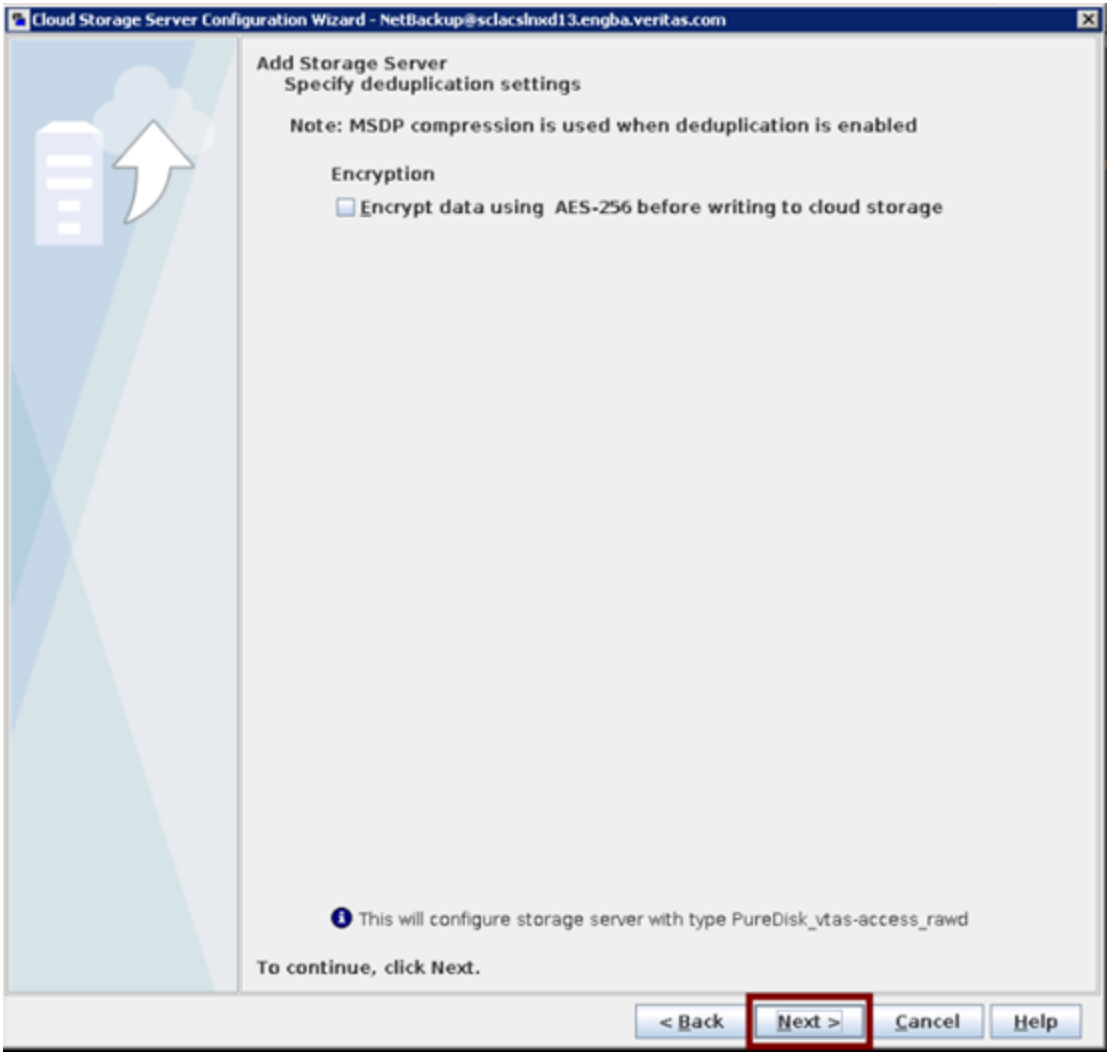
8 If the Veritas Access ObjectAccess server is configured with **No SSL**, then clear the **Use SSL** check box and click **Ok**.



9 Click **Next**

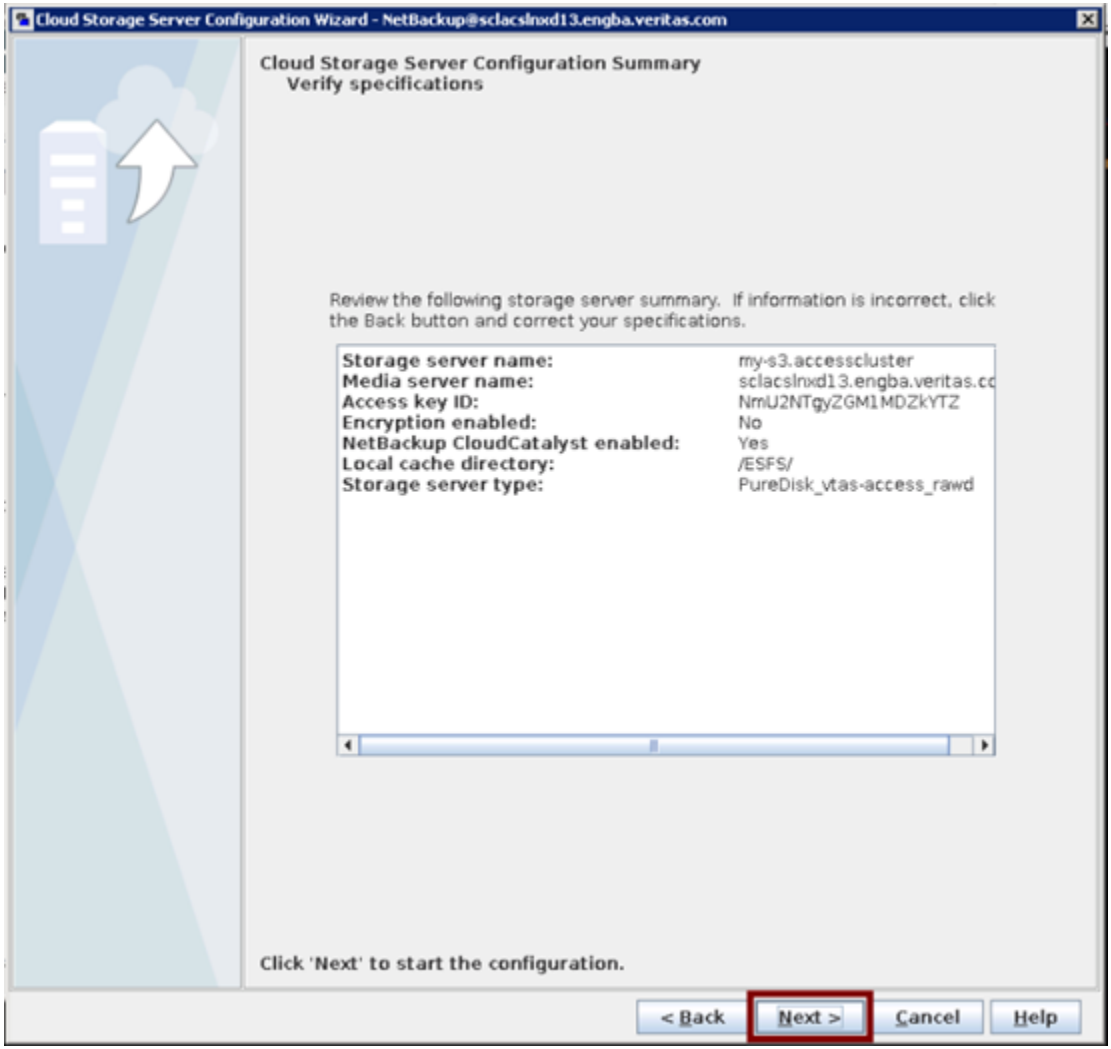

Cloud Storage Server Configuration Wizard - NetBackup@sclacslnxd13.engba.veritas.com
Add Storage Server
Select a media server and provide cloud storage service credentials. To be listed below in the media server drop-down list a security certificate must be deployed and NetBackup must be running including the NetBackup CloudStore Service Container (nbcssc).
Cloud storage provider - Veritas Access
Service host:
s3.accesscluster
Storage server name:
my-s3.accesscluster
Add Cloud Storage
Media server name:
sclacslnxd13.engba.veritas.com
Deduplication
Enable NetBackup CloudCatalyst
Local cache directory:
/ESFS/
Browse...
Access details for Veritas Access account
Access key ID:
NmU2NTgyZGM1MDZkYTZ
Secret access key:
If you do not have Veritas Access account
Create an account with Veritas Access.
Advanced Settings
To continue, click Next.
< Back
Next >
Cancel
Help

10 On the **Specify Deduplication setting** form, click **Next**

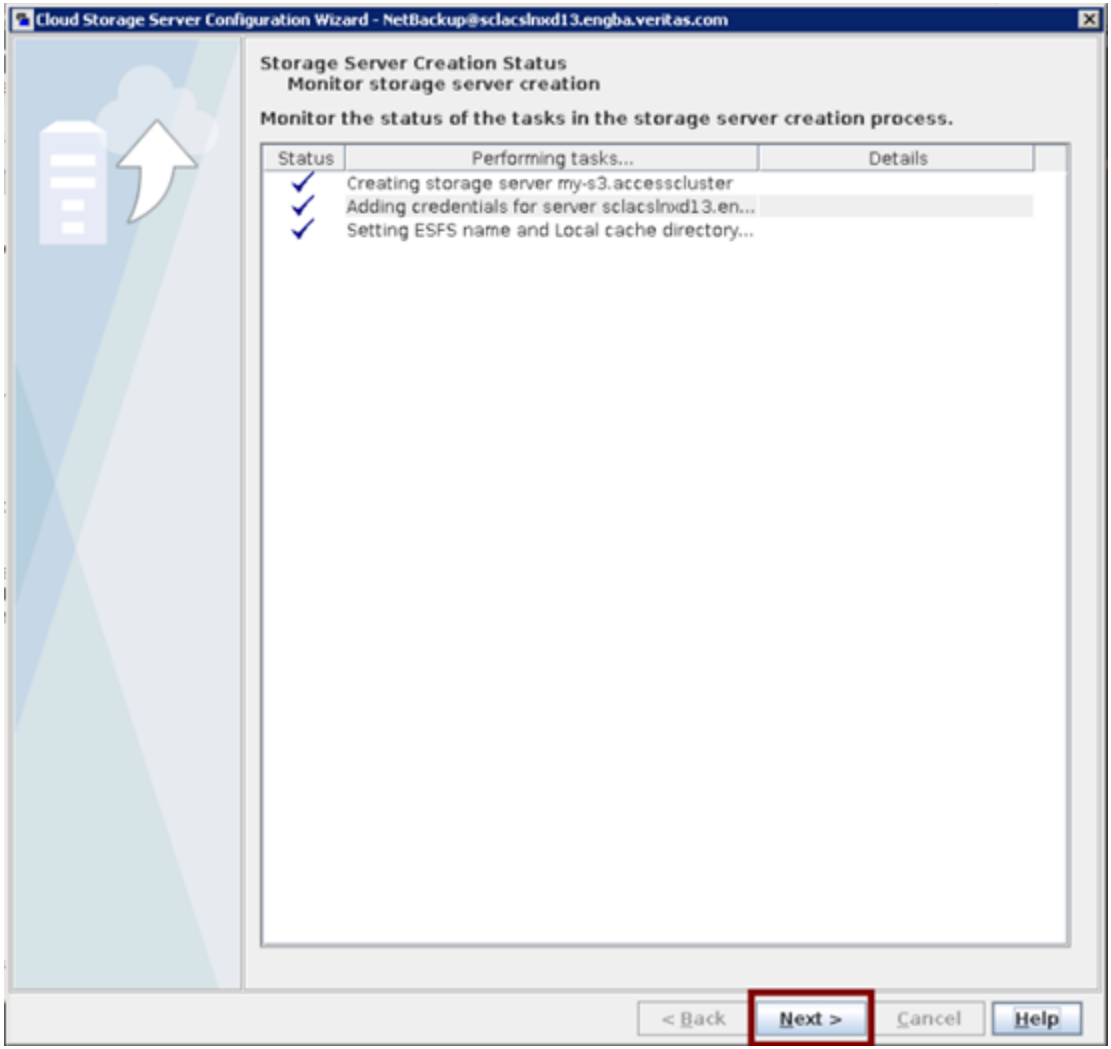


11 Messages related to setting the encryption appear. Click **Yes**.

12 Review the Cloud storage server summary and click **Next**.

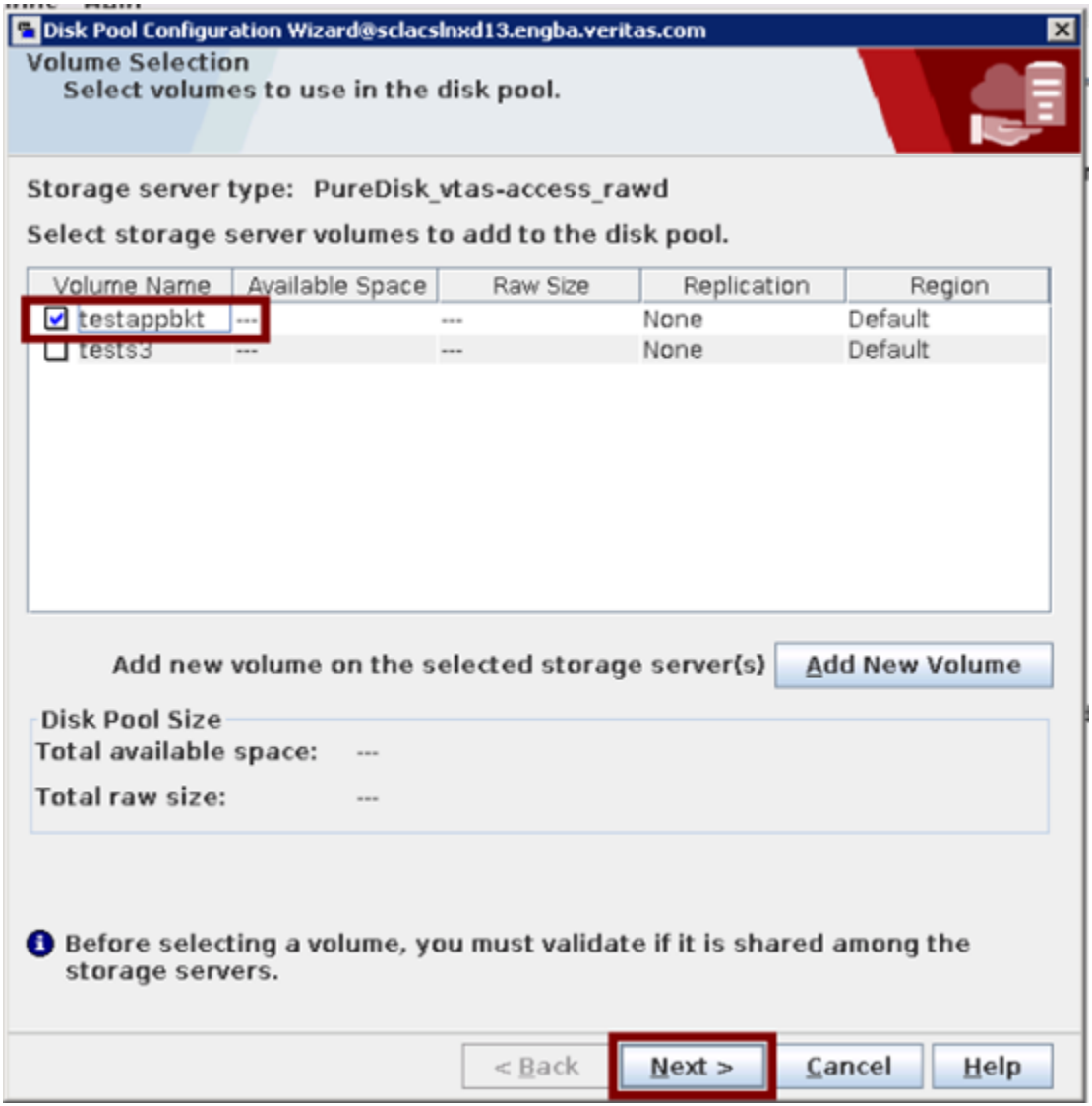


13 Check the status of the tasks in the storage server creation process. Click **Next**

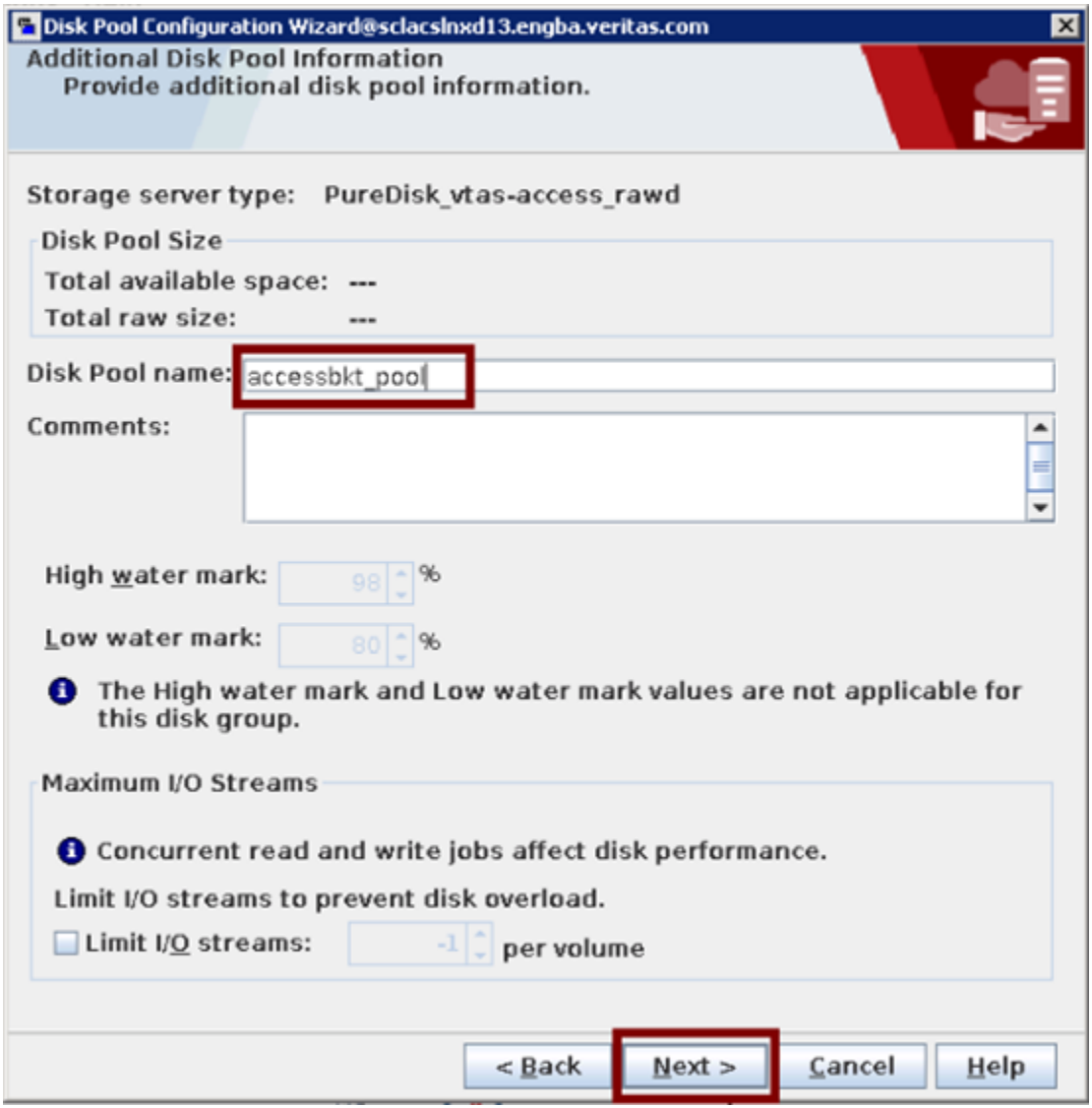


14 Verify that the storage server is successfully created and click **Next**.

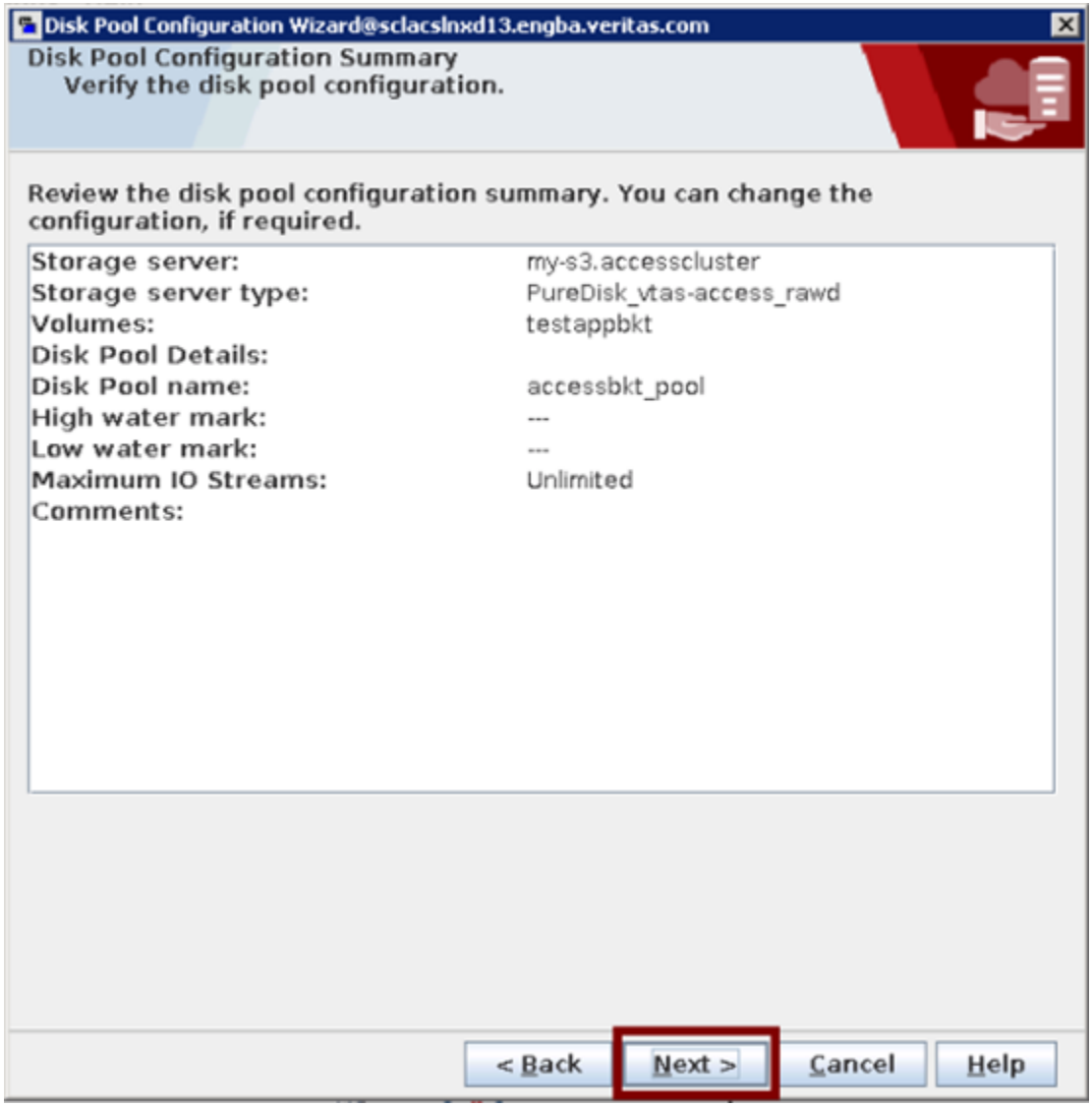
15 The **Volume selection to use in disk pool** form lists all the buckets that are created by a user on the Veritas Access cluster as a volume. If the bucket is not created from Veritas Access, then click on **Add volume** and specify the bucket name. After bucket creation, the bucket is listed as a volume. Select a bucket and click **Next**.



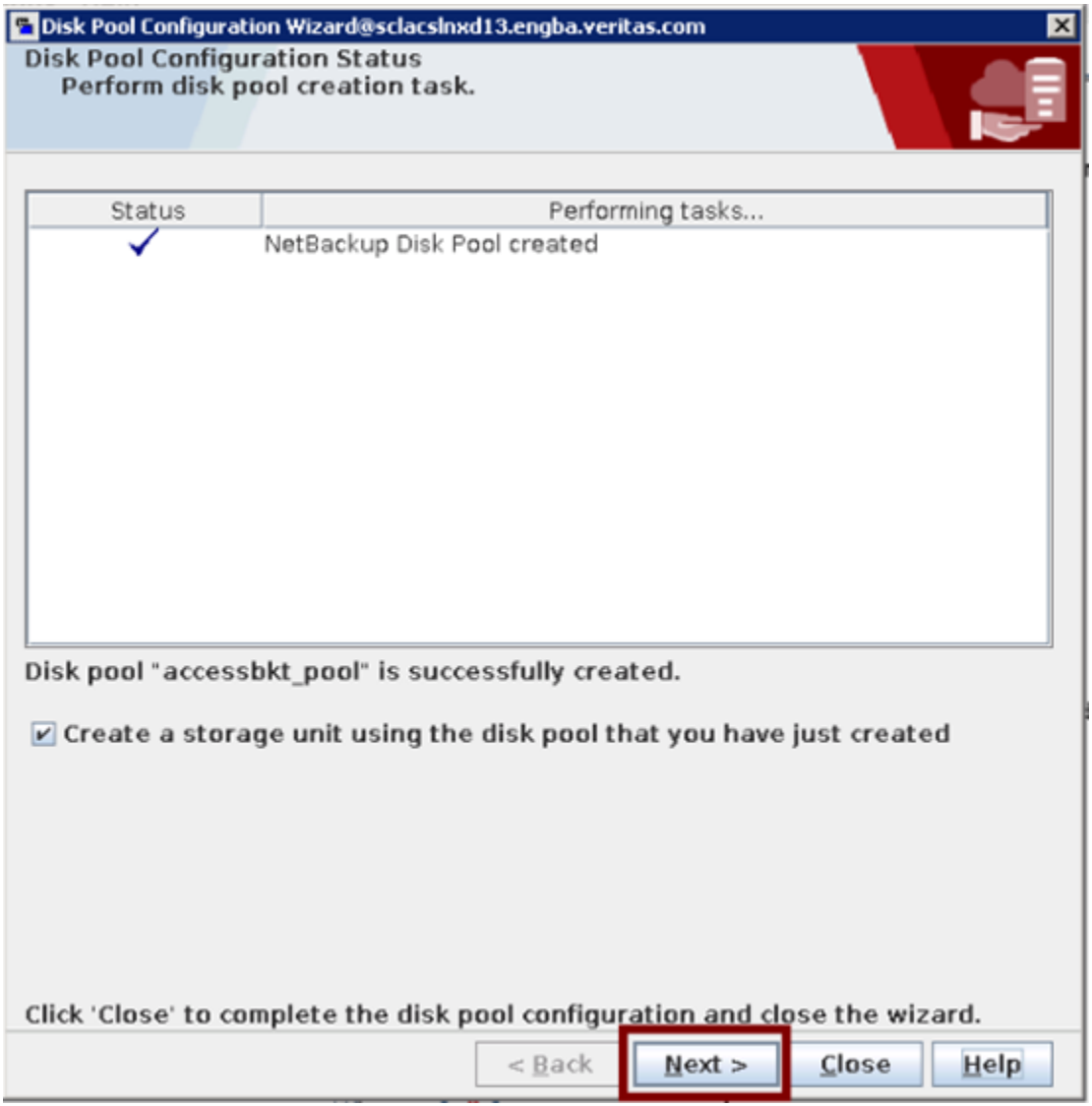
16 In the **Additional disk pool information** form, enter the disk pool name and click **Next**.



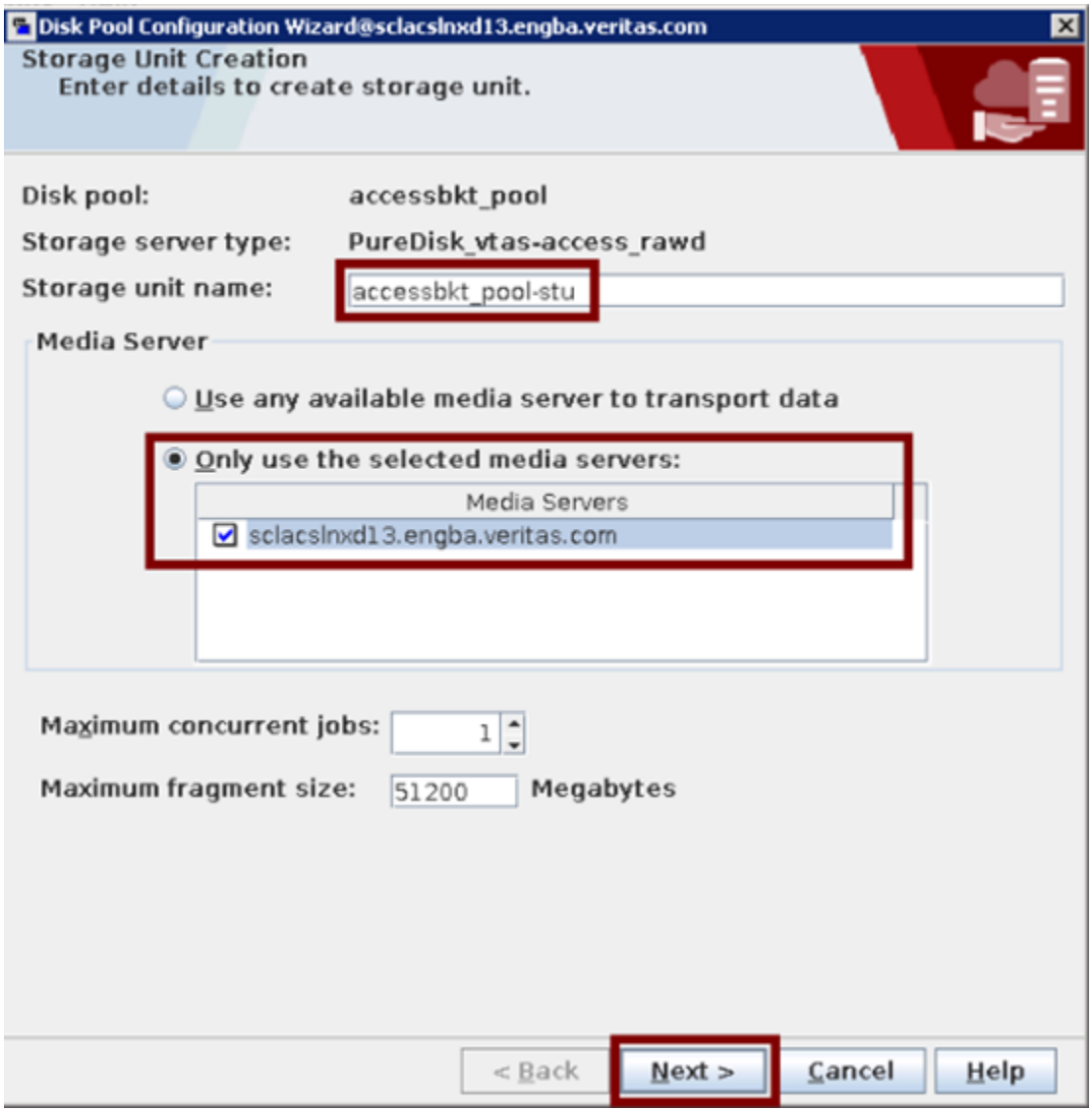
17 Review the disk pool configuration summary and click **Next**.



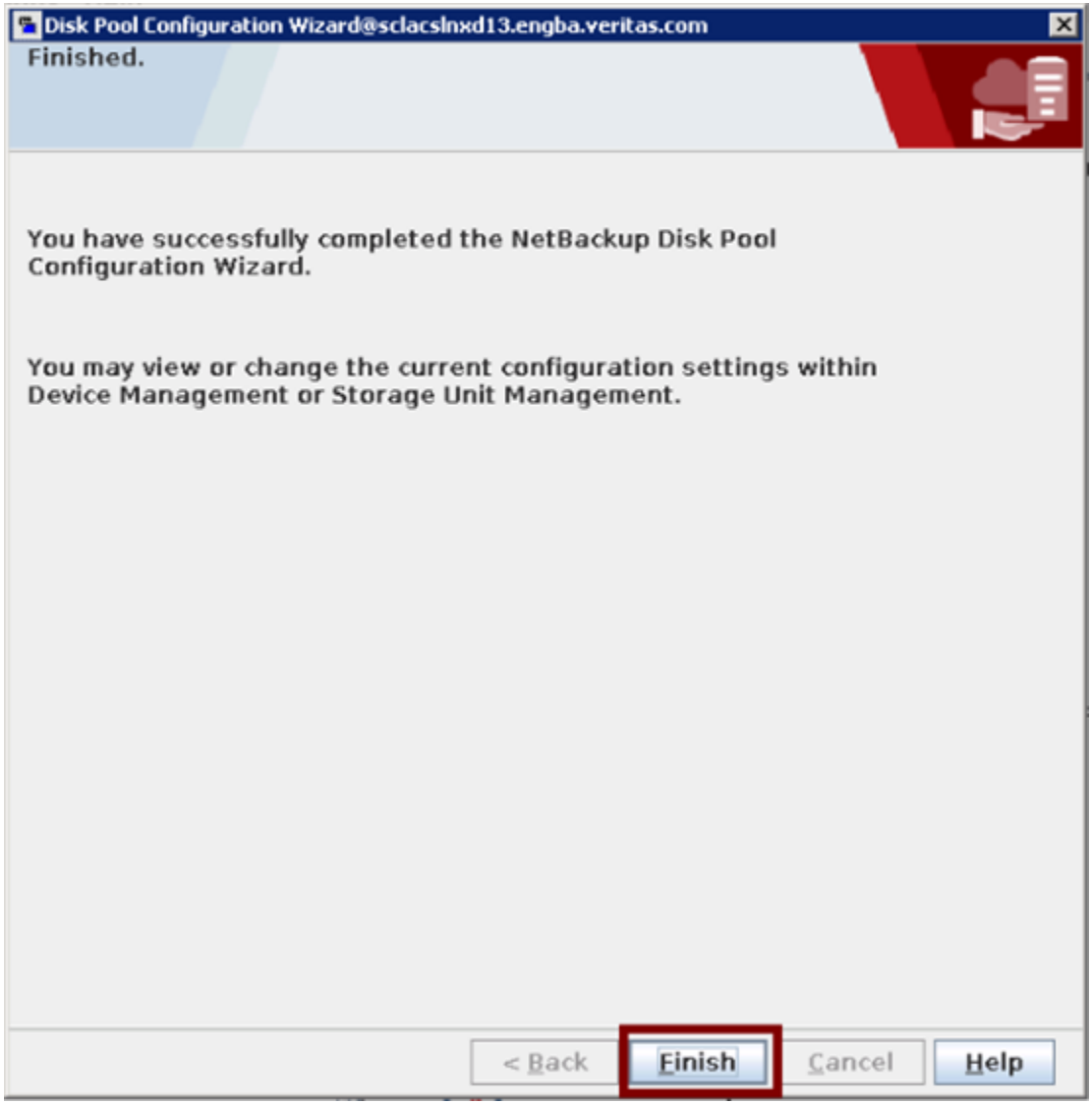
18 In the **Disk pool creation status** form, verify that the disk pool is created successfully. Make sure that the **Create storage unit using disk pool which you have just created** check box is selected.



19 In the **Storage unit creation** wizard, enter the storage unit name. Click **Only use selected media servers**. Select the media server in the list and click **Next**.



20 Verify that the disk pool creation wizard is completed successfully. Click **Finish**.



Chapter 5

Configuring backup and restore using NetBackup policies

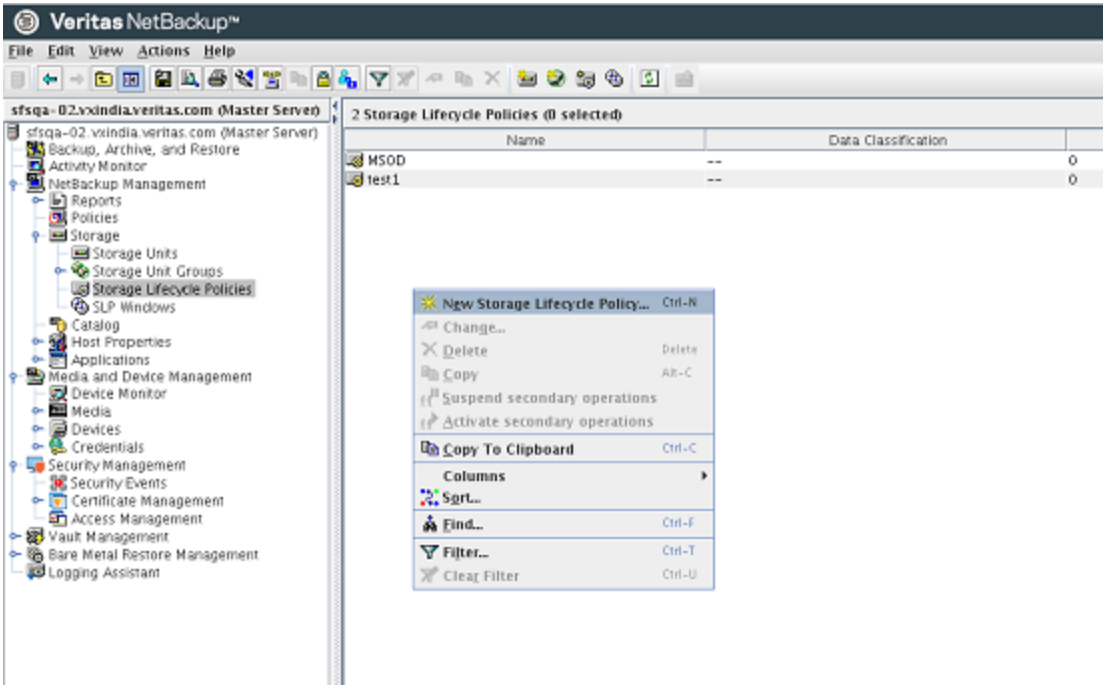
This chapter includes the following topics:

Storage Lifecycle Policies

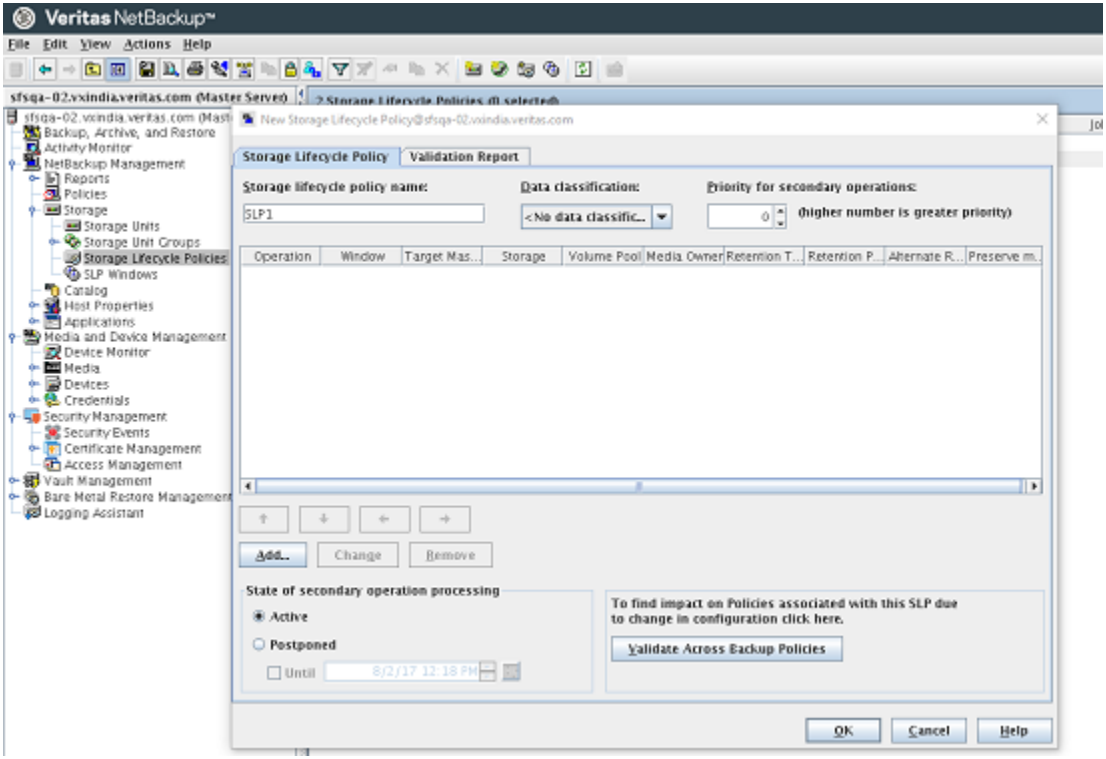
You can create Storage Lifecycle Policies (SLP).

To create Storage Lifecycle Policies

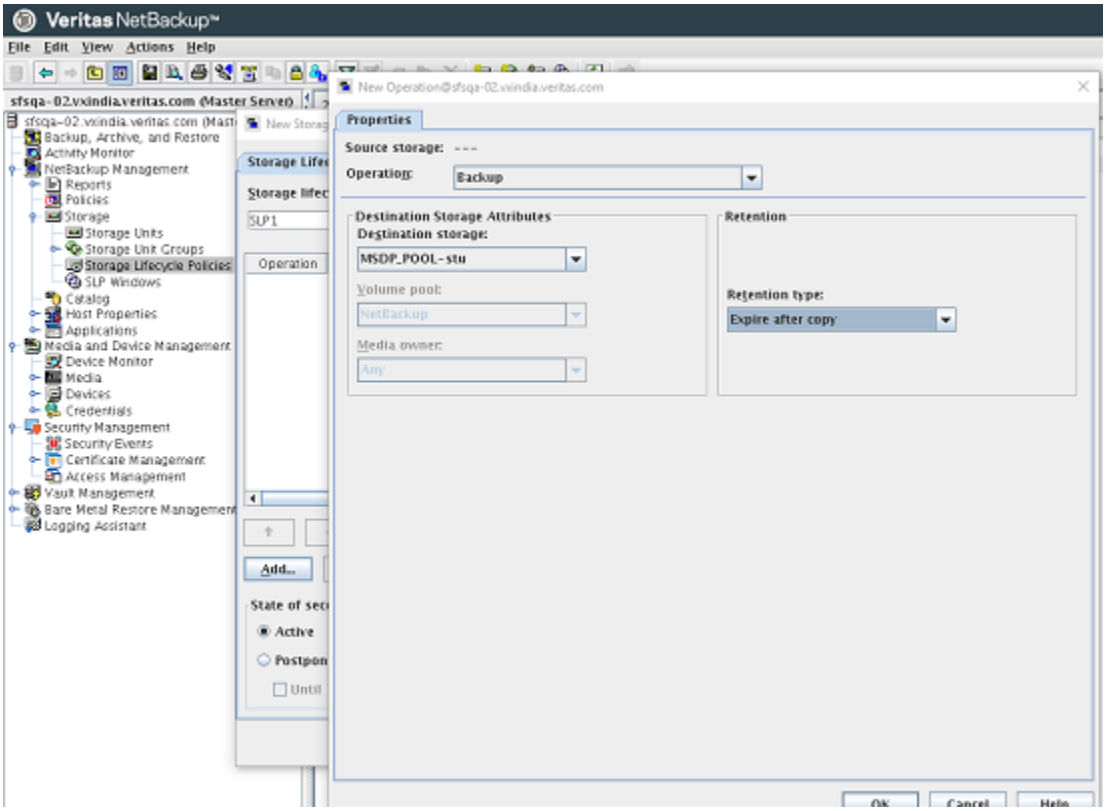
1 Click **Storage** -> **Storage Lifecycle Policies** on the NetBackup console. Select **New Storage Lifecycle Policy**.



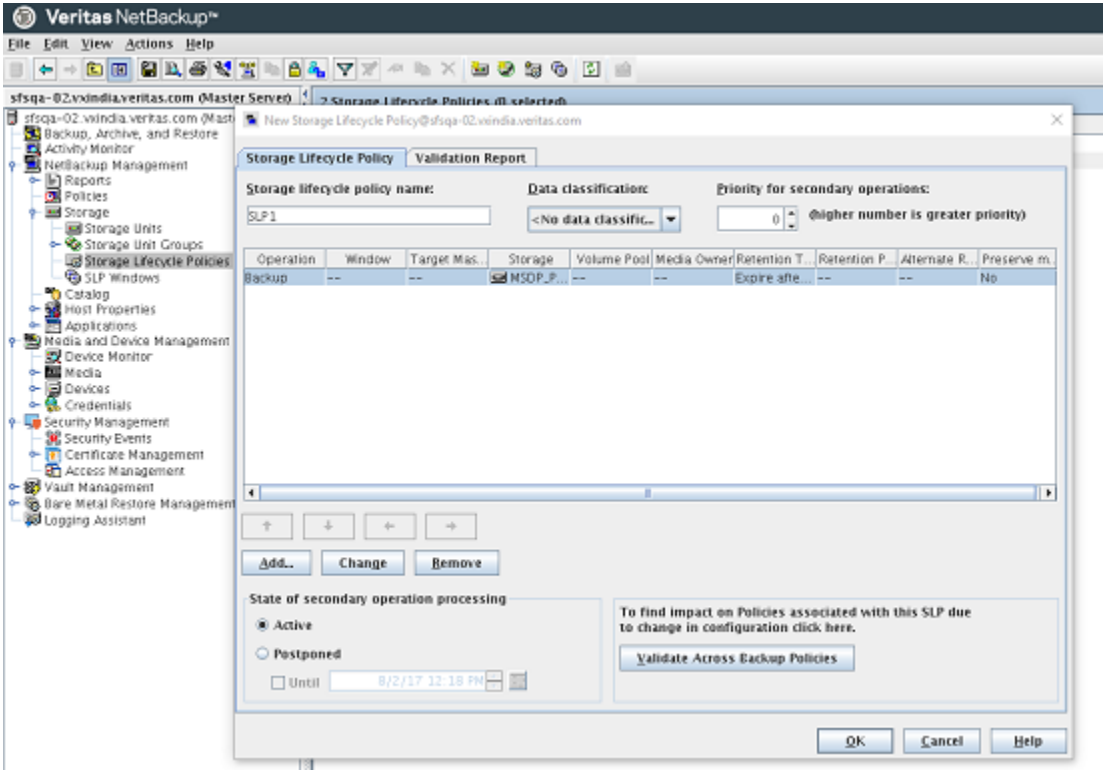
2 Enter a unique policy name for the policy. Click on the **Add** button.



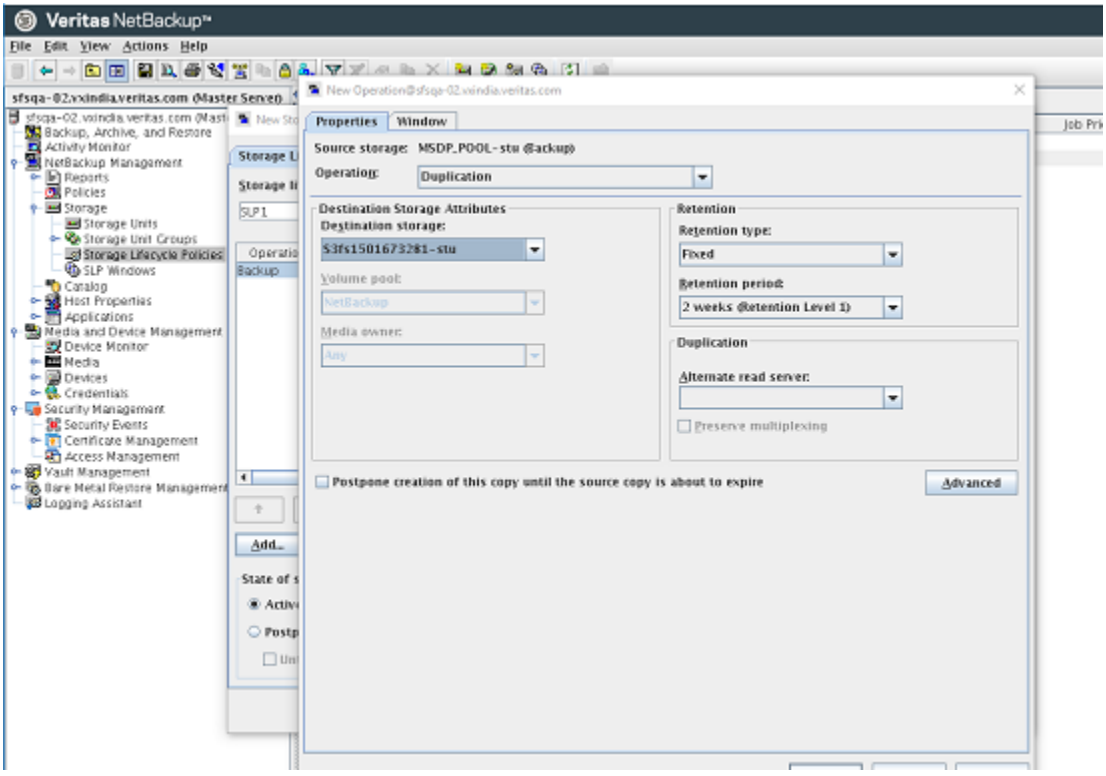
3 Select **Operation** as **Backup**, and set the destination pool to the MSDP pool that was created. Choose the **Retention type** based on your requirement.



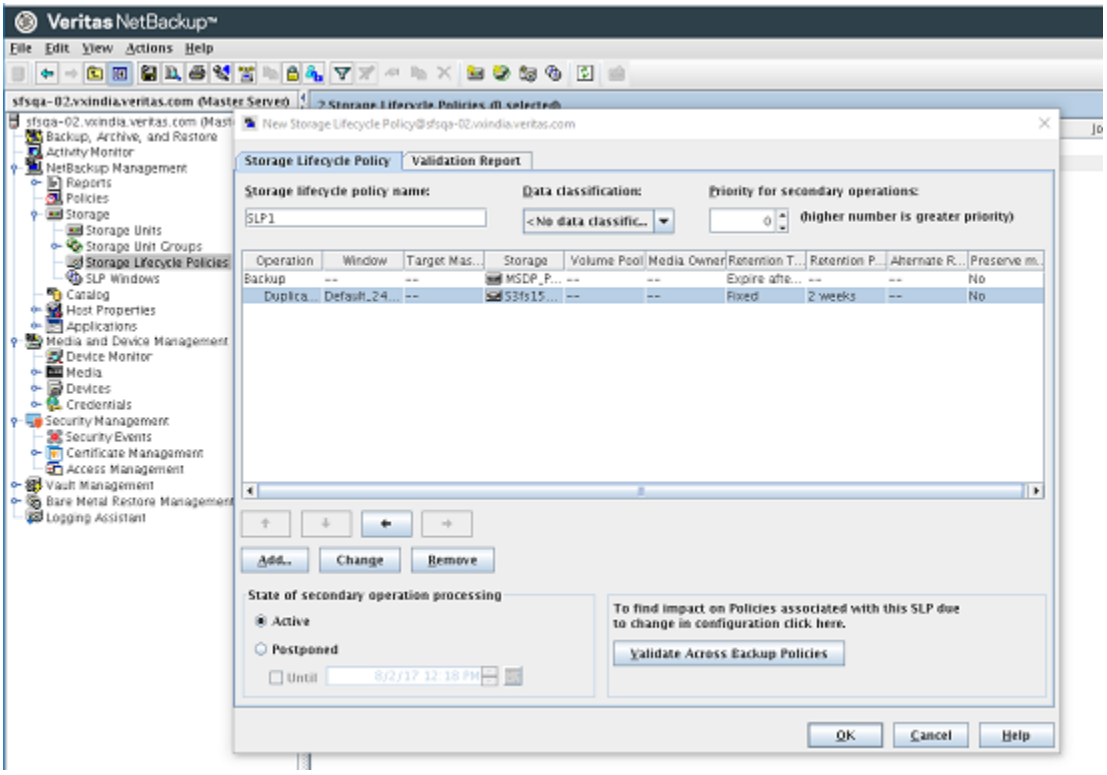
4 A new entry for Backup gets added. Click on the **Add** button again.



5 Select **Operation** as **Deduplication** and set the destination tier to the OST storage unit that was created. Choose the **Retention type** based on your requirement.



6 Both entries for SLP appear in the **Storage Lifecycle Policy** tab. The first operation is for Backup and the second operation is for Duplication.



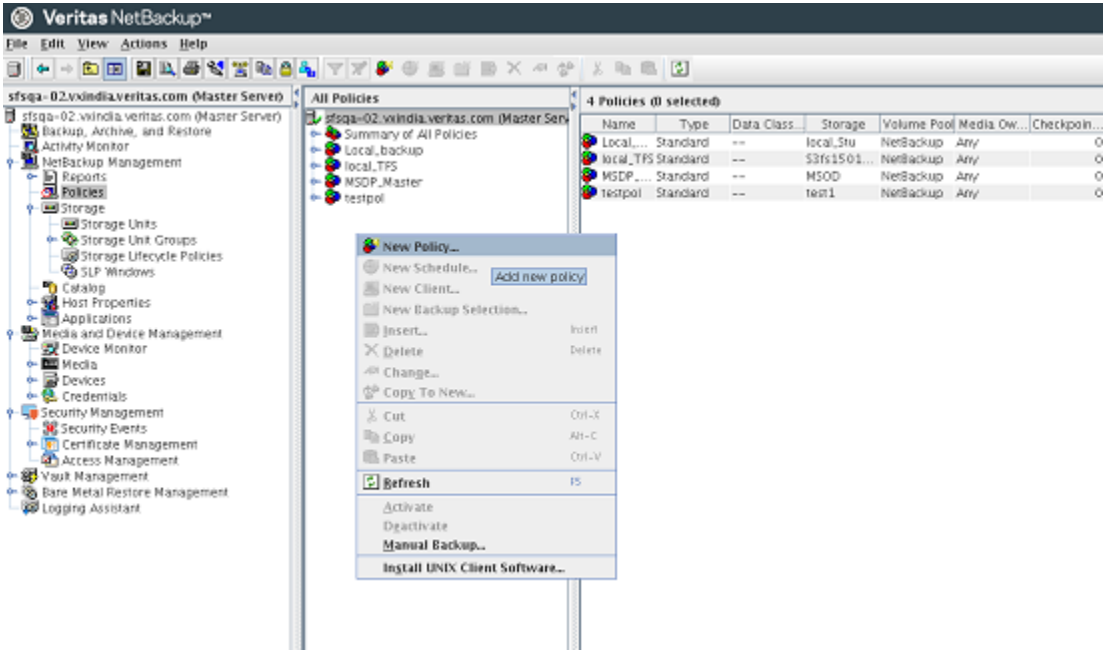
Backup and restore

After you complete the configurations, perform the following steps for backup and restore.

Policy creation

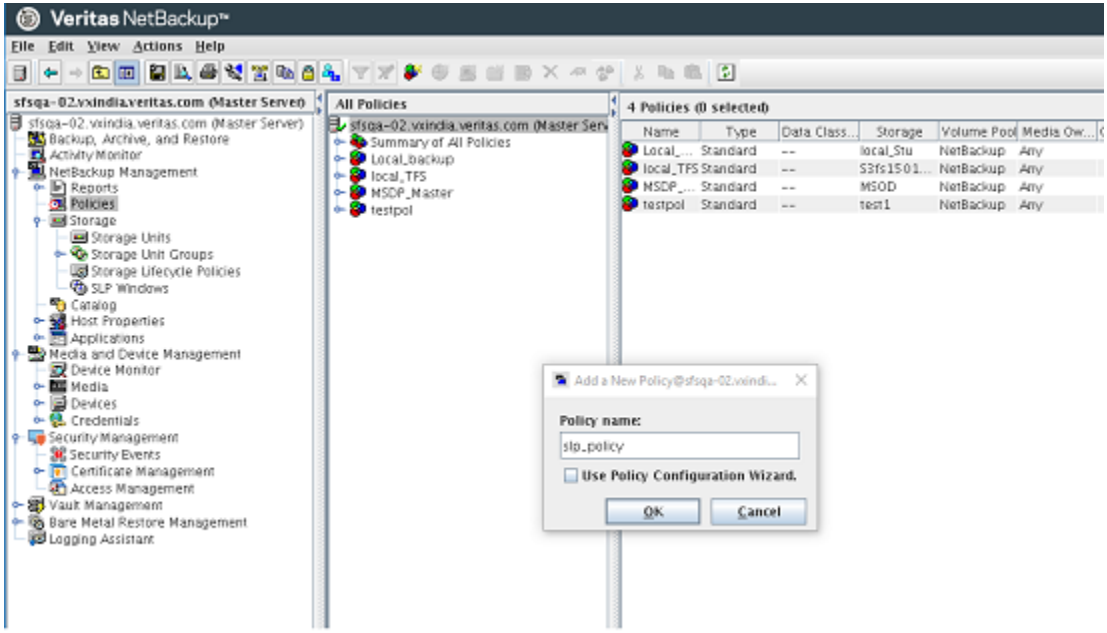
To create policies

1 Right-click on **Policies** within the NetBackup console and click on **New Policy**.



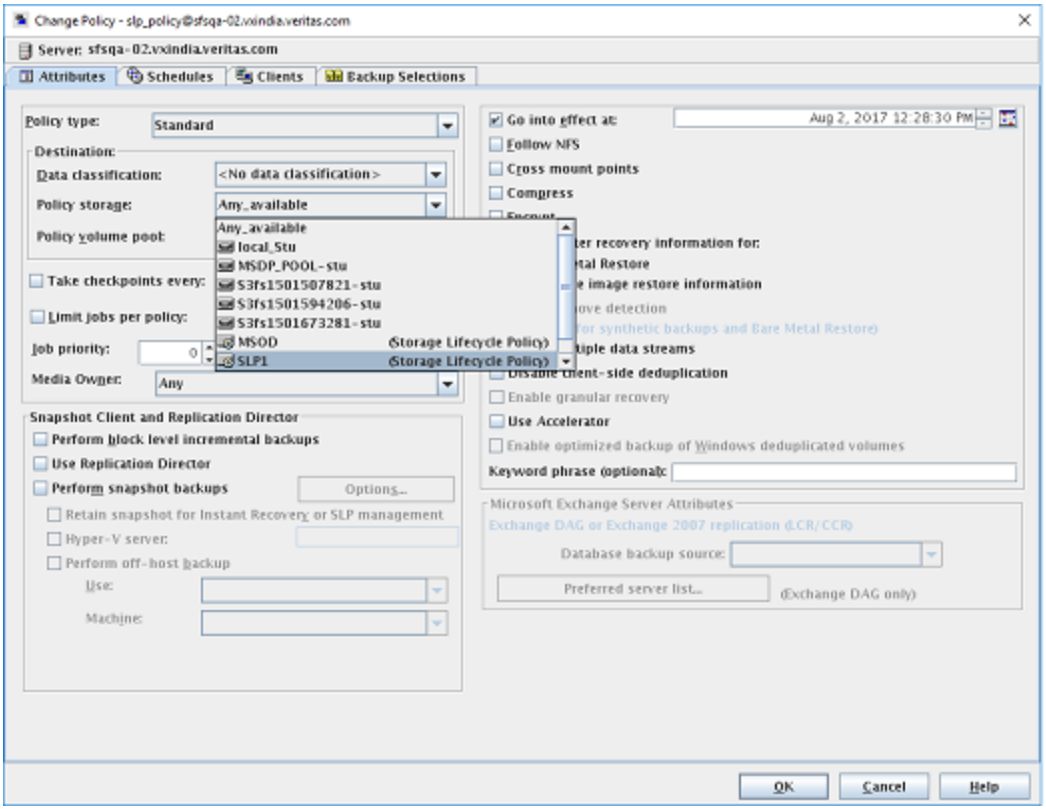
2 Provide the following information for policy creation.

- Policy name
- From the **Attributes** tab, select the appropriate storage unit under **Policy storage**.

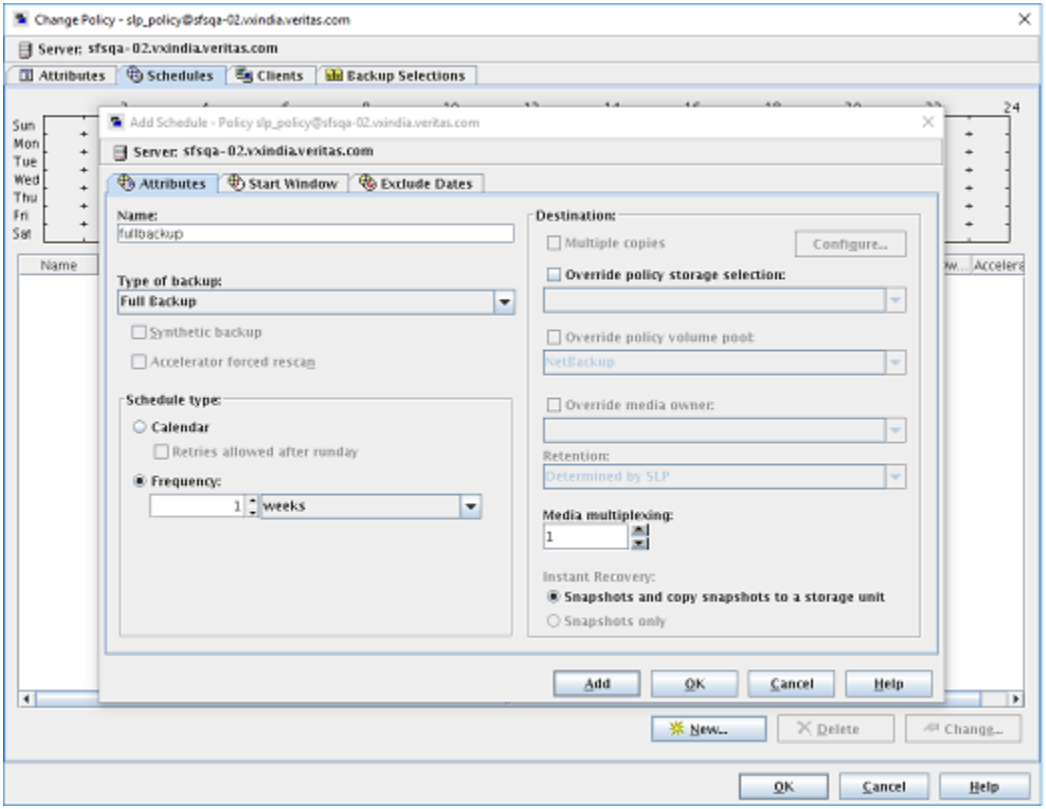

Veritas NetBackup™
File Edit View Actions Help
sfsqa-02.vxindia.veritas.com (Master Server)
sfsqa-02.vxindia.veritas.com (Master Server)
Backup, Archive, and Restore
Activity Monitor
NetBackup Management
Reports
Policies
Storage
Storage Units
Storage Unit Groups
Storage Lifecycle Policies
SLP Windows
Catalog
Host Properties
Applications
Media and Device Management
Device Monitor
Media
Devices
Credentials
Security Management
Security Events
Certificate Management
Access Management
Vault Management
Bare Metal Restore Management
Logging Assistant
All Policies
sfsqa-02.vxindia.veritas.com (Master Serv
Summary of All Policies
Local_backup
local_TFS
MSDP_Master
testpol
4 Policies (0 selected)
Name
Type
Data Class...
Storage
Volume Pool
Media Ow...
Local_...
Standard
--
local_Stu
NetBackup
Any
local_TFS
Standard
--
S3fs15 01...
NetBackup
Any
MSDP_...
Standard
--
MSOD
NetBackup
Any
testpol
Standard
--
test1
NetBackup
Any
Add a New Policy@sfsqa-02.vxindi...
Policy name:
slp_policy
Use Policy Configuration Wizard.
OK
Cancel

3 Under **Policy storage**, enter the name of the **Storage Lifecycle Policy** that was created.

See “Storage Lifecycle Policies” on page 64.

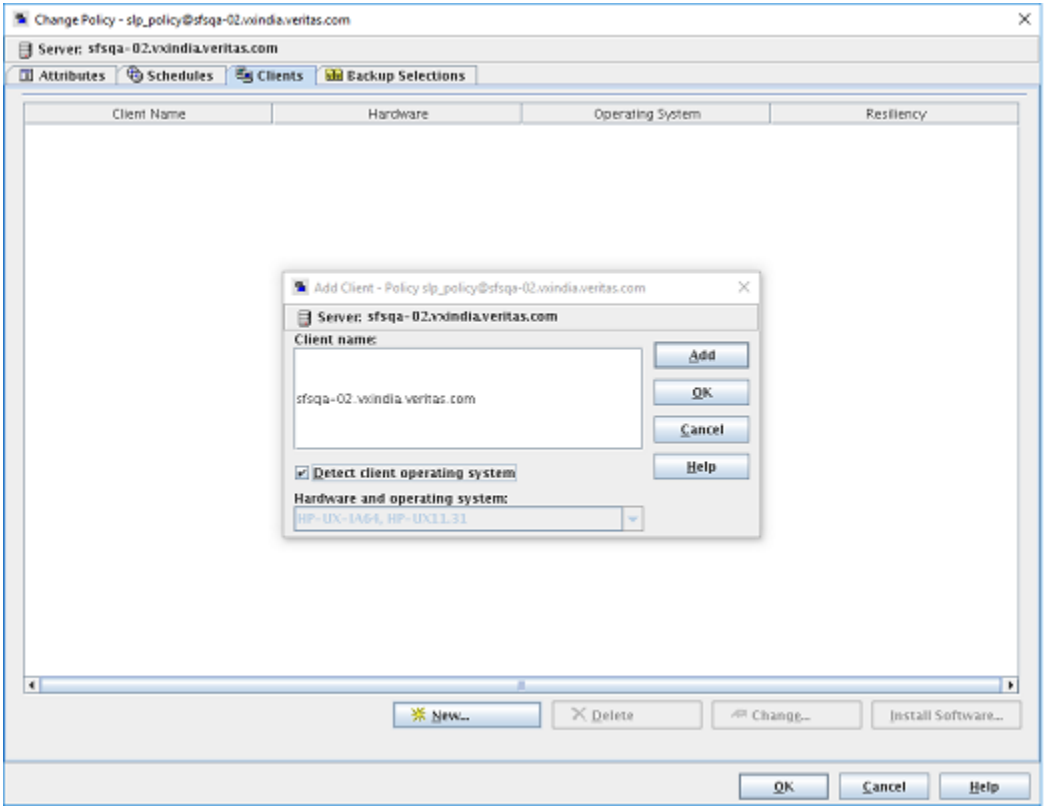


4 Enter the attribute information as per your requirement.

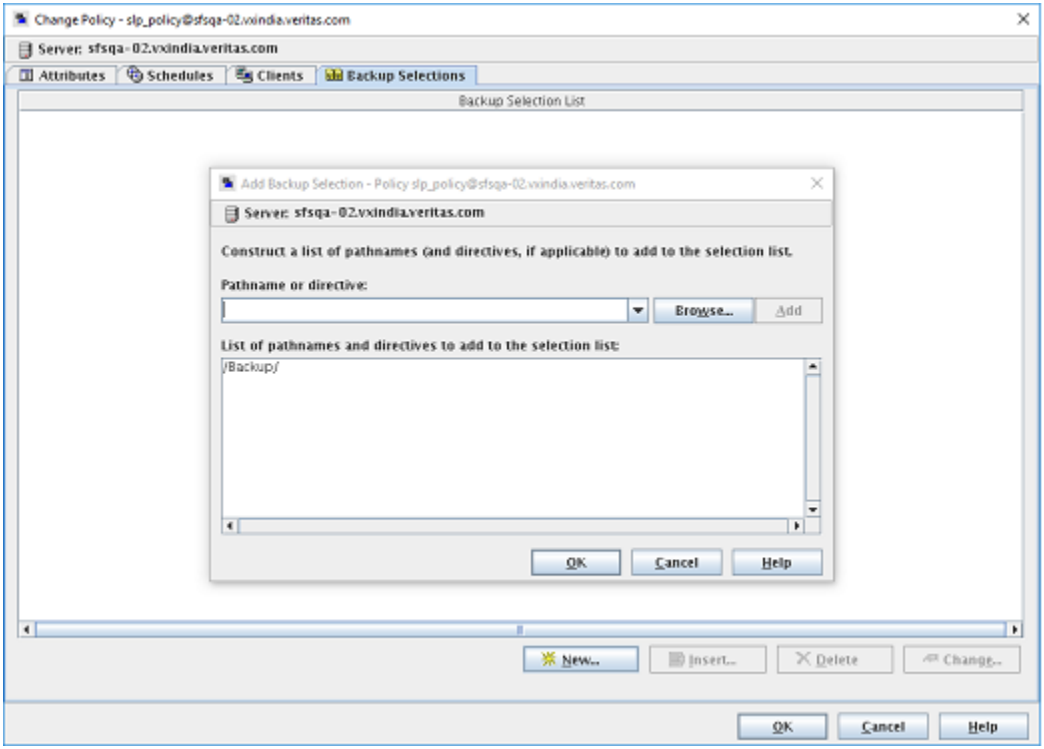


5 Under the **Schedule** tab, enter the name of the schedule. For example, **fullbackup**.

6 Enter the client information under the **Clients** tab.



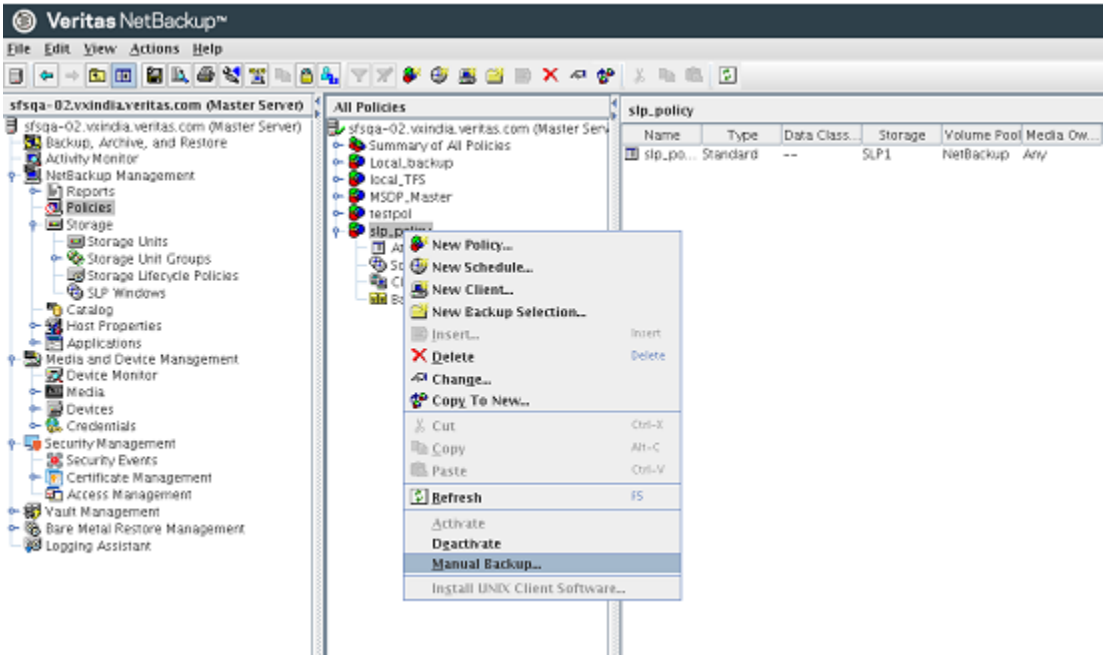
7 Select the folders that need to be backed up under **Backup Selections**.



Running a backup policy manually

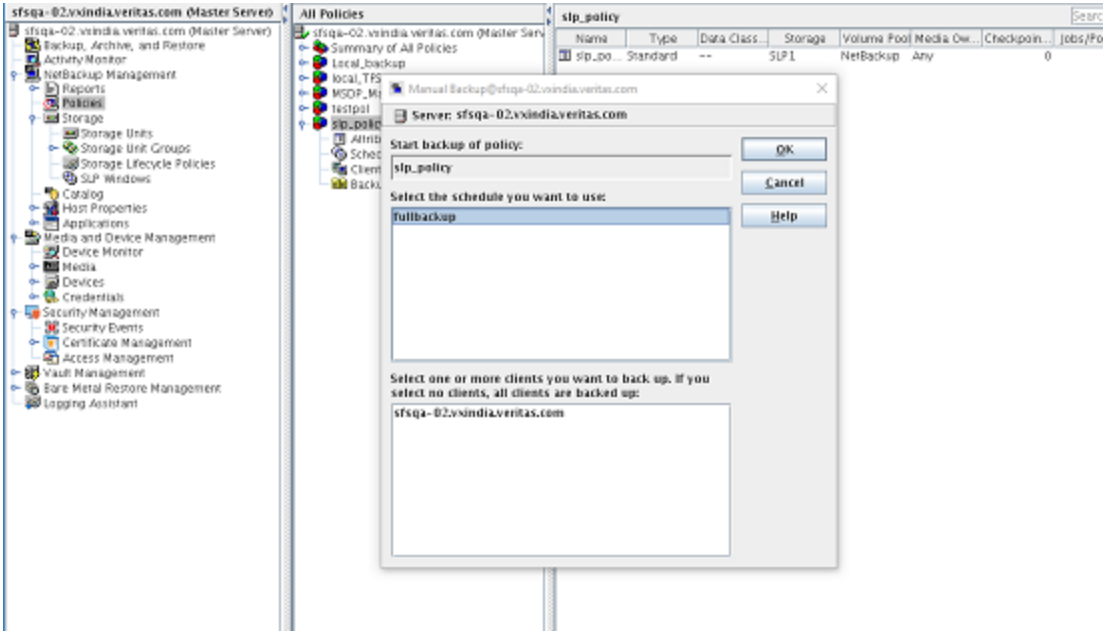
To run a backup policy manually

1 Once the policy is created, right-click on the name of the policy that you want to run under **Summary of All Policies**, and click on **Manual Backup**.

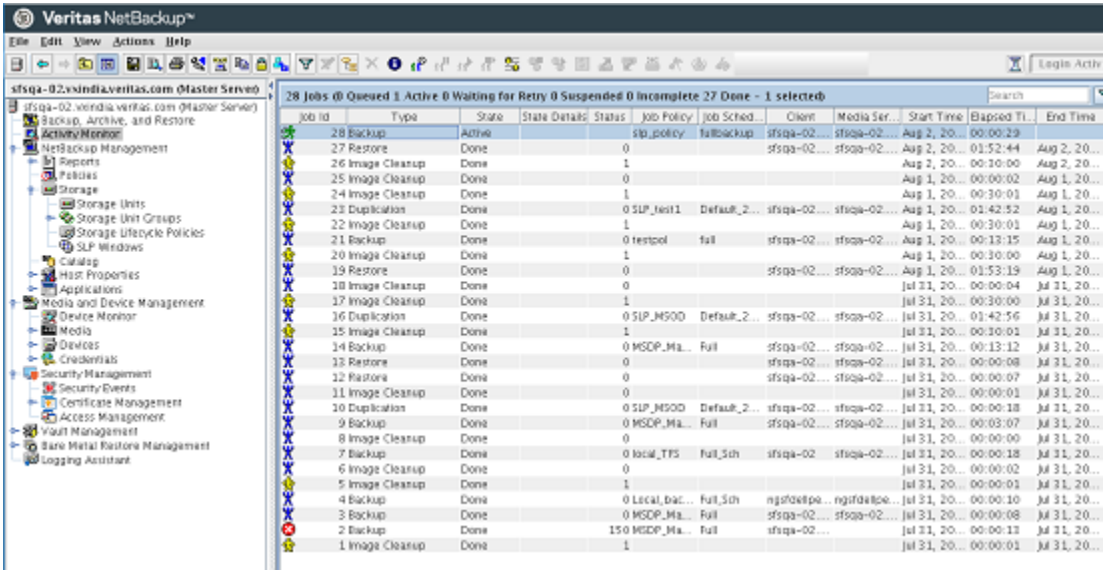


2 Select the schedule that you want to use and click **OK**.

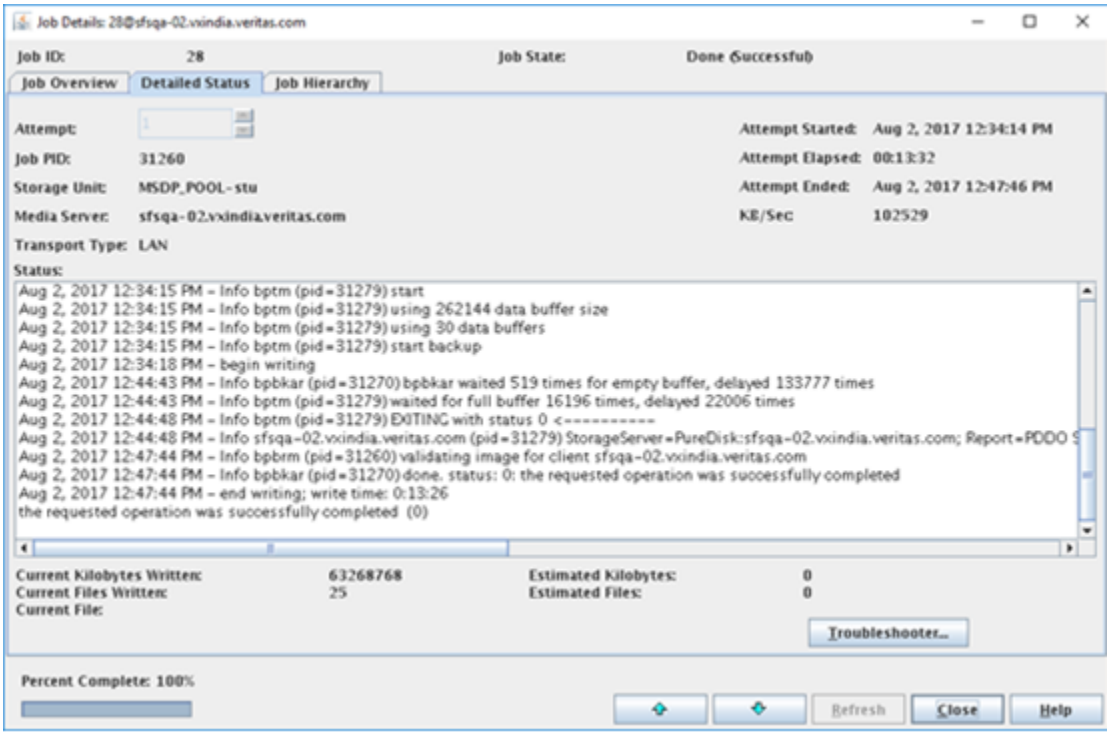
This starts the manual backup with the policy.



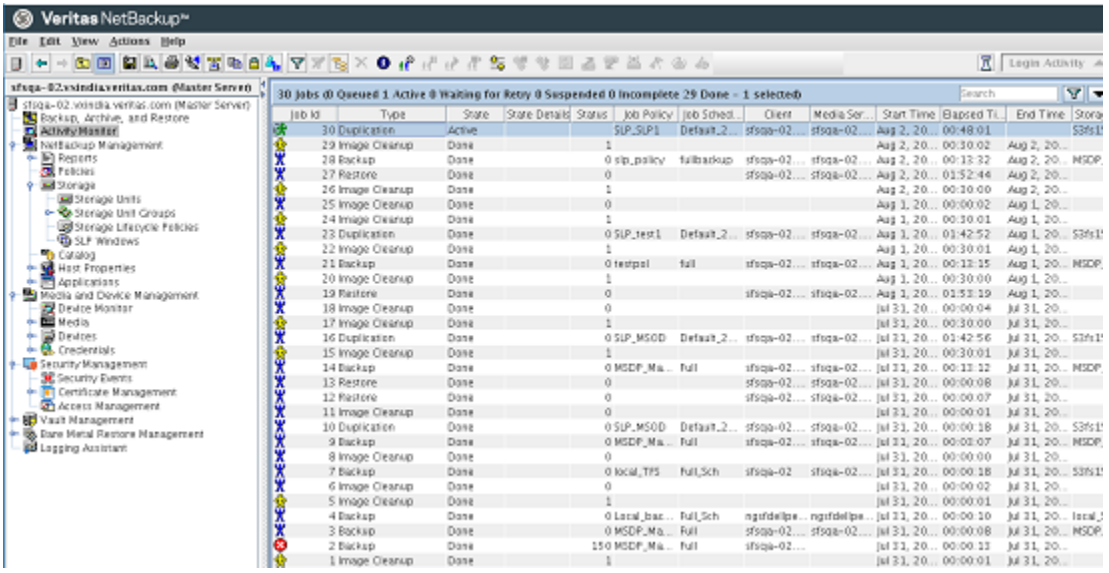
3 To verify the status of the backup, go to **Activity Monitor**.



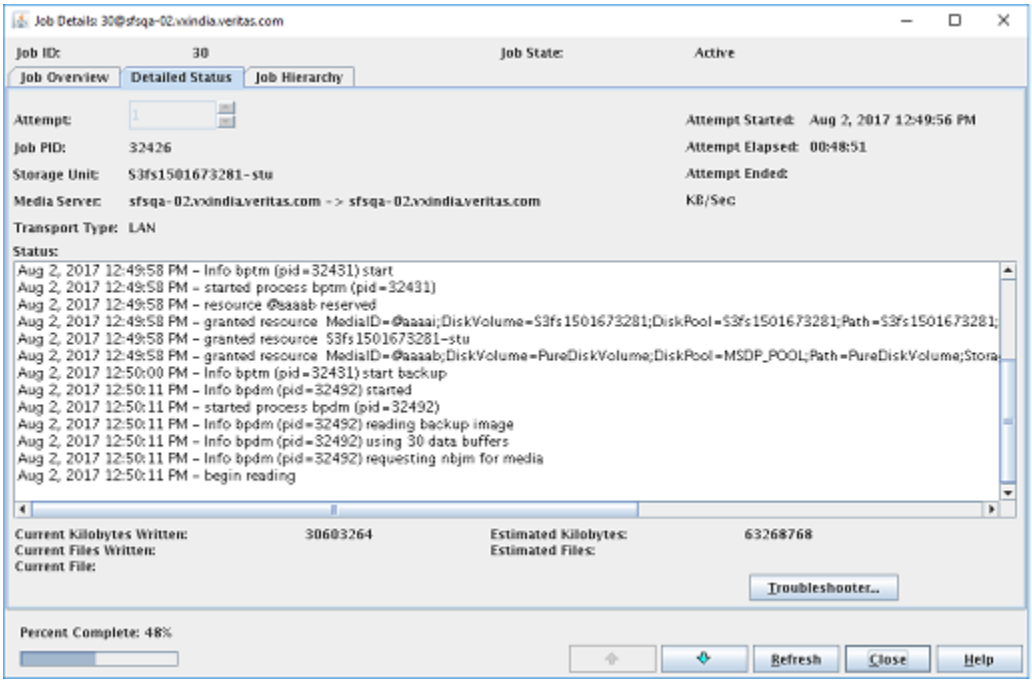
4 Select the appropriate job from the displayed jobs and click on the **Detailed status** tab in the new window to check on the status of the backup.



5 Once the above backup job is complete, a new duplication job is automatically triggered.



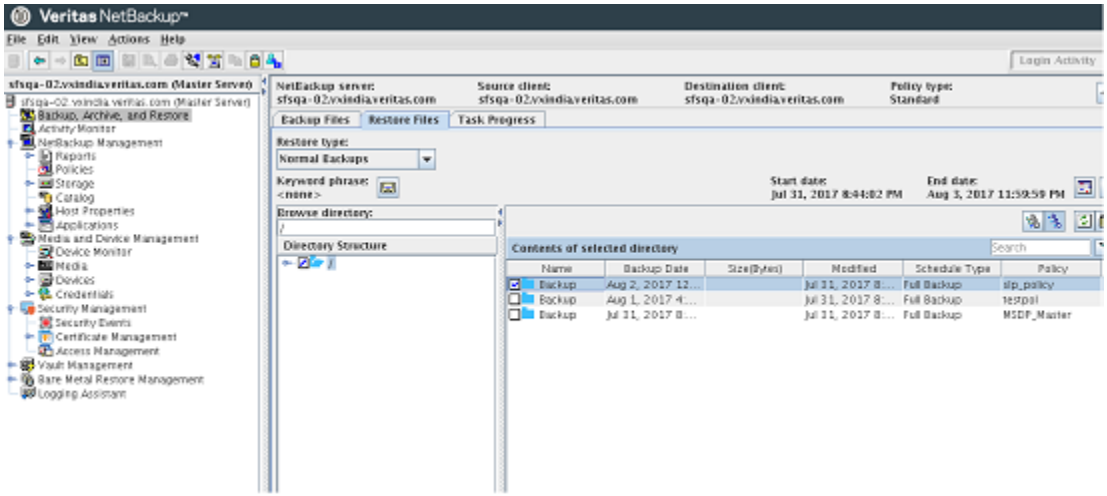
6 Click on that job and then select detailed status to check the status of the duplication job.



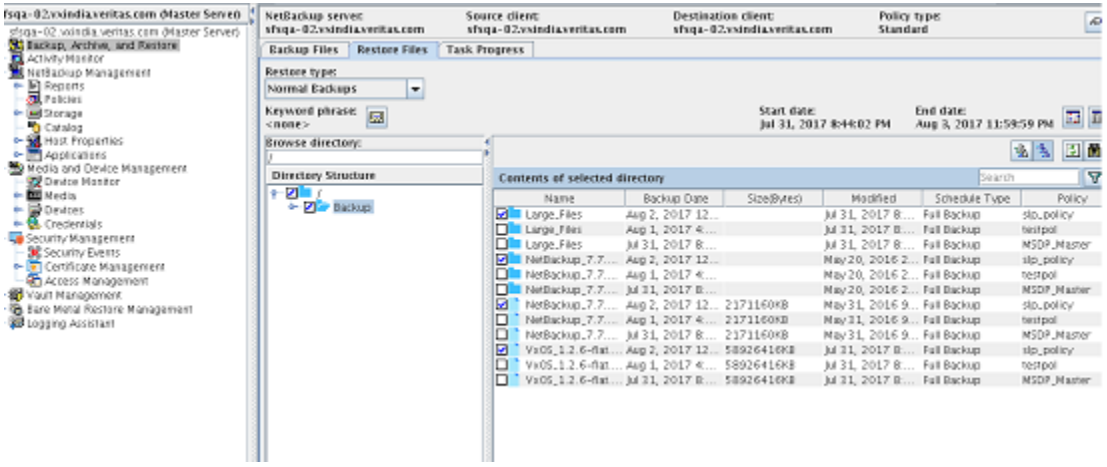
Restoring backed up files

To restore backed up files

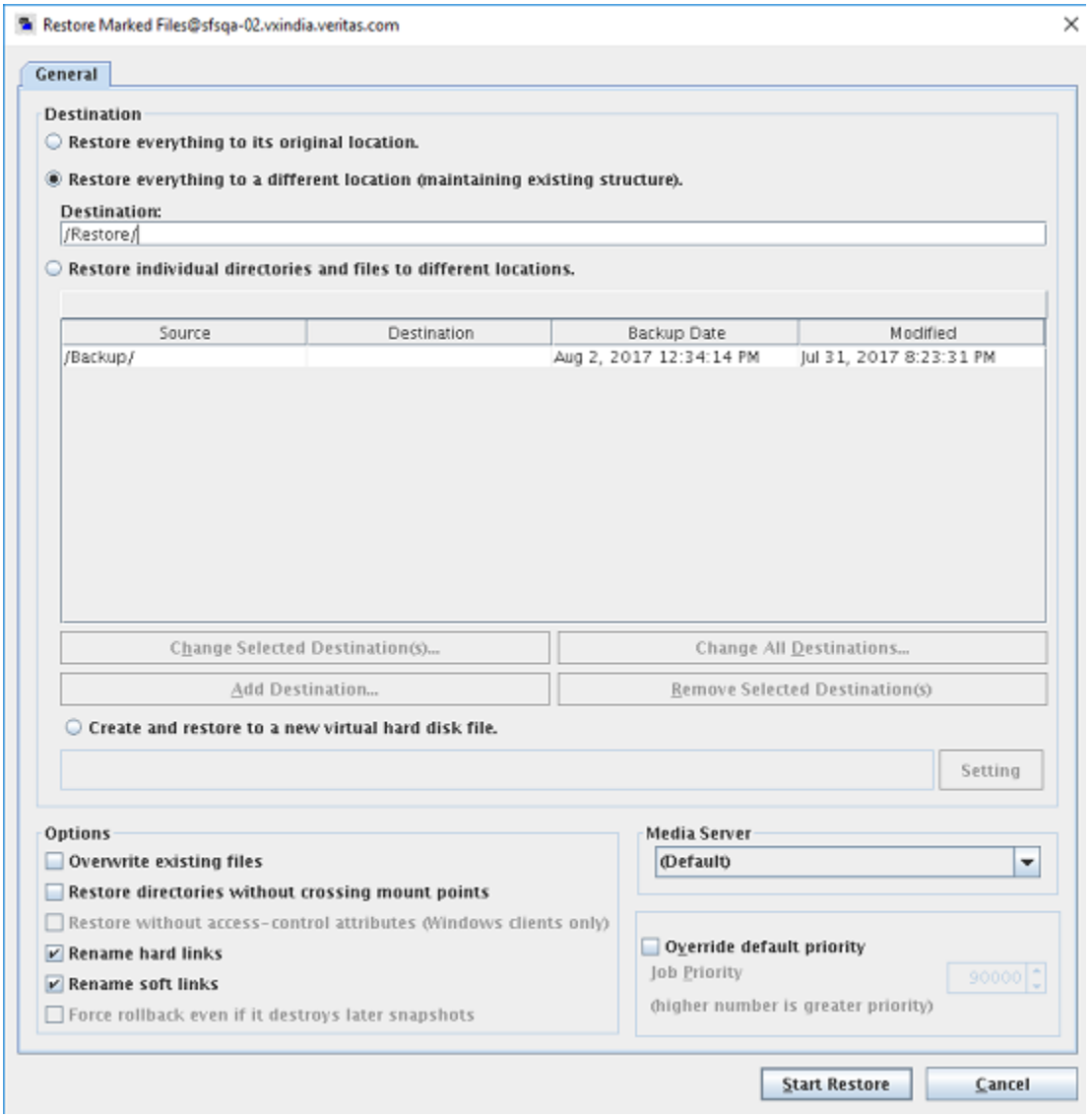
1. Create a directory where you want to restore the backed-up files.
2. Go to the **Restore Files** tab under **Backup, Archive, Restore**.



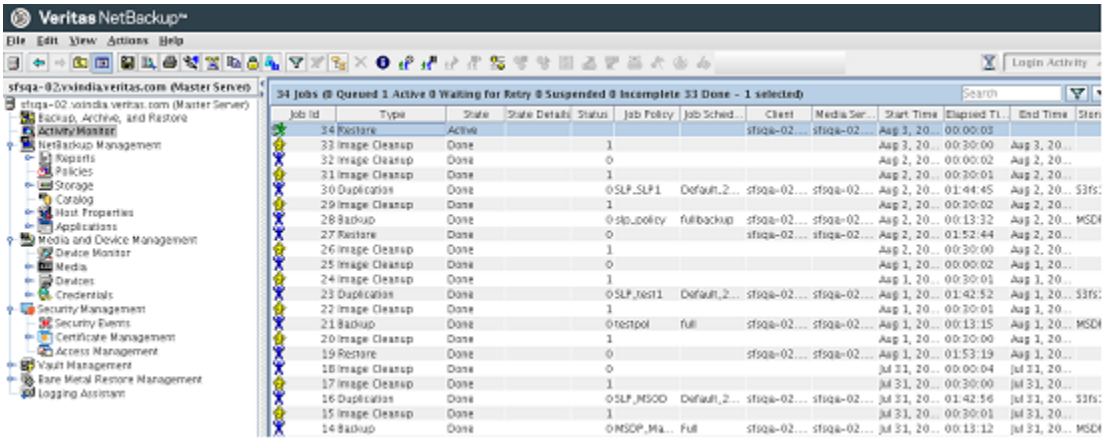
3. Go to the browse directory and select the appropriate files to restore and click **Restore**. The backup to be restored can reside either on NetBackup or on Veritas Access depending on the **Storage Lifecycle Policy** that is set. Hence, the restore location changes accordingly.



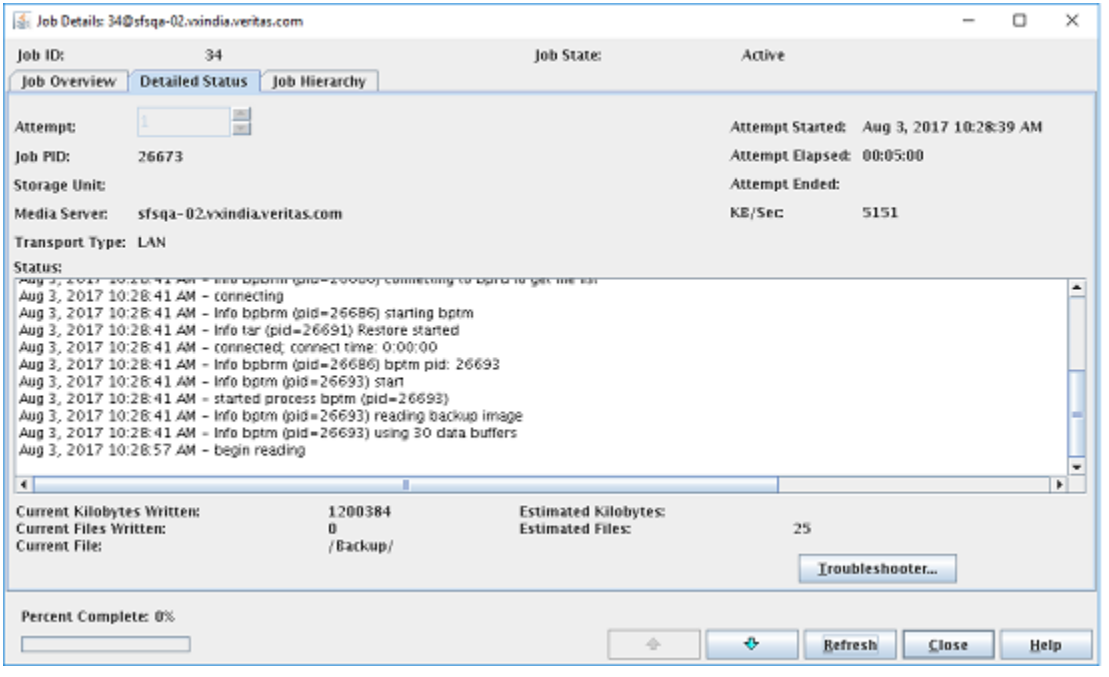
4 Enter the location where the files should be restored, and click on the **Start Restore** button.



5 To view the progress of the restore operation, click **Yes** on the **Restore Initiated** window.



6 You can view the progress of the restore operation under the **Detailed Status** tab.



Chapter 6

Troubleshooting

This chapter includes the following topics:

Unmounting the SDFS volume before restarting Veritas Access or the NetBackup media server

Before restarting Veritas Access or the NetBackup media server, create a backup copy of the SDFS volume and unmount the SDFS volume.

To perform a clean unmount of the SDFS volume

1. Create a backup copy of the SDFS volume .xml file in the `/etc/sdfs` directory.
2. Unmount the SDFS volume and wait for the `jsvc` process to exit before restarting Veritas Access.
3. In case of OpenDedup on Veritas Access, use the following command to offline the OpenDedup volume:

   ```
   # opendedup volume offline <vol_name>
   ```

   Where *vol_name* is the OpenDepdup volume.

Upgrading SDFS from earlier versions to 7.4.1

- If you are an existing customer and have taken backup with an SDFS version earlier than 7.3.1.2 , you have to set the `dist-layout` parameter to `false` in the extended config `volume.xml` file before mounting the SDFS volume.
- If you are an existing customer and have taken backup with SDFS 7.3.1.2 and later versions without setting the `dist-layout` parameter to `false`, and if there is a problem with restore, you have to unmount the SDFS volume, set the `retry-layout` parameter to `true` in the `volume.xml` file and remount the SDFS volume before you start restore.

  Note: The default value of the `dist-layout` parameter is `true`.

- If you are a new customer, no modification is required.

Sample from the `volume.log` file:

```
<extended-config allow-sync="false"
block-size="30 MB"
data-appendix=".data"
delete-unclaimed="true"
disableDNSBucket="false"
dist-layout="true"
retry-layout="true"
glacier-archive-days="0"
io-threads="16"
local-cache-size="10 GB"
map-cache-size="200"
read-speed="0"
refresh-blobs="false"
```

```
retry-layout="true"
simple-metadata="true"
simple-s3="true"
sync-check-schedule="4 59 23 * * ?"
sync-files="true"
upload-thread-sleep-time="10000"
use-basic-signer="true"
write-speed="0">
```

Log locations for troubleshooting

OpenDedup logs

- `/opt/VRTSnas/log/odd.log`
- `/opt/VRTSnas/log/odd-vcs.log`

Veritas Access S3 logs

- `/opt/VRTSnas/log/portald.log`
- `/opt/VRTSnas/log/portald_access.log`

SDFS logs

SDFS creates its logs under `/var/logs/sdfs/<volume-name>-volume-cfg.xml.log`. Errors can be identified in this log file.

OST plug-in logs

The OpenDedup OST plug-in log can be found in `/tmp/logs/opendedup.log`.

NetBackup logs

Pertinent OST-related errors and logging are trapped in the `bptm` log. NetBackup logging for `bptm` can be enabled by creating the `bptm` logging directory:

```
mkdir /usr/openv/netbackup/logs/bptm
```

Veritas Access support debug information upload command

```
CLISH> support debuginfo upload path
```

Changing log levels

The logging framework for SDFS is updated to log4j2. For SDFS 7.4.1 and later releases, changing the log levels using the `volume.xml` is not effective. You have to update the `/etc/sdfs/log4j2.xml` file.

To change the log level:

- Edit the `/etc/sdfs/log4j2.xml` file.
- Go to the `Loggers` section.
- Search for `Logger name="sdfs"`
- Set the level to an appropriate parameter.

For example:

```
<Loggers>
<Logger name="sdfs" additivity="false" level="debug">
<appender-ref ref="sdfsLog" />
```

The following log levels are available:

- `trace`
- `debug`
- `info`
- `warn`
- `error`
- `fatal`

You can find more details about the `log42.xml` parameters at https://logging.apache.org/log4j/log4j-2.2/manual/configuration.html.

Additional resources

See the following documentation for more information on Veritas Access, OpenDedup, and Veritas NetBackup:

- *Veritas Access Installation Guide* for the supported NetBackup clients and the OpenDedup ports.
- *Veritas Access Troubleshooting Guide* for setting the NetBackup client log levels and debugging options.
- Veritas NetBackup product documentation on the SORT website.

- OpenDedup product documentation on the OpenDedup website.

Generating Veritas Access S3 server keys using the helper script

Create the access and the secret keys using the Veritas Access helper script in case you do not want to use the Active directory Domain user to create and own the buckets. This is an alternative way to get the Veritas Access S3 server credential keys.

- Location of the helper script:
  `/opt/VRTSnas/scripts/utils/objectaccess/objectaccess_client.py`
- The Veritas Access helper script can be used from any client system that has Python installed.
- To run the script, your S3 client needs to have the `argparse` and `requests` Python modules.
  If these modules are missing, install both these modules using `pip` or `easy_install`.
- Add the ADMIN_URL name in your `/etc/hosts` file.
  where the *ADMIN_URL* is admin.<*cluster_name*> and the port is 8144. This url should point to the Veritas Access management console IP address.
- Create the access and the secret key using the Veritas Access helper script by providing the user name, password, and ADMIN_URL (check the online Help of the Veritas Access helper script for all of the provided operations like `list key` and `delete key`).
  Create a secret key:

```
clus_01:~ # ./objectaccess_client.py --create_key
--server admin.clus:8144 --username localuser1 --password root123
--insecure
UserName                : localuser1
AccessKeyId             : Y2FkODU2NTU2MjVhYzV
Status                  : Active
SecretAccessKey         : ODk0YzQxMDhkMmRjM2M5OTUzNjI5OWIzMDgyNzY
```

  The <*localuser1*> is the local user created on both the Veritas Access cluster nodes with same unique ID.
  List a secret key for the specified user:

```
clus_01:~ # ./objectaccess_client.py --list_key --server
admin.clus:8144 --username localuser2 --password root123 --insecure
```

Delete a secret key for the specified user:

```
clus_01:~ # ./objectaccess_client.py --delete_key
ZTkyNDdjZTViM2EyMWZ --server admin.clus:8144 --username localuser2
--password root123 --insecure
```

- If the object server is enabled without the `SSL` option, you need to add the `--insecure` option.

```
clus_01 ~# ./objectaccess_client.py --server
admin.clus:8144 --username <uname> --create_key --insecure
```

OpenDedup tuning recommendations

OpenDedup has a flexible design which can span from small users to large data enterprises. You can tune OpenDedup as per your requirements to serve your use-case. Veritas recommends that you perform the following tuning before you start using the LTR solution.

Table 6-1 XML tags

XML parameter	Value
max-open-files	200
write-threads	32
io-threads	64 (within extended config)
map-cache-size	1024
local-cache-size	500 GB (as per your local cache)
sync-on-write	false
refresh-blobs	true (only to be set when Glacier cloud tier is used)
glacier-archive-days	30 (only to be set when Glacier cloud tier is being used)
sync-files	true (within extended config)
chunk-size	40960
hash-type	VARIABLE_MD5

Table 6-1 XML tags *(continued)*

XML parameter	Value
`max-file-writebuffers`	80

On the media server for the ODD-on-Media_Server use case:

```
# echo "* hard nofile 65535" >> /etc/security/limits.conf
# echo "* soft nofile 65535" >> /etc/security/limits.conf
# exit
```

Based on the system workload, ensure that the number of portal threads are increased (on Veritas Access):

```
/opt/VRTSnas/conf/portald.conf >> cf_max_s3_threads
```

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