NetApp AltaVault™ OST Plug-in 1.2.4

Deployment Guide

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doccomments@netapp.com

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Contents

AltaVault OST Plug-in overview

Veritas OST (OpenStorage) is an API that delivers optimized backup integration between NetBackup and storage appliances such as NetApp AltaVault (formerly AltaVault). Using the AltaVault OST Plug-in, the AltaVault appliance appears to the backup server as a shared disk.

AltaVault leverages the OST framework to provide NetBackup the ability to efficiently stream backups to AltaVault as well as manage lifecycle policy of backup copies stored on AltaVault and in the cloud.

When it is time for a backup, the backup server contacts the backup client. Next, the backup server contacts the backup media (in this case, AltaVault) and starts writing an image of the clients or objects it is backing up.

OST implemented features with AltaVault

AltaVault support for OST consists of two features:

- Support for the OST communication protocol.

- Support of OST optimized duplication of backups triggered by NetBackup storage lifecycle policies (SLP), allowing NetBackup to have visibility and control of backups stored on AltaVault and in the cloud.

Key Benefits

- Availability of data where you need it. With OST, NetBackup administrators can now ensure that critical datasets that are needed for short term use are locally available on the AltaVault appliance cache. Optimized duplicate copies for long-term recovery and compliance can be managed and driven via secondary retention separately in the cloud. AltaVault intelligently manages the retention of the two copies in accordance with SLP.

- Off-site replication validation
  Prior to OST support, NetBackup administrators could not determine via the NetBackup management console whether backups to AltaVault had indeed been protected to off-site cloud storage. The addition of OST now allows NetBackup to have visibility into where backups are stored: either on AltaVault or in the cloud.

- Enhanced optimization of resources end to end
  AltaVault intelligently deduplicates, compresses and encrypts NetBackup data to cloud storage, reducing the costs of transmission and storage while simultaneously easing management of backups. With the addition of OST, NetBackup can now further extend optimization techniques to additional duplicate copies with minimal impact on NetBackup media servers or appliances, corporate networks, and cloud storage.

Recommended deployments

AltaVault supports the fan-in of multiple NetBackup media servers or appliances using OST, allowing for AltaVault to provide optimal deduplication across all sources. It is recommended to configure a separate OST share for each NetBackup media server or appliance.

Summary deployment steps

Installation and configuration of AltaVault OST Plug-in falls into three basic procedures:

- Installing the AltaVault Plug-in on the Windows, Linux, or NetBackup appliance.

- Configuring OST shares and user accounts on the AltaVault appliance.

- Configuring the client to use the AltaVault OST Plug-in for communication with the AltaVault appliance.

Installing and configuring OST Plug-in for Windows

Installing the AltaVault OST Plug-in for Windows causes the AltaVault appliance to appear to the NetBackup media server as a shared disk.

Before you begin

Your environment must meet the following requirements:

- NetApp AltaVault 4.4.1P1 or later

- Veritas NetBackup version 7.6 or later

- Microsoft Visual C++ 2015 Redistributable (x64) package: `https://www.microsoft.com/en-us/download/details.aspx?id=48145`

- Microsoft Visual C++ 2015 Redistributable (x64) package: `https://www.microsoft.com/en-us/download/details.aspx?id=48145`

About this task

You must complete the tasks in the order presented.

Steps

Installing OST Plug-in for Windows

Steps for installing the AltaVault OST Plug-in for Windows include downloading the installer from NetApp, accepting the license agreement, and verifying the installation.

Steps

1. Download the AltaVault OST Plug-in installer from the **Downloads** section of the NetApp Support Site.

   NetApp Support

2. Copy the plug-in installer file onto the NetBackup media server.

3. Shut down the NetBackup services on the media server host.

4. Launch the AltaVault OST Plug-in installer `ost_installer.msi` file.

5. Accept the license agreement presented.

6. Click **Install**.

7. Click **Finish**.

8. Start the NetBackup services on the media server host.

9. Check for the latest version number to verify that the AltaVault OST Plug-in is installed properly.

Example

```
C:\Program Files\Veritas\NetBackup\bin\admincmd> bpstsinfo.exe -pi -
sp NetAppAltaVault
Plugin Info:
  Plugin Name: libstspiAltaVaultDisk.dll
  Prefix: NetAppAltaVault
  Label: NetApp AltaVault Plugin
  Build Version: 11
  Build Version Minor: 1
  Operating Version: 11
  Vendor Version: v1.2.4 4237972/29-Mar-2018
```

After you finish

Configure OST shares on the NetApp AltaVault appliance.

For information about configuring OST shares, see *Configuring AltaVault OST* on page 13.

Configuring OST Plug-in for SSL on Windows

SSL helps to protect the data movement between NetBackup and AltaVault.

About this task

SSL is optional on Windows and is disabled by default. Steps for enabling SSL include copying the certificate from AltaVault appliance, accessing the Windows server, and then adding the certificate.

Note: If the NetBackup media server will be communicating with multiple AltaVault appliances using SSL, this procedure must be repeated for each targeted AltaVault appliance.

Steps

1. In the Management Console, select **Configure > OST > Global OST Settings**.

2. Select the check box to enable SSL.

3. Select **Maintenance > Service**, and then restart the Storage Optimization Service.

4. Choose **Configure > Web Settings**.

5. Under the **Web Certificate** section, select **PEM** tab, and then copy the certificate.

6. On the Windows NetBackup media server where you installed AltaVault OST Plug-in, navigate to the `C:\ntapav` folder .

7. Create a text file called *hostname_cert.pem* if the file does not exist.

8. Open the file in a text editor, and then paste the certificate contents from Step *5*.

   If the file already contains the web certificate of an existing AltaVault appliance, you can append the new AltaVault certificate information to the end of the file starting on a new line. Here, *hostname* refers to the storage server host name or IP address specified while creating the storage server for which SSL connection is needed.

   Note: If you are upgrading from a previous AltaVault OST Plug-in version, you must update your `cert.pem` file.

   Upgrading OST Plug-in for Windows on page 19

Installing and configuring OST Plug-in for Linux

Installing the AltaVault OST Plug-in for Linux causes the AltaVault appliance to appear to the NetBackup media server as a shared disk.

Before you begin

Your environment must meet the following requirements:

- NetApp AltaVault 4.4.1P1 or later

- Veritas NetBackup 7.6 or later

- Write permission to create the /usr/ntapav directory, which contains AltaVault OST Plug-in configuration and log files.

About this task

You must complete the tasks in the order presented.

Steps

1.
2.

Installing the OST Plug-in for Linux

Installing the AltaVault OST Plug-in for Linux involves downloading the software from NetApp, running the install script, and verifying the installation.

Steps

1. Download the AltaVault OST Plug-in from the **Downloads** section of the NetApp Support Site.

   NetApp Support

2. Extract the archive file to a temporary directory on the NetBackup media server:

   tar zxvf AltaVaultOSTPlugin_1.2.4_OST_redhat_64.tar.gz

   The file name might be different depending on the version you downloaded from the support site.

3. Shut down the NetBackup services on the media server host.

4. Go to the temporary directory, and then run the installer.sh script to copy the libraries:

   ./install.sh

5. Start the NetBackup services on the media server host.

6. Check for the latest version number to verify that the AltaVault OST Plug-in is installed properly.

   Example

   ```
   # /usr/openv/netbackup/bin/admincmd/bpstsinfo -pi -sp NetAppAltaVault
         Plugin Info:
           Plugin Name: libstspiNetAppAltaVaultMT.so
           Prefix: NetAppAltaVault
           Label: NetApp AltaVault Plugin
   ```

```
          Build Version: 11
          Build Version Minor: 1
          Operating Version: 11
          Vendor Version: v1.2.4 4237972/29-Mar-2018
```

After you finish

Configure OST shares on the NetApp AltaVault appliance.

Configuring AltaVault OST on page 13

Configuring OST Plug-in for SSL on Linux

SSL helps to protect the data movement between NetBackup and AltaVault.

About this task

SSL is optional on Linux and is disabled by default. To enable SSL, you must copy the certificate from AltaVault appliance, access the Linux server, and then add the certificate.

> **Note:** If the Linux server will be communicating with multiple AltaVault appliances using SSL, this procedure must be repeated for each targeted AltaVault appliance.

Steps

1. In the Management Console, select **Configure > OST > Global OST Settings**.

2. Select the check box to enable SSL.

3. Select **Maintenance > Service**, and then restart the Storage Optimization Service.

4. Select **Configure > Web Settings**.

5. Under the Web Certificates section, select the **PEM** tab, and then copy the certificate.

6. On the Linux NetBackup media server or appliance where you installed the AltaVault OST Plug-in, navigate to /usr/ntapav.

7. Create a text file called `hostname_cert.pem` if the file does not exist.

8. Open the file in a text editor, and then paste the certificate contents from Step *5*.

   If the file already contains the web certificate of an existing AltaVault appliance, you can append the new AltaVault certificate information to the end of the file starting on a new line. Here, `hostname` refers to the storage server host name or IP address specified while creating the storage server for which SSL connection is needed.

   > **Note:** If you are upgrading from a previous AltaVault OST Plug-in version, you must update your cert.pem file.

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Installing and configuring the AltaVault OST Plug-in for NetBackup appliances

Installing the AltaVault OST Plug-in for NetBackup appliances causes the AltaVault appliance to appear to the NetBackup media server as a shared disk.

Before you begin

Your environment must meet the following requirements:

- NetApp AltaVault 4.4.1P1 or later

- Veritas NetBackup 7.6 or later

- Write permission to create the `/usr/ntapav` directory, which contains AltaVault OST Plug-in configuration and log files.

- For NetBackup appliances, write permission to create the `/usr/ntapav` directory, which contains directories that are links to directories mentioned below.

- For NetBackup appliances, permission to create the `/usr/openv/ostconf` and `/log/OST` directories, which contain AltaVault OST Plug-in configuration and log files, respectively.

About this task

You must complete the tasks in the order presented.

Steps

Installing the AltaVault OST Plug-in for NetBackup appliances

Installing the AltaVault OST Plug-in involves downloading the software package from NetApp, accessing the NetBackup appliance, installing the software, and verifying the installation.

Steps

1. Download the AltaVault OST Plug-in from the **Downloads** section of the NetApp Support Site.

   NetApp Support

2. On the NetBackup appliance, choose **Main Menu > Manage > OpenStorage**.

3. Select **Share Open**.

   The NetBackup appliance provides CIFS and NFS mount points.

4. Map the mount points on remote clients from where you need to copy the AltaVault OST Plug-in 1.2.4.

5. Copy the downloaded plug-in package to the NetBackup appliance, and then select **Share Close**.

6. Select **List Available**, and then verify from the output that the AltaVault OST Plug-in 1.2.4 package is getting listed.

7. Select **Install AltaVaultOSTPlugin_1.2.4_OST_redhat_64.tar.gz**.

8. Select **List Installed**, and then verify that the AltaVault OST Plug-in 1.2.4 is installed.

   The AltaVault OST Plug-in works in conjunction with OST settings on the AltaVault appliance. This requires configuring OST shares on the NetApp AltaVault appliance.

   For information about configuring OST shares, see *Configuring AltaVault OST* on page 13.

Configuring AltaVault OST Plug-in for SSL on NetBackup appliances

SSL helps to protect the data movement between NetBackup and AltaVault.

About this task

SSL is optional on NetBackup appliances and is disabled by default. To enable SSL, you must access the NetBackup appliance, copy the certificate from AltaVault, and then add the certificate to the NetBackup appliance.

Note: If the appliance will be communicating with multiple AltaVault appliances using SSL, this procedure must be repeated for each targeted AltaVault appliance.

Steps

1. On the NetBackup appliance, configure root access:

   a. From Main_Menu, enter Maintenance mode:

   ```
   Main_Menu> Support
   Support> Maintenance
   ```

   The appliance prompts you for the password.

   b. Temporarily override the system protection on the NBU appliance to provide root access:

   ```
   maintenance-!> /opt/Symantec/sdcssagent/IPS/sisipsoverride.sh
   ```

   The appliance prompts you to enter additional information to complete the override.

   c. Enable root access:

   ```
   maintenance-!> elevate
   ```

2. In the AltaVault Management Console, select **Configure > OST > Global OST Settings**.

3. Select the check box to enable SSL.

4. Select **Maintenance > Service**, and then restart the Storage Optimization Service.

5. Select **Configure > Web Settings**.

6. Under the **Web Certificates** section, select the **PEM** tab, and then copy the certificate.

7. On the NetBackup appliance, navigate to the directory where the local configuration information for the AltaVault OST Plugin will be stored:

   ```
   maintenance-!> cd /usr/ntapav
   ```

8. Create a text file called `hostname_cert.pem` if the file does not exist.

9. Open the file in a text editor, and then paste the certificate contents from Step *6* on page 11.

    If the file already contains the web certificate of an existing AltaVault appliance, you can append the new AltaVault certificate information to the end of the file starting on a new line. Here, `hostname` refers to the storage server host name or IP address specified while creating the storage server for which SSL connection is needed.

10. Exit Maintenance mode.

    Note: If you are upgrading from a previous AltaVault OST Plug-in version, you must update your `cert.pem` file.

    Upgrading OST Plug-in for Windows on page 19

Configuring AltaVault OST

The AltaVault OST Plug-in works in conjunction with OST settings on the AltaVault appliance. You must configure OST shares and user accounts on the AltaVault appliance for access by the NetBackup client.

Before you begin

You should be familiar with the OST share types:

- Regular Shares
  Regular shares treat incoming data by AltaVault the same as traditional SMB shares or NFS exports by writing the data on cache, and replicating the data to the cloud. A minimum of one regular share is required for OST to move data to AltaVault.

- Cloud Shares
  Cloud shares are used to create an optimized duplicate of data in regular shares replicated in the cloud that are managed via NetBackup storage lifecycle policies (SLP). One or more cloud shares can be created to extend duplication of regular or cloud shares for policies requiring longer retention.

Steps

1. Create AltaVault OST shares and user accounts as described in the *NetApp AltaVault Cloud Integrated Storage Administration Guide*.

2. After setting up OST shares and user accounts, configure NetBackup media servers or appliances for AltaVault OST, as described in *Deploying Veritas OST with AltaVault* on page 14 .

Deploying Veritas OST with AltaVault

You must set up the NetBackup media server or appliance for OST communication with the AltaVault appliance.

Before you begin

Prior to setting up communication between the NetBackup media server or appliance and AltaVault, you must configure regular shares, cloud shares, or both on the AltaVault appliance. Additionally, OST shares must have associated local user accounts set up on AltaVault to be used by NetBackup storage server. Details about configuring OST shares and users on AltaVault are contained in the "Configuring OST" section in the latest *NetApp AltaVault Cloud Integrated Storage Administration Guide*.

About this task

You must complete the tasks in the order presented.

Steps

1. Running the NetBackup Storage Server Wizard on page 14
2. Creating a storage lifecycle policy (SLP) on page 16
3. Creating an optimized duplication operation on page 17

Running the NetBackup Storage Server Wizard

The NetBackup Storage Server Wizard configures the necessary storage devices, including the storage server, disk pool, and storage unit, enabling OST communications to AltaVault.

About this task

Because each share created on AltaVault is associated with one storage server, disk pool, and storage unit, you perform the following procedure once per share that you want to enable with NetBackup OST.

Steps

1. Start the **NetBackup Storage Server Wizard**, and then fill in the fields on the **Add Storage Server** page:

Field	Description
Media Server	Specify the media server or NetBackup appliance that has the AltaVault OST Plug-in installed.
Storage server type	If **NetAppAltaVault** does not appear in the drop down list, manually type in the value **NetAppAltaVault**.

Field	Description
Storage server name	Enter a name to call this storage server. This name is constructed using the OST share name configured on AltaVault, followed by an underscore (_) character, followed by the AltaVault data interface DNS name or IP address. For example, if the OST share is called OSTshare1, and the AltaVault data interface e0a entry in DNS is AltaVaultDataInterface, the constructed name for the field is OSTshare1_AltaVaultDataInterface.
User name	Provide the name of the OST user associated with the AltaVault OST share. Refer to the AltaVault OST page for the credentials.
Password	Provide the password of the OST user associated with the AltaVault OST share. Refer to the AltaVault OST page for the credentials.

2. Click **Next**.

3. Complete the **Storage Server Setup**, ensuring that the **Create a disk pool using the storage server you have just created** check box is selected.

4. Click **Next**.

5. In the **Disk Pool and Volumes** page, select the appropriate pool type and the volume to add to the disk pool by clicking the check box next to the logical name of the AltaVault volume in the table:

   • Replication Source
     Use this type when configuring a disk pool for AltaVault regular OST shares.

   • Replication Target
     Use this type when configuring a disk pool for AltaVault cloud OST shares.

   Note: The size of an OST share on AltaVault is set at 1.78 PB and cannot be changed. This value is reflected on the page. If you require additional storage, configure additional shares and add them to the OST disk pool.

6. Click **Next**.

7. In the **Additional Disk Pool Information** page, enter a disk pool name but do not select the Limit I/O streams check box:

Selection	Description
Disk Pool name	Provide the name of the disk pool you are creating.
High water mark	Leave this value at its default value of 98 percent.
Low water mark	Leave this value at its default value of 80 percent.
Limit I/O streams	Leave this check box unselected for best AltaVault performance.

8. Click **Next**.

9. Select the check box **Create a storage unit using the disk pool that you have just created**.

10. Click **Next**.

11. In the **Storage Unit Creation** page, fill in the fields.

Field	Description
Storage unit name	Provide a name for the storage unit you are creating.
Only use the selected media servers or appliances	Identify the NetBackup media servers or appliances which are enabled with the AltaVault OST Plug-in to perform data movement of backups
Maximum concurrent jobs	This value establishes how many writers are allowed by data protection clients. Tune performance by setting a value higher than 1. The value you set depends on your available resources and infrastructure environment. Adjust the number of writers accordingly based on your observed performance.
Maximum fragment size	The fragment size is the maximum-size object that NetBackup can create to store backups. The recommended fragment size is 20480 MB (20 GB).

12. Click **Next**.

13. After the **Storage Server Configuration** wizard finishes, click **Finish**.

Creating a storage lifecycle policy (SLP)

You need to create at least one backup operation in an SLP representing the primary backup to AltaVault. Additional optimized duplication operations can be created as tiered operations under a backup operation to reflect the longer term retentions of backups according to your business needs.

Steps

1. Open the **Storage Lifecycle Policies** page in the NetBackup Administration Console, and then click **Add** to add a backup step to the SLP.

2. In the page that appears, fill in the fields:

Field	Description
Operation	Select **Backup** to identify a backup job that will be sent to the AltaVault OST share.
Destination Storage	Select the storage unit configured to use the regular AltaVault OST share.
Retention type	Specify your retention requirements.
Retention period	Specify your retention time frame to maintain the backup. Backups after this time elapses expire from AltaVault and will be deleted.

3. Click **OK** to complete the backup operation creation.

Creating an optimized duplication operation

For NetBackup policies requiring longer retention, you can create a duplicate of regular share data that has been replicated in the cloud.

Steps

1. Select the backup operation created previously, and then click **Add** to add an optimized duplication operation.

2. In the page that appears, fill in the fields.

Field	Description
Operation	Select **Duplication** to identify a duplication operation that will be performed to a cloud-based AltaVault OST share.
Destination Storage	Select the storage unit configured to use the cloud-based AltaVault OST share.
Retention type	Specify your retention requirements.
Retention period	Specify your retention time frame to maintain the backup. Backups after this time elapses expire from AltaVault and will be deleted.
Alternate read server	You can specify an additional Media Server or appliance if you want to read duplicated backups from a separate media server or appliance. This media server or appliance must also have the AltaVault OST Plug-in installed.

Note: The operation type should default to **Duplication** if you properly selected the backup operation in the previous step.

3. Click **OK** to complete the optimized duplication operation creation.

Summary of AltaVault best practices

AltaVault supports a number of best practices for appliance operation.

Practice	Recommendation	Notes
Disk pool maximum I/O streams	Do not enable and provide a value for maximum I/O streams.	Use maximum concurrent jobs under the Storage Unit settings instead.
Assigning media servers or appliance to a storage unit	Manually select the appropriate media servers or appliances with AltaVault.	
Maximum concurrent jobs	Set appropriately according to your available media server or appliance resources.	Tune this setting rather than the maximum I/O streams value at the disk pool level. Set to 0 if you are switching cloud providers, or you are experiencing intermittent cloud connectivity issues. The highest it can be set is 128.
Maximum fragment size	20480 MB.	This can be left at the default if desired by your business, but is not recommended to be set lower than 20480 MB.
NetBackup Catalog backups	AltaVault can be used for NetBackup catalog backup operations.	

Upgrading OST Plug-in for Windows

If you have previously installed the AltaVault OST Plug-in, you can upgrade the software for compatibility with AltaVault as indicated in the Interoperability Matrix Tool (IMT).

Before you begin

The AltaVault OST Plug-in must be compatible with the AltaVault version running in your environment.

NetApp Interoperability Matrix Tool

Steps

1. Uninstall the existing AltaVault OST Plug-in from the Windows server:

    a. Go to **Control Panel**.

    b. Double-click **Programs and Features**.

    c. Select **NetApp AltaVault Plug-in**.

    d. Right-click the selection, and then click **Uninstall**.

2. Install the AltaVault OST Plug-in as described in the procedure *Installing OST Plug-in for Windows* on page 6.

3. If needed, configure or reconfigure the plug-in for SSL as described in the procedure *Configuring OST Plug-in for SSL on Windows* on page 7.

    Note: If you are upgrading to AltaVault OST Plug-in 1.2.4 from a pre-1.2 release, you must rename your cert.pem file to *AVA_IP_address*_cert.pem for SSL to be available after the upgrade.

Upgrading OST Plug-in for Linux

If you have previously installed the AltaVault OST Plug-in, you can upgrade the software for compatibility with AltaVault as indicated in the Interoperability Matrix Tool (IMT).

Before you begin

The AltaVault OST Plug-in must be compatible with the AltaVault version running in your environment.

NetApp Interoperability Matrix Tool

Steps

1. Install the AltaVault OST Plug-in as described in the procedure *Installing the OST Plug-in for Linux* on page 8.

2. If needed, configure or reconfigure the plug-in for SSL as described in the procedure *Configuring OST Plug-in for SSL on Linux* on page 9.

   Note: If you are upgrading to AltaVault OST Plug-in 1.2.4 from a pre-1.2 release, you must rename your cert.pem file to *AVA IP*_cert.pem for SSL to be available after the upgrade.

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You can also contact us in the following ways:

- NetApp, Inc., 1395 Crossman Ave., Sunnyvale, CA 94089 U.S.

- Telephone: +1 (408) 822-6000

- Fax: +1 (408) 822-4501

- Support telephone: +1 (888) 463-8277

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