Exos® Protect 4006 Series vSphere Client Plug-in User Guide

Abstract

This guide describes how to install and use the vSphere Client Plug-in to monitor and manage Seagate storage systems.

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1 Getting started with the Exos Protect vSphere Client Plug-in

The vSphere Client Plug-in is a browser-based tool that integrates with the VMware vSphere Client, providing an alternative interface that lets you monitor and manage Seagate Exos Protect 4006 Series storage systems.

NOTE The plug-in is only supported in the vSphere HTML Client, not the vSphere Web Client. The latter was deprecated in vSphere 6.7 and removed in vSphere 7.0.

The plug-in is compatible with the following environments:

Vendor	Sofware	Version
VMware	vCenter	6.5 to 7.0
VMware	ESXi	6.5 to 7.0
Red Hat	Enterprise Linux	7, 8
Ubuntu	Linux	18.04 LTS, 20.04 LTS

The plug-in supports Exos Protect storage systems with Fibre Channel, SAS, and iSCSI host interfaces.

NOTE iSCSI software initiators are supported, but provisioning using hardware SCSI initiators is not yet supported.

Before you begin

Before you install the plug-in, gather the following information for your system:

- The IP address or hostname of the vCenter server
- A vCenter username and password with sufficient permission to install the plug-in.

While portions of the plug-in run in the web browser and on the vCenter server, the plug-in software itself must be installed and run on a GNU/Linux host. The plug-in may be installed in one of two ways:

- As a Linux container image under Docker or another container runtime system
- As an application on a Red Hat Enterprise Linux or Ubuntu Linux system

You must have administrative rights to install and register the plug-in.

2 Deploying the plug-in as a container

The plug-in is designed to deployed as a Linux container using Docker or a compatible container runtime. If you do not already have a Linux container runtime in place, you can deploy a lightweight container host as a virtual machine in your vSphere environment; see the PhotonOS documentation for instructions on deploying VMware's open-source container host solution.

The instructions below assume that Docker is installed on a suitable host. For information on Docker, see the Docker website.

Load the image

1. Download the plug-in container image **`seagate-exos-x-vcp-1.2.x.x.tgz`**.
2. Import the image:

   `docker load -i seagate-exos-x-vcp-1.2.x.x.tgz`
3. Use the **`docker image list`** command to verify that an image with the tag `vcp` has been installed.

Start the container

Start the container by running the following command at the shell prompt:

`docker run --privileged -v vcp_vcpdata:/opt/centerplugin --restart always -d -p18080:18080 --name vcp vcp`

This will allocate resources for the plug-in but will not start the plug-in until you configure it. The options in this command specify that the plug-in should be run automatically when the host is restarted, that the plug-in listens on TCP port 18080, and that persistent configuration information is stored in a separate docker volume named `vcp_vcpdata`.

Register the plug-in

1. To configure and start the plug-in, first gather the following information for your system:
   - The container host's local IP address
   - The IP address or hostname of the vCenter server
   - The vCenter username and password with sufficient permission to install the plug-in
2. Then, run docker to open a bash shell to open a Bash shell inside the container:

   `docker exec -it vcp bash`
3. At the shell prompt inside the container, run the plug-in's installer script:

   `bash vSphere-Client-Plugin-installer.sh --install --local-address <local-ip-address> -vc <vCenter-address-or-hostname> -u <vCenter-admin-user>`
4. When prompted, enter the vCenter administrator account's password.
5. The script may take a minute or two to finish. If no errors occurred, exit from the bash shell in the container and proceed to section "Using the plug-in" on page 12.

NOTE It may be necessary to log out and back in to the vCenter HTML Client once or twice, depending on the version of vCenter in use, before the plug-in is visible in the HTML Client.

---

3 Installing the plug-in as a Linux application

Installation prerequisites

Perform the appropriate one-time procedure from below for the system you are using before the plug-in is installed.

On an Red Hat Enterprise Linux or CentOS system:

1. Install JDK v1.8 using the following command:

   sudo yum install java-1.8.0-openjdk-devel

2. Set the JAVA_HOME environment variable:

   export JAVA_HOME=/usr/lib/jvm/java-1.8.0-openjdk

   NOTE You must provide the exact path of the JDK for JAVA_HOME for your environment. The path shown above is just an example.

3. Update the PATH environment variable value by using the following command:

   export PATH=$PATH:$JAVA_HOME/bin

4. Edit the /etc/profile file using any text editor and add the following two lines:

   export JAVA_HOME=/usr/lib/jvm/java-1.8.0-openjdk

   export PATH=$PATH:$JAVA_HOME/bin

5. Install the Zip and Unzip utilities:

   sudo yum install unzip

6. Install the lsof utility:

   sudo yum install lsof

On an Ubuntu system:

sudo apt-get update

sudo apt install openjdk-8-jre-headless zip unzip lsof

Install the plug-in

1. Extract the installation zip file into any convenient, empty folder; for example, /opt/vCenter-Client-Plugin. This folder can be deleted afterward or retained for reference in case you need to perform any maintenance operation later.

   mkdir /opt/vCenter-Client-Plugin

   cd /opt/vCenter-Client-Plugin

2. Unzip the installation zip file into the empty folder using the following command:

   unzip seagate-exos-x-vcp-v1.2.x.x.zip

Register the plug-in

This chapter describes installation procedures to register, upgrade, uninstall, repair, and access the plug-in. The plug-in registration process requires the following vCenter Server information:

- vCenter Server IP address or hostname
- Username of a local administrator account on the vCenter server
- Password of the vCenter administrator account
- IP address of the host on which the plug-in is running

1. Run the shell script from the extracted zip:

   bash vSphere-Client-Plugin-installer.sh -i -u <vCenter-admin-user> -vc <vCenter-address-or-hostname>

   For example:

   bash vSphere-Client-Plugin-installer.sh -i -u Administrator@vsphere.local -vc 192.168.42.126
2. When prompted, enter the vCenter server administrator password. After the password is authenticated and the plug-in is installed and registered, a message indicates that setup is complete.

NOTE It may be necessary to log out and back in to the vCenter HTML Client once or twice, depending on the version of vCenter in use, before the plug-in is visible in the HTML Client.

Firewall considerations

The installation script attempts to modify the host's firewall to accept connections on TCP port 18080 (unless overridden by specifying a different port number). The script invokes `firewall-cmd` to do this, but if your host uses a different firewall management system, you will need to manually open port 18080. If no other tools are being used to manage the firewall, open the port with the `iptables` command:

iptables -I INPUT -p tcp --dport 18080 -j ACCEPT

This command must also be placed in `/etc/rc.d/rc.local` (Red Hat) or `/etc/rc.local` (Debian) or another script that is run at boot time.

Start and stop the system service

The installation script creates a StoragePluginService `systemd` service which runs in the background and starts automatically when the system is rebooted.

- To stop the backend service, run the following command:

  systemctl stop StoragePluginService
- To start the backend service manually if a user has stopped the service using the `stop` command, run the following command:

  systemctl start StoragePluginService
- To check the status of the plug-in service, run the following command:

  systemctl is-active StoragePluginService

If output of this command indicates **active**, then the service is running.

If output of this command reports **failed** then the service is not running.

- To check the result of the last command (`start` or `stop`), run the following command:

  systemctl status StoragePluginService

NOTE The commands above will work only if the plug-in is installed on the system, as the service is registered at the time of installation and it is deleted at the time of uninstallation.

NOTE If the `stop` command is run when the service is already stopped or the `start` command is run when the service is already running, the system does not display an error.

Upgrade the plug-in

To upgrade the plug-in:

1. Navigate to the location where the plug-in zip file was extracted:

   cd /opt/vCenter-Client-Plugin

2. Run the `upgrade` command:

   bash vCenter-Client-Plugin-installer.sh upgrade

3. At the confirmation prompt to upgrade the plug-in, enter **yes**. After a few seconds, the upgrade completes and a success message appears.

Uninstall the plug-in

To uninstall the plug-in and unregister the system from the VMware vSphere Web Client:

1. Navigate to the location where the plug-in zip file was extracted:

   cd /opt/vCenter-Client-Plugin

2. Run the `uninstall` command:

   bash vCenter-Client-Plugin-installer.sh uninstall

After a few seconds, the plug-in is unregistered and a success message appears.

Run commands in silent mode

The installation script accepts a `-f` (force) option to indicate that the installation script should not request input from the user or present confirmation prompts.

This option can be used to with the install, upgrade, uninstall, and repair operations. For example:

- To upgrade the plug-in in silent mode:

  bash vSphere-Client-Plugin-installer.sh upgrade -f

- To uninstall the plug-in in silent mode:

  bash vSphere-Client-Plugin-installer.sh uninstall -f

4 Cleaning up after uninstalling the plug-in

Perform the following steps on the vCenter Server host to remove vCenter Web Client plug-in files that may be left behind after uninstalling the plug-in. This procedure may be required when removing and re-installing the same version of the plug-in.

Unregister the plug-in manually

This procedure may be required when removing and reinstalling the same version of the plug-in, or the original installation of the plug-in is unavailable.

1. Log in to the vCenter managed object browser Extension Manager at: `https://<vCenter-address>/mob/?moid=ExtensionManager`.
2. Select **UnregisterExtension**.
3. Enter **`com.vcplugin.plugin`** in the input field in the VALUE column.
4. Select **Invoke Method**.

Continue by removing the plug-in files from the vCenter server as described in the following sections.

If vCenter is running on Windows

Open a command prompt window with administrator privileges.

1. Stop the vCenter client service:

   `cd C:\ProgramFiles\VMware\vCenterServer\bin service-control --stop vsphere-ui`
2. Delete the plug-in in the vCenter `serenity` folder:

   `cd C:\ProgramData\VMware\vCenterServer\cfg\vsphere-ui\vc-packages\vsphere-client-serenity`
   `rmdir /s com.vcplugin.plugin-version`
3. Restart the client service on vCenter Server:

   `cd C:\ProgramFiles\VMware\vCenterServer\bin`

   `service-control --start vsphere-ui`

If vCenter is running on vCSA

Log in as root on the vCSA appliance to perform the following steps:

1. Stop the vCenter client service:

   `service-control --stop vsphere-ui`
2. Delete the plug-in in the vCenter `serenity` folder:

   `cd /etc/vmware/vsphere-ui/vc-packages/vsphere-client-serenity rm -rf com.vcplugin.plugin-version`
3. Restart the client service:

   `service-control --start vsphere-ui`

Removing files from the plug-in host

On the host where the vCenter Web Client plug-in is installed, delete the installation directory (**/opt/vcenterplugin**) if it was not deleted after uninstallation. If the plug-in is running in a container, remove the container instead:

```
docker stop vcp
docker rm -f vcp
```

5 Using the plug-in

Access the plug-in

After you install the plug-in, perform the following steps to access it:

1. Access the vCenter Server with a web browser.

   If prompted to choose a vSphere client, select **vSphere Client (HTML5)**.
2. Enter the vCenter Server username and password.
3. Select **Login**.

You should now see the **Exos X** item on the main menu and in the Inventories category under Shortcuts.

NOTE If you do not see the **Exos X** item in the menu, try logging out of the vSphere Client and logging back in again. This may be necessary the first time you try to access any vSphere client plug-in after installing or upgrading it.

Discover the storage system

The plug-in is used to manage the storage systems you have discovered. You can discover a storage system and refresh the discovery history details. You can also modify and remove a storage system from the inventory.

NOTE At least one storage system should be available to be discovered and the administrator should know the storage system login credentials. If the storage system is connected via iSCSI, the ESXi host must already be configured to access the storage system's iSCSI target.

To discover a storage system:

1. Log in to the VMware vSphere Client.

   The VMware vSphere home page appears.
2. In the main menu, select the **Exos X** item.

   The Exos X home page appears.
3. Select the ✚ (Add) icon.

   The **Discover Storage Pool** dialog box appears.
4. Enter the host/IP address username and password of the storage system.
5. Select **Submit**.
   - If successful, a dialog window appears that says: "Storage array discovered successfully."
   - If unsuccessful, a dialog box appears that displays an error message, e.g. "Login unsuccessful" for invalid credentials.
6. Select **OK**.

The discovered storage system is shown in the vSphere Client Exos X home page.

Change the saved credentials for the storage system

To change the saved credentials that are used by the vSphere Web Client Plug-in to log in to the storage system:

1. Log in to the VMware vSphere Web Client.

   The VMware vSphere home page appears.
2. Select the **Exos X** menu item.

   The Exos X home page appears.
3. Select the (Edit) icon.

   The **Update Saved Credentials** dialog box appears.
4. Enter the new credentials for the storage system.
5. Select **Submit**.

NOTE Performing these steps does not change the credentials on the storage system. Performing these steps only changes the storage system credentials that are saved by the vSphere Client Plug-in for authenticating the plug-in to the array.

Remove a storage system from inventory

To remove a storage system from inventory:

1. Login to the VMware vSphere Client.

   The VMware vSphere home page appears.
2. Select the **Exos X** menu item.
3. Select the storage system to remove.
4. Select the (Remove) icon.
5. At the confirmation prompt, select **Yes** to delete the storage system.

   A success message appears.
6. Select **OK**.

6 Managing datastores

The plug-in enables you to manage the datastores that are created in the storage system. Datastore management is available in the Host and Cluster views. Snapshot management operations can be performed in the Storage view.

In the plug-in interface, you must discover and select a cluster to view its datastore-related information.

Create a datastore

This section describes the steps to create a datastore on a host or cluster. The plug-in supports creating iSCSI, Fibre Channel (FC), and SAS datastores. You can create a datastore on a new volume or an existing volume.

Create an iSCSI or FC datastore on a new volume

To create a datastore on an iSCSI or FC host or cluster:

1. In the navigation pane in the VMware vSphere Client, select **Hosts and Clusters**.
2. Right-click the required host or cluster to which the datastore should be attached and select **Exos X Actions** > **New datastore**.

   The **Create Datastore** wizard appears.
3. Select the storage system name.
4. Enter the datastore name and desired size.
5. Select the iSCSI option to create an iSCSI datastore or the FC option to create an FC datastore.
6. Select the required VMFS version. VMFS 6 and VMFS 5 are supported.
7. Select **Next**.
8. Select pool A or B to specify the storage pool on the storage system from which space will be allocated.
9. Select **Next**.
10. Select the required host or cluster and select **Next**.
11. Verify all details.
12. To change details on any page, select **Back**.
13. To submit the request, select **Finish**.

After the request is validated and submitted successfully, the task appears in the **Recent Tasks** list where you can view its progress.

Create a SAS datastore on a new volume

To create a datastore on a SAS host:

1. In the navigation pane in the VMware vSphere Client, select **Hosts and Clusters**.
2. Right-click the required host and select **Exos X Actions** > **New datastore**.

   The **Create Datastore** wizard appears.
3. Select the storage system name.
4. Select the **SAS** option to create a SAS datastore.
5. Select **Next**.

6. Enter the datastore name and size.
7. Select pool A or B.
8. Select the required VMFS version. VMFS 6 and VMFS 5 are supported.
9. Select **Next**.
10. Verify all details.
11. To change details on any page, select **Back**.
12. To submit the request, select **Finish**.

After the request is validated and submitted successfully, the task appears in the **Recent Tasks** list where you can view its progress.

Create a datastore on an existing volume

The plug-in supports creating a datastore on an existing volume either as a blank RAW volume or with the VMFS file system mapped.

To create a datastore on an existing volume:

1. In the navigation pane in the VMware vSphere Client, select **Hosts and Clusters**.
2. Right-click the required host and select **Exos X Actions** > **New datastore**.

   The **Create Datastore** wizard appears.
3. Select the storage system name.
4. Select the required datastore type: SAS, iSCSI, or FC.
5. Select **Next**.
6. Select **Existing Volume**.
7. Select the required volume in the list. If many volumes exist you can use the search field to find a volume by name.
8. Enter the datastore name and size.
9. Select **Next**.
10. Verify all details.
11. To change details on any page, select **Back**.
12. To submit the request, select **Finish**.

After the request is validated and submitted successfully, the task appears in the **Recent Tasks** list where you can view its progress.

Viewing host-to-volume mappings

To view host mappings for volumes in a storage system:

1. In the navigation pane in the VMware vSphere Web Client UI, select **Hosts and Clusters**.
2. Select the required host.
3. Select the **Monitor** tab.
4. Select **Exos X**.

   All storage systems are listed in the right pane.
5. In the **Storage Array** section, select a storage system to show its volume mappings in the **Volume Mapping** section.

Manage snapshots

This section describes the ways in which you can manage snapshots.

- Take a snapshot
- Remove a snapshot

Take a snapshot

To take a snapshot of a datastore:

1. Login to the VMware vSphere Client.

   The VMware vSphere home page appears.
2. In the **Inventories** section, select **Storage**.
3. In the navigation pane, select a datastore.
4. On the **Configure** tab, select **Exos X**.
5. Select the (Add) icon to take a snapshot.

   The **Take Snapshot** dialog box appears, showing the volume name of the selected datastore.
6. Select **Submit**.
7. When the snapshot is created, a success message appears.
8. Select **OK**.

The snapshot appears in the **Snapshot** section.

Remove a snapshot

To remove an existing snapshot:

1. In the Inventories section, select **Storage**.
2. In the navigation pane, select the datastore having the snapshot to remove.
3. On the **Configure** tab, select **Exos X**.
4. Select the snapshot to remove.
5. Select the (Remove) icon to remove the selected snapshot.
6. At the confirmation prompt, select **Yes** to remove the snapshot.
7. Select **OK**.

The selected snapshot is removed from the datastore.

Clone a datastore

To clone an existing datastore:

1. Login to the VMware vSphere Client.

   The VMware vSphere home page appears.
2. In the **Inventories** section, select **Storage**.
3. In the navigation pane, select the datastore having the snapshot to clone.

4. On the **Configure** tab, select **Exos X**.
5. Select the snapshot to clone and select the (Clone) icon.

   The **Clone Datastore** dialog box appears.
6. Select the type of clone to create:
   - **Snapshot Volume**: The clone will be a snapshot of the selected snapshot.
   - **Copy Volume**: The clone will be a full copy of the snapshot's source volume.
7. If you selected **Copy Volume**, select the pool in which to clone the datastore.
8. Select **Submit**.

The selected datastore is cloned and can be accessed from the navigation pane.

Mount a datastore

To mount an existing datastore to a host:

1. Login to the VMware vSphere Client.

   The VMware vSphere home page appears.
2. In the **Inventories** section, select **Storage**.
3. In the navigation pane, select the datastore to mount.
4. Right-click the datastore and select **Exos X Actions** > **Mount Datastore**.

   The **Mount** dialog box appears.
5. Select the check box for the host where you want to mount the selected datastore.
6. Select **Submit**.

   The progress of the mount operation is shown as a percentage. When progress reaches 100% the operation shows as Complete.
7. To view the mounted datastore, select the datastore and select the **Hosts** tab.

Unmount a datastore

To unmount a datastore that is mounted to a host:

1. Login to the VMware vSphere Client.

   The VMware vSphere home page appears.
2. In the **Inventories** section, select **Storage**.
3. In the navigation pane, select the datastore to unmount.
4. Right-click the datastore and select **Exos X Actions** > **Unmount Datastore**.

   The **Unmount Datastore** dialog box appears and shows the hosts to which the datastore is mounted.
5. Select the check box for each host from which you want to unmount the datastore.
6. Select **Submit**.

   The progress of the unmount operation is shown as a percentage. When progress reaches 100%, the operation shows as Complete.

7 Common administrative tasks

View events and alerts

To view events and alerts:

1. In the navigation pane in the VMware vSphere Client, select **Events**.

   The **Event Console** pane appears, listing storage event information.
2. To view Exos Protect events, sort the event list by the **Description** field.
3. Select an event in the upper-right pane to view details about it in the lower-right pane.

View help

To view help for the plug-in installer, enter the following command with no arguments:

```
bash vSphere-Client-Plugin-installer.sh
```

Verify vCenter services are running

To verify that vCenter services are up and running, enter the appropriate command below.

- For vCenter Server:

  ```
  service-control --status vpxd
  ```
- For vCSA:

  ```
  service-control --status vmware-vpxd
  ```

8 Troubleshooting

Problem	Recommended action
Plug-in not visible after installation	Verify the successful installation of the plug-in and the plug-in version. 1. Log in to **`http://<vCenter-address>/mob/content/ExtensionManager/extensionList`** using vCenter Server credentials to access the Managed Object Browser (MOB). 2. Look for the plug-in name `com.vcplugin.plugin` in the extension list and then select the name to check the plug-in version. If the expected version number is found, log out of vCenter and log in again. The vSphere client displays a message indicating that plug-ins that were installed or updated. They will be ready for use next time you log in to vSphere client. 3. Try uninstalling and reinstalling the plug-in. Be sure to follow the steps in the section "Cleaning up after uninstalling the plug-in" on page 10.
vCenter vSphere client cannot be accessed from any host (error 404)	There are several possible solutions. • Add the vCenter host entry to the hosts file in the appropriate path. ▪ Windows: **`C:\Windows\System32\drivers\etc\hosts file`** ▪ Linux: **`/etc/hosts`** • Verify that the host is connected to the storage system. In the Exos Protect storage system CLI, run the **`show initiators`** command to view the list of initiators that are known to the system. For each initiator, the output shows whether the initiator was discovered, the initiator ID, and other information. On the host, find the adapter with the corresponding ID and verify whether the storage system shows that initiator as being discovered or not. • Verify that the datastore is mounted on hosts after a mount operation. 1. Go to **Storage**. 2. Select the datastore. 3. Select the **Hosts** tab. 4. View the list of mounted hosts. • Verify that the datastore is unmounted from hosts after an unmount operation. 1. Go to **Storage**. 2. Select the datastore. 3. Select the **Hosts** tab. 4. Verify that the unmounted host entry is not listed. • Verify task details for plug-in specific operations: 1. Select **Menu**. 2. Select **Tasks**. 3. Select the task in the **Task Console**. 4. Check the task .
VMware error code 503	Indicates that the vCenter Server vSphere UI service may not be running on the vCSA server. • To start the service, enter the following command in a root shell on the vCSA server: **`service-control --start vsphere-ui`**.