Veritas Access Appliance 8.0 Solutions Guide for NetBackup

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VERITAS™

Access Appliance Solutions Guide for NetBackup

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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

Access Appliance integration with NetBackup

This chapter includes the following topics:

About Access Appliance as a NetBackup client

Access Appliance is integrated with Veritas NetBackup so that a NetBackup administrator can back up your Access Appliance file systems to NetBackup primary 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 Access Appliance. The NetBackup primary and media servers that run on separate computers from Access Appliance are licensed separately from Access Appliance.

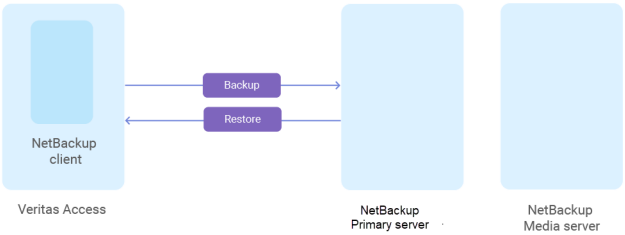
You can configure NetBackup domain information using the command-line interface (CLI)

The Veritas Access command-line interface 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.

See “Configuring Access Appliance for NetBackup client” on page 117.

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 Access Appliance.

Figure 1-1 Backing up Access Appliance using NetBackup



About Access Appliance as backup storage for NetBackup

This document describes how Access Appliance 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.

Access Appliance is based on the rock-solid and industry-proven Veritas CFS stack. It offers an AWS-compatible S3 protocol as object storage for NetBackup. Access Appliance also provides deduplication storage for NetBackup by using the NetBackup MSDP.

Use cases for long-term data retention

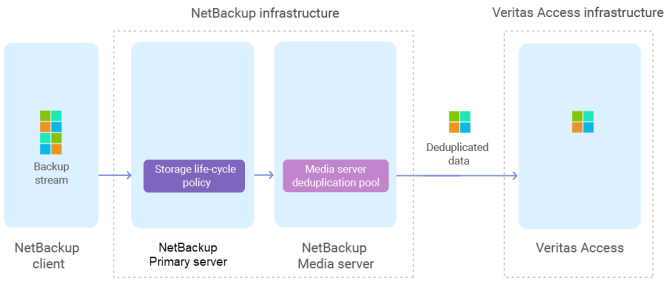
The following are the use cases for long-term data retention (LTR) using Access Appliance:

Use Case: Access Appliance with Veritas Data Deduplication

- Veritas Data Deduplication technology is installed on top of Access Appliance and integrates with NetBackup. It catalogs and organizes incoming deduplicated backup data and stores it on Access Appliance storage.
- MSDP deduplicates the primary backup data and stores it on the NetBackup server.
- The same deduplicated data is sent to Access Appliance for long-term retention purpose using SLPs through duplication jobs.

- Veritas Data Deduplication can also act as a source or destination while replicating deduplicated data using Auto Image Replication (AIR).

Figure 1-2 Access Appliance Veritas Data Deduplication with NetBackup

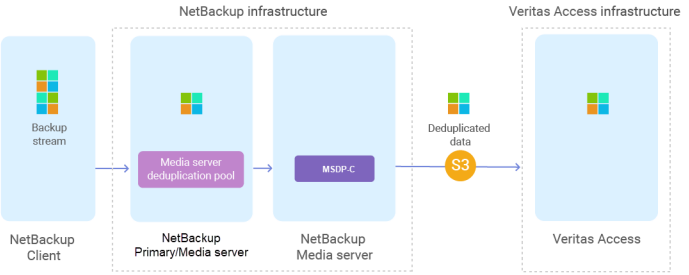


Use Case: Access Appliance with MSDP-C

- MSDP deduplicates the primary backup data and stores it on the NetBackup server.
- The same deduplicated data is moved to Access Appliance through SLP using MSDP-C.

See "Configuring Access S3 bucket with NetBackup MSDP-C" on page 97.

Figure 1-3 NetBackup MSDP-C over Access Appliance Object Access protocol (S3)



Note: If you want to use 2.4 PiB of storage, configure Veritas Data Deduplication with 1.2 PiB storage and configure MSDP-C with two buckets of size 600 TB each. Use the virtual IP of one node for Veritas Data Deduplication and use the virtual IP of another node for MSDP-C.

Note: Veritas does not support a deduplication pool of size greater than 1.2 PiB.

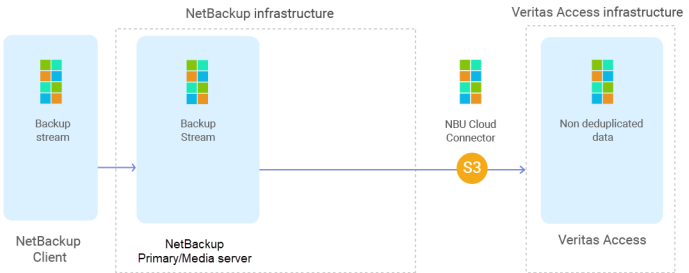
Use Case: Access Appliance as an S3 connector

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

Or

- MSDP duplicates the primary backup data and stores it on the NetBackup server.
- The deduplicated data is rehydrated and then moved to Access Appliance through SLP over the Access Appliance S3 protocol.

Figure 1-4 Backup data stored in non-deduplicated format on the NetBackup server as primary backup and the same backup data duplicates to Access Appliance over Access S3 protocol.



Note: Configurations and use cases beyond storing copies for long term retention periods require a Support Exception. Please contact your Veritas representative for details on the Support Exception approval process.

Chapter 2

System requirements

This chapter includes the following topics:

Supported configurations and versions for NetBackup with Veritas Data Deduplication

Table 2-1 Supported versions of NetBackup for Veritas Data Deduplication without WORM

Access Appliance	Veritas NetBackup primary servers	Veritas NetBackup media servers
8.0	8.3.x..x, 9.0.x.x, 9.1.x.x, 10.0.x.x and later versions	8.3.x..x, 9.0.x.x, 9.1.x.x, 10.0.x.x and later versions

Note: The version of the media server should be the same as or lower than the version of the primary server.

Table 2-2 Supported versions of NetBackup for Veritas Data Deduplication with WORM

Access Appliance	Veritas NetBackup primary servers	Veritas NetBackup media servers
8.0	10.0.x.x and later versions	10.0.x.x and later versions

Supported configurations and versions for NetBackup with MSDP-C

Table 2-3 Supported versions of NetBackup for MSDP-C without WORM

Access Appliance	Veritas NetBackup servers
8.0	9.0 and later versions

Table 2-4 Supported versions of NetBackup for MSDP-C with WORM

Access Appliance	Veritas NetBackup servers
8.0	10.0 and later versions

Chapter 3

Configuring Veritas Data Deduplication with Access Appliance

This chapter includes the following topics:

About Veritas Data Deduplication

Access Appliance is integrated with a duplication engine which is based on Media Server Deduplication Pool (MSDP) technology for storing backup data. The storage server component of Veritas Data Deduplication runs on the Access Appliance nodes with high availability in active/passive mode. The deduplication plug-in of the NetBackup media server does segmentation and finger printing of the backup data and sends the deduplicated data to Access Appliance. The Veritas Data Deduplication storage server stores and manages the deduplicated data. The deduplication storage server provides high availability to protect against storage, node, and network failures. It supports client direct as well as media server deduplication configurations.

Considerations before configuring Veritas Data Deduplication:

- All storage that is provisioned for Veritas Data Deduplication is displayed as a single storage pool on NetBackup.
- Access Appliance supports only a single storage pool for Veritas Data Deduplication and it requires minimum (or multiple) of five disks in the storage pool.

Benefits of using Veritas Data Deduplication with Access Appliance

- Capability of writing the deduplicated data from the media server to Access Appliance.
- Support global deduplication across media servers within the same domain and across different NetBackup domains.
- The storage server components reside directly on the Access Appliance nodes with high availability in active/passive mode to protect against storage, node, and network failures.
- Includes WORM storage that provides immutable and indelible data protection, ensuring data cannot be changed for a determined length of time to protect data against cyber criminal intrusion and internal threats.
- All software meet stringent security standards and are Federal information Processing Standard (FIPS) 140-2–compliant.

Configuring Veritas Data Deduplication without WORM

You can configure Veritas Data Deduplication without WORM using the Access Appliance GUI as well as command-line interface. Veritas recommends that you configure Veritas Data Deduplication usng the GUI as it ensures that the configuration is performed with the appropriate filesystem size, and volume layout along with catalog filesystem creation.

You can configure Veritas Data Deduplication without WORM when the lockdown mode is Normal, Enterprise or Compliance.

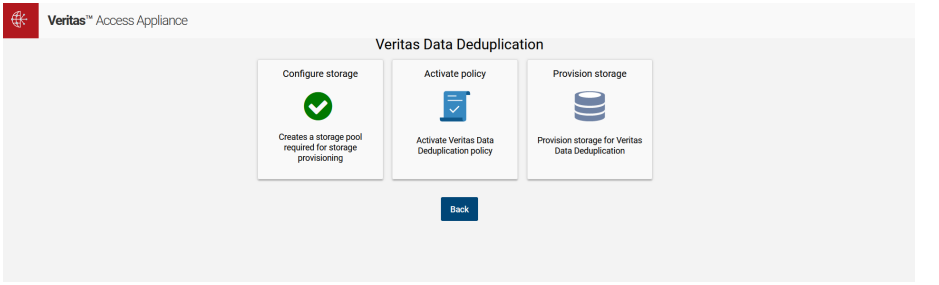
For more information, see the *About lockdown modes* section in the *Access Appliance Administrator's Guide*.

Configuring Veritas Data Deduplication using the GUI

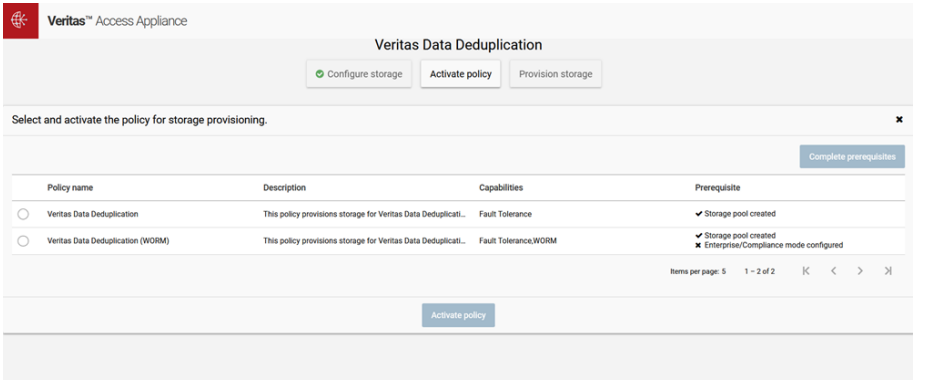
This section describes how you can configure Veritas Data Deduplication using the Access Appliance GUI.

To configure Veritas Data Deduplication

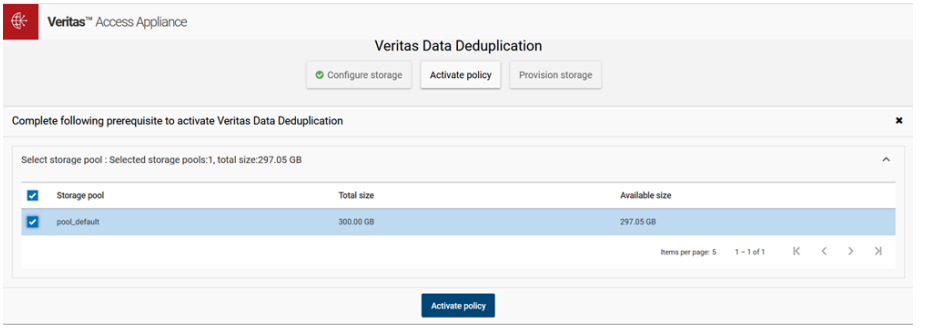
1. Log on to the **Access Appliance** application.
   - The **Getting Started** page is displayed when you login for the first time. Click **Veritas Data Deduplication**.
   - Or, navigate to **Quick Actions > Provision Storage > Storage for NetBackup > Veritas Data Deduplication**.
   - Or, navigate to **Settings > Veritas Data Deduplication Management**.
2. A default storage pool is created at the time of initial configuration with all the available disks.



3 Under the **Activate Policy** tab, select the Veritas Data Deduplication policy.



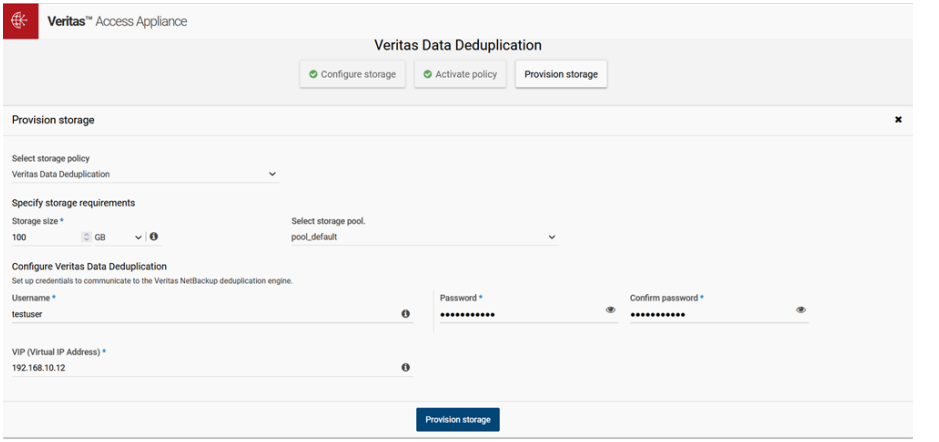
4 Complete all the prerequisites such as, selecting the storage pool to activate the Veritas Data Deduplication policy and click **Activate policy**.



After the policy is activated, click **Finish**.

5 Under the **Provision storage** tab, specify all the required fields.

Select storage policy	From the dropdown menu, choose `Veritas Data Deduplication policy`.
Storage size	Mention the capacity for Veritas Data Deduplication storage (size should be less than 1.2 PiB)
Select storage pool	Specify the name of the storage pool.
Username	Specify the username to be used
Password/Confirm Password:	Enter the password for the above username
VIP (Virtual IP address)	Specify a free virtual IP from the cluster (this IP should not be used by any protocol on the cluster) You can check if an IP is used by CIFS using the `cifs share show <sharename>` command. Run the `network ip addr show` command from the Access command-line interface to find an available virtual IP address. Or navigate to **Infrastructure** > **Nodes** in the GUI, and click on the node name to see the virtual IP address. If a virtual IP is not available to configure the Veritas Data Deduplication server, you should add at least one virtual IP to the cluster using the Access command-line interface.



Click **Provision storage**.

View the **Recent Activity** panel for the status of the task.

The storage provisioning is now complete.

An alert appears in the GUI when the memory usage of the Veritas Data Deduplication server is more than 75%. The alert displays the amount of memory used and the total RAM usage. If the situation persists for more than 24 hours, an AutoSupport alert is raised and an email is sent.

If you receive this alert, go to **Settings** > **Veritas Data Deduplication management** and restart the service once you reach this threshold. For information about the issues that are caused when the Veritas Data Deduplication service consumes large amount of memory, see https://www.veritas.com/support/en_US/article.100045745.

Configuring Veritas Data Deduplication using the Access CLISH

This section describes how you can configure Veritas Data Deduplication without WORM using the Access Appliance command-line interface.

You can use the `dedupe> config` command to configure the deduplication storage server using the given set of filesystems and IP address.

Prerequisites:

- The filesystem should be striped and should be already created with size not exceeding 100 TiB and the IP should be online before you start configuring Veritas Data Deduplication.
- If the total deduplication pool size required is larger than 100 TiB, then create multiple data filesystems.
- The total data filesystem size should not exceed 1.2 PiB.
- The data filesystems are used to store the deduplicated data and its metadata.
- You are required to create a separate catalog file system to store the Veritas Data Deduplication catalog. The minimum size of the catalog file system should be 5 TiB.
- The deduplication storage server uses the specified IP address to receive the backup data from NetBackup.

To configure the deduplication storage server

- To configure the first deduplication storage server, enter the following:

  ```
  dedupe> config filesystem1[,filesystem2,...] IP username
  [catfs_name]  [worm=no] [minret] [maxret]
  ```

  Where:

filesystem1, filesystem2,...	Specifies the data filesystem names.
IP	Specifies the interface IP. You can check for the IP using the `network IP address show` command.
username	Specifies the username.
catfs_name	Specifies the catalog filesystem of the deduplication server.
worm	Enables WORM. The possible values are `enable_worm=yes/enable_worm=no`. This is an optional parameter.
minret	Specifies the minimum image retention period. This is an optional parameter.
maxret	Specifies the maximum image retention period. This is an optional parameter.

  You are prompted to enter your password. After you specify your password, Veritas Data Deduplication is configured.

  Note: Make a note of the password that you use. You have to use the same password when you configure the storage server on NetBackup and also when you reconfigure Veritas Data Deduplication.

Note: Configuring Veritas Data Deduplication requires an FQDN entry which resolves to a specific IP. You can either have a DNS entry or you can add an entry in the `/etc/hosts` file of both the NetBackup media and primary servers.on all the nodes to resolve the FQDN to a specific IP.

Note: If you want to configure deduplication with an IPv6 IP, you are required to have an FQDN entry which resolves to the specific IP. The FQDN should be resolvable on both Access Appliance and NetBackup. You can either have a DNS entry or you can add an entry in the `/etc/hosts` file of the NetBackup servers on all the nodes to resolve the FQDN to a specific IP.

Note: If you have to reconfigure deduplication, you have to pass all the filesystems in the same order that is displayed in the output of the `dedupe show` command before deduplication was unconfigured.

You must use the same username and password that you used when you initially configured deduplication.

If a new IP is used for the deduplication server during reconfiguration, the new IP should map to the old FQDN. You can either have a DNS entry or add an entry in the /`etc/hosts` file on all the nodes to resolve the FQDN to a specific IP.

Configuring Veritas Data Deduplication with WORM

You can configure Veritas Data Deduplication with WORM using both the Access Appliance GUI and command-line interface. Veritas recommends that you configure Veritas Data Deduplication usng the GUI as it ensures that the configuration is performed with the appropriate filesystem size, and volume layout along with catalog filesystem creation.

You can configure Veritas Data Deduplication with WORM when the lockdown mode is Enterprise or Compliance.

For more information, see the *About lockdown modes* section in the *Access Appliance Administrator's Guide*.

Only a single Veritas Data Deduplication pool is supported on Access Appliance. Veritas does not support converting an existing Veritas Data Deduplication pool (without WORM) to a Veritas Data Deduplication pool with WORM.

If you want to use the same appliance to configure a Veritas Data Deduplication pool with WORM, you must do the following:

- Duplicate the data to another storage unit.
- Expire all images from the Access Appliance deduplication pool.
- Unconfigure and destroy the file systems.

You cannot convert non-WORM images to WORM images directly. But it is possible to convert the images using other methods. For example, you can provision an MSDP-C instance using Access appliance if there is enough space to store a copy of the data present in Veritas Data Deduplication. You can also provision another Access Appliance with Veritas Data Deduplication and duplicate all images onto it. After duplicating the images to another storage unit, you can expire the images from Veritas Data Deduplication and unconfigure it. Then, you can proceed to configure Veritas Data Deduplication in WORM mode and duplicate the data back to the Access Appliance with WORM protection. After the configuration, the server is WORM-enabled but the existing images are not WORM-enabled.

Configuring Veritas Data Deduplication with WORM using GUI

This section describes how you can configure Veritas Data Deduplication with WORM using the Access Appliance GUI.

To configure Veritas Data Deduplication

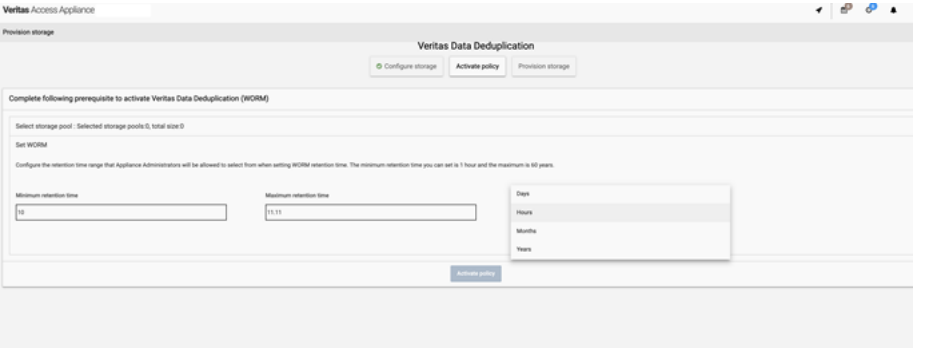
1. Log on to the Access Appliance application.

   Select the **Quick Actions** icon present on the dashboard page, and navigate to **Provision Storage > Storage for NetBackup > Veritas Data Deduplication**. Click **Next**. You have to use this option if any instance of Veritas Data Dedupication is already present on the cluster.

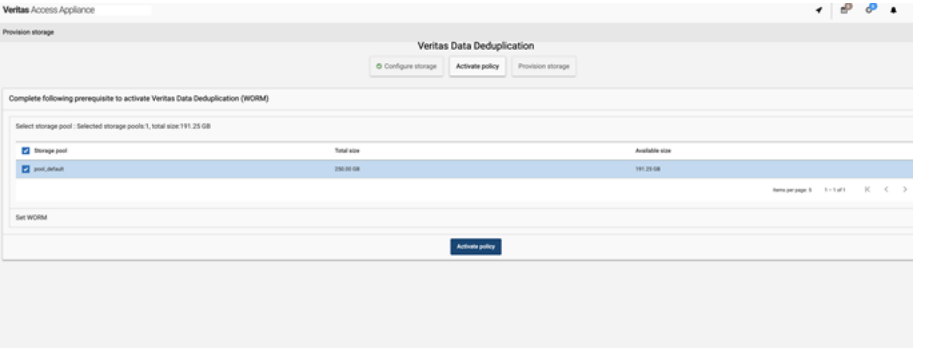
   Or, navigate to **Settings > Veritas Data Deduplication Management**. Click **Configure**. This option is available only if no Veritas Data Dedupication instances are present on the cluster.

   If you want to configure lockdown mode, refer to the *About lockdown modes* section in the *Access Appliance Administrator's Guide*.

2. Under the **Activate Policy** tab, enter the required details to activate the policy. Specify the maximum and minimum retention period. The retention period range is between 1 hour and 60 years.



3 Select the storage pools and click **Activate policy**.

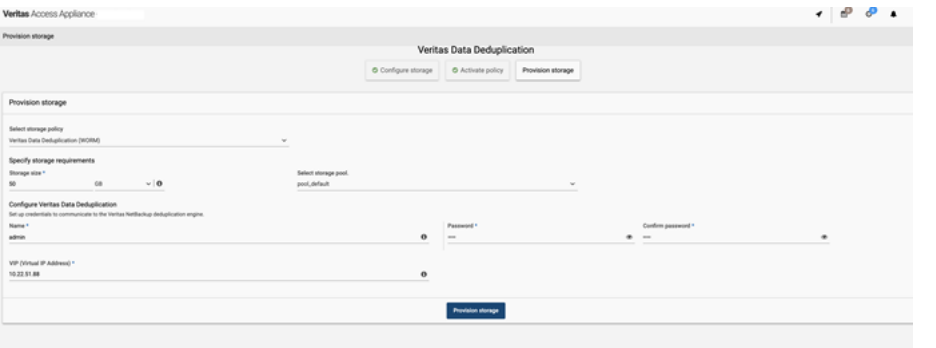


The Veritas Data Deduplication policy is activated.

4 In the **Provision storage** page, select the Veritas Data Deduplication (WORM) policy and specify the storage requirements. Enter the required information.

Select storage policy	From the dropdown menu, choose the relevant Veritas Data Deduplication policy (WORM)
Storage size	Mention the capacity for Veritas Data Deduplication storage (size should be less than 1.2 PiB)
Username	Specify the username to be used
Password/Confirm Password:	Enter the password for the above username
VIP (Virtual IP address)	Specify a free virtual IP from the cluster (this IP should not be used by any protocol on the cluster). You can find this IP using the `network IP address` command.

Click **Provision storage**.



View the **Recent Activity** panel for the status of the task.

Configuring Veritas Data Deduplication with WORM using the Access CLISH

This section describes how you can configure Veritas Data Deduplication with WORM using the Access Appliance command-line interface.

You can use the `dedupe> config` command to configure the deduplication storage server using the given set of file systems and IP address.

Prerequisites:

- The filesystem should be striped and should be already created with size not exceeding 100 TiB and the IP should be online before you start configuring Veritas Data Deduplication.
- If the total deduplication pool size required is larger than 100 TiB, then create multiple data filesystems.
- The total data filesystem size should not exceed 1.2 PiB.
- The data filesystems are used to store the deduplicated data and its metadata.
- You are required to create a separate catalog file system to store the Veritas Data Deduplication catalog. The minimum size of the catalog file system should be 5 TiB.
- The deduplication storage server uses the specified IP address to receive the backup data from NetBackup.
- The lockdown mode should be enterprise or compliance.

To configure the deduplication storage server with WORM

- To configure the deduplication storage server, enter the following:

  `dedupe>` **`config`** ***`filesystem1[,filesystem2,...] IP username catfs_name`*** **`[enable_worm=yes]`** **`[`*`minret`*`]`** **`[`*`maxret`*`]`**

  Where:

filesystem1, filesystem2,...	Specifies the data filesystem names.
IP	Specifies the interface IP.
username	Specifies the user name.
catfs_name	Specifies the catalog file system of the deduplication server.
worm	Enables WORM. The possible values are `enable_worm=yes/enable_worm=no`.
minret	Specifies the minimum image retention period in seconds. It can contain: [1-9](s|S). The minimum value is 3600s.
maxret	Specifies the maximum image retention period in seconds. It can contain: [1-9](s|S). The maximum value is 1892160000s.

  You are prompted to enter your password. After you specify your password, Veritas Data Deduplication is configured.

  Note: You have to use the same password when you configure the storage server on NetBackup.

Note: Configuring Veritas Data Deduplication requires a FQDN entry which resolves to a specific IP. You can either have a DNS entry or you can add an entry in the `/etc/hosts` file on all the nodes to resolve the FQDN to a specific IP.

If the FQDN entry is not found, a random string is used as a FQDN entry during configuration.

Note: If you have to reconfigure deduplication, you have to pass all the file systems in the same order that is displayed in the output of the `dedupe show` command.

You must use the same user name and password that you used when you initially configured deduplication.

If a new IP is used for the deduplication server during reconfiguration, the new IP should map to the old FQDN. You can either have a DNS entry or add an entry in the /`etc/hosts` file on all the nodes to resolve the FQDN to a specific IP.

The default size of the stripe unit of the deduplication file system created is 64K. As a result of the creation of catalog file system and VxFS and VDD optimizations, performance improvements can be seen in optimized duplication and restore.

Managing Veritas Data Deduplication using the Access CLISH

This section describes the various operations that you can perform on the deduplication server using the Access CLISH.

To change the user password

- You can change the password of the deduplication server user.

  To change the password, enter the following:

  ```
  Dedupe> passwd user_name
  ```

  You are prompted to enter your current password and the new password. After you confirm the new password, the password gets updated.

Note:

- If the user is not present on NetBackup, you have to add the user on the NetBackup server.

  ```
  # /usr/openv/pdde/pdcr/bin/spauser -a -u user_name
  ```

- You also must update the password on NetBackup if you have updated the password for the Veritas Data Deduplication server from Access Appliance.

  ```
  # /usr/openv/volmgr/bin/tpconfig -update -stype PureDisk
  -storage_server IP address -sts_user_id user_name
  ```

To start the deduplication storage server

- The storage server starts on the node on which the virtual IP, which you specified in the `dedupe config` command is online.

  To start the deduplication storage server, enter the following:

  ```
  Dedupe> start
  ```

  The deduplication storage server should be already configured before you start the deduplication storage server.

To display information the deduplication storage server

- To display information about the deduplication storage server, enter the following:

  ```
  Dedupe> show
  ```

  The information includes the file system(s) being used, the IP, and the cluster node on which the server is running.

To display the deduplication storage server statistics

- To display the deduplication storage server statistics, enter the following:

  ```
  Dedupe> stats
  ```

  The information includes details like total storage size, free storage, and deduplication ratio. The deduplication storage server should be online for this operation.

To show the status of the deduplication storage server

- To show the status of the deduplication storage server, enter the following:

  ```
  Dedupe> status
  ```

  The information includes details such as whether the server is running and the cluster node on which the server is running.

To stop the deduplication storage server

- To stop the deduplication storage server, enter the following:

  ```
  Dedupe> stop
  ```

  The deduplication storage server must be configured and running. If any backup job is running when the server is stopped, the job aborts with an error.

To increase the storage capacity of the deduplication storage server

- To increase the storage capacity of the deduplication storage server to the given size, enter the following:

  ```
  Dedupe> grow size
  ```

  The deduplication storage server should be online for this operation.

Note: The shrink operation is not supported. You cannot shrink the size of the deduplication storage server pool after configuration.

To add a new user to the deduplication storage server

- To add a new user to the deduplication storage server, enter the following:

  ```
  Dedupe> adduser username
  ```

  The user name that is mentioned here is the NetBackup media server user name which you use later to configure the storage server on the NetBackup server.

To show the list of users of the deduplication storage server

- To show the list of users of the deduplication storage server, enter the following:

  ```
  Dedupe> listuser
  ```

To unconfigure the deduplication storage server

Ensure that you make a note of the following configuration details before you unconfigure the Veritas Data Deduplication server. These details are required when you reconfigure the service.

- The virtual IP that you used to configure the Veritas Data Deduplication serve.
- Credentials to access the Veritas Data Deduplication server

- To unconfigure the deduplication storage server, enter the following:

  ```
  Dedupe> unconfig destroy_fs=yes/no
  ```

  The *destroy_fs* is an optional parameter with default value set to *no*.

  If *destroy_fs=no*, the file systems that are used in the deduplication configuration (both data and catalog file systems) are not destroyed. You can later reconfigure deduplication using the same file systems.

  If *destroy_fs=yes,*:

- If WORM was configured, a check is made to see if there are any backup images present in the system. If backup images are present, you cannot destroy the file system and the `dedupe unconfig` command fails. Before you unconfigure Veritas Data Deduplication and destroy the file systems, ensure that you have removed the storage unit, disk pool and storage server from the NetBackup primary server.
- If WORM is not configured, the file systems are destroyed after unconfiguring deduplication.

To add an IP to the deduplication cluster

- To add an IP to the deduplication cluster, enter the following:

```
Dedupe> addip IP
```

To remove an IP from the deduplication cluster

- To remove an IP from the deduplication cluster, enter the following:

```
Dedupe> removeip IP
```

- To change the primary IP of the deduplication server, enter the following:

```
Dedupe> changeip IP config_name
```

The *config_name* is the name of the deduplication server to which IP is being added. It must be specified if more than one deduplication server is configured on the cluster.

To add an FQDN to the deduplication server

The FQDNs of the NetBackup master and media servers should be added to the deduplication server. This configuration leads to faster backups on the storage server and should be done prior to adding the storage server in the NetBackup administration console or Web UI. Adding the FQDNs of the NetBackup servers allows for faster name resolution within the docker container.

Do not add the IP and FQDN of the deduplication service to the deduplication server as this can create issues when the MSDP services are started.

- To add an FQDN to the deduplication cluster, enter the following:

```
Dedupe> fqdn add IP fqdn
```

To remove an FQDN from the deduplication cluster

- To remove an FQDN from the deduplication cluster, enter the following:

```
Dedupe> fqdn remove IP
```

To grow the catalog file system of the deduplication server

- To grow the catalog file system of the deduplication server to a specific size, enter the following:

  ```
  Dedupe> catgrow size
  ```

  The deduplication server should be online for this operation. This operation is not supported from the Access Appliance GUI.

You can use the `dedupe catgrow <size>` command to grow the catalog file system to the specified size. The default `dedupe grow` command does not modify the size of the catalog file system. If there are multiple data file systems, specify the file system names in the same order in which you specified them in the `dedupe show` command previously.

See the `dedupe` man page for more information.

Managing Veritas Data Deduplication using GUI

This section describes the various operations that you can perform on the deduplication server using the GUI.

Unconfiguring Veritas Data Deduplication

You can unconfigure Veritas Data Deduplication.

Ensure that you make a note of the following configuration details before you unconfigure the Veritas Data Deduplication server with **Retain data** option. These details are required when you reconfigure the service.

- The virtual IP that you used to configure the Veritas Data Deduplication serve.
- Credentials to access the Veritas Data Deduplication server
- File system names (including data and catalog file systems)

Note: You can reconfigure Veritas Data Deduplication from the Access Appliance CLISH only.

To unconfigure Veritas Data Deduplication

1. Go to **Settings > Veritas Data Deduplication management**. Click on the kebab menu of the instance.
2. Click **Unconfigure**.

3 The **Unconfigure Veritas Data Deduplication** dialog box is displayed.

Select one of the options - **Retain data** (if you want to keep the Veritas Data Deduplication utilized file systems) or **Delete data** (if you want to delete the file systems) and click **Save**.

4 View the **Recent Activity** panel for the status of the task.

Adding secondary IP for Veritas Data Deduplication

You can add a secondary IP for any instance of Veritas Data Deduplication.

To add secondary IP for any instance

1 Go to **Settings > Veritas Data Deduplication management**. Click on the configuration name for which you want to add a secondary IP.

2 Click **Add IP**.

3 The **Add Deduplication Secondary IP** dialog box is displayed. Enter the IP. Click **Next**.

Note: The restrictions which are applicable to the virtual IP field during configuring of Veritas Data Deduplication are also applicable here.

4 Click **Finish**.

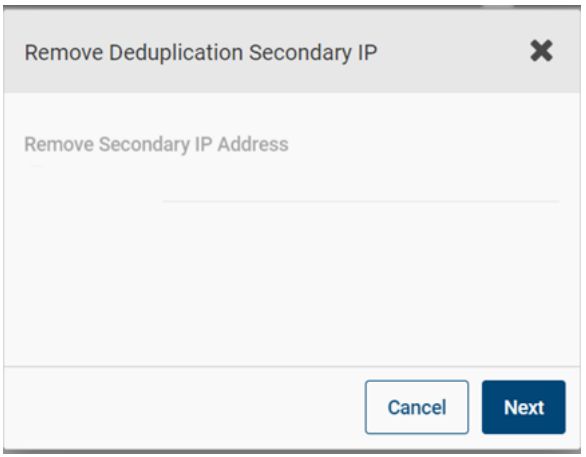
5 View the **Recent Activity** panel for the status of the task.

Deleting secondary IP for Veritas Data Deduplication

You can delete the secondary IP for any instance of Veritas Data Deduplication.

To remove secondary IP for any instance

1. Go to **Settings > Veritas Data Deduplication management**. Click on the configuration name for which you want to delete the secondary IP.
2. Click **Remove** for the IP that you want to remove. The **Remove Deduplication Secondary IP** dialog box is displayed. Click **Next**.



3. Click **Finish**.
4. View the **Recent Activity** panel for the status of the task.

Accessing Access Appliance WORM storage shell for management tasks

To perform some management tasks on a WORM storage server instance, you must open an SSH session to the instance and log in to the WORM storage server shell. Any user with appliance administrator role can login and perform management tasks.

From the WORM storage shell, you can run commands to manage the instance and your WORM storage. See "About the Access Appliance WORM storage server shell" on page 33.

About the Access Appliance WORM storage server shell

Use the Access Appliance WORM storage server shell to configure the immutable and indelible data from the appliance. The interface provides tab-completed command options.

These are main categories of commands:

- `dedupe`
  This command lets you manage the deduplication service.
  See "About the dedupe command" on page 34.
- `retention`
  This command lets you manage image retention.
  See "About the retention command" on page 36.
- `setting`
  This command lets you manage the deduplication and system configuration settings.
  See "About the setting command" on page 36.
- `support`
  This command lets you access and upload the relevant logs and configuration files for troubleshooting.
  See "About the support command" on page 40.

About the dedupe command

The `dedupe` commands lets you manage the deduplication services.

The following table describes the options and arguments for the `dedupe` command.

Table 3-1 The options and arguments for the `dedupe` command.

Option and its description	Argument	Description
`CRC` Check and manage the deduplication CRC service.	`state`	Display the state of the CRC checking services.
	`enable`	Enable the CRC checking services.
	`enable-fixmode`	Enable the CRC checking services with a fix mode.
	`disable-fixmode`	Disable the fix mode of the CRC checking services.
	`disable`	Disable the CRC checking services.
	`fast`	Restart the CRC checking services in a mode.
	`fixmode-state`	Display the state of the fix mode of the CRC checking services.

Table 3-1 The options and arguments for the `dedupe` command. *(continued)*

Option and its description	Argument	Description
`CRQP` Manage the transaction log (`Tlog`) process service.	`status`	Display the status of the CRQP services.
	`start`	Start the CRQP services.
	`info`	Show the CRQP services information.
`online-check` Manage online checking services.	`enable`	Enable the online checking services.
	`status`	Display the status of the online checking services.
	`disable`	Disable the online checking services.
`compaction` Manage the MSDP compaction service.	`start`	Start the deduplication compaction services.
	`state`	Display the status of the deduplication compaction services.
	`disable`	Disable the deduplication compaction services.
	`enable`	Enable the deduplication compaction services.
`MSDP` Manage the MSDP services.	`start`	Start the deduplication (MSDP) services.
	`status`	Display the status of the deduplication (MSDP) services.
	`stop`	Stop the deduplication (MSDP) services.

Stopping and starting the MSDP services

To stop the MSDP services:

1. Check the health monitor status using the following command:

   ```
   setting health status
   ```

2. If the health monitor is enabled, stop the monitor using the following command:

   ```
   setting health disable
   ```

3. After disabling the health monitor, use the following command to stop the MSDP services:

   ```
   dedupe MSDP stop
   ```

To start the MSDP services:

1. Start the MSDP services using the following command:

   ```
   dedupe MSDP start
   ```

2. Start the health monitor using the following command:

   ```
   setting health enable
   ```

About the retention command

The `retention` command lets you manage image retention.

The following table describes the options and arguments for the `retention` command.

Table 3-2 The options and arguments for the `retention` command.

Option and its description	Argument	Description
`policy` The backup policy to use for the image retention with a retention lock.	`list`	List the images that have a retention lock.
	`audit`	Display the audit information for the images with a retention lock.
	`disable`	Disable the image retention using the backup ID of the image. For example: `retention policy disable backup_ID=<test_123> copynumber=<number>` You can find the backup ID and the copy number in the output of the `retention policy list` command.

About the setting command

Thie `setting` command lets you manage the deduplication and system configuration settings.

The following table describes the options and arguments for the `setting` command.

Table 3-3 The options and arguments for the `setting` command.

Option and its description	Argument	Description
`FIPS` Manage FIPS settings.	`status`	Display the status of FIPS in MSDP.
`network` Configure the network settings.	`ping`	Ping the network for a connection status. Use the `ip` parameter to enter the IP address of the network to check the connection status.
	`ifconfig`	Display the IP address of the network.
	`route`	Display the network route information.
`WORM` Configure the settings for immutable and indelible storage.	`status`	Display the status of WORM storage.
	`set-max`	Specify the maximum duration to keep the storage immutable and indelible. Use the `worm_max` parameter to specify the maximum duration in seconds to keep the storage immutable and indelible (WORM).
	`set-min`	Specify the minimum duration to keep the storage immutable and indelible. Use the `worm_min` parameter to specify the minimum duration in seconds to keep the storage immutable and indelible (WORM).
	`show-mode`	Display the WORM mode.

Table 3-3 The options and arguments for the `setting` command. *(continued)*

Option and its description	Argument	Description
`set-MSDP-param` Set the parameters in the MSDP configuration files.	`write-thread-num`	Get and set the <`WriteThreadNum`> parameter. Use the `value` parameter to enter the value that is used by the MSDP parameters.
	`spoold-logging`	Get and set the <`SpooldLogging`> parameter.
	`allocation-unit-size`	Get and set the <`AllocationUnitSize`> parameter.
	`data-check-days`	Get and set the <`DataCheckDays`> parameter.
	`max-fp-cache-size`	Get and set the <`MaxFPCacheSize`> parameter.
	`max-retry-count`	Get and set the <`MaxRetryCount`> parameter.
	`spad-logging`	Get and set the <`SpadLogging`> parameter.
	`log-retention`	Get and set the <`LogRetention`> parameter.

Table 3-3 The options and arguments for the `setting` command. *(continued)*

Option and its description	Argument	Description
`get-MSDP-param` Get the parameters from the MSDP configuration files.	`write-thread-num`	Get and set the <`WriteThreadNum`> parameter.
	`spoold-logging`	Get and set the <`SpooldLogging`> parameter.
	`allocation-unit-size`	Get and set the <`AllocationUnitSize`> parameter.
	`data-check-days`	Get and set the <`DataCheckDays`> parameter.
	`max-fp-cache-size`	Get and set the <`MaxFPCacheSize`> parameter.
	`max-retry-count`	Get and set the <`MaxRetryCount`> parameter.
	`spad-logging`	Get and set the <`SpadLogging`> parameter.
	`log-retention`	Get and set the <`LogRetention`> parameter.
`MSDP-user` Configure the settings for the MSDP user.	`random-password`	Generates a random password.
	`list`	List all the MSDP users.
	`verify-user`	Verify user password and user role.
	`reset-password`	Reset the password for the MSDP user.
`encryption` Configure the settings for MSDP encryption.	`status`	Display the current encryption status.
	`enable`	Enable encryption for MSDP.
`kernel` Get the information about the kernel.	`search-param`	Search for a keyword in the kernel parameters. Use the `keyword` to specify a keyword to search in the keyword parameters.

About the support command

The `support` command lets you access and upload the relevant logs and configuration files for troubleshooting.

The following table describes the options and arguments for the `support` command.

Table 3-4 The options and arguments for the `support` command.

Option and its description	Argument	Description
`MSDP-history` Access the MSDP history files.	`tail`	Append the last 10 lines of each file to standard output. This command requires the following parameters: ■ `file` Enter the filename. This is a required parameter. ■ `options` Enter the supported options for `grep: -i, -w, -E`, or `tail: -f, -n`.
	`collect`	Collect files for transferring to the target host. This command requires the following parameters: ■ `mmin` Find files that are modified `n` minutes ago. Same as `mmin` option in find command. For example, 15, +15, -15. ■ `pattern` Specify the naming pattern to find and select matching files and folders. For example, `spoold`, or `spad*`. ■ `mtime` Finds files that are modified `n*24` hours ago. Same as `mtime` option in find command. For example, 2, +2, -2.
	`ls`	List information about the FILEs. Use the `dir` parameter to enter the directory name.
	`scp`	

Table 3-4 The options and arguments for the `support` command. *(continued)*

Option and its description	Argument	Description
		Securely transfer selected files to the target host. This command requires the following parameters: ■ `scp_port` Specifies the port to connect to on the remote host. ■ `scp_target` Specifies the target host and path for transferring files. Use the `user@host:/directory path/` format. This is a required parameter.
	`cat`	Concatenate files and print on the standard output. Use the `file` parameter to enter the file name.
	`grep`	Print lines that match patterns. This command requires the following parameters: ■ `pattern` Specify the naming pattern to find and select matching files and folders. For example, `spoold`, or `spad*`. This is a required parameter. ■ `file` Enter the filename. This is a required parameter. ■ `options` Enter the supported options for `grep: -i, -w, -E`, or `tail: -f, -n`.

Table 3-4 The options and arguments for the `support` command. *(continued)*

Option and its description	Argument	Description
`process` Displays information about the MSDP processes.	`MSDP-process`	Display the MSDP processes.
	`htop`	Display the CPU and memory information.
	`atop`	Display information about the operating system.
	`pidstat`	Display the PID statistics.
	`memory-usage`	Displays the free and used memory.
`software` Displays information about the software.	`show-MSDP-version`	Display the MSDP version.
	`show-OS-version`	Display the operating system information.

Table 3-4 The options and arguments for the `support` command. *(continued)*

Option and its description	Argument	Description
`MSDP-log` Access the MSDP log files.	`tail`	Append the last 10 lines of each file to standard output. This command requires the following parameters: ■ `file` Enter the filename. This is a required parameter. ■ `options` Enter the supported options for `grep: -i, -w, -E`, or `tail: -f, -n`.
	`collect`	Collect files for transferring to the target host. This command requires the following parameters: ■ `mmin` Find files that are modified `n` minutes ago. Same as `mmin` option in find command. For example, 15, +15, -15. ■ `pattern` Specify the naming pattern to find and select matching files and folders. For example, `spoold`, or `spad*`. ■ `mtime` Finds files that are modified `n*24` hours ago. Same as `mtime` option in find command. For example, 2, +2, -2.
	`ls`	List information about the files. Use the `dir` parameter to enter the directory name.
	`scp`	

Table 3-4 The options and arguments for the `support` command. *(continued)*

Option and its description	Argument	Description
		Securely transfer selected files to the target host. This command requires the following parameters: ■ `scp_port` Specifies the port to connect to on the remote host. ■ `scp_target` Specifies the target host and path for transferring files. Use the `user@host:/directory path/` format. This is a required parameter.
	`cat`	Concatenate files and print on the standard output. Use the `file` parameter to enter the file name.
	`grep`	Print lines that match patterns. This command requires the following parameters: ■ `pattern` Specify the naming pattern to find and select matching files and folders. For example, `spoold`, or `spad*`. This is a required parameter. ■ `file` Enter the filename. This is a required parameter. ■ `options` Enter the supported options for `grep: -i, -w, -E`, or `tail: -f, -n`.
`hardware` Displays information about the hardware.	`cpumem`	Display the CPU and memory information.

Table 3-4 The options and arguments for the `support` command. *(continued)*

Option and its description	Argument	Description
`MSDP-config` Access the MSDP configuration files.	`tail`	Append the last 10 lines of each file to standard output. This command requires the following parameters: ■ `file` Enter the filename. This is a required parameter. ■ `options` Enter the supported options for `grep: -i, -w, -E`, or `tail: -f, -n`.
	`collect`	Collect files for transferring to the target host. This command requires the following parameters: ■ `mmin` Find files that are modified `n` minutes ago. Same as `mmin` option in find command. For example, 15, +15, -15. ■ `pattern` Specify the naming pattern to find and select matching files and folders. For example, `spoold`, or `spad*`. ■ `mtime` Finds files that are modified `n*24` hours ago. Same as `mtime` option in find command. For example, 2, +2, -2.
	`ls`	List information about the FILEs. Use the `dir` parameter to enter the directory name.
	`scp`	

Table 3-4 The options and arguments for the `support` command. *(continued)*

Option and its description	Argument	Description
		Securely transfer selected files to the target host. This command requires the following parameters: ■ `scp_port` Specifies the port to connect to on the remote host. ■ `scp_target` Specifies the target host and path for transferring files. Use the `user@host:/directory path/` format. This is a required parameter.
	`cat`	Concatenate files and print on the standard output. Use the `file` parameter to enter the file name.
	`grep`	Print lines that match patterns. This command requires the following parameters: ■ `pattern` Specify the naming pattern to find and select matching files and folders. For example, `spoold`, or `spad*`. This is a required parameter. ■ `file` Enter the filename. This is a required parameter. ■ `options` Enter the supported options for `grep: -i, -w, -E`, or `tail: -f, -n`.

Table 3-4 The options and arguments for the `support` command. *(continued)*

Option and its description	Argument	Description
`diskio` Displays information about the disk I/O.	`iostat`	Displays the information about the disk I/O.
	`vmstat`	Displays the information on the wait on the disk I/O.
	`nmon`	Display the information about the monitor system.
	`disk-volume`	Display information about the disk volume.

Table 3-4 The options and arguments for the `support` command. *(continued)*

Option and its description	Argument	Description
`syslogs` Access the system logs.	`tail`	Append the last 10 lines of each file to standard output. This command requires the following parameters: ■ `file` Enter the filename. This is a required parameter. ■ `options` Enter the supported options for `grep: -i, -w, -E`, or `tail: -f, -n`.
	`collect`	Collect files for transferring to the target host. This command requires the following parameters: ■ `mmin` Find files that are modified `n` minutes ago. Same as `mmin` option in find command. For example, 15, +15, -15. ■ `pattern` Specify the naming pattern to find and select matching files and folders. For example, `spoold`, or `spad*`. ■ `mtime` Finds files that are modified `n*24` hours ago. Same as `mtime` option in find command. For example, 2, +2, -2.
	`ls`	List information about the FILEs. Use the `dir` parameter to enter the directory name.
	`scp`	

Table 3-4 The options and arguments for the `support` command. *(continued)*

Option and its description	Argument	Description
		Securely transfer selected files to the target host. This command requires the following parameters: ■ `scp_port` Specifies the port to connect to on the remote host. ■ `scp_target` Specifies the target host and path for transferring files. Use the `user@host:/directory path/` format. This is a required parameter.
	`cat`	Concatenate files and print on the standard output. Use the `file` parameter to enter the file name.
	`grep`	Print lines that match patterns. This command requires the following parameters: ■ `pattern` Specify the naming pattern to find and select matching files and folders. For example, `spoold`, or `spad*`. This is a required parameter. ■ `file` Enter the filename. This is a required parameter. ■ `options` Enter the supported options for `grep: -i, -w, -E`, or `tail: -f, -n`.

Table 3-4 The options and arguments for the `support` command. *(continued)*

Option and its description	Argument	Description
`proc` Access process information about the pseudo-filesystem.	`tail`	Append the last 10 lines of each file to standard output. This command requires the following parameters: ■ `file` Enter the filename. This is a required parameter. ■ `options` Enter the supported options for `grep: -i, -w, -E`, or `tail: -f, -n`.
	`ls`	List information about the FILEs. Use the `dir` parameter to enter the directory name.
	`cat`	Concatenate files and print on the standard output. Use the `file` parameter to enter the file name.
	`grep`	Print lines that match patterns. This command requires the following parameters: ■ `pattern` Specify the naming pattern to find and select matching files and folders. For example, `spoold`, or `spad*`. This is a required parameter. ■ `file` Enter the filename. This is a required parameter. ■ `options` Enter the supported options for `grep: -i, -w, -E`, or `tail: -f, -n`.

Here are some examples of the support command usage:

```
support MSDP-log ls dir=spoold
support MSDP-log ls dir=spad/sof1vm08.tec.com/spoold/spad/072320.log
support MSDP-log cat file=pdde-config.log
support MSDP-log cat file=spad/sof1vm08.tec.com/spoold/spad/072320.log
support MSDP-log tail file=pdde-config.log
support MSDP-log tail file=pdde-config.log options="-f"
support MSDP-log tail file=pdde-config.log options="-n 5"
support MSDP-log tail file=spad/sofia11vm08/spoold/spad/072320.log
options="-f -n 5"
support MSDP-log grep file=spad* pattern=sessionStartAgent
options="-r"
support MSDP-log grep file=pdde-setup.log pattern="pid  455"
support MSDP-log grep file=pdde-setup.log pattern="Pid" options="-w
 -i"
support MSDP-log grep file=spoold* pattern="Pid" options="-w -i -r"
support MSDP-log grep file=pdde-setup.log pattern="MSDP-X|PureDisk"
 options="-w -i -r -E"
```

Examples to uploading logs, history, or config files:

Uploading logs is a two-step process:

- Run the `collect` command for the desired category to collect files of interest. For example:

  ```
  support MSDP-log collect pattern=spoold* mmin="+2"
  support MSDP-history collect
  support MSDP-config collect
  support syslogs collect pattern=crash mmin="-2"
  ```

- Transfer files using `scp` command

  Run the `scp` command from any category to create a tarball of all previously collected files (from all categories) and transfer the tarball to the target host using the `scp` protocol.

  ```
  support MSDP-config scp scp_target=user@example.com:/tmp
  ```

Support for multiple domains across networks for Veritas Data Deduplication

You can use a single deduplication pool to backup data from multiple NetBackup domains. The Veritas Data Deduplication server deduplicates backups originating from different subnets. Use the `network ip addr show` command to list the multiple subnets that have been created.

```
Network> ip addr show
IP              Netmask/Prefix  Device Node     Type     Status
--              --------------  ------ ----     ----     ------
192.168.10.5    255.255.255.0   eth5   vaupg_01 Physical
192.168.10.13   255.255.255.0   eth5   vaupg_02 Physical
192.168.30.2    255.255.255.0   eth4   vaupg_01 Physical
192.168.30.10   255.255.255.0   eth4   vaupg_02 Physical
10.209.192.206 255.255.252.0   eth1   vaupg_01 Physical
10.209.192.208 255.255.252.0   eth1   vaupg_02 Physical
10.209.194.38   255.255.252.0   eth1   vaupg_01 Virtual  ONLINE (Con IP)
192.168.10.22   255.255.255.0   eth5   vaupg_01 Virtual  ONLINE
192.168.10.25   255.255.255.0   eth5   vaupg_02 Virtual  ONLINE
192.168.30.15   255.255.255.0   eth4   vaupg_02 Virtual  ONLINE
192.168.30.20   255.255.255.0   eth4   vaupg_01 Virtual  ONLINE
```

You can use the following command to configure the deduplication server with a virtual IP.

```
Dedupe> config fs_name IPaddress username catalogfilesystem
```

For example:

```
Dedupe> config fs1 192.168.10.22 user1 CAT_257091
Enter Password:
ACCESS dedupe INFO V-493-10-0 configuring deduplication server...
ACCESS dedupe INFO V-493-10-0 Deduplication server configured successfully
```

You can verify that the IP has been added successfully using the `dedupe show` command.

```
Dedupe> show
Parameter                      Value
=======================        ======
Virtual_IP                     192.168.10.22
Catalog_Filesystem             CAT_257091
Filesystem                     fs1
Deduplication_Storage_Size_GB 5000
WORM_enabled                   False
Hostname                       vaupg_01
Server_Status                  ONLINE
Max_Cache_Size                 50%
Percentage_Memory_Usage        4.58%
Minimum_Retention_Value
Maximum_Retention_Value
```

You can add another IP from a different subnet.

```
Dedupe> addip <IPaddress>
```

For example:

```
Dedupe> addip 192.168.10.25
ACCESS dedupe INFO V-493-10-0 IP has been successfully added to the
deduplication server.
Dedupe> addip 192.168.30.15
ACCESS dedupe INFO V-493-10-0 IP has been successfully added to the
deduplication server.

Dedupe> addip 192.168.30.20
ACCESS dedupe INFO V-493-10-0 IP has been successfully added to the
deduplication server.
```

You can verify that the virtual IP is added successfully. The `dedupe show` command is used to display information about the deduplication server that has been configured. The output of this command includes the file system(s) being used, deduplication server status, storage capacity, secondary IPs used, percentage of memory usage, maximum cache size, and the IP and the cluster node on which the server is running.

```
Dedupe> show
Parameter                       Value
============                    =============
Secondary_IP                    192.168.10.25,192.168.30.15,192.168.30.20
Virtual_IP                      192.168.10.22
Catalog_Filesystem              CAT_257091
Filesystem                      fs1
Deduplication_Storage_Size_GB   5000
WORM_enabled                    False
Hostname                        vaupg_01
Server_Status                   ONLINE
Max_Cache_Size                  50%
Percentage_Memory_Usage         4.79%
Minimum_Retention_Value         -
Maximum_Retention_Value         -
```

Use the `network ip addr show` command to list the multiple subnets that have been created.

```
Network> ip addr show
IP              Netmask/Prefix  Device Node     Type     Status
```

```
--              --------------  ------ ----     ----     ------
192.168.10.5    255.255.255.0   eth5   vaupg_01 Physical
192.168.10.13   255.255.255.0   eth5   vaupg_02 Physical
192.168.30.2    255.255.255.0   eth4   vaupg_01 Physical
192.168.30.10   255.255.255.0   eth4   vaupg_02 Physical
10.209.192.206 255.255.252.0   eth1   vaupg_01 Physical
10.209.192.208 255.255.252.0   eth1   vaupg_02 Physical
10.209.194.38   255.255.252.0   eth1   vaupg_01 Virtual  ONLINE (Con IP)
192.168.10.22   255.255.255.0   eth5   vaupg_01 Virtual  ONLINE (Dedupe IP)
192.168.10.25   255.255.255.0   eth5   vaupg_01 Virtual  ONLINE (Dedupe IP)
192.168.30.15   255.255.255.0   eth4   vaupg_01 Virtual  ONLINE (Dedupe IP)
192.168.30.20   255.255.255.0   eth4   vaupg_01 Virtual  ONLINE (Dedupe IP)
```

You can also add a second user. The second user is used to add the second NetBackup domain, if required. You should use a different user for every new NetBackup domain.

```
Dedupe> adduser user1
Enter Password:
Confirm Password:
ACCESS dedupe INFO V-493-10-0 Adding new user user2 to deduplication server.
ACCESS dedupe INFO V-493-10-0 Added new user user2 to deduplication server
successfully.
```

You can perform backup and restore operations from the NetBackup domains from the two subnets.

Note: You can remove the virtual IP that you added later after the initial configuration. But you cannot remove the virtual IP specified during the initial configuration.

```
Dedupe> removeip IPaddress
```

For example:

```
Dedupe> removeip 192.168.30.15
ACCESS dedupe INFO V-493-10-0 IP has been successfully removed from the
deduplication server.
```

You can verify that the second virtual IP has been removed from the configuration using the `dedupe show` command.

```
Dedupe> show
Parameter                       Value
============                    =============
```

```
Secondary_IP                    192.168.10.25,192.168.30.20
Catalog_Filesystem              CAT_257091
Virtual_IP                      192.168.10.22
Filesystem                      fs1
Deduplication_Storage_Size_GB   5000
WORM_enabled                    False
Hostname                        vaupg_01
Server_Status                   ONLINE
Max_Cache_Size                  50%
Percentage_Memory_Usage         4.79%
Minimum_Retention_Value         -
Maximum_Retention_Value         -
```

You can use the `dedupe unconfig` command to free up all the virtual IPs added to the deduplication server. This command also unconfigures Veritas Data Deduplication from the cluster.

```
Dedupe> unconfig destroy_fs=yes
ACCESS dedupe INFO V-493-10-0 Removing deduplication server configuration...
ACCESS dedupe INFO V-493-10-0 Deduplication server unconfigured successfully.
```

Upgrade considerations

You cannot use the same virtual IP for both the CIFS and Veritas Data Deduplication server. So, if a virtual IP is used by the Veritas Data Deduplication server, then you cannot use the same virtual IP for adding CIFS shares or setting the CIFS home directory.

Note: If Veritas Access 7.4.2.x is installed in your system and the same virtual IP is being shared by both the CIFS and Veritas Data Deduplication server, and you want to upgrade, ensure that an additional free virtual IP is available in the configuration.

During the upgrade, the virtual IP which is shared between CIFS and Veritas Data Deduplication server is removed from the CIFS configuration and the next available free virtual IP is assigned to the CIFS server.

- If a free virtual IP is available, the deduplication continues to work without any issues once the upgrade is complete.
- If there is no free virtual IP, then the upgrade fails. You can add a free virtual IP to the configuration and try to upgrade again.
- If the virtual IP is shared between the Veritas Data Deduplication server and a segregated CIFS share, then the upgrade fails even if an additional free virtual

IP is available in the configuration. You can move the segregated CIFS share to different virtual IP and try the upgrade again.

Veritas Data Deduplication storage layout

The layout of the Veritas Data Deduplication storage is such that when you configure Veritas Data Deduplication, multiple file systems of 100TiB and a separate catalog file system of size 5TiB are created.

The `dedupe grow` command creates a new file system for every 100TiB. If you perform upgrade and you had previously configured Veritas Data Deduplication, then the old layout of Veritas Data Deduplication is preserved. If a separate catalog file system existed before upgrade, the same catalog file system is present after the upgrade also. If the size of data filesystems is more than 100 TiB, then those filesystems remain as it is but new data filesystems are created for every 100 TiB that is grown using the `dedupe grow` command.

Note: Veritas Data Deduplication configuration requires 5 TiB for creating the catalog file system. This is over and above the size specified for the deduplication pool in the GUI.

Reconfiguration is a two-step process involving unconfiguring the Veritas Data Deduplication without destroying the filesystems and configuring it again with the same existing filesystems. After an upgrade, if you want to reconfigure the Veritas Data Deduplication service, the following checks are performed:

- If a separate catalog file system existed before reconfiguration, then the same catalog file system is passed to the dedupe config command during reconfiguration.
- If a separate catalog file system did not exist before reconfiguration, then the catalog file system cannot be passed to the dedupe config command during reconfiguration.

After unconfiguration, you can use `dedupe config` command to reconfigure the deduplication server.

Reconfiguration of Veritas Data Deduplication can be done only using CLISH.

To reconfigure Veritas Data Deduplication

1. Run the `dedupe show` command and make a note of the file system names for both the data and catalog file system.
2. Unconfigure Veritas Data Deduplication using the `dedupe unconfig` command.

   ```
   Dedupe> unconfig
   ```

3. Run the following command to configure Veritas Data Deduplication:

   ```
   Dedupe> config filesystem_list virtual_IP username [catfs_name]
   ```

   where the *catfs_name* depends on the configuration and *filesystem_list* is a comma-separated list of filesystems without space.

   The credentials should be the same that you used when you previously configured Veritas Data Deduplication.

The catalog file system needs to be mentioned only if the previous Veritas Data Deduplication configuration had a catalog file system.

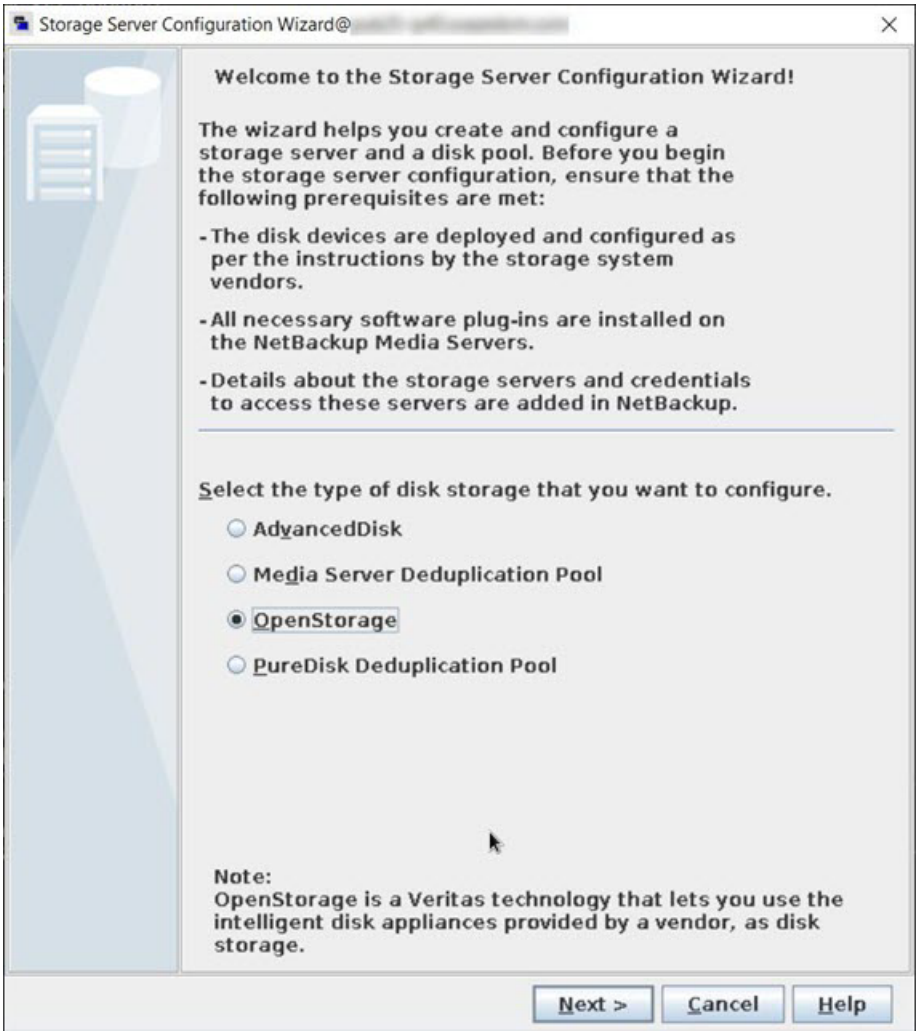
Configuring a Veritas Data Deduplication storage unit on NetBackup

Veritas recommends that you run a maximum of 80 parallel duplication streams on Veritas Data Deduplication.

To create a storage server on NetBackup

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

3 The **Welcome to Storage Server Configuration** wizard appears. Select **OpenStorage**. Click **Next**.



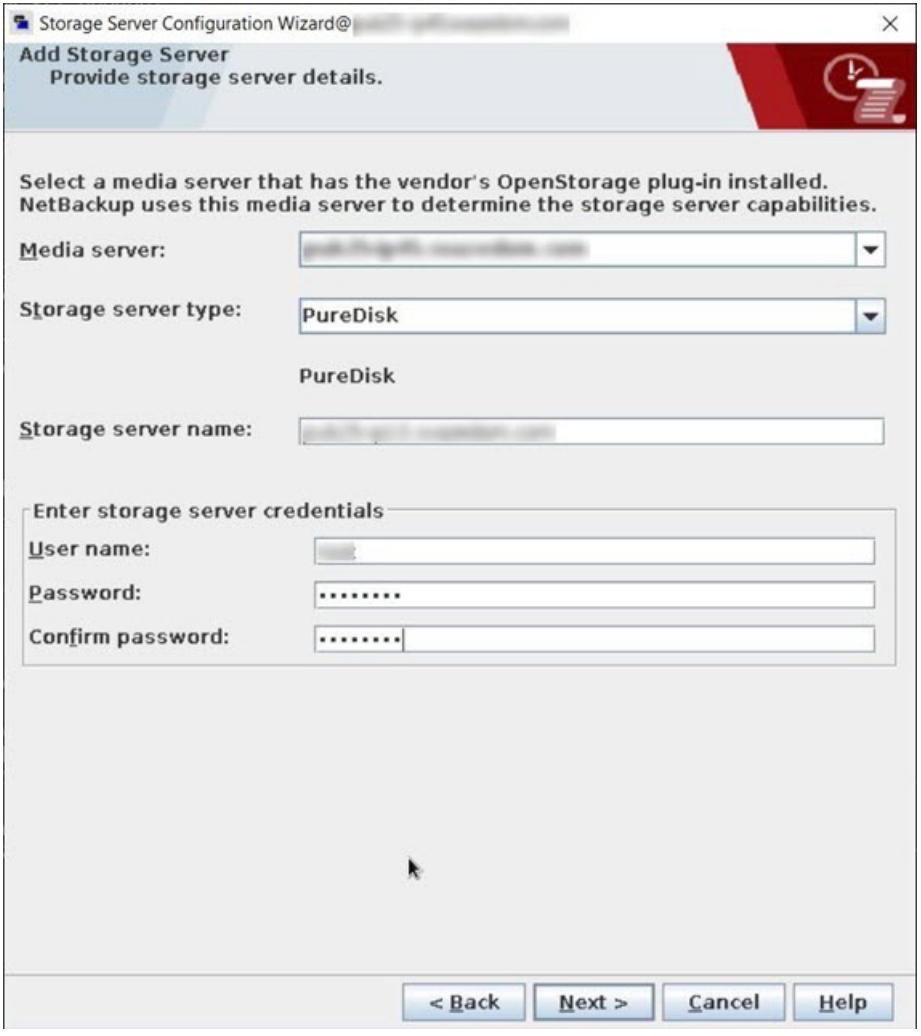
4 In the **Add Storage Server** form, enter the required information.

- Select the media server from the **Media server** drop-down box.
- Enter the storage server type as **PureDisk**.
- Enter the FQDN of the storage server configured on the Access Appliance cluster.

Note: If you want to use a host name for the storage server instead of the deduplication IP's FQDN, ensure that it is resolvable to the FQDN configured for the deduplication storage server with DNS.

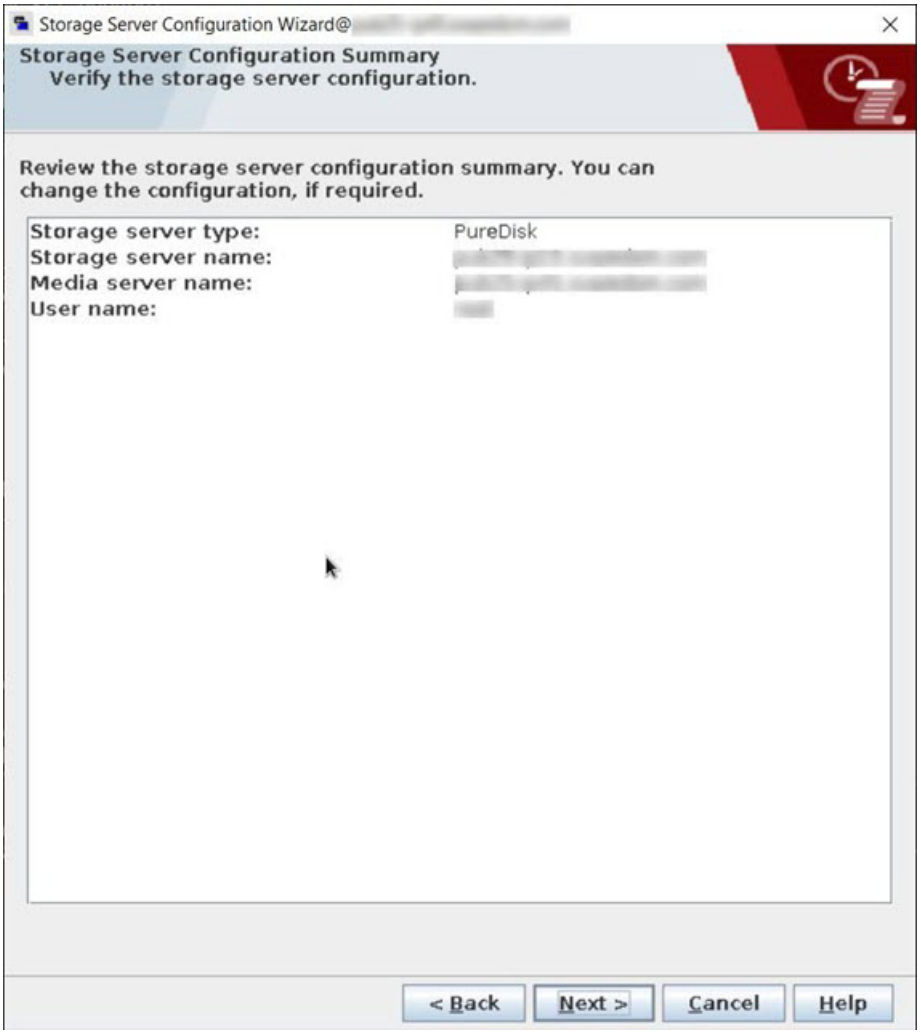
- Enter your credentials that you created when you configured Veritas Data Deduplication.

Click **Next**.



5 In the **Additional Media Server Configuration for OpenStorage Devices** form, specify the media servers that should have access to the OpenStorage device. Click **Next**.

6 In the **Storage Server Configuration Summary** form, verify the storage server configuration. Click **Next**.

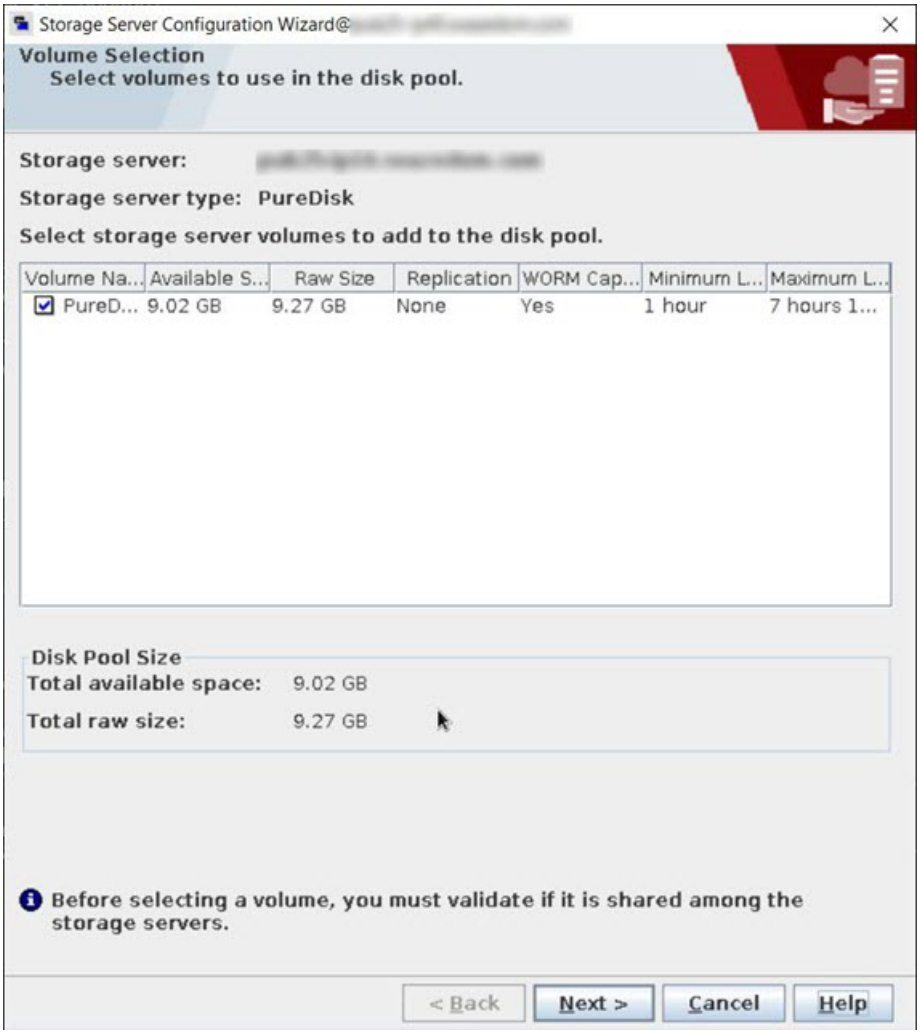


7 Check the status of the tasks in the **Storage Server Configuration Status** form. This operation can take some time depending on your configuration.

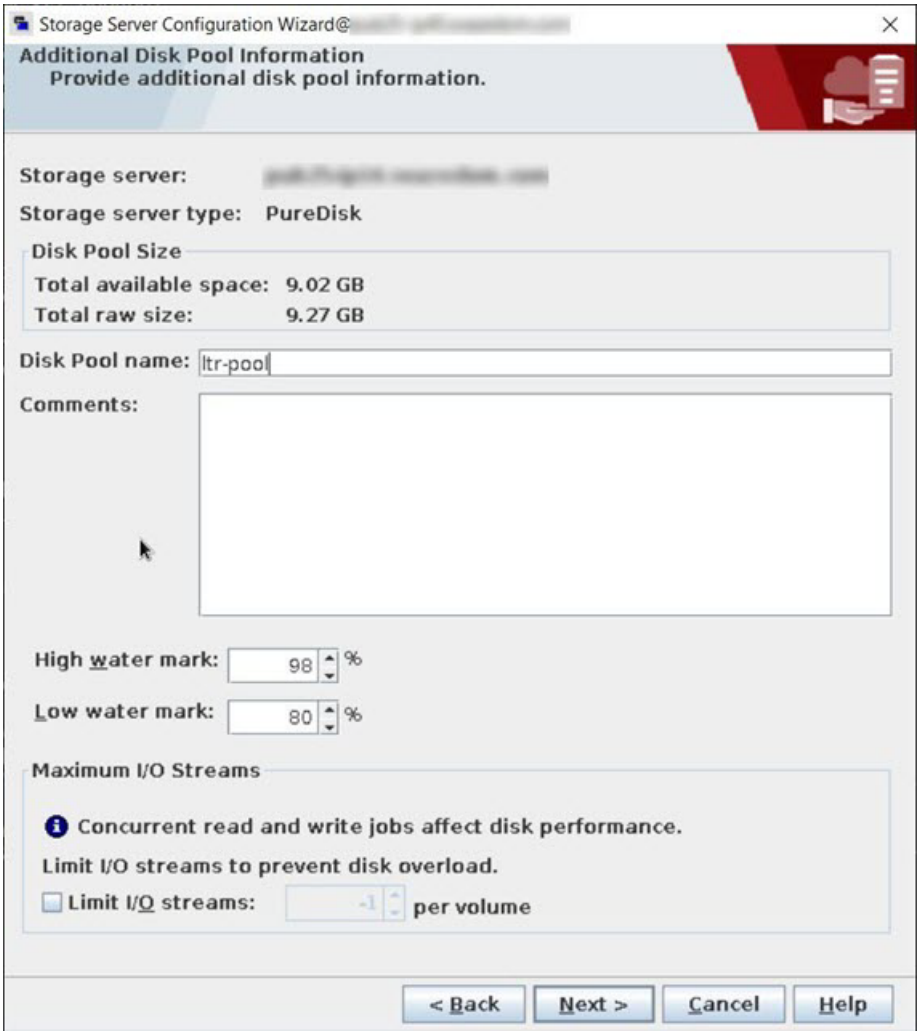
8 Verify that the storage server is successfully created and click **Next**.

9 The **Volume Selection** form lists all the volumes.

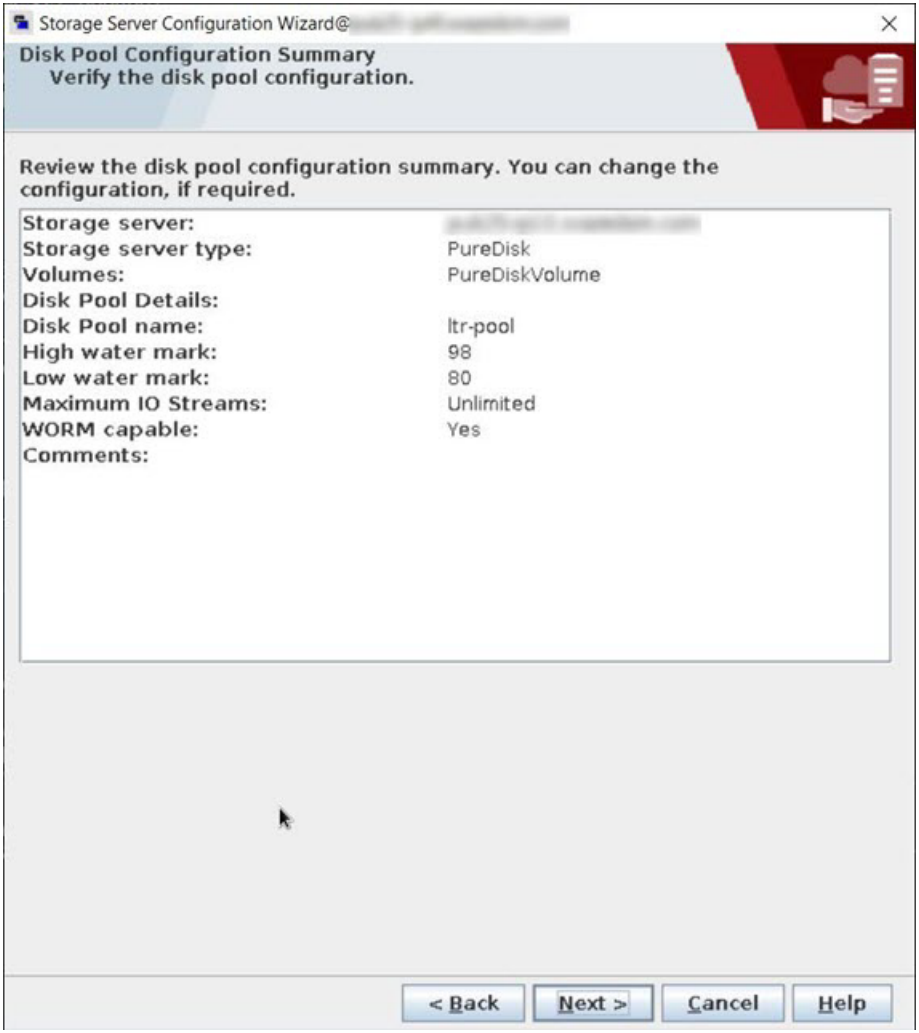
Select the storage server volumes that you want to add to the disk pool and click **Next**.



10 In the **Additional Disk Pool Information** form, enter the disk pool name and click **Next**.

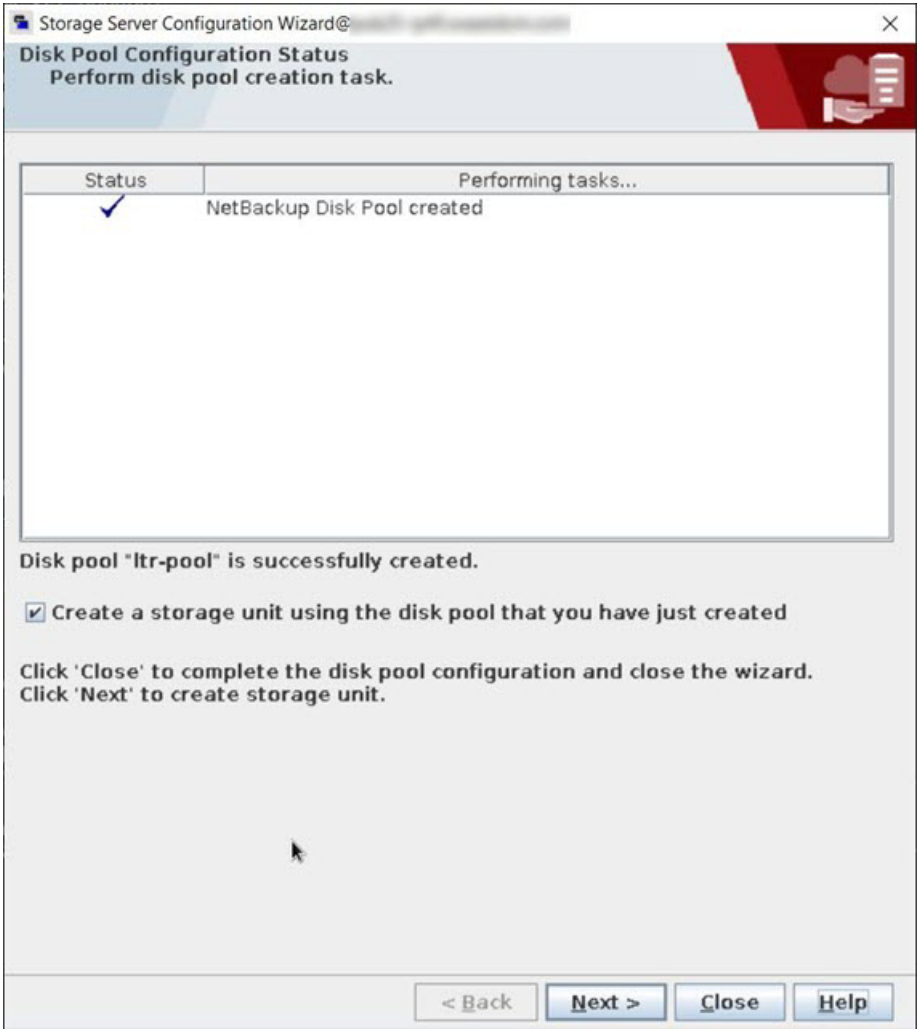


11 Verify the disk pool configuration summary and click **Next**.



12 In the **Disk Pool Configuration Status** form, create a disk pool.

Verify that the disk pool is created successfully. Make sure that the **Create a storage unit using the disk pool that you have just created** check box is selected.



13 In the **Storage Unit Creation** wizard, enter the storage unit name. Select **Only use the selected media servers**. Select the media server in the list and update the maximum concurrent jobs field as per the NetBackup recommendations.

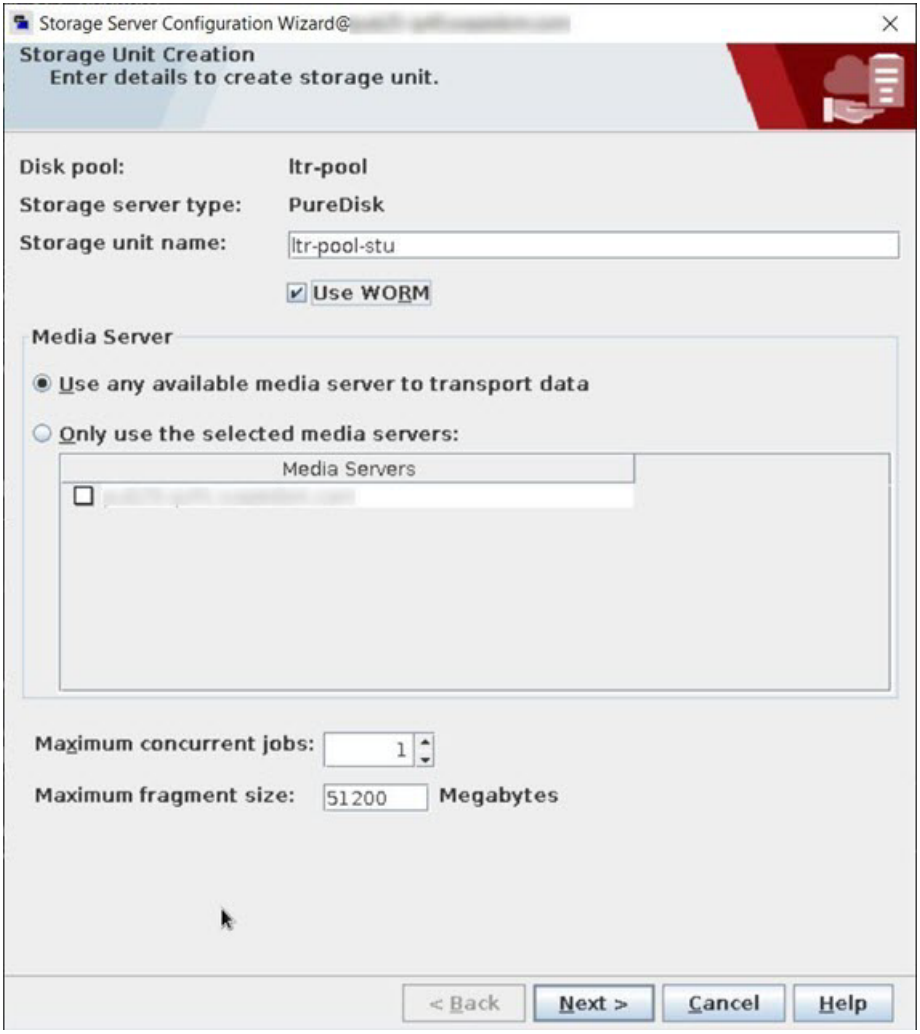
Refer to the *Veritas NetBackup* product documentation for more details.

If the Access Appliance Veritas Data Deduplication is configured with the WORM option and you want to store the WORM-enabled images from NetBackup, then select the **Use WORM** check-box

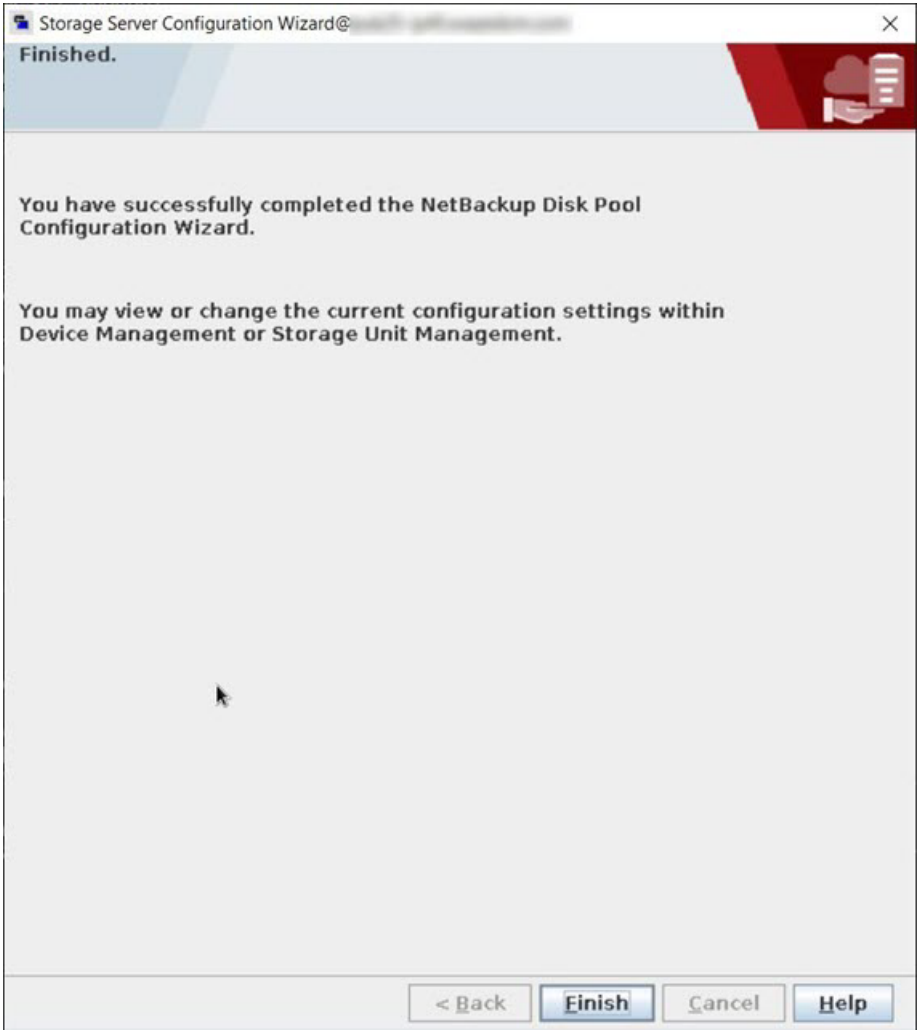
To use this option, you should have created a WORM capable storage server on Access Appliance.

See "Configuring Veritas Data Deduplication with WORM using GUI" on page 22.

Click **Next**.


Storage Server Configuration Wizard@
Storage Unit Creation
Enter details to create storage unit.
Disk pool:
ltr-pool
Storage server type:
PureDisk
Storage unit name:
ltr-pool-stu
Use WORM
Media Server
Use any available media server to transport data
Only use the selected media servers:
Media Servers
Maximum concurrent jobs:
1
Maximum fragment size:
51200
Megabytes
< Back
Next >
Cancel
Help

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



15 Go to **NetBackup Management** > **Storage Units** and verify that the storage server has been added successfully.

16 Go to **Media and Device Management** > **Disk Pools** and verify that the disk pool is created successfully.

Configuring global deduplication using the Veritas Data Deduplication storage server across the domain

Access Appliance supports the configuration of multiple Logical Storage Units (LSU) with Veritas Data Deduplication. Using the global deduplication feature, multiple NetBackup domains can access the Veritas Data Deduplication storage server in Access Appliance. By default, only one NetBackup domain is preconfigured with the Veritas Data Deduplication storage server. To configure multiple domains, you need to create a new user for each domain. Different NetBackup domains require a different Veritas Data Deduplication user. A specific user can access data only from the domain to which the user has been added.

To add a new user to the deduplication storage server, enter the following:

```
dedupe> adduser username
```

Where *username* is the user name of the second domain user.

The command should be run on the Access Appliance cluster.

After a new user name is added to the storage server in Access Appliance, you can use the credentials of the new user to add a STU on NetBackup in the new domain. Any backups taken from the new domain are visible only to the new user. The NetBackup domain can access the catalog and data of the user. When you configure Auto Image Replication and add the storage target, use the Veritas Data Deduplication user name used by the target NetBackup domain.

To show the list of users of the deduplication storage server, enter the following:

```
dedupe> listuser
```

The command should be run on the Access Appliance cluster.

Note: You must use the deduplication IP address of Veritas Data Deduplication host that was previously configured with the first domain in the **Add Storage Server** form when you provide the details of the storage server.

Enabling Veritas Data Deduplication encryption

Access Appliance supports Veritas Data Deduplication encryption for all backup and deduplication jobs. This section describes how to enable encryption for the backup jobs.

You can do it in two different ways.

Method 1:

Note: In NetBackup long-term data retention (LTR) use case, the server side refers to Access Appliance and the client refers to the media server.

For details on the MSDP compression and encryption settings, see the *MSDP compression and encryption settings matrix* section in the *Configuring deduplication* chapter in the *Veritas NetBackup Deduplication Guide* on SORT.

For details on configuring encryption for MSDP backups, see the *Configuring encryption for MSDP backups* section in the *Configuring deduplication* chapter in the *Veritas NetBackup Deduplication Guide* on SORT.

Method 2:

You can also enable encryption in the `contentrouter.cfg` file. If encryption is enabled in the `contentrouter.cfg` file, then any data coming from any media server is encrypted.

If Veritas Data Deduplication is configured with WORM

1. Log on to the restricted shell and type `setting encryption enable`.
2. Restart Veritas Data Deduplication services through the restricted shell.
3. Disable the health monitor and restart MSDP.

   See "Stopping and starting the MSDP services" on page 35.

If Veritas Data Deduplication is configured without WORM

1. Log on to the appliance console by connecting to the management IP and elevate to shell using `support elevate`.
2. Enable Encryption on the Veritas Access cluster.
   - Append the *encrypt* keyword in `contentrouter.cfg` file which is located in the first Veritas Data Deduplication file system. For example: `/vx/D3_588101/dedupe/etc/puredisk/contentrouter.cfg`.
   - Before appending the *encrypt* keyword, it appears as *ServerOptions=verify_so_references,fast*. After appending the *encrypt* keyword, it appears as *ServerOptions=verify_so_references,fast,encrypt*.
3. Restart the Veritas Data Deduplication services from the Access CLISH.

Support for bandwidth throttling during duplication

Veritas Data Deduplication supports bandwidth throttling during duplication.

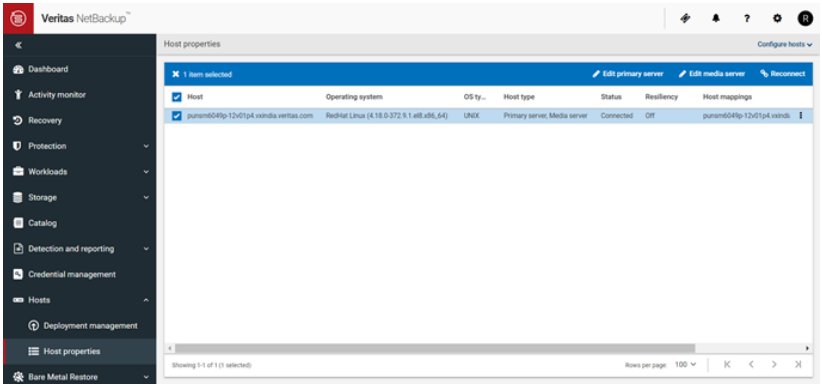
For more details, see https://www.veritas.com/support/en_US/article.100037976

Support for NetBackup Auto Image Replication

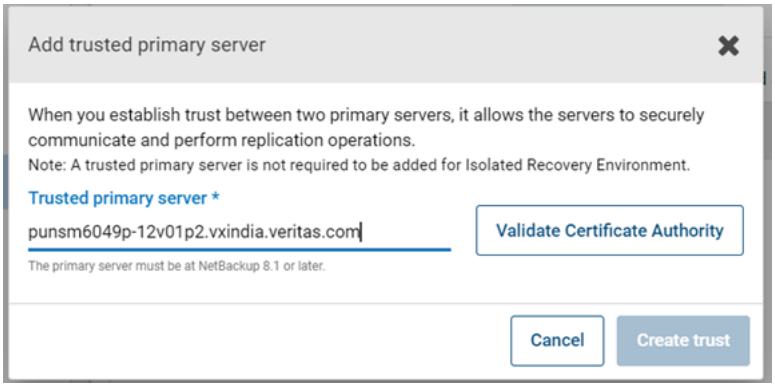
You can use the NetBackup Auto Image Replication (AIR) feature to replicate from one media to another media with Veritas Data Deduplication storage: You have to create a trust relationship between two NetBackup primary/media servers to configure NetBackup AIR.

To set up trust between NetBackup primary servers

1. Log on to the NetBackup primary server (*NBU1*) from the web UI.
2. Navigate to **Hosts > Host properties**. Select the **Edit primary server** tab.

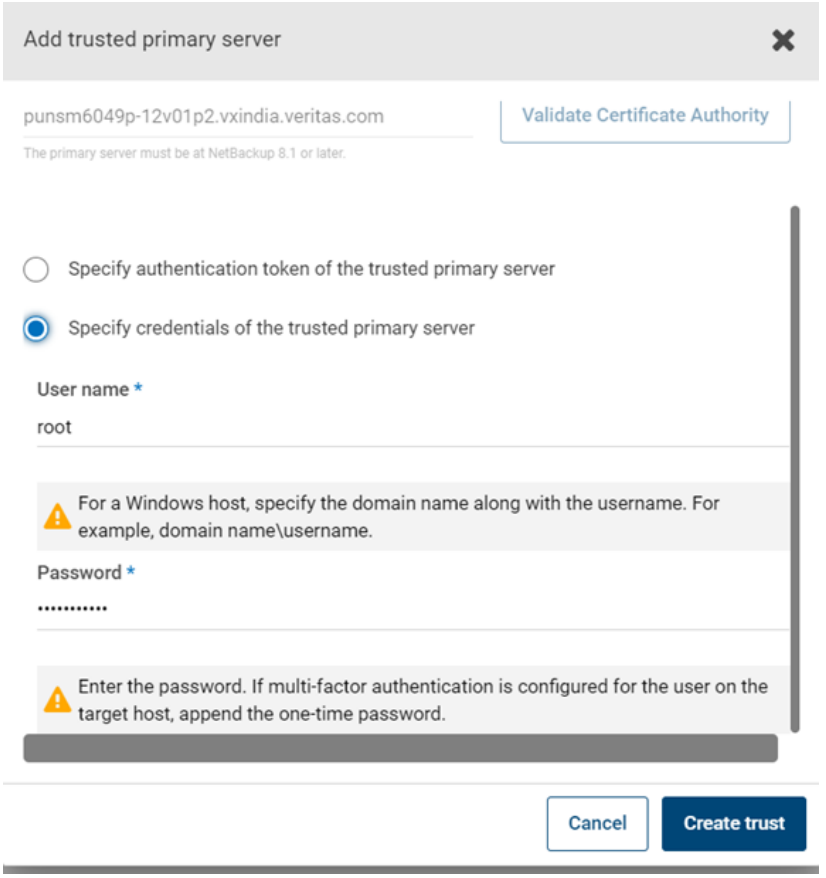


3 Click on **Servers > Trusted primary servers**. Click **Add**. Provide the target NetBackup primary server (*NBU2*) FQDN. Click on the **Validate Certificate Authority** option.



4 After verifying the CA fingerprint, click **Next**.

5 Generate token on the target NetBackup primary server (*NBU2*) and use it for authentication. Or, you can specify the target NetBackup primary server (*NBU2*) credentials for authentication. Click on **Create trust**. The NetBackup primary server (*NBU2*) is listed in the **Trusted primary servers** tab.



6 Repeat the same steps on the target NetBackup primary server (*NBU2*) to set up trust with the NetBackup primary server (*NBU1*).

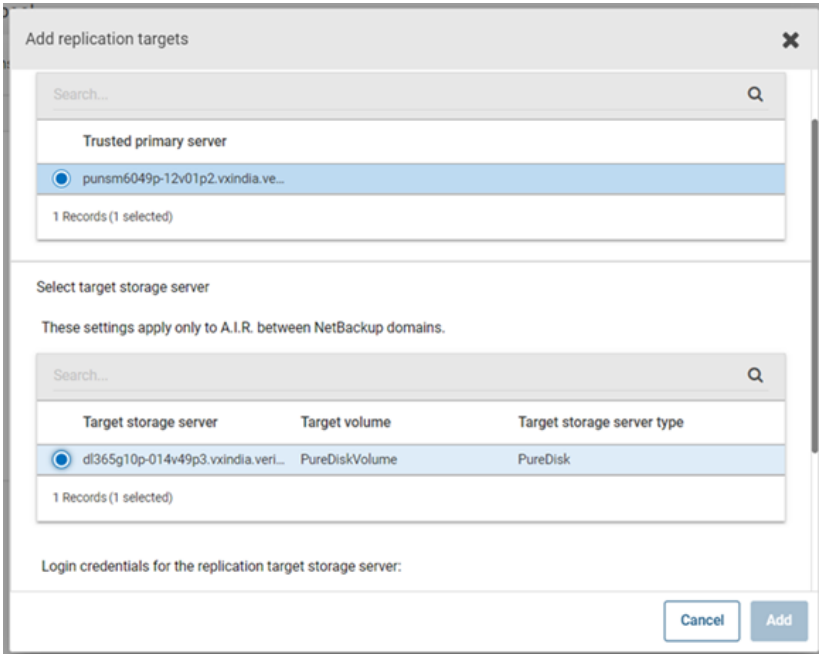
To configure storage servers for NetBackup Auto Image replication (AIR)

1 Configure the deduplication servers on the Access Appliances (both source and target) for AIR configuration.

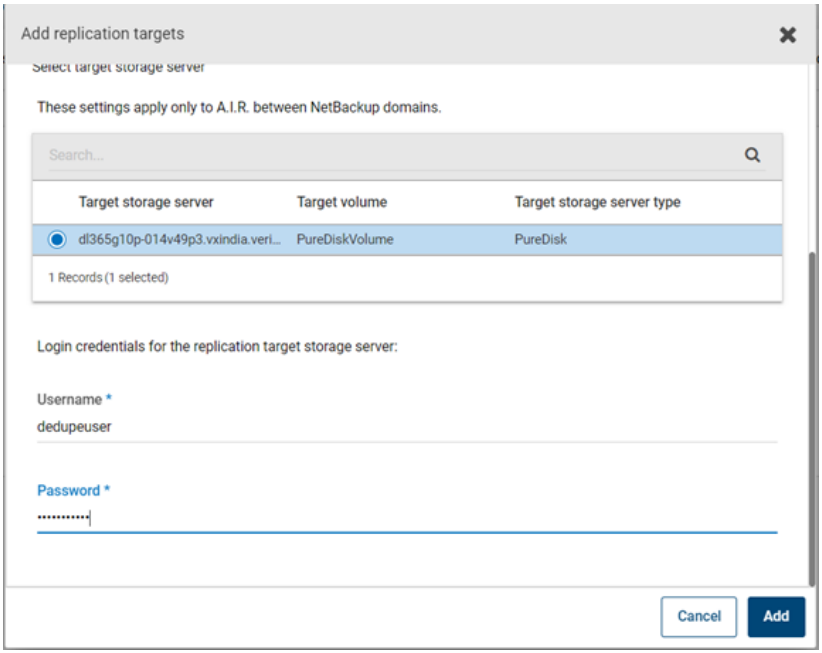
2 Add storage servers on the target NetBackup primary server (*NBU2*) with the target Access Appliance MSDP server's FQDN and credentials.

3. Log on to the target NetBackup primary server (*NBU2*) with the web UI. Navigate to **Storage > Storage configuration > Add Storage server**. Configure the storage server, disk pool and STU to complete the storage server configuration on the target.
4. Log on to the source NetBackup primary server (*NBU1*) with the web UI. Navigate to **Storage > Storage configuration > Add Storage server**. Add the storage server.

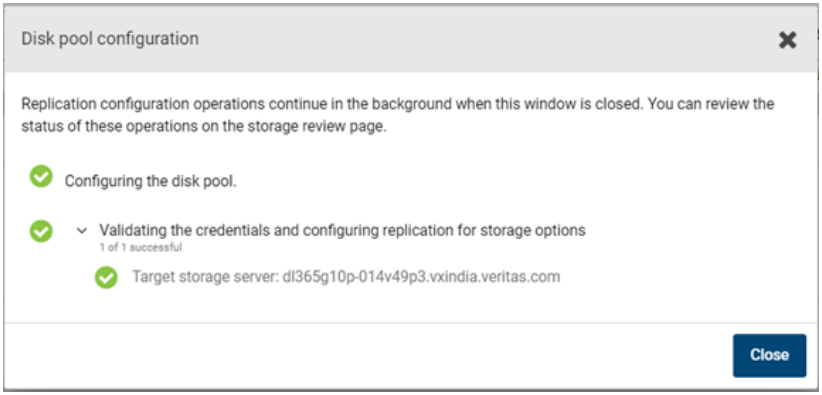
5 While adding the MSDP disk pool, add the replication target. Select the trusted primary server (*NBU2*) and the target storage server.



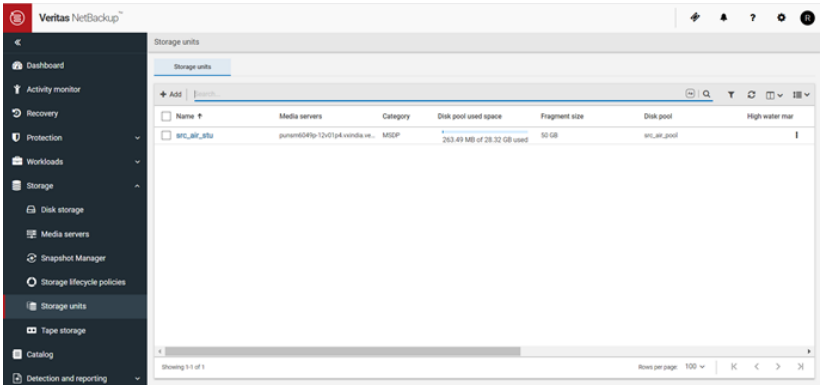
Scroll down and provide login credentials for the replication target storage servers. Click **Add**.



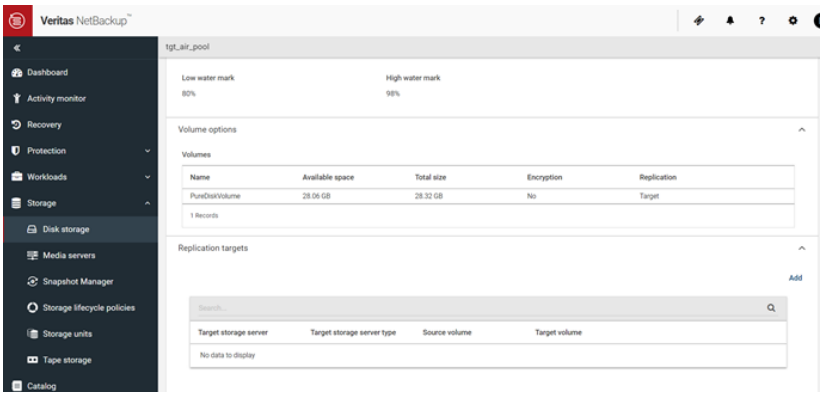
6 Review the MSDP pool configuration and click **Finish**.



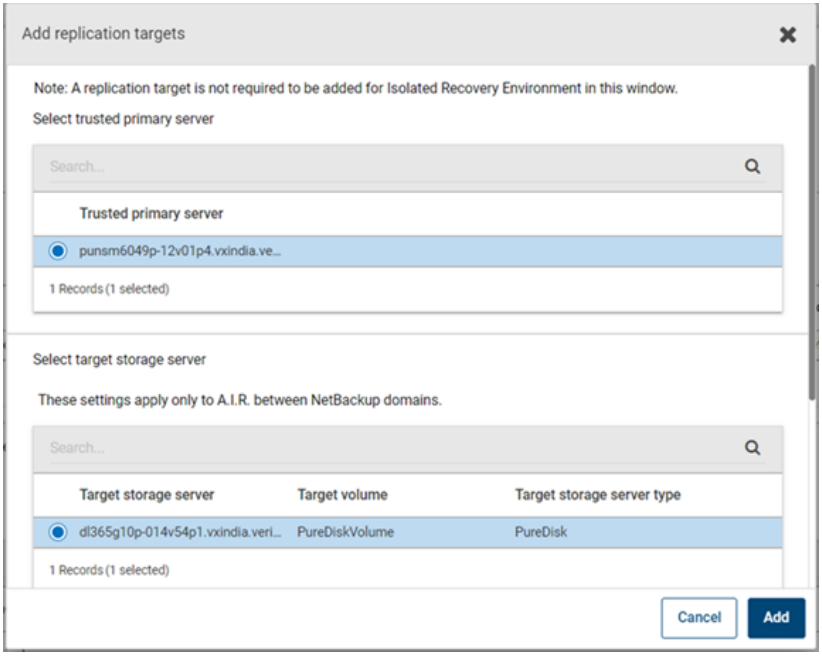
7 Create an STU to complete the storage server configuration for the source.

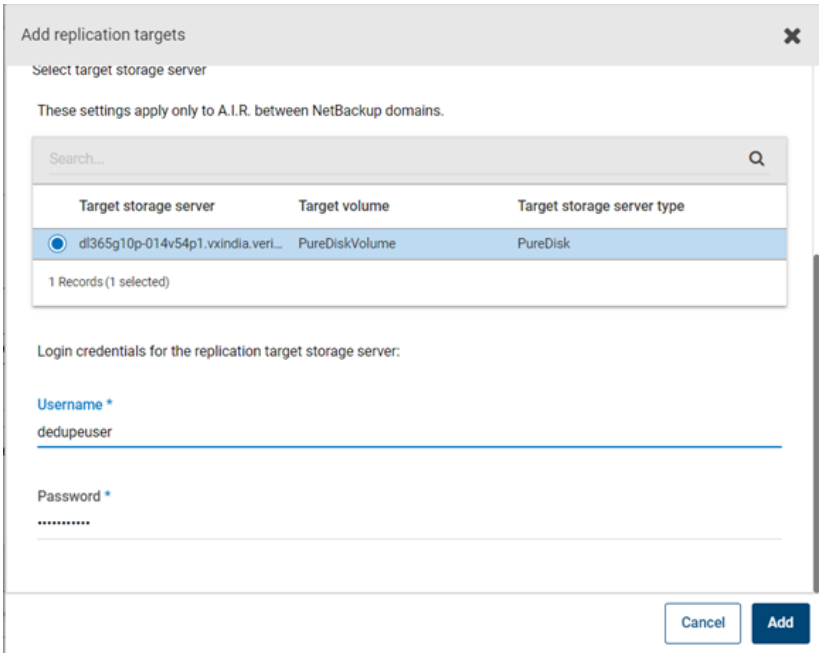


8 Relogin to the target NetBackup primary (*NBU2* and navigate to the earlier configured disk pool. Click on the disk pool name and navigate to replication target option. Click **Add**.

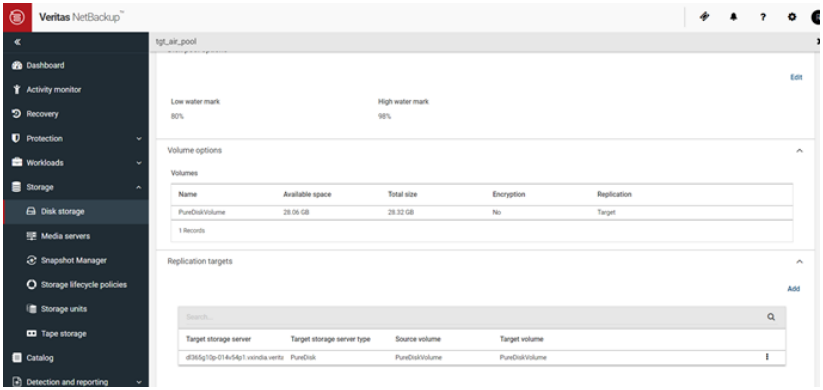


9 Select a trusted primary server (*NBU1*) and storage server. Enter the password for the deduplication service on the storage server.





10 Verify that the replication target is added.



NetBackup AIR process:

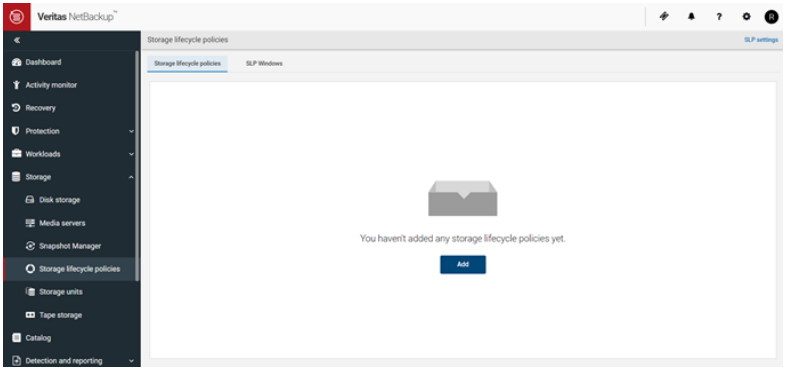
1. Backup - This is performed on the originating primary server (source domain, *NBU1*). Clients are backed up according to a backup policy that is indicated by the SLP specified in the Policy storage selection. The SLP must include at least one replication operation to a similar storage in the target domain.

2. Duplication - Images are duplicated to the source domain secondary storage server.
3. Replication - Images are replicated from the source domain to the target domain.
4. Device notifies NetBackup - The storage server in the target domain recognizes that a replication event has occurred. It notifies the NetBackup primary server in the target domain.
5. Import - NetBackup imports the image immediately, based on an SLP that contains an import operation. NetBackup can import the image quickly because the metadata is replicated as part of the image.

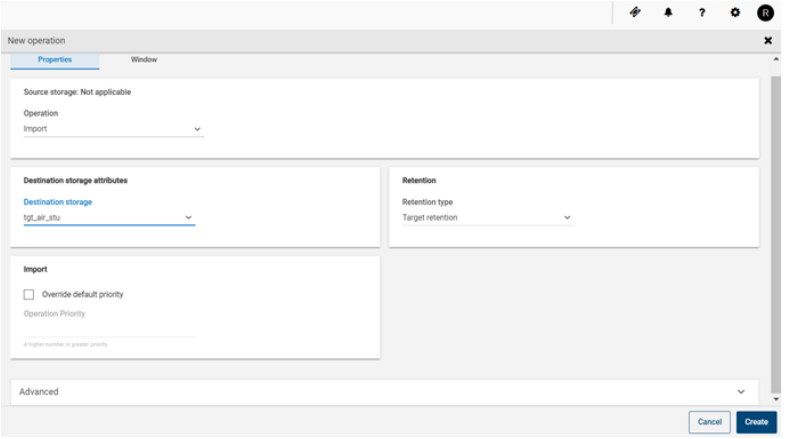
To create Storage LifeCycle Policy (SLP) for AIR

1 Create SLP Policy (import) on the target: cluster.

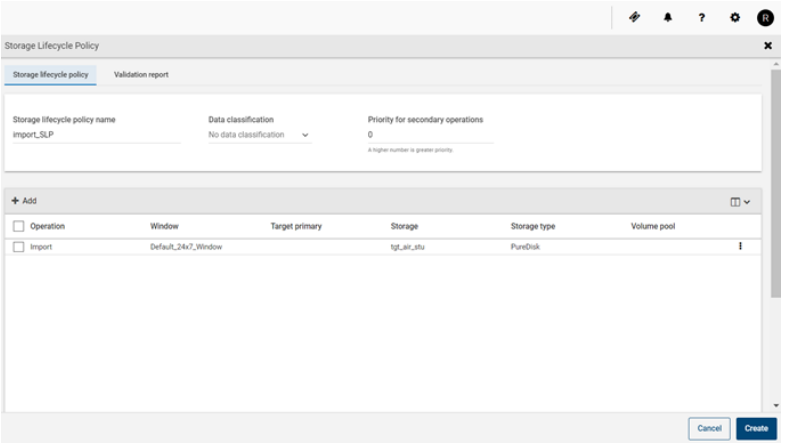
- On the target NetBackup primary (*NBU2*), navigate to **Storage > Storage lifecycle policies**. Click **Add**.



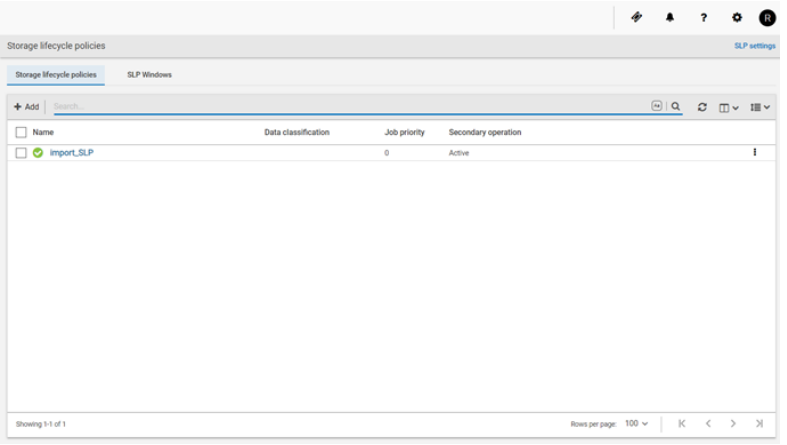
- Provide the SLP name. Click **Add** to add the import operation. Select **Import** from the drop-down. Select the destination storage STU. Click **Create**.



- Verify the import operation, storage and SLP name. Click **Create**.

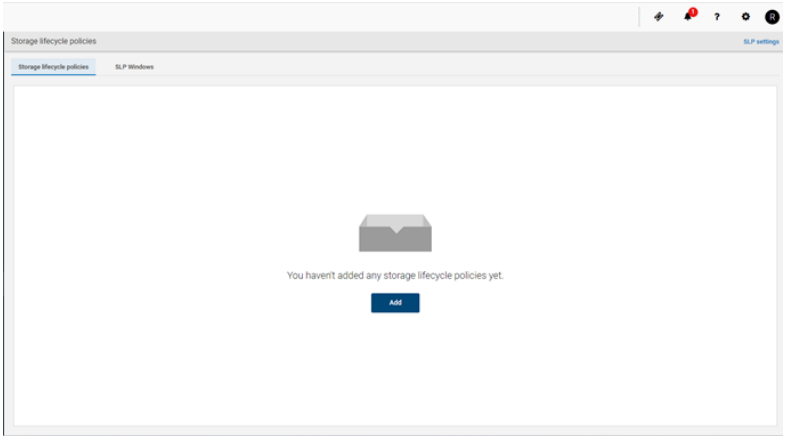


- Verify that the Import SLP has been added.

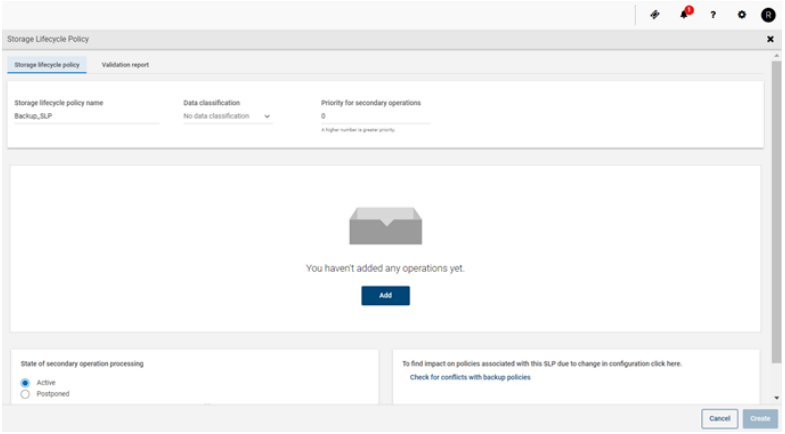


2 Create SLP Policy (backup, duplication and replication) on the source NetBackup primary (NBU1):

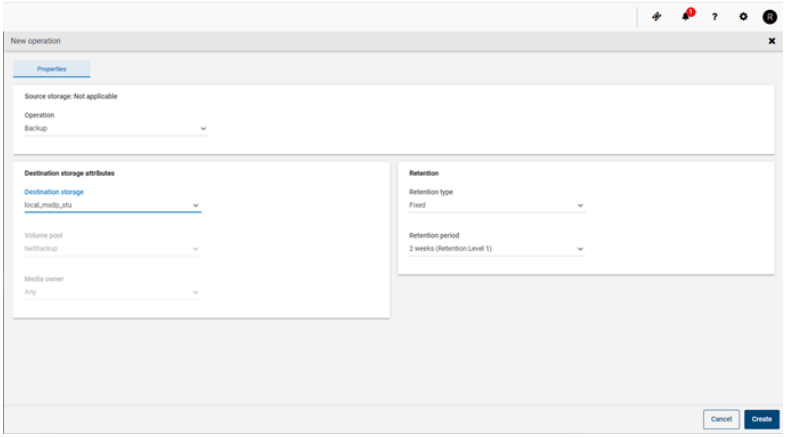
- Log on to the source NetBackup primary (*NBU1*). Navigate to **Storage > Storage lifecycle policies**. Click **Add**.



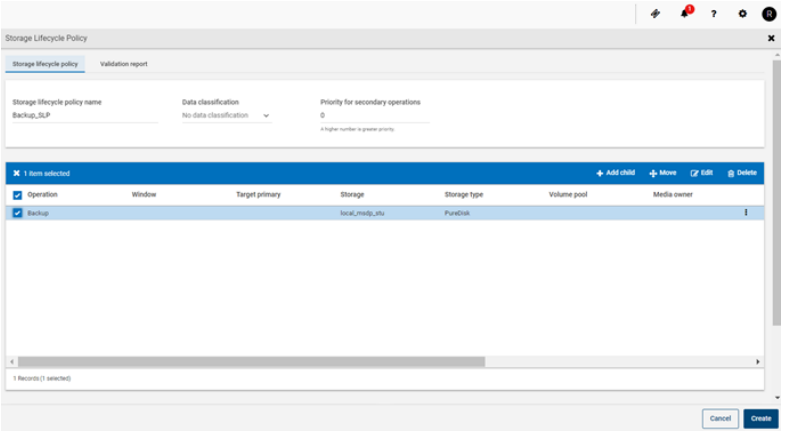
- Provide the SLP name. Click **Add**.



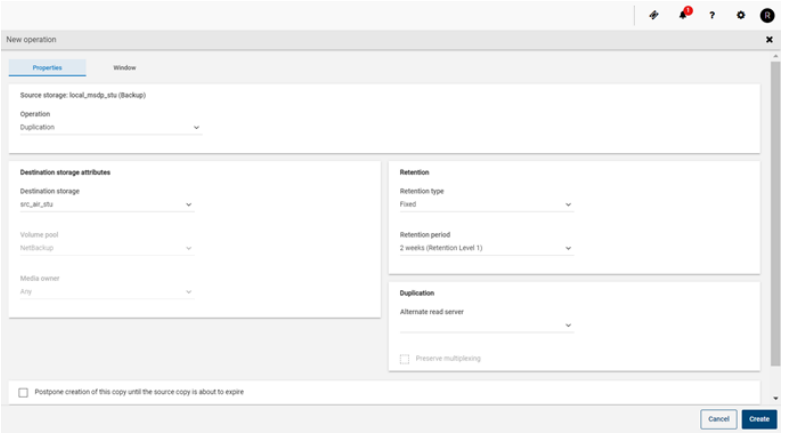
- Select **Backup** from the drop-down. Select the destination storage pool as the local MSDP pool which stores the primary data backup. Provide retention type and retention period. Click **Create**.



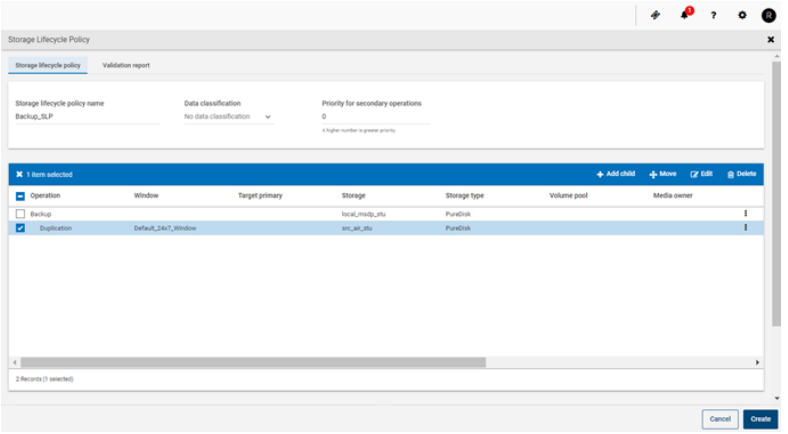
- Select the created backup operation on the SLP window, click on **Add child** to add the duplication operation as a child for backup operation.



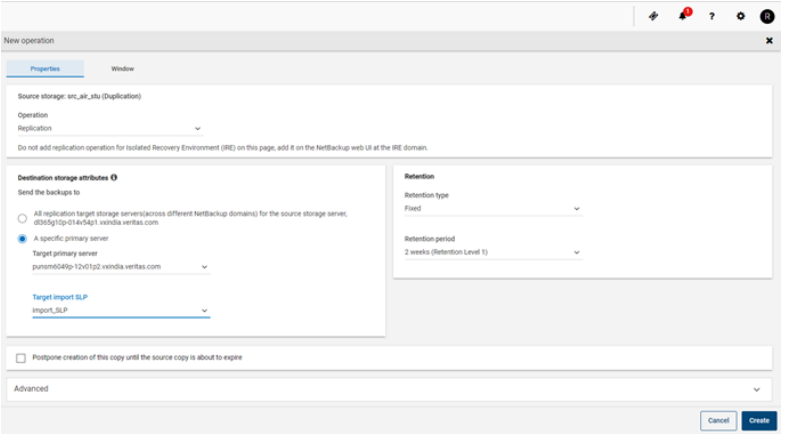
- Set the destination storage attributes.



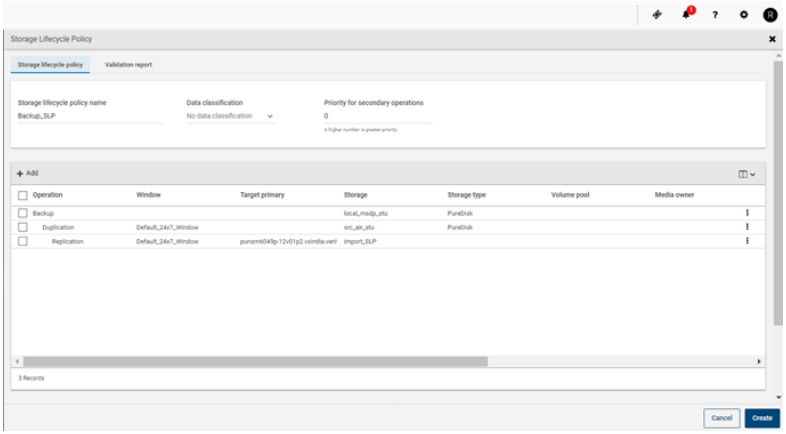
- Select the created duplication operation on the SLP window. Click **Add child** to add the replication operation as a child for duplication operation.



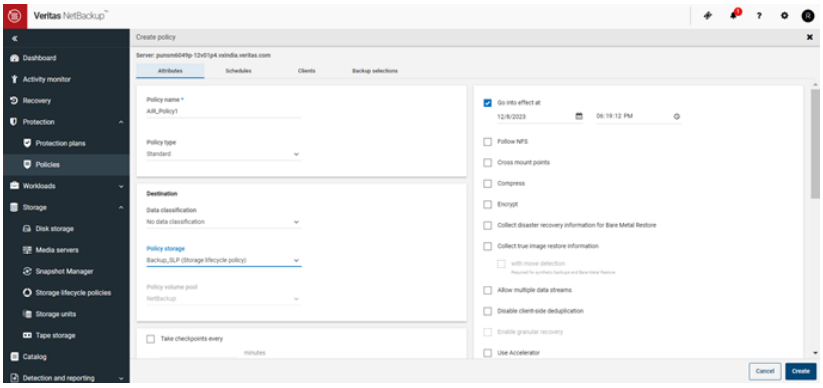
- Set the destination storage attributes. Choose the target primary server and target import SLP policy.



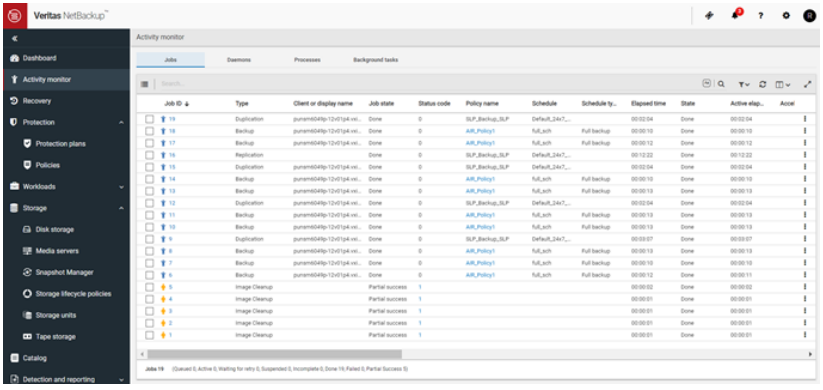
- Verify that the backup, duplication and replication operations are added correctly. Click **Create**.



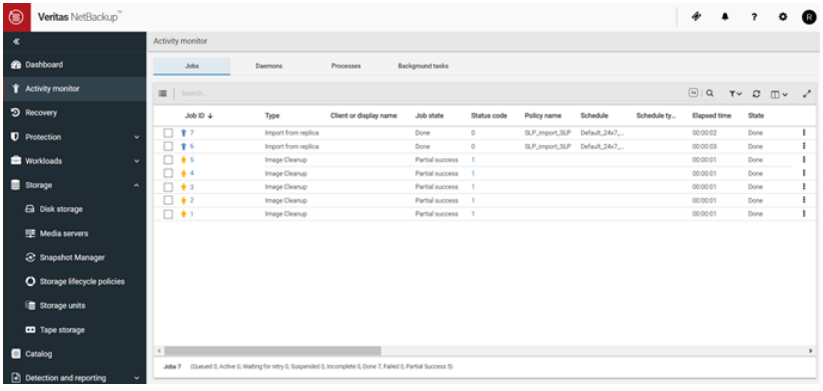
3 On the source NetBackup primary server (*NBU1*), create a policy and select the policy storage as the SLP you created. Configure the policy **Attributes**, **Schedules**, **Clients** and **Backup selections**.



4 Run the policy manually. The backup job is responsible for the data backup. The duplication job is responsible for duplicating backed up data on source storage server. The replication job is responsible for the replication of data to the target NetBackup primary server.



5 On the target NetBackup primary server (*NBU2*), verify that the **Activity** monitor lists the import job.



Separating the duplication and replication network

You can separate the duplication and replication network by performing an AIR from the source Access Appliance MSDP server to the target Access Appliance MSDP server. With the default configuration, the AIR traffic follows the same network route as the duplication traffic (eth4). You can separate both the traffic by running the following steps on the Access Appliance cluster.

Consider the following scenario:

- The deduplication server is configured on source Access Appliance cluster (*NBU1*) with primary IP as *10.10.10.11* and FQDN as *primary1.access.com*.
- The deduplication server is configured on the target cluster (*NBU2*) with primary IP as *10.10.10.12* and FQDN as *primary2.access.com*.
- The primary IPs are online on device *eth4*.
- The storage server is configured with *primary1.access.com* on (*NBU1*) and *primary2.access.com* on (*NBU1*).
- *10.10.10.13* and *10.10.10.14* are unused IPs with FQDNs as *vip1.access.com* and *vip2.access.com* respectively.

To separate the duplication and replication network

1. Log on to source Access Appliance cluster with management console IP.
2. On the source cluster, add a virtual IP. Select a device other than the one already used for deduplication of the primary IP.

   ```
   network> ip addr add <virtual_ip> <netmask> [device] [nodename] [fqdns]
   ```

   Example:

   ```
   network> ip addr add 10.10.10.13 255.255.240.0 eth5
   ```

3. Repeat step 2 with the other IP on the target Access Appliance cluster.

   Example:

   ```
   network> ip addr add 10.10.10.14 255.255.255.0 eth5
   ```

4 On the source cluster, add a route to the new target virtual IP.

```
network ip route add all <target_vip> 255.255.255.255 via
<source_gateway> dev <device_name> scope=global
```

Where

target_vip	Newly added virtual IP on target Access Appliance cluster.
source_gateway	Gateway IP of the source cluster
device_name	Device on which the newly added virtual IP is present on the source cluster.

Example:

```
network> ip route add all 10.10.10.14 255.255.255.255 via 10.10.10.1
dev eth5
```

5 Add the virtual IP to Access Appliance MSDP server on both the source and target cluster with the respectively added virtual IPs.

```
dedupe> addip <virtual_ip>
```

Example:

On the source cluster:

```
dedupe> addip 10.10.10.13
```

On target: cluster:

```
dedupe> addip 10.10.10.14
```

6 Add the mapping of the target virtual IP to the target deduplication primary FQDN on the source deduplication instance.

If you have an instance of WORM-enabled Veritas Data Deduplication, run the following command on the source cluster.

```
dedupe> fqdn add <target_vip> <target_primary_fqdn>
```

Where

target_vip	Newly added virtual IP on the target Access Appliance cluster.
target_primary_fqdn	FQDN with which the storage server has been added to the target NetBackup primary server.

Example:

```
dedupe> fqdn add 10.10.10.14 primary2.access.com
```

If the instance of Veritas Data Deduplication is not WORM-enabled, add the IP/FQDN to the /etc/hosts file of each node.

7 If you want to replicate from the target cluster to the source cluster, you can perform the same steps on the target cluster with the source cluster IP.

If you have an instance of WORM-enabled Veritas Data Deduplication, run the following command on the target cluster.

```
dedupe> fqdn add 10.10.10.13 primary1.access.com
```

If the instance of Veritas Data Deduplication is not WORM-enabled, add the IP/FQDN to the /etc/hosts file of each node.

Chapter 4

Configuring MSDP-C with Access Appliance

This chapter includes the following topics:

Starting the Access S3 server and provisioning the S3 bucket

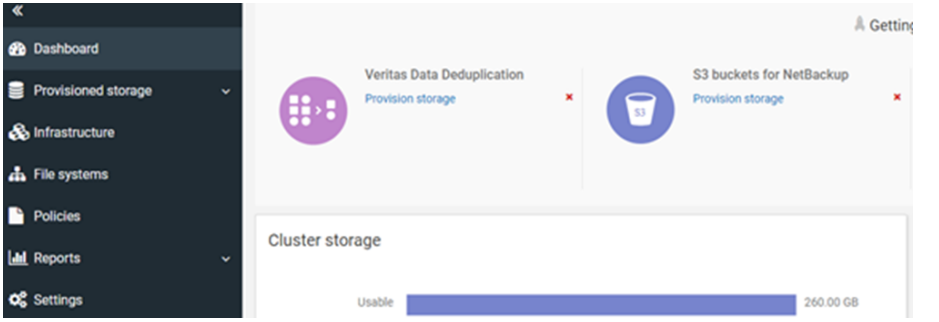
You can use the following procedure to start the S3 server and provision the S3 bucket.

Note: The size of the bucket for MSDP-C should not be more than 1 PiB.

Note: NetBackup bucket with WORM-enabled is only supported with Compliance mode.

To start the S3 server and provision the S3 bucket using the Access GUI

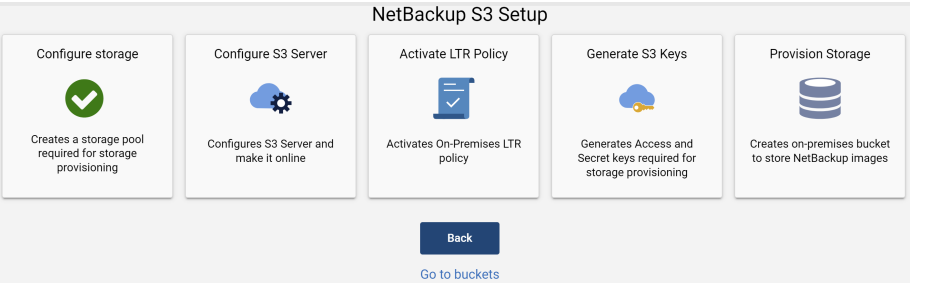
1 In **S3 buckets for NetBackup** area, click **Provision storage**.



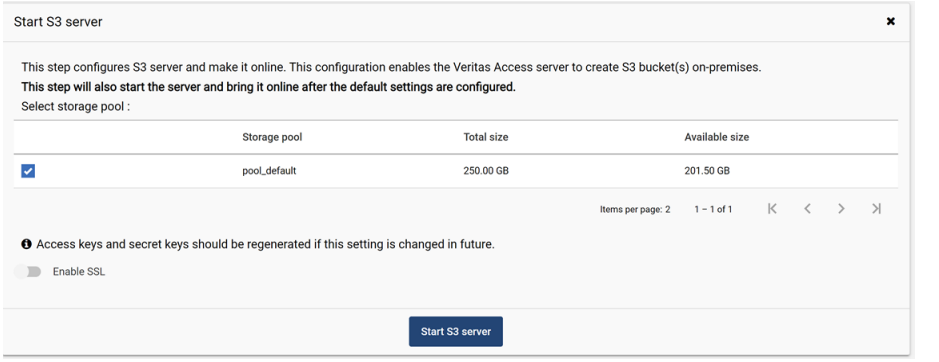
Or

Navigate to **Quick Actions > Provision Storage > Storage for NetBackup > S3 without cloud**. Click **Next**.

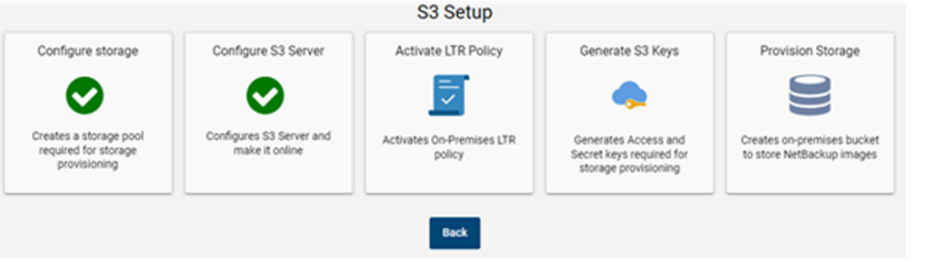
2 Click **Configure S3 server**.



3 Select the storage pool and click **Start S3 server**. If you want to enable SSL for S3 server. then turn on the **Enable SSL** toggle button.

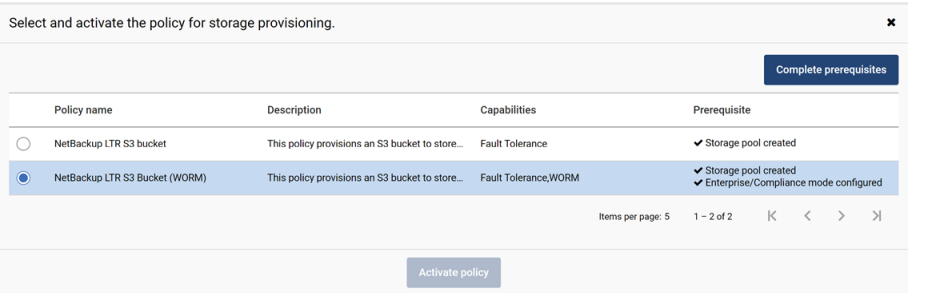


4 Click **Activate LTR Policy**.



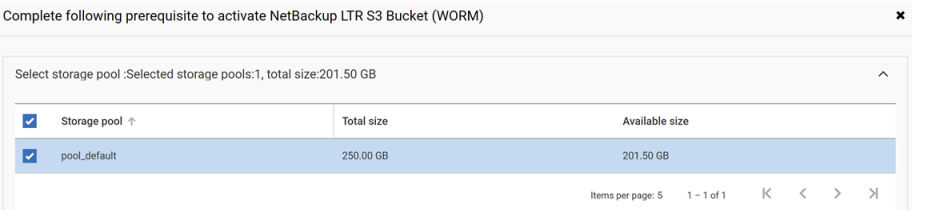
5 If you want to configure NetBackup MSDP-C on a non-WORM bucket, select **NetBackup LTR S3 Bucket policy** and click **Complete prerequisites**.

If you want to configure NetBackup MSDP-C on a WORM bucket, select **NetBackup LTR S3 Bucket (WORM) policy** and click **Complete prerequisites**.

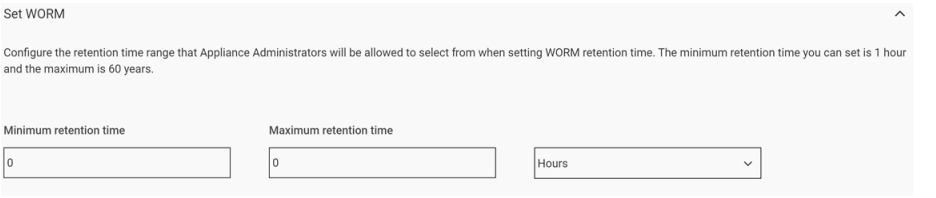


6 For non-WORM use case, select the storage pool. Click **Activate policy**.

For WORM use case, select the storage pool.

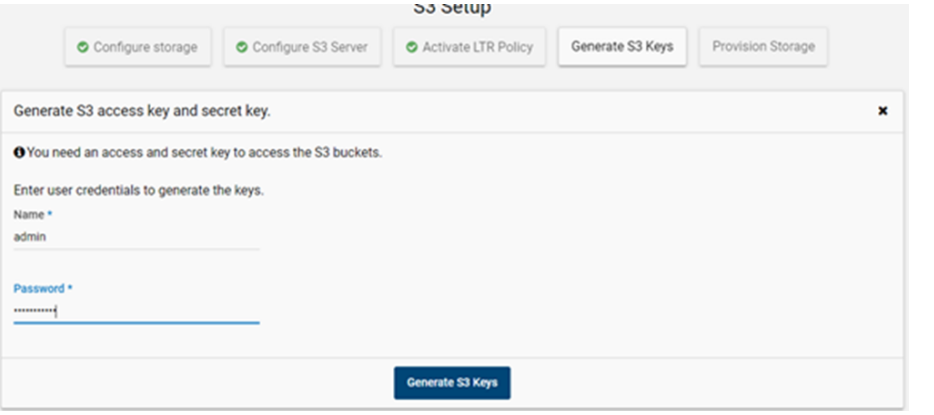


7 Perform this step only for WORM use case. During activation, under **Set WORM**, the minimum and maximum retention period should be left as blank for MSDP-C buckets. This will be applied from NetBackup during configuration. Click **Activate policy**.

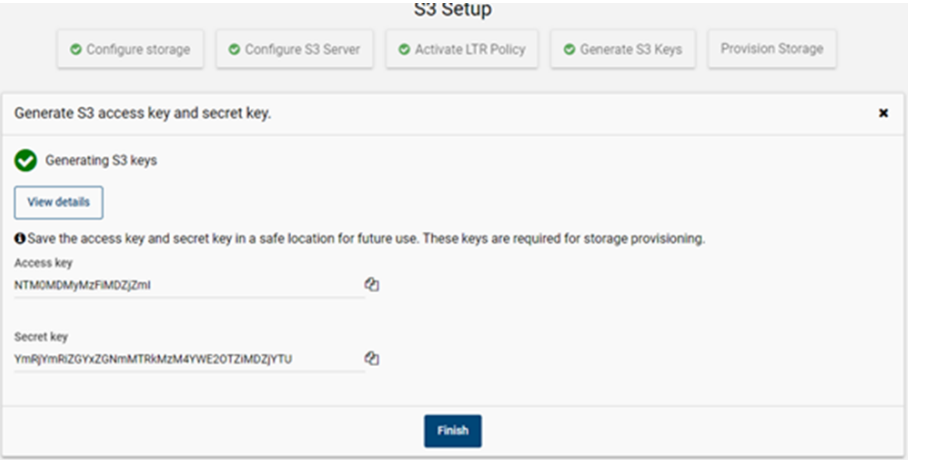


8 Generate S3 keys. You can use any local/AD/LDAP user credentials. Under **Name**, enter the username for which you want to create keys and under **Password**, specify the user password.

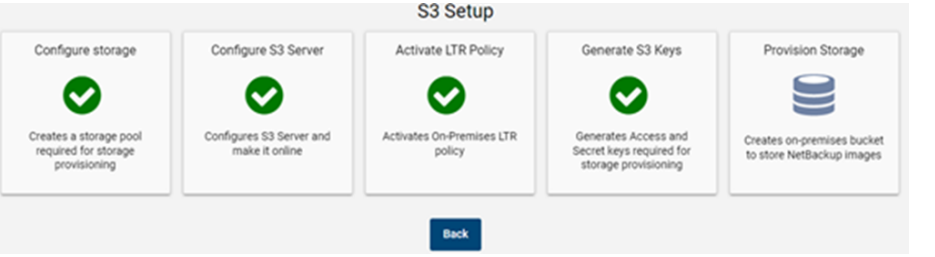
Click on **Generate S3 Keys**.



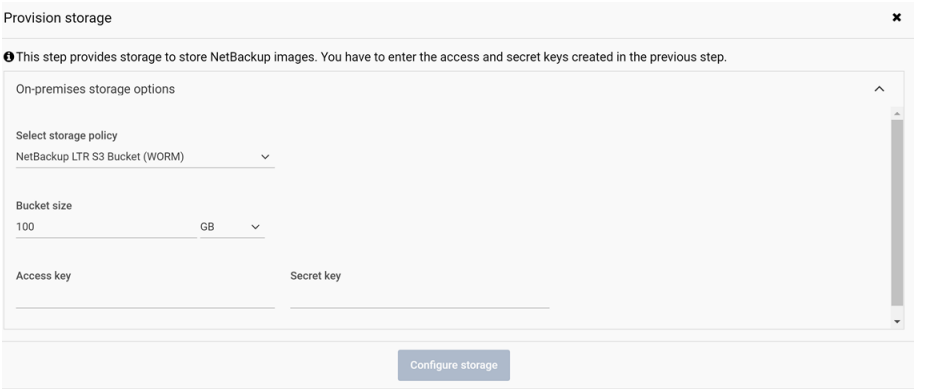
9 Note down the access key and secret key.



10 Click **Provision Storage**.



11 Select the storage policy according to the activation, set the bucket size as per the requirement, and specify the access and the secret keys.



Configuring Access S3 bucket with NetBackup MSDP-C

This section describes how to configure an Access S3 bucket with NetBackup MSDP-C.

Pre-requisite to configuring MSDP-C with Access S3 server configured in SSL mode

If Access S3 is started with SSL, perform the following steps to add the Access S3 certificate to the OS trust store of NetBackup media servers:

1. Copy the certificate obtained after running the `objectaccess certificate show` CLISH command to the `s3cert.pem` file. Append the following file with the obtained certificate on the NetBackup servers:

For NetBackup 9.x: `/usr/openv/var/global/wmc/cloud/cacert.pem`

For NetBackup 10.x: `/usr/openv/var/global/cloud/cacert.pem`

2. Run the following commands on the NetBackup primary server:

```
cp s3cert.pem /usr/share/pki/ca-trust-source/anchors/

update-ca-trust force-enable

update-ca-trust extract

update-ca-trust
```

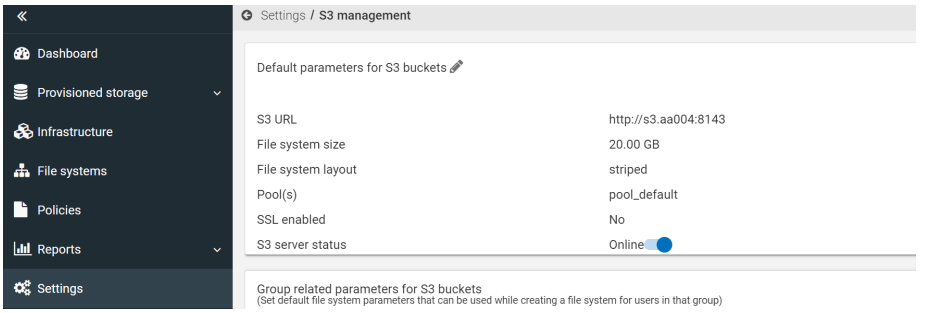
Pre-requisite to configuring MSDP-C with WORM

If you want to configure NetBackup MSDP-C WORM with Access S3 WORM bucket, then you must add the volume to the bucket using the `msdpcldutil` command from the NetBackup server's bash.

To add volume to the bucket

1 Log in to NetBackup primary and set the following environment variables:

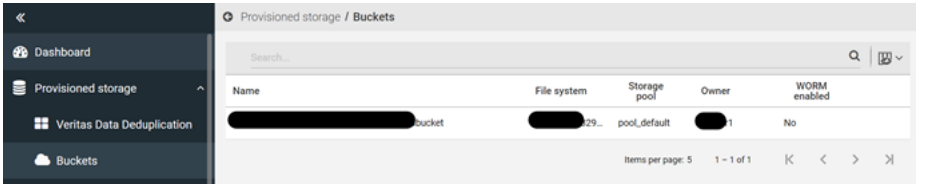
```
export MSDPC_ACCESS_KEY=<access-key>
export MSDPC_SECRET_KEY=<secret-key>
export MSDPC_REGION=us-east-1
export MSDPC_PROVIDER=vtas-access
export MSDPC_ENDPOINT=<endpoint name> (find it from GUI Dashboard.
Go to Settings > S3 management. For example: http://<cluster>:8143)
```



2 Run the following command to create a volume. Use the bucket name from the Access Appliance GUI (**Provisioned storage** > **Buckets**).

```
/usr/openv/pdde/pdcr/bin/msdpcldutil create --bucket <bucketname>
--volume <volumename> --mode COMPLIANCE --max <maxdays>
--min <mindays> --live <date>
```

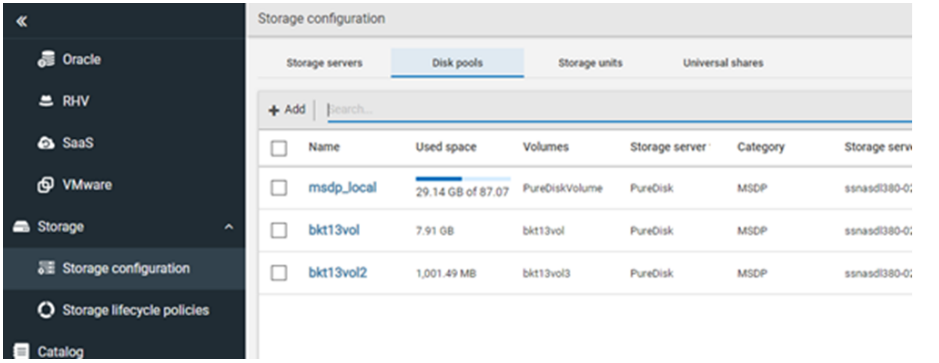
Refer to the `msdpcldutil` command's help for more details.



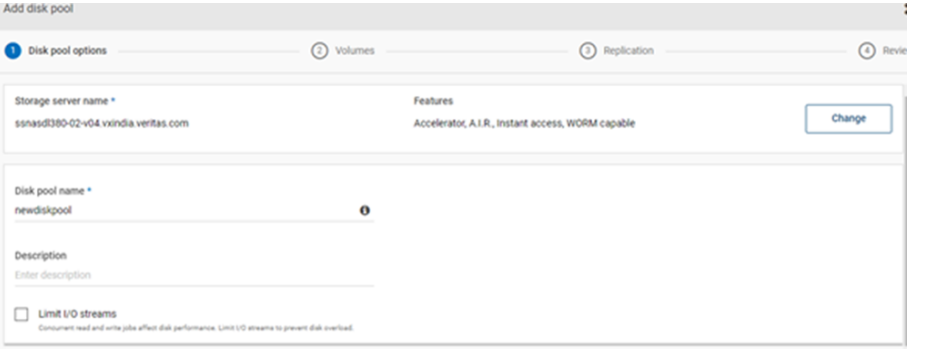
Log in to the NetBackup GUI and perform the following steps to configure MSDP-C with Access S3 bucket, create disk pool and create STU.

To configure MSDP-C with Access S3 bucket

1. Go to **Storage** > **Storage Configuration** > **Storage servers** and add the MSDP storage server on the NetBackup media server using which you want to configure MSDP-C.
2. Go to **Storage** > **Storage Configuration** > **Disk pools** and add a new pool.



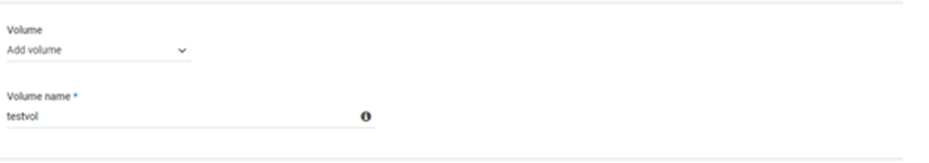
3. Select a storage server and enter the name of pool and click **Next**.



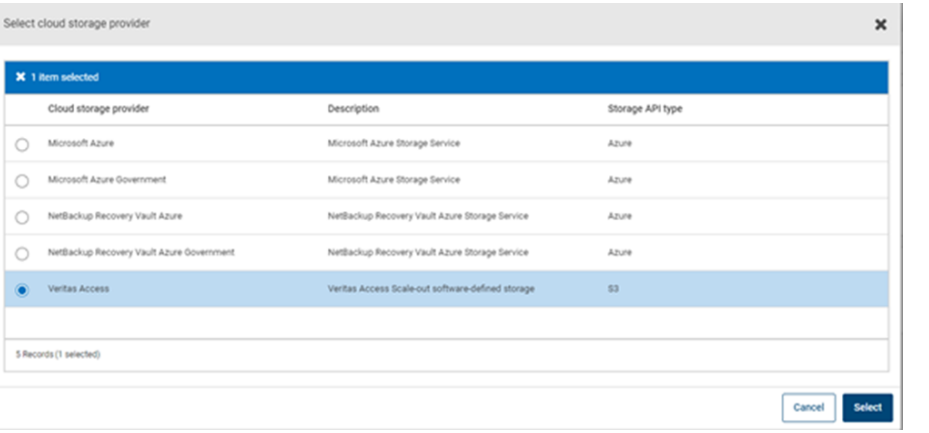
4 Select **Add volume**.

For MSDP-C with WORM use case, enter the volume name which was provided as part of `msdpcldutil` command during S3 configuration.

For MSDP-C with non-WORM use case, you can enter any volume name.

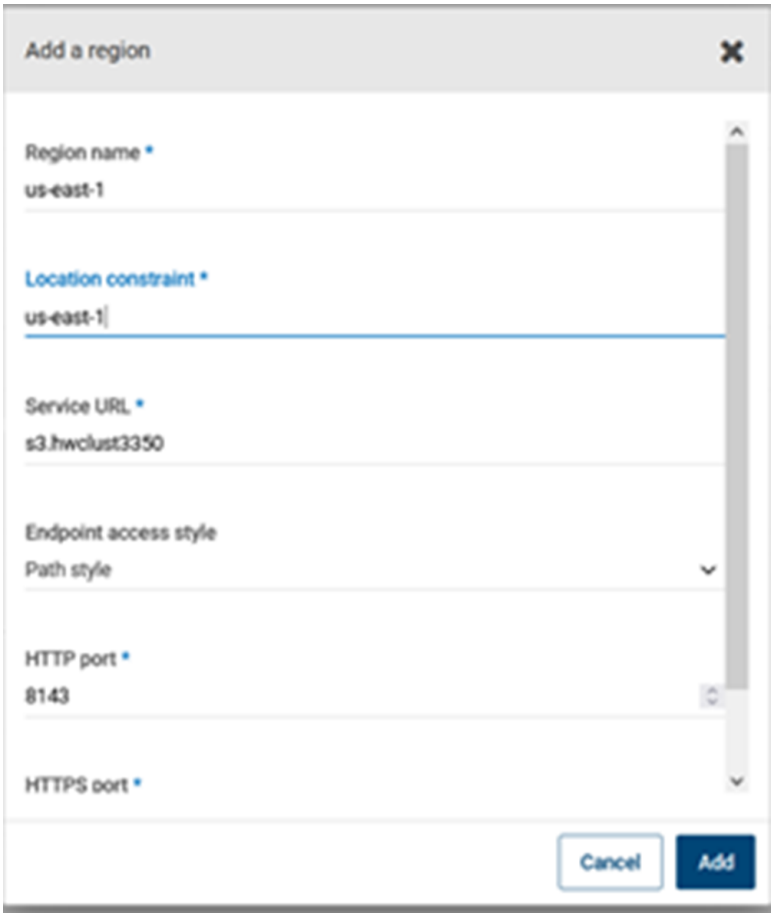


5 Under **Select cloud storage provider**, search for Veritas Access.

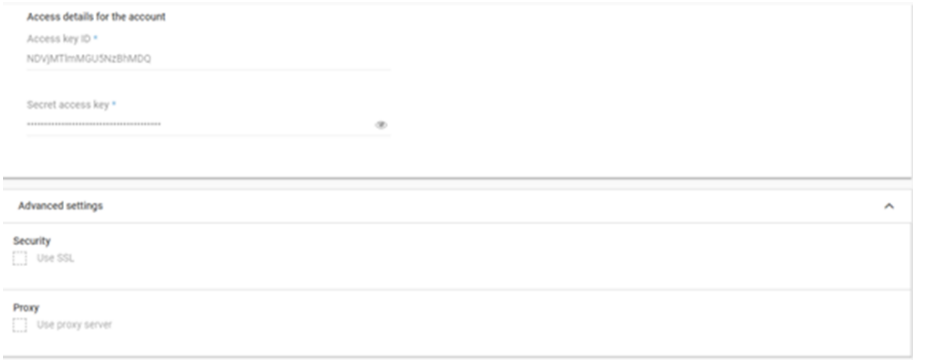


6 Add **Region name** and **Location Constraint** as *us-east-1*. Service URL should be endpoint name (http://<cluster>:8143). Note that the endpoint name refers to only the <*cluster*> part listed in the URL and not the entire URL.

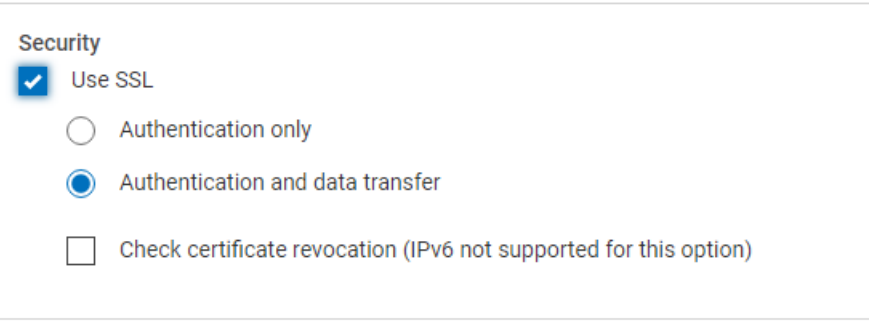
You can find the Access S3 endpoint URL by running the `objectaccess show` command from the Access CLISH. Specify the HTTP and HTTPS port number which is mentioned in S3 endpoint URL. Click **Add** to proceed.



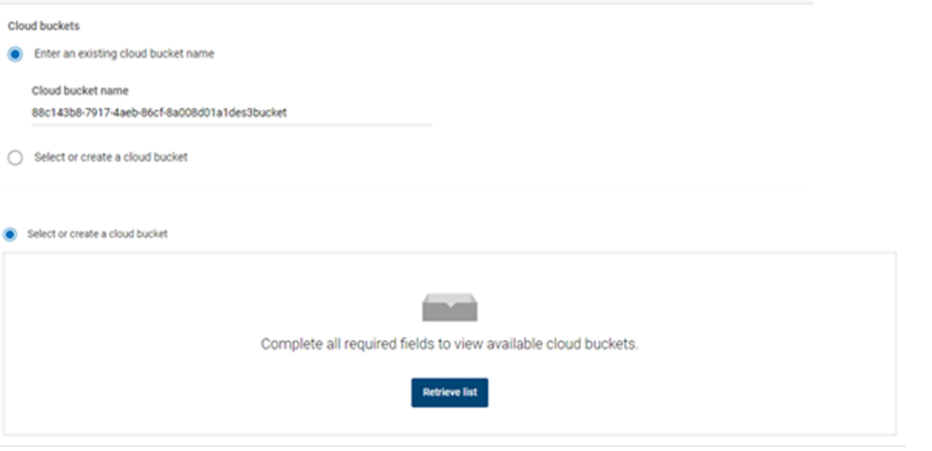
7 Add access key and secret key.



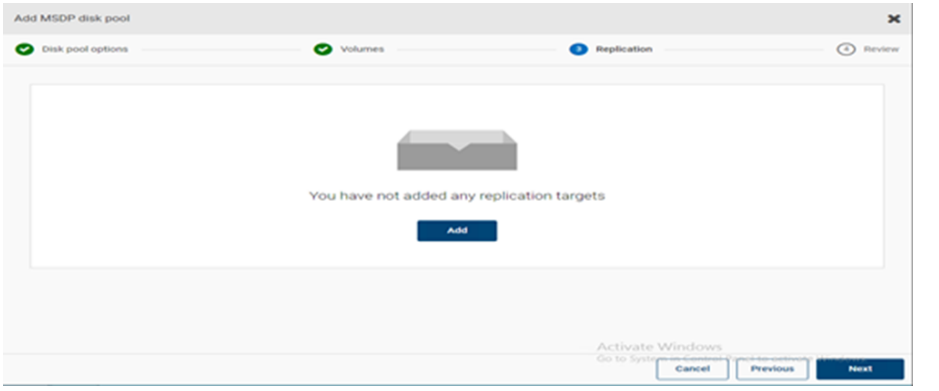
8 Uncheck the **Use SSL** option, if Access S3 server is configured on HTTP. If Access S3 server is configured with SSL/HTTPS then select the **Use SSL** option with **Authentication and data transfer**.



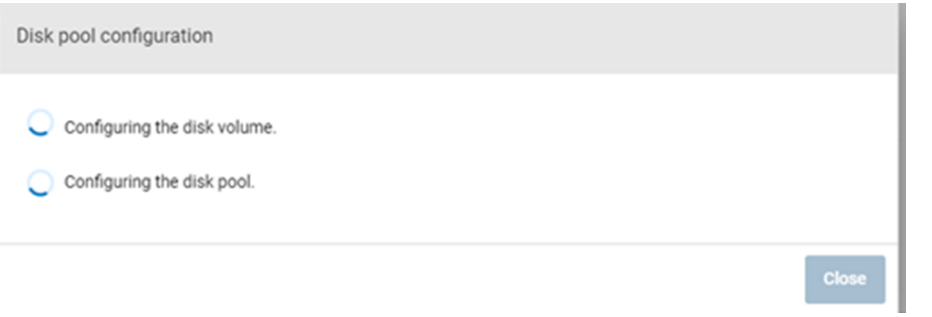
9 You can either enter an existing bucket name or select a cloud bucket by clicking **Retrieve list**. Click **Next**.



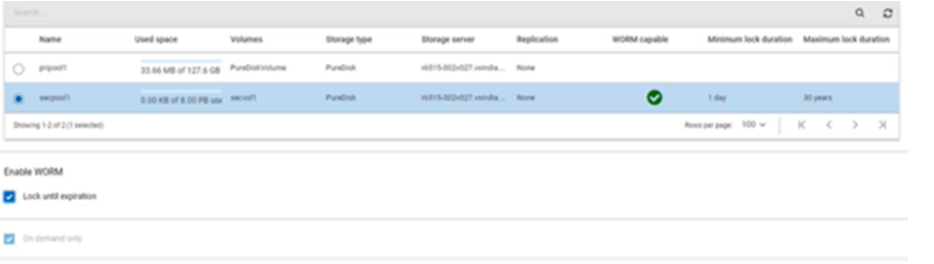
10 Skip the addition of replication target by clicking **Next**.



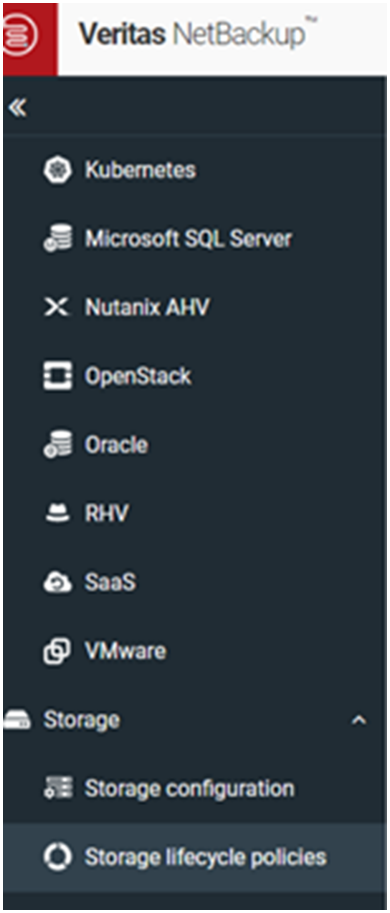
11 Review the configuration and click **Finish**. The disk volume and disk pool will get configured.



12 Go to **Add storage unit** and select the created pool. For MSDP-C with WORM use case, check the **Lock until expiration** option to enable WORM.

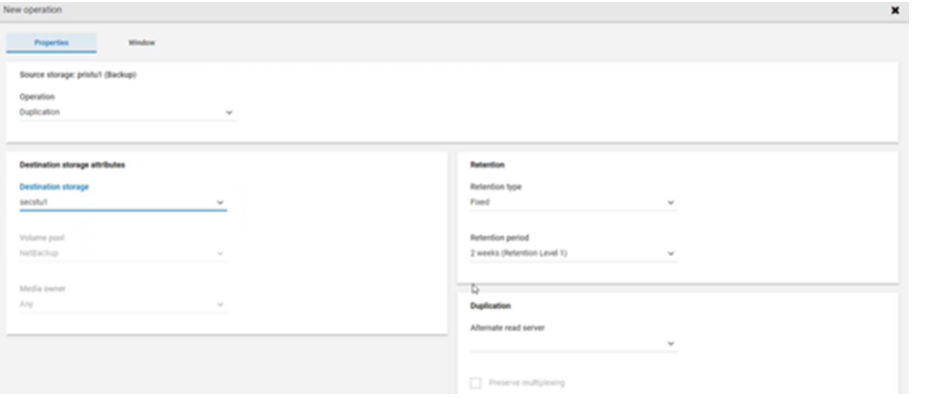


13 Create storage lifecycle policies. Go to **Storage** > **Storage lifecycle policies**.

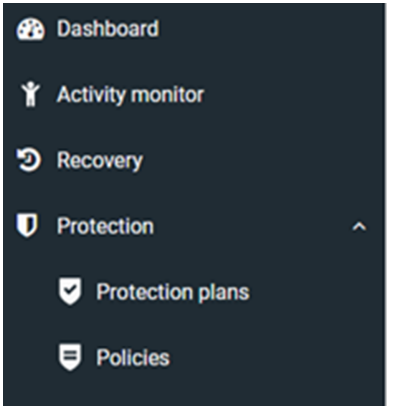


14 Add Storage lifecycle policy (SLP) with backup on the primary STU and deduplication on the secondary STU (the STU which is configured with MSDP-C).

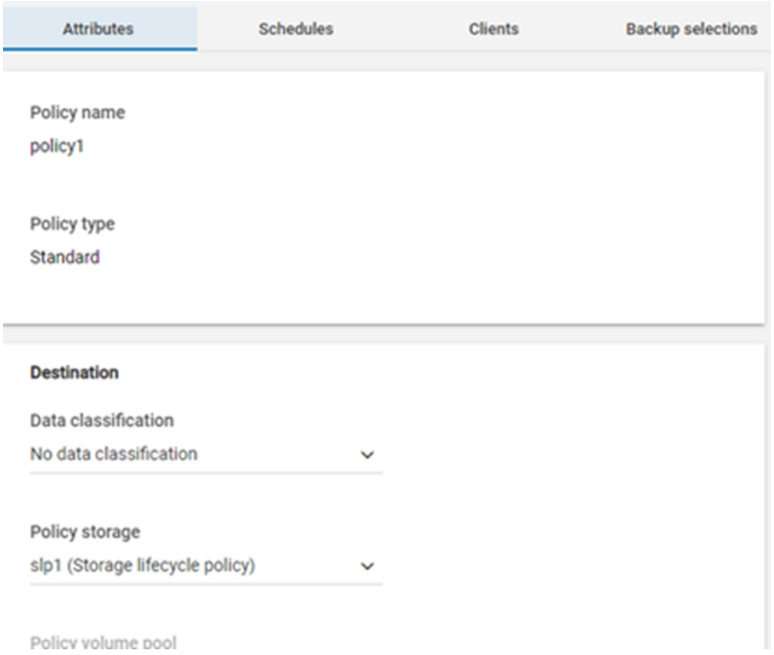
For MSDP-C with WORM use case, the retention period selected should be between the maximum and minimum value given while configuring the volume using the `msdpcldutil` command.



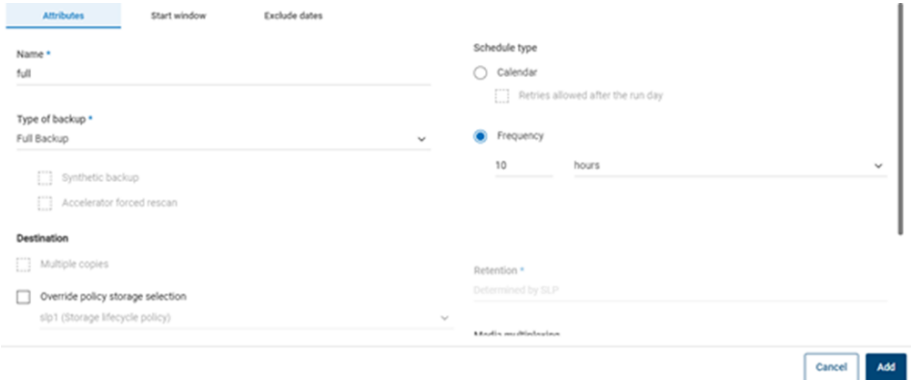
15 After defining the SLP, create a policy to perform backup. Go to **Protection** > **Policies**.



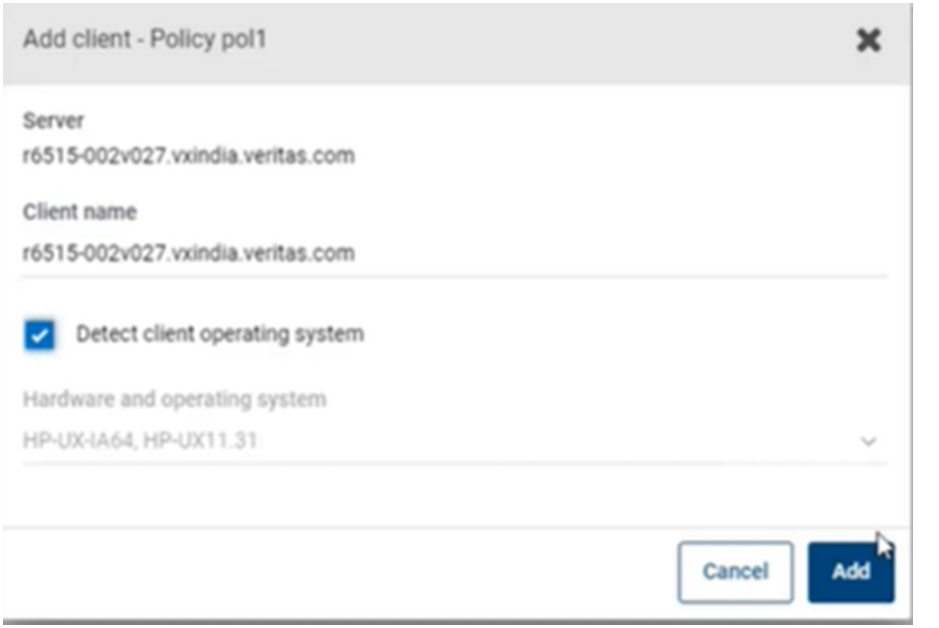
16 Add a policy name. Under **Policy storage**, select the SLP created in the previous step.



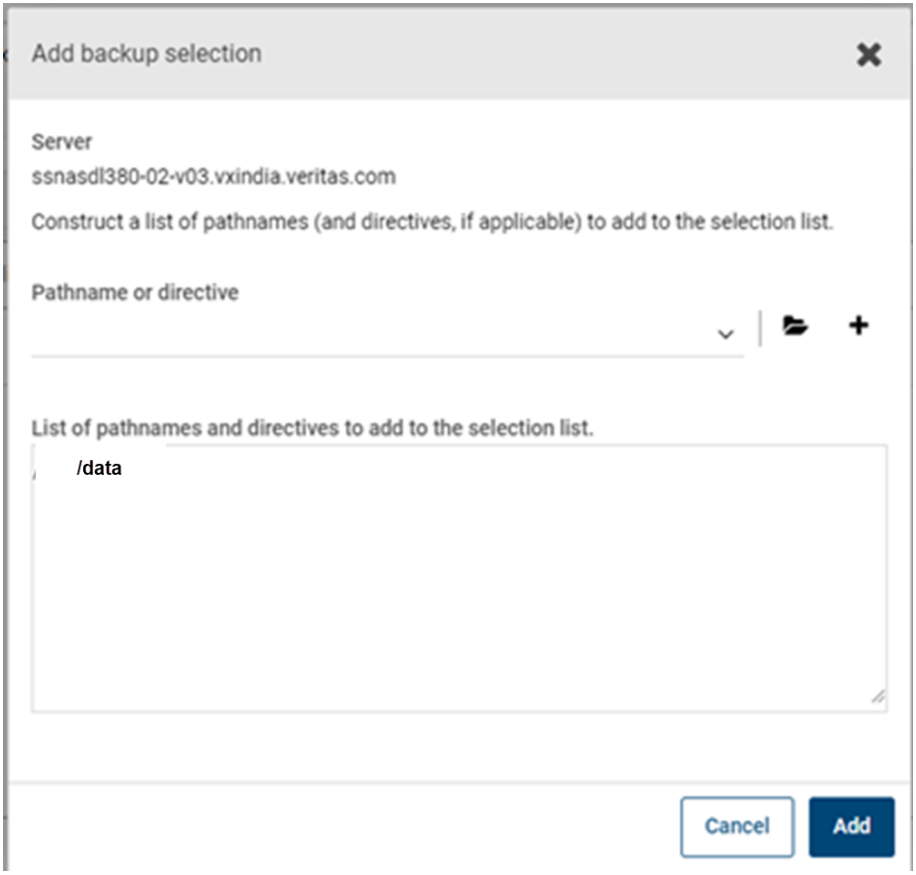
17 Go to **Schedules** to create automatic schedules.



18 Add the client.



19 In the **Add backup selection** dialog box, select the file or directory that needs to be backed up.



20 Click **Create**.

21 Activate the policy.

Chapter 5

Migrating the NetBackup images from existing storage to Veritas Access storage

This chapter includes the following topics:

Migrating NetBackup images from CloudCatalyst/S3/MSDP-C to Veritas Data Deduplication storage

You can migrate the backup images from the CloudCatalyst/S3/MSDP-C Storage Unit (STU) to the Veritas Data Deduplication STU.

Table 5-1

When CloudCatalyst is configured as the secondary/LTR storage in the NetBackup policy	To migrate the NetBackup images from the CloudCatalyst STU to the Veritas Data Deduplication STU when CloudCatalyst is configured as the secondary storage in the NetBackup SLP

Table 5-1 *(continued)*

When CloudCatalyst is configured as the primary storage in the NetBackup policy	To migrate the NetBackup images from the CloudCatalyst STU to the Veritas Data Deduplication STU when CloudCatalyst is configured as the primary storage in the NetBackup policy
When S3 is configured as the primary storage in the NetBackup policy	To migrate the NetBackup images from the S3 STU to the Veritas Data Deduplication STU when S3 is configured as the primary storage in the NetBackup policy
If you want to migrate the NetBackup images from the MSDP-C STU to the Veritas Data Deduplication STU	To migrate the NetBackup images from the MSDP-C STU to the Veritas Data Deduplication STU

To migrate the NetBackup images from the CloudCatalyst STU to the Veritas Data Deduplication STU when CloudCatalyst is configured as the secondary storage in the NetBackup SLP

1. Configure the Veritas Data Deduplication STU.
2. Change the SLP to point to the Veritas Data Deduplication STU instead of the CloudCatalyst STU so that the new images get duplicated on the Veritas Data Deduplication STU.
3. As optimized duplication from CloudCatalyst to Veritas Data Deduplication is not supported, the administrator is required to add the `RESUME_ORIG_DUP_ON_OPT_DUP_FAIL = TRUE` flag in the `/usr/openv/netbackup/bp.conf` file of both the primary and media server.
4. Go to the **NetBackup Management** > **Catalog** and select the **Action** as **Duplicate** from the drop-down menu.
5. In the **NetBackup Management** > **Catalog**, right-click on the image that is stored on the CloudCatalyst STU and that you want to duplicate on the Veritas Data Deduplication STU. Select **Duplicate**.
6. In the pop-up window that appears, select the Veritas Data Deduplication STU and click **OK**.
7. In the confirmation screen, click **OK** to start duplication.

   You can check the progress of the image duplication in the **NetBackup Activity Monitor**.

8 After the completion of duplication, the status of the duplication job appears as **The requested operation was partially successful**. In the job detail status, some error messages appear that are expected.

9 After duplication is complete, expire the backup image stored on the CloudCatalyst STU.

To migrate the NetBackup images from the CloudCatalyst STU to the Veritas Data Deduplication STU when CloudCatalyst is configured as the primary storage in the NetBackup policy

1 Configure the Veritas Data Deduplication STU.

2 Change the SLP to point to the Veritas Data Deduplication STU instead of the CloudCatalyst STU so that the new images get created on the Veritas Data Deduplication STU.

3 As optimized duplication from CloudCatalyst to Veritas Data Deduplication is not supported, the administrator is required to add the `RESUME_ORIG_DUP_ON_OPT_DUP_FAIL = TRUE` flag in the `/usr/openv/netbackup/bp.conf` file of both the primary and media server.

4 Go to the **NetBackup Management** > **Catalog** and select the **Action** as **Duplicate** from the drop-down menu.

5 In the **NetBackup Management** > **Catalog**, right-click on the image that is stored on the CloudCatalyst STU and that you want to duplicate on the Veritas Data Deduplication STU. Select **Duplicate**.

6 In the pop-up window that appears, select the Veritas Data Deduplication STU and click **OK**.

7 In the confirmation screen, click **OK** to start duplication.

You can check the progress of the image duplication in the **NetBackup Activity Monitor**.

8 After the completion of duplication, the status of the duplication job appears as **The requested operation was partially successful**. In the job detail status, some error messages appear that are expected.

9 After duplication is complete, expire the backup image stored on the CloudCatalyst STU.

To migrate the NetBackup images from the S3 STU to the Veritas Data Deduplication STU when S3 is configured as the primary storage in the NetBackup policy

1. Configure the Veritas Data Deduplication STU.
2. Change the SLP to point to the Veritas Data Deduplication STU instead of the S3 STU so that the new images get created on the Veritas Data Deduplication STU.
3. Go to the **NetBackup Management** > **Catalog** and select the **Action** as **Duplicate** from the drop-down menu.
4. In the **NetBackup Management** > **Catalog**, right-click on the image that is stored on the S3 STU and that you want to duplicate on the Veritas Data Deduplication STU. Select **Duplicate**.
5. In the pop-up window that appears, select the Veritas Data Deduplication STU and click **OK**.
6. In the confirmation screen, click **OK** to start duplication.

   You can check the progress of the image duplication in the **NetBackup Activity Monitor**.
7. After duplication is complete, expire the backup image stored on the S3 STU.

To migrate the NetBackup images from the MSDP-C STU to the Veritas Data Deduplication STU

1. Configure the Veritas Data Deduplication STU.
2. Change the existing SLP to point to the Veritas Data Deduplication STU instead of the MSDP-C STU so that the new images will get duplicated to the Veritas Data Deduplication STU.
3. Go to **NetBackup Management** > **Catalog** and select the **Action** as **Duplicate** from the drop-down menu.
4. In **NetBackup Management** > **Catalog**, right-click on the image that is stored on the MSDP- C STU which you want to duplicate on the Veritas Data Deduplication STU. Select **Duplicate**.
5. In the pop-up window that appears, select the Veritas Data Deduplication STU and click **OK**.
6. In the confirmation screen, click **OK** to start duplication. You can check the progress of the image duplication in the **NetBackup Activity Monitor**.
7. After duplication completes, expire the backup image stored on the MSDP-C STU.

Migrating the NetBackup images from the Veritas Data Deduplication STU to the MSDP-C STU

You can migrate the NetBackup images from the Veritas Data Deduplication STU to the MSDP-C STU.

To migrate the NetBackup images from the Veritas Data Deduplication STU to the MSDP-C STU which is configured on bucket of Veritas Access Objectaccess server

1. Configure MSDP-C with Veritas Access Objectaccess bucket.
2. Change the existing SLP to point to the MSDP-C STU instead of the Veritas Data Deduplication STU so that the new images will get duplicated to the MSDP-C STU.
3. Go to **NetBackup Management** > **Catalog** and select the **Action** as **Duplicate** from the drop-down menu.
4. In **NetBackup Management** > **Catalog**, right-click on the image that is stored on the Veritas Data Deduplication STU which you want to duplicate on the MSDP-C STU. Select **Duplicate**.
5. In the pop-up window that appears, select the MSDP-C STU and click **OK**.
6. In the confirmation screen, click **OK** to start duplication. You can check the progress of the image duplication in the **NetBackup Activity Monitor**.
7. After duplication completes, expire the backup image stored on the Veritas Data Deduplication STU.

Chapter 6

Configuring Access Appliance with the NetBackup client

This chapter includes the following topics:

- Configuring backup operations using NetBackup or other third-party backup applications
- Restoring filesystems backed up with NetBackup client

Configuring Access Appliance for NetBackup client

Access Appliance 8.0 supports NetBackup client versions 8.1.2.1, 8.2, 9.0, 9.0.0.1, 9.1, and 10.0.

Certificates are deployed as a part of the NetBackup client configuration to enable secure communication between NetBackup primary and NetBackup client to perform backup and restore related operations successfully.

To back up your data present on filesystems which are present on Access Appliance with NetBackup, you must register the installed and configured NetBackup primary server with Access Appliance.

To configure NetBackup Client for Access Appliance, perform the following tasks in the following order:

Table 6-1 Workflow for configuring the NetBackup client

Task	Details
Make sure that the prerequisites are met.	See "Prerequisites for configuring the NetBackup client" on page 120.
Configure the NetBackup client.	See "Configuring the NetBackup client" on page 120.
Add an optional media server.	See "Adding an optional media server" on page 121.
Add multiple primary servers.	See "Adding multiple primary servers" on page 122.
Add file systems for backup.	See "Adding file systems to the backup configuration" on page 123.

You can also perform the following tasks:

Table 6-2 Other operations that you can perform on the NetBackup client

Task	Details
Unconfigure the NetBackup client.	See "Unconfiguring the NetBackup client" on page 125.

Table 6-2 Other operations that you can perform on the NetBackup client *(continued)*

Task	Details
Remove file systems from backup configuration.	See "Removing file systems from backup configuration" on page 123.
Change the virtual IP address used by NetBackup client.	See "Changing the virtual IP address used by the NetBackup client" on page 124.
Upgrade the NetBackup client.	See "Upgrade the NetBackup client" on page 124.
Enable Veritas Data Deduplication catalog backup with NetBackup client.	See "Enabling Veritas Data Deduplication catalog backup with NetBackup client" on page 125.
Disable Veritas Data Deduplication catalog backup with NetBackup client.	See "Disabling Veritas Data Deduplication catalog backup from NetBackup client" on page 128.
Remove file systems from backup configuration.	See "Removing file systems from backup configuration" on page 123.
Display the current status of the NetBackup client.	See "Displaying the status of NetBackup services" on page 129.
Verify that Access Appliance is configured with the NetBackup client.	See "Displaying the status of NetBackup services" on page 129.

If Access Appliance 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 running the `bpgetconfig` command.

  ```
  # bpgetconfig
  IP_ADDRESS_FAMILY = AF_UNSPEC
  ```

- Restart the services after making this change.

Installing the NetBackup client add-on packages

The supported NetBackup clients can be installed as add-on packages.

Considerations while installing the NetBackup client add-on packages:

- If the nodes are configured in the cluster, the NetBackup client add-on packages are installed on both nodes.
- If the nodes are not configured in the cluster, you have to download and install the NetBackup client add-on packages on both the nodes.
- To create a file system, refer the section *Creating a file system* section in the *Access Appliance Administrator's Guide* on SORT. The file system used for the NetBackup client configuration should be a minimum of 10 GB with a 5-way striped layout. The client configuration uses 1 GB or less of space of the file system, and the remaining space is used for NetBackup Accelerator track logs. The NetBackup file system is used to store NetBackup client configuration and NetBackup Accelerator track logs. You can grow the file system as per your requirement.
- The virtual IP should be pingable and online. You can check the status of the virtual IP using the `network ip addr show` command.

To install the add-on packages

1. Download the add-on packages for the NetBackup client from the Download Centre:
   - VRTSaccess-app-ADDON-NBUClient-8.1.2.1-1.0.1-1.x86_64.rpm
   - VRTSaccess-app-ADDON-NBUClient-8.2-1.0.1-1.x86_64.rpm
   - VRTSaccess-app-ADDON-NBUClient-9.0-1.0.1-1.x86_64.rpm
   - VRTSaccess-app-ADDON-NBUClient-9.0.0.1-1.0.1-1.x86_64.rpm
   - VRTSaccess-app-ADDON-NBUClient-9.1-1.0.1-1.x86_64.rpm
   - VRTSaccess-app-ADDON-NBUClient-10.0-1.0.1-1.x86_64.rpm
2. Go to the Appliance CLISH. Navigate to **System** > **Software** > **Share Open**.
3. Mount the path specified as a part of the `share open` command on NFS or CIFS client.
4. Copy the add-on packages to the `/inst/patch/appliance/available/` folder using NFS or CIFS.

   For more details, see the *Downloading software updates to an Access appliance node using a client share* section in the *Veritas Access Appliance Upgrade Guide*.
5. In the Appliance CLISH, navigate to **System** > **Software** > **Downloaded** to confirm that the add-on packages are downloaded successfully.

6 Navigate to **System** > **Software** > **Install update *update-name=<add-on pkg name>*** to install the package.

7 Navigate to **System** > **Software** > **Installed-addons** to confirm that the package has been installed.

8 Navigate to **System** > **Software** > **Share close** to close the shares.

To remove the add-on packages

1 Go to the Appliance CLISH. Navigate to **System** > **Software** > **Rollback-update *update-name=<pkg name>*** to uninstall the packages.

2 Navigate to **System** > **Software** > **Installed-addons** to confirm that the package has been removed.

Prerequisites for configuring the NetBackup client

Before configuring the NetBackup client for Access Appliance, you must have completed the following:

- Add the valid licenses on the NetBackup primary server.
- Make sure that host names of the primary server and the NetBackup client installed on Access Appliance can be resolved and the reverse lookup is working.
- The file system used for the NetBackup client configuration should be a minimum of 10 GB with a 5-way striped layout. The client configuration uses 1 GB or less of space of the file system, and the remaining space is used for NetBackup Accelerator track logs. The size of the file system must be decided based on the the backup policies that have been created. See https://www.veritas.com/support/en_US/article.100045746 for more details.

Configuring the NetBackup client

The `backup config` CLISH command configures the specified version of the NetBackup client. The NetBackup client version must be 8.1 or higher. Required certificates are generated as part of this command.

To configure the NetBackup client

- Configure the NetBackup client.

```
Backup> config <virtual_name> <virtual_IP> fs_name
client_version auth_token primary_server_name [primary_server_ip]
```

virtual_name	Hostname to be used by a NetBackup client configuration on the nodes. Make sure that name can be resolved through DNS and its IP address can be resolved back to name through a DNS reverse lookup. Also make sure that name resolves to the IP address parameter *ipaddr* that is provided for configuration.
virtual_IP	Virtual IP address to be used by the NetBackup client configuration on the nodes. Make sure that IP address can be resolved back to the name we use for configuration.
fs_name	Name of the file system used to store NetBackup client configuration.
client_version	NetBackup client version to be installed.
auth_token	Authentication token from NetBackup primary server to enable backup/restore in a secure environment.
primary_server_name	FQDN of the primary server
primary_ip	IP of the server to be used as the NetBackup primary server. Specify this parameter if DNS is not configured in the cluster. This is an optional parameter.

See the `backup_config(1)` man page for detailed examples.

Adding an optional media server

You can optionally add a media server to be used by the NetBackup client. If the media server name is not added, the local NetBackup client uses the NetBackup primary server as the NetBackup media server. But it is not mandatory that the NetBackup primary server be the NetBackup media server. In production environments, the NetBackup media server is separate from the NetBackup primary server.

To add an optional NetBackup media server

- Add an optional NetBackup media server.

  ```
  Backup> netbackup media-server add media_server_name
  [media_server_IP]
  ```

  For example:

  ```
  Backup> netbackup media-server add FQDN_of_primary_server
  ```

Make sure that the server hostname can be resolved through DNS, and its IP address can be resolved back to the NetBackup media server hostname through the DNS reverse lookup. If DNS is not configured in the cluster, specify the *media_server_IP* in the `/etc/hosts` file of all nodes of the cluster. to create a mapping between the server hostname and its IP address.

You can also delete an already configured NetBackup media server.

To delete an already configured NetBackup media server

- Delete an already configured NetBackup media server.

  ```
  Backup> netbackup media-server delete server
  ```

See the `backup_netbackup(1)` man page for detailed examples.

Adding multiple primary servers

The NetBackup primary server is registered with Access Appliance during NetBackup client configuration so that it can communicate with the Access Appliance. If necessary, you can add multiple primary servers with the same NetBackup client.

To add an additional NetBackup primary server

- Add an additional new NetBackup primary server to the existing client configuration. Required certificates of the new primary server are generated as part of this command.

  ```
  Backup> netbackup primary-server add auth_token primary_server
  [primary_ip]
  ```

primary_server	FQDN of the primary server
auth_token	Authorization token to generate th host ID based certificates
primary_ip	IP address of the primary server. This is optional field when the primary server is not resolvable to the FQDN,

To delete a NetBackup primary server

- Remove a primary server from the existing client configuration.

  ```
  Backup> netbackup primary-server del primary_server
  ```

  where *primary_server* is the FQDN of the primary server.

  CA and host ID certificates for the specified primary server is deleted and its associated entry from the configuration files also removed.

See the `backup` man page `fs` module for detailed examples.

Adding file systems to the backup configuration

You can add the file systems required to be backed up with the NetBackup client. Once the file system is configured for backup, it is available for backup and restore operation from NetBackup primary server side.

To add file systems for backup

- Add the file system to the NetBackup client configuration to enable backup and restore operations from NetBackup primary server.

  ```
  Backup> fs add fs_name
  ```

See the `backup` man page `fs` module for detailed examples.

Removing file systems from backup configuration

You can remove the file system from the NetBackup client configuration. Once the file system is removed from the backup configuration, it is not available for backup and restore operations from NetBackup primary server side.

To remove the file systems for backup

- Remove the file system from the NetBackup client configuration.

  ```
  Backup> fs remove fs_name
  ```

See the `backup` man page `fs` module for detailed examples.

Changing the virtual IP address used by the NetBackup client

You can alter the virtual IP address of the NetBackup client. This address is a highly-available virtual IP address in the cluster.

Note: Configure the virtual IP address using the `backup virtual-ip set` command so that it is different from all of the other virtual IP addresses, including the console server IP address and the physical IP addresses that are used to install Access Appliance. Use the `network ip addr show` command to display the currently assigned virtual IP addresses on Access Appliance.

See the `backup_virtual-ip(1)` man page for detailed examples.

To change the virtual IP address used by NetBackup

- Configure the virtual IP address of NetBackup on Access Appliance.

  ```
  Backup> virtual-ip set ipaddr [device]
  ```

  This command configures the built-in NetBackup client to use *ipaddr* as its virtual IP address and *device* as the network interface. A network mask can be provided with the IP address as the prefix length for the *ipaddr*.

  Ensure that the NetBackup primary server is able to resolve the NetBackup client's FQDN to the new IP.

Upgrade the NetBackup client

You can upgrade the NetBackup client on your appliance by specifying the version. Ensure that the client image version that is specified is pre-installed on the cluster. Also, the version to be installed must be higher than the already configured version. Download the Add-Ons before you begin the upgrade operation.

To upgrade the NetBackup client to a specified version

- Upgrade the NetBackup client on the appliance by specifying the version.

  ```
  Backup> upgrade <version>
  ```

Unconfiguring the NetBackup client

The `backup unconfig` command removes the existing NetBackup client configuration.

To unconfigure the NetBackup client

- Removes the NetBackup client configuration for the client,

```
Backup> unconfig
```

See the `backup_unconfig(1)` man page for detailed examples.

Enabling Veritas Data Deduplication catalog backup with NetBackup client

You can configure the built-in NetBackup client to perform a backup and restore of the deduplication catalog.

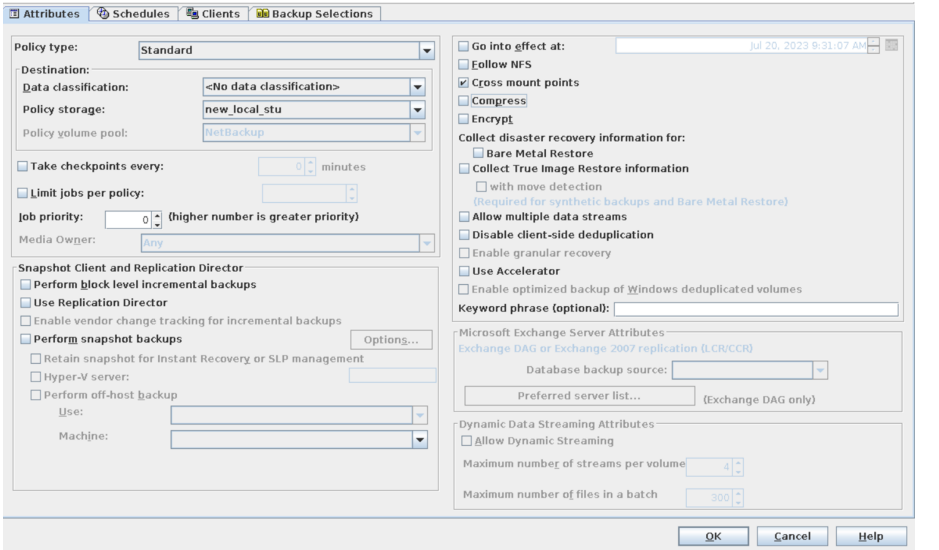
To enable the Veritas Data Deduplication catalog backup with NetBackup client

1. Enable the NetBackup client to perform a backup and restore of the deduplication catalog.

```
Backup> dedupe-catalog enable
```

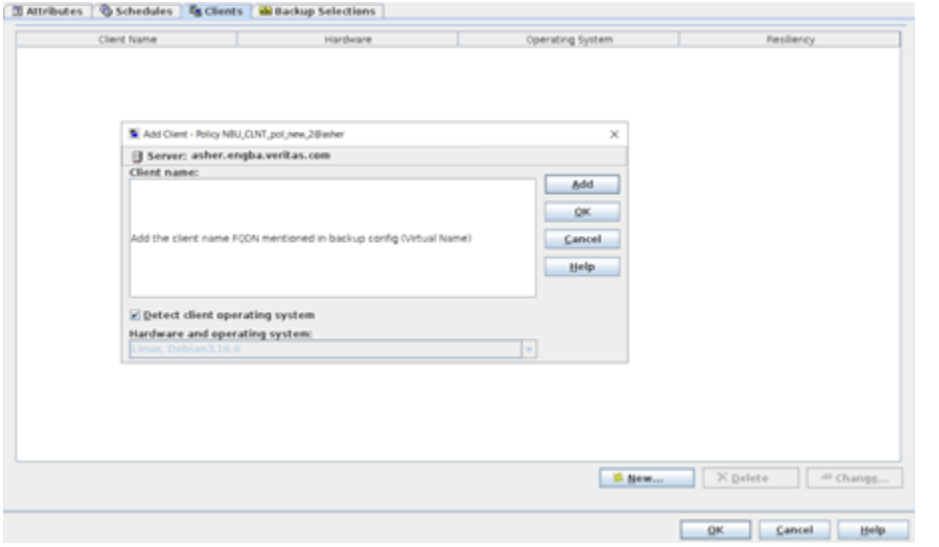
2 Create a new policy. Navigate to the **Attributes** tab, select *MSDP local STU (Storage unit)* in **Policy storage** drop-down. You have to create a local STU as data is written to the media server.

Note: During policy creation, you must select the **Policy Type** as Standard and also select the **Cross Mount Point** check box for successful backup operation.



3 Navigate to the **Schedules** tab and create a new schedule as per your requirement.

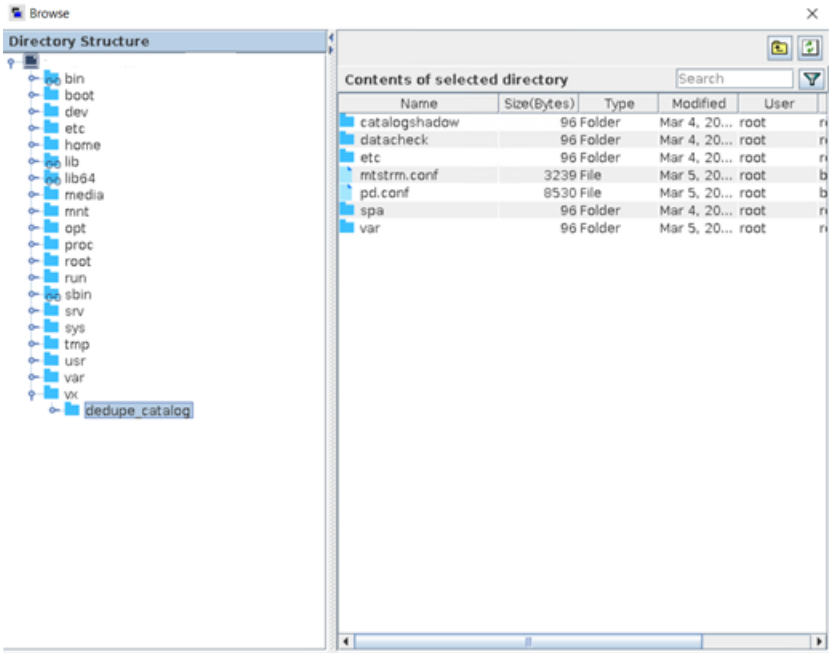
4 Navigate to the **Clients** tab. Click **New** and add the client name (FQDN) which is mentioned during backup configuration (Virtual Name). Select the check box **Detect client operating system** and click **OK**.



5 Navigate to the **Backup Selection** tab. Click **Browse**.

Double click on the `vx` folder. Select the `dedupe_catalog` folder. The list of all the files and directories which are to be backed up appears. Click **OK**.

Note: When you run the `dedupe-catalog enable` command from CLISH, all the catalog files and folders that are required for back up are automatically added to the `dedupe_catalog` folder. You need not select any files manually.



6 Run the policy manually or as per schedule.

Disabling Veritas Data Deduplication catalog backup from NetBackup client

You can disable the NetBackup client from performing a backup and restore of the deduplication catalog.

To disable the Veritas Data Deduplication catalog backup from the NetBackup client

- Disable Veritas Data Deduplication catalog backup from the NetBackup client.

```
Backup> dedupe-catalog disable
```

Displaying the status of NetBackup services

Use the backup commands to display the status of the NetBackup services.

See the following man pages for detailed examples:

- `backup_show(1)`
- `backup_status(1)`
- `backup_start(1)`
- `backup_stop(1)`

To display NetBackup services

- Display the current NetBackup services.

```
Backup> show
```

If the settings were configured while the backup and the restore services were online, run the `backup stop` command followed by the `backup start` command to make the changes come into effect.

To display the status of backup services

- Display the status of backup services.

```
Backup> status
```

If the NetBackup server is started and online, then `Backup> status` displays any on-going backup or restore jobs.

To start or stop backup services

1. Start the backup services.

```
Backup> start [nodename]
```

You can also change the status of a virtual IP address to online after it has been configured using the `Backup> virtual-ip` command. This command applies to any currently active node in the cluster that handles backup and restore jobs.

2 Stop the backup services.

```
Backup> stop
```

You can also change the status of a virtual IP address to offline after it has been configured using the `Backup> virtual-ip` command.

Configuring backup operations using NetBackup or other third-party backup applications

You can backup Access Appliance using NetBackup client capability, or backup applications from other third-party companies that use the standard NFS mount to backup over the network.

For information on NetBackup, refer to the *Veritas NetBackup* product documentation set.

The Backup commands configure the local NetBackup installation of Access Appliance to use an external NetBackup primary server or media server. When NetBackup is installed on Access Appliance, it acts as a NetBackup client to perform IP-based backups of Access Appliance file systems.

Restoring filesystems backed up with NetBackup client

This section describes how you can restore filesystems (which are backed up using the NetBackup client) that get corrupted in the Access Appliance environment.

You can backup a filesystem with the NetBackup client using the `backup fs add` command. The backup of the filesystem is created on the NetBackup media server. If the filesystem goes corrupt and is destroyed, you can restore the filesystem.

To restore a corrupted filesystem

1 Create a new filesystem. You can use the same name as that of the existing filesystem if a filesystem with that name is no longer present, else use a different name.

2 Add the filesystem back to the NetBackup client's backup filesystem configuration using the `backup fs add` *`fs_name`* command.

3 Restore the data backed up from the filesystem to the respective path on the new filesystem.

To restore the MSDP catalog filesystem

- Restore the MSDP catalog filesystem.

  If the NetBackup client is enabled with deduplication catalog backup and the catalog filesystem goes corrupt, you will need to format the catalog filesystem.

  - Disable the catalog backup.

    ```
    backup> dedupe-catalog disable
    ```

  - Format the catalog filesystem or re-create it with the same name.
  - Add the catalog filesystem as a backup filesystem.

    ```
    backup> fs add fs_name
    ```

  - From the deduplication catalog backup, restore the content that was backed up to `/vx/<catalog_fs>/dedupe/databases` by selecting **Restore to a different location** on the NetBackup primary.
  - Enable the deduplication catalog to continue backing up the deduplication catalog.

    ```
    backup> dedupe-catalog enable
    ```

  Note: In case the MSDP catalog filesystem is destroyed, ensure that a new filesystem is created with same name as the old MSDP catalog filesystem. You can then follow the steps to add, restore and enable the catalog filesystem.

Chapter 7

Troubleshooting

This chapter includes the following topics:

Additional resources

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

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

Generating Access Appliance S3 server keys using the helper script

Create the access and the secret keys using the Access Appliance 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 Access Appliance S3 server credential keys.

- Location of the helper script:
  `/opt/VRTSnas/scripts/utils/objectaccess/objectaccess_client.py`
- The Access Appliance 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. The *ADMIN_URL* has the format **admin.<*cluster_name*:*port number*>** . The port number should be 8144. This url should point to the Access Appliance management console IP address.
- Create the access and the secret key using the Access Appliance helper script by providing the user name, password, and ADMIN_URL (check the online Help of the Access Appliance 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 Access Appliance 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
```

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