

VERSION 13.3.1.0.0

# PURE STORAGE FLASHARRAY PLUG-IN

FOR ORACLE ENTERPRISE MANAGER

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## INTRODUCTION

Pure Storage® provides simple, comprehensive integration with the Oracle® Enterprise Manager platform via the Pure Storage REST API and the FlashArray Plug-in for OEM. This guide provides an overview of the plug-in's integration with OEM and best practices for its use.

## PREREQUISITES

### Oracle Environment Prerequisites

The following sections describe the supported software versions and operating systems for the various components of the Oracle Enterprise Manager system.

### ORACLE ENTERPRISE MANAGER

The plug-in supports the following Oracle Enterprise Manager versions:

- Oracle Enterprise Manager Cloud Control 13c R3 (13.3.1.0.0)

### ORACLE MANAGEMENT SERVER (OMS)

The plug-in is supported for all Oracle Management Server platforms.

### ORACLE MANAGEMENT AGENT (OMA)

The plug-in is supported for the following Oracle Management Agent platforms:

- Linux x86-64
- Microsoft Windows x64 (64-bit)
- Oracle Solaris on SPARC (64-bit)

### Pure Environment Prerequisites

The plug-in uses the Pure Storage REST API for data collection from the Pure Storage array. The following versions of the REST API are supported:

- Pure Storage REST API 1.4 or later

## INSTALLING AND CONFIGURING THE PURE STORAGE FLASHARRAY PLUG-IN

### Installation Overview

This chapter describes installation and configuration steps in detail.

Ensure that the OEM environment is properly setup for plug-in deployment before beginning. The **emcli** utility must be configured and working locally on the Oracle Management Server to successfully complete the installation.

### Download the Plug-in

To download the plug-in, go to the Oracle Extensibility Exchange website (<http://www.oracle.com/goto/emextensibility>) and search for the Pure Storage FlashArray plugin. That website will redirect to the VLSS download page (<http://www.vlss-llc.com/pure-storage-oem/>), where the plug-in zip file can be downloaded. The zip file contains the OPAR as well as a PDF copy of this document.

Transfer the OPAR to any accessible location on the Oracle Management Server host.

### Import the Plug-in OPAR

After the OPAR is located on the management server, it needs to be imported into the OEM environment. Use the **emcli** utility to import the OPAR.

Login to the OMS from the command line:

```
$ emcli login -username=sysman
```

Type the following command:

```
$ emcli import_update -file=<path to downloaded *.opar file> -omslocal
```

The **-omslocal** flag indicates that the file is located on the same host as the Oracle Management Server. Please see the Oracle documentation for importing the OPAR from a remote host.

For example:

```
$ emcli import_update -file=/home/oracle/Downloads/13.3.1.0.0_vlss.pure.xvp1_2000_0.opar -omslocal
Processing update: Plug-in – Pure Storage Flash Array. Operation completed successfully. Update has been
uploaded to Enterprise Manager. Please use the Self Update Home to manage this update.
```

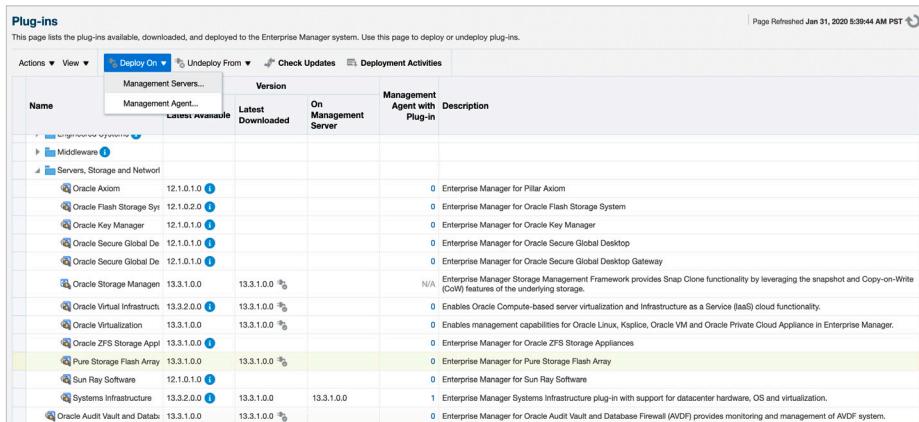
## Deploy the Plug-in on the Oracle Management Server (OMS)

After the OPAR is imported, it must be deployed on the OMS. There are two methods to deploy to the OMS:

### THROUGH THE OEM CONSOLE

To deploy the plug-in through the console:

1. From the **Setup** menu, select **Extensibility** and then **Plug-ins**.
2. From the **Plug-ins** page, select the **Pure Storage FlashArray** plug-in. Then select **Deploy On** and choose **Management Servers**.



This screenshot shows the 'Plug-ins' page in the Oracle Enterprise Manager interface. The page lists various plug-ins available for deployment. The 'Pure Storage Flash Array' plug-in is highlighted with a yellow background. The columns in the table are: Name, Version, Management Agent with, and Description. The Pure Storage plug-in has a 'Latest Downloaded' version of 13.3.1.0.0 and is listed under the 'Management Agents...' category.

Name	Version	Management Agent with	Description
Middleware	12.1.0.1.0	Enterprise Manager for Pilar Axiom	
Servers, Storage and Network			
Oracle Axiom	12.1.0.1.0	Enterprise Manager for Oracle Flash Storage System	
Oracle Flash Storage Sys	12.1.0.2.0	Enterprise Manager for Oracle Key Manager	
Oracle Key Manager	12.1.0.1.0	Enterprise Manager for Oracle Secure Global Desktop	
Oracle Secure Global De	12.1.0.1.0	Enterprise Manager for Oracle Secure Global Desktop Gateway	
Oracle Secure Global De	12.1.0.1.0	Enterprise Manager Storage Management Framework provides Snap Clone functionality by leveraging the snapshot and Copy-on-Write (CoW) features of the underlying storage.	N/A
Oracle Storage Manager	13.3.1.0.0	Enterprise Manager for Oracle Compute-based server virtualization and Infrastructure as a Service (IaaS) cloud functionality.	
Oracle Virtual Infrastruc	13.3.2.0.0	Enterprise management capabilities for Oracle Linux, Ksplice, Oracle VM and Oracle Private Cloud Appliance in Enterprise Manager.	
Oracle Virtualization	13.3.1.0.0	Enterprise Manager for Oracle ZFS Storage Appliances	
Oracle ZFS Storage Appl	13.3.1.0.0	Enterprise Manager for Pure Storage Flash Array	
Pure Storage Flash Array	13.3.1.0.0	Enterprise Manager for Sun Ray Software	
Sun Ray Software	12.1.0.1.0	Enterprise Manager Systems Infrastructure plug-in with support for datacenter hardware, OS and virtualization.	
Systems Infrastructure	13.3.2.0.0	Enterprise Manager for Oracle Audit Vault and Database Firewall (AVDF) provides monitoring and management of AVDF system.	
Oracle Audit Vault and Datab	13.3.1.0.0	Enterprise Manager for Oracle Audit Vault and Database Firewall (AVDF) provides monitoring and management of AVDF system.	

FIGURE 1. Deploying the plug-in on OMS

3. In the **Deploy Plug-in on Management Servers: Plug-ins** page, click **Next**.
4. In the **Deploy Plug-in on Management Servers: Pre-requisite Checks** page, verify that the checks were successfully completed and click **Next**.
5. In the **Deploy Plug-in on Management Servers: Repository** page, enter the SYS credentials for the repository or select existing credentials and click **Next**.
6. In the **Deploy Plug-in on Management Servers: Review** page, click **Deploy** to deploy the plug-in on the OMS.
7. In the **Deploy Plug-in on Management Servers: Confirmation** page, click **Show Status** to view the steps of the deployment.
8. In the **Deployment Activities** page, verify that the deployment was successful with a green checkmark in the **Status** column.

## THROUGH THE EMCLI UTILITY

1. Type the following command:

```
$ emcli deploy_plugin_on_server -sys_password=<Repository SYS password>  
-plugin=vlss.pure.xvp1:13.3.1.0.0
```

2. The deploy will run in the background after the following output:

```
Performing pre-requisites check... This will take a while.  
Prerequisites check succeeded  
Deployment of plug-in on the management servers is in progress  
Use "emcli get_plugin_deployment_status -plugin=vlss.pure.xvp1" to track the  
plug-in deployment status.
```

3. Verify the deployment is successful by running the status command:

```
$ emcli get_plugin_deployment_status -plugin=vlss.pure.xvp1
```

## Deploy the Plug-in on the Oracle Management Agent (OMA)

Now the plug-in must be deployed on at least one OMA which can connect to the Pure Storage REST API.

Again, there are two methods of deploying to an OMA:

## THROUGH THE OEM CONSOLE

To deploy the plug-in through the console:

1. From the **Setup** menu, select **Extensibility** and then **Plug-ins**.
2. From the **Plug-ins** page, select the **Pure Storage FlashArray** plug-in. Then select **Deploy On** and choose **Management Agent**.

Plug-ins					Page Refreshed Jan 31, 2020 5:51:52 AM PST
Actions ▾ View ▾		Deploy On ▾	Undeploy From ▾	Check Updates	Deployment Activities
Name	Management Servers...	Version	On Management Server	Management Agent with Plug-in	Description
pureware	Management Agent...	Latest Downloaded			
Oracle Axiom		12.1.0.1.0			Enterprise Manager for Pillar Axiom
Oracle Flash Storage Sys		12.1.0.2.0			Enterprise Manager for Oracle Flash Storage System
Oracle Key Manager		12.1.0.1.0			Enterprise Manager for Oracle Key Manager
Oracle Secure Global D		12.1.0.1.0			Enterprise Manager for Oracle Secure Global Desktop
Oracle Secure Global D		12.1.0.1.0			Enterprise Manager for Oracle Secure Global Desktop Gateway
Oracle Storage Manager		13.3.1.0.0	13.3.1.0.0	N/A	Enterprise Manager Storage Management Framework provides Snap Clone functionality by leveraging the snapshot and Copy-on-Write (CoW) features of the underlying storage.
Oracle Virtual Infrastruc.		13.3.2.0.0	13.3.1.0.0		Enables Oracle Compute-based server virtualization and Infrastructure as a Service (IaaS) cloud functionality.
Oracle Virtualization		13.3.1.0.0	13.3.1.0.0		Enables management capabilities for Oracle Linux, Ksplice, Oracle VM and Oracle Private Cloud Appliance in Enterprise Manager.
Oracle ZFS Storage Appl		13.3.1.0.0			Enterprise Manager for Oracle ZFS Storage Appliances
Pure Storage Flash Array		13.3.1.0.0	13.3.1.0.0		Enterprise Manager for Pure Storage Flash Array
Sun Ray Software		12.1.0.1.0			Enterprise Manager for Sun Ray Software
Systems Infrastructure		13.3.2.0.0	13.3.1.0.0	13.3.1.0.0	Enterprise Manager Systems Infrastructure plug-in with support for datacenter hardware, OS and virtualization.
Oracle Audit Vault and Datab		13.3.1.0.0	13.3.1.0.0		Enterprise Manager for Oracle Audit Vault and Database Firewall (AVDF) provides monitoring and management of AVDF system.

FIGURE 2. Deploying the plug-in on OMA

3. In the **Deploy Plug-in on Management Agent** page, click **Continue**.

4. In the **Deploy Plug-in on Management Agent: Select Management Agent** page, select an agent for deployment and click **Continue**.
5. In the **Deploy Plug-in on Management Agent: Pre-requisite Checks** page, verify that the checks were successfully completed and click **Next**.
6. In the **Deploy Plug-in on Management Agent: Review** page, click **Deploy** to deploy the plug-in on the OMA.
7. In the **Deploy Plug-in on Management Agent: Confirmation** page, click **Show Status** to view the steps of the deployment.
8. In the **Deployment Activities** page, verify that the deployment was successful with a green checkmark in the **Status** column.

### THROUGH THE EMCLI UTILITY

1. Type the following command:

```
$ emcli deploy_plugin_on_agent -agent_names=<Hostname of agent>:<Port>
-plugin=vlss.pure.xvp1:13.3.1.0.0
```

2. The deploy will run in the background after the following output:

```
Performing pre-requisites check... This will take a while.
Prerequisites check succeeded
Deployment of plug-in on the management agent is in progress
Use "emcli get_plugin_deployment_status -plugin=vlss.pure.xvp1" to track
the plug-in deployment status.
```

3. Verify the deployment is successful by running the status command:

```
$ emcli get_plugin_deployment_status -plugin=vlss.pure.xvp1
```

### Verify Plug-in Deployment

To verify that the plug-in deployment was successful, check the Extensibility page:

1. From the **Setup** menu, select **Extensibility** and then **Plug-ins**.
2. From the Plug-ins page, select the **Pure Storage FlashArray** plug-in. Verify that the **On Management Server** column is populated and that the **Management Agent with Plug-in** column is greater than zero.

Plug-ins						Page Refreshed Jan 31, 2020 5:57:06 AM PST
Actions ▾ View ▾		Deploy On ▾	Undeploy From ▾	Check Updates	Deployment Activities	
Name	Latest Available	Latest Downloaded	On Management Server	Management Agent with Plug-in	Description	
Oracle Axiom	12.1.0.1.0			Enterprise Manager for Pillar Axiom		
Oracle Flash Storage System	12.1.0.2.0			Enterprise Manager for Oracle Flash Storage System		
Oracle Key Manager	12.1.0.1.0			Enterprise Manager for Oracle Key Manager		
Oracle Secure Global Desktop	12.1.0.1.0			Enterprise Manager for Oracle Secure Global Desktop		
Oracle Secure Global Desktop Gateway	12.1.0.1.0			Enterprise Manager for Oracle Secure Global Desktop Gateway		
Oracle Storage Manager	13.3.1.0.0	13.3.1.0.0	N/A	Enterprise Manager Storage Management Framework provides Snap Clone functionality by leveraging the snapshot and Copy-on-Write (CoW) features of the underlying storage.		
Oracle Virtual Infrastructure	13.3.2.0.0	13.3.1.0.0		Enables Oracle Compute-based server virtualization and Infrastructure as a Service (IaaS) cloud functionality.		
Oracle Virtualization	13.3.1.0.0	13.3.1.0.0		Enables management capabilities for Oracle Linux, Ksplice, Oracle VM and Oracle Private Cloud Appliance in Enterprise Manager.		
Oracle ZFS Storage Appliance	13.3.1.0.0			Enterprise Manager for Oracle ZFS Storage Appliances		
Pure Storage Flash Array	13.3.1.0.0	13.3.1.0.0	13.3.1.0.0	Enterprise Manager for Pure Storage Flash Array		
Sun Ray Software	12.1.0.1.0			Enterprise Manager for Sun Ray Software		
Systems Infrastructure	13.3.2.0.0	13.3.1.0.0	13.3.1.0.0	Enterprise Manager Systems Infrastructure plug-in with support for datacenter hardware, OS and virtualization.		
Oracle Audit Vault and Database Firewall	13.3.1.0.0	13.3.1.0.0		Enterprise Manager for Oracle Audit Vault and Database Firewall (AVDF) provides monitoring and management of AVDF system.		

FIGURE 3. Verify plug-in deployment

## Create the Pure Storage FlashArray Target

The Pure Storage FlashArray target is the only target needed to monitor the storage system. It provides a dashboard for monitoring the system details, capacity, performance and historical metrics of the array.

Again, there are two methods of creating the Pure Storage FlashArray target:

### THROUGH THE OEM CONSOLE

- From the **Setup** menu, select **Add Target** and then **Add Targets Manually**

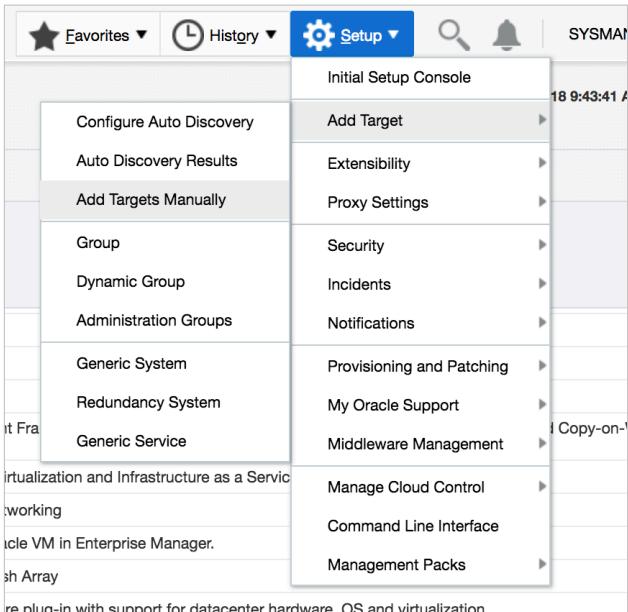


FIGURE 4. Add Target

- Select **Add Targets Declaratively**.

3. Select **Pure Storage FlashArray** from the drop down and select a Monitoring Agent that has the Pure Storage Plug-in deployed on it. Then click **Add Manually...**
4. On the **Add: Pure Storage FlashArray** page, enter a **Target Name**. Then enter an **API Token** that has at least read privileges through the REST API. Finally, enter **Array Hostname / IP Address** for one of the virtual IPs on the array. Then click **OK**.

**Add: Pure Storage Flash Array**  
Add a target to be monitored by Enterprise Manager by specifying target monitoring properties

**Target**

\* Target Name:

Target Type: Pure Storage Flash Array  
Host: oem132.vlssllc.com  
Agent: https://oem132.vlssllc.com:3872/emd/main/

**Properties**

\* API Token:

\* Array Hostname / IP Address:

► Global Properties

Figure 5. Add: Pure Storage FlashArray

5. The **Add Target** popup should appear and shortly thereafter a confirmation message that the **Add Target – Completed Successfully**.

### THROUGH THE EMCLI UTILITY

1. Type the following command:

```
$ emcli add_target -name=<Target Name> -type="pure_flash_array" -host=<Host Name>
-properties="ARRAY_HOME:<IP or Hostname for the Pure Storage Array>;API_TOKEN:<API Token>"
```

2. The deploy will run in the background after the following output:

```
Target "<Target Name>:pure_flash_array" added successfully
```

## USING THE PLUG-IN

### Home Page

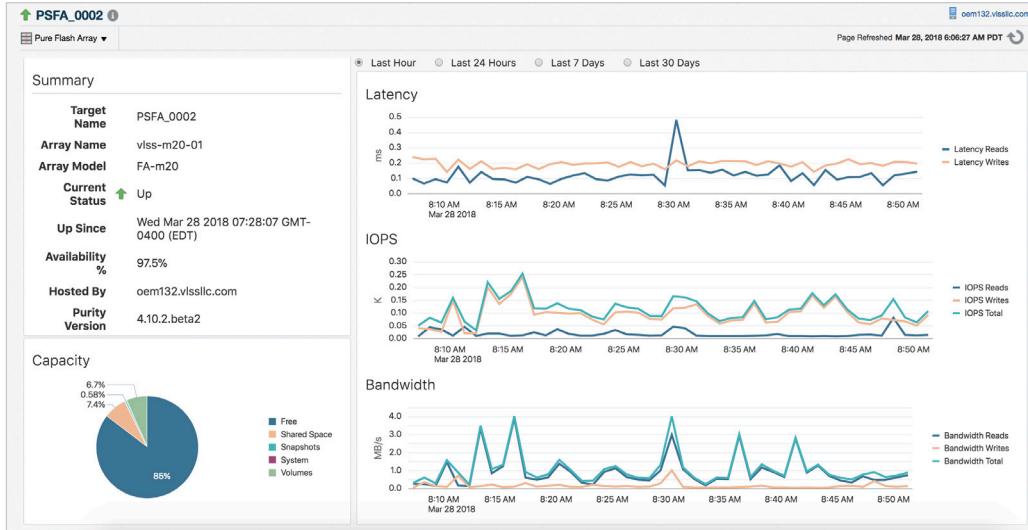


FIGURE 6. Home page

The Pure Storage FlashArray home page is a single-pane dashboard into the array. It contains the following sections:

- The Summary pane** – displays the relevant system information of the array, including array name, array model, uptime, and Purity version.

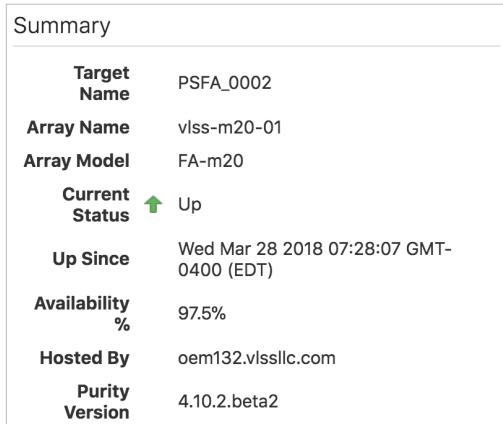


FIGURE 7. Summary pane

2. **The Capacity pane** – displays the current usage of the storage array, including volumes, shared space, snapshots, system, and free space.

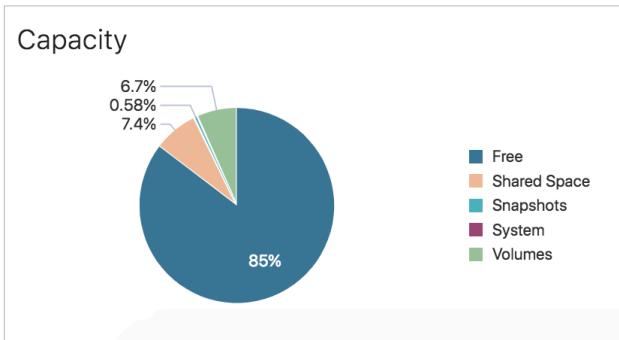


FIGURE 8. Capacity pane

3. **The Performance pane** – displays read and write latency; read, write, and total IOPS; and read, write, and total bandwidth of the array for the past hour in milliseconds. The time period radio button at the top allows for changing the time domain between the last hour, the last day, the last week, and the last month.

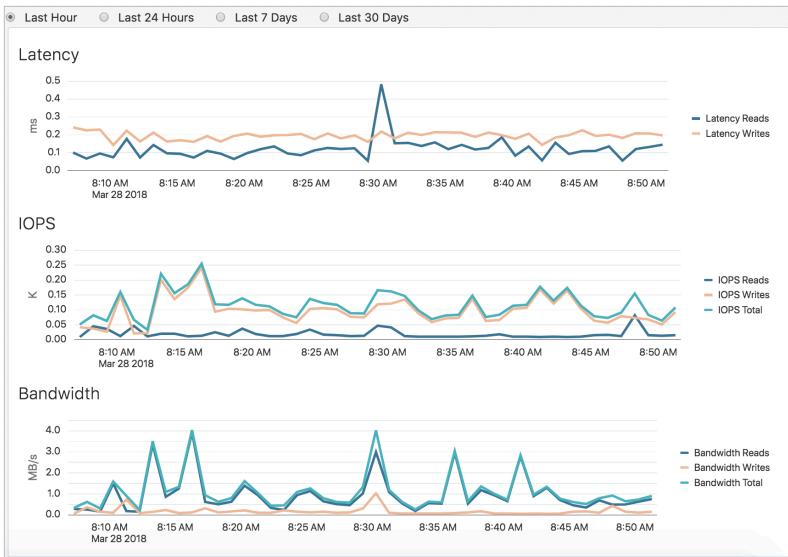


FIGURE 9. Performance pane

## Volumes Page

Navigate to the **Volumes** page from the FlashArray menu.

The screenshot shows the Pure Flash Array interface. On the left, a sidebar menu lists various navigation options: Home, Monitoring, Diagnostics, Control, Job Activity, Information Publisher Reports, Members, Volumes (which is selected and highlighted in grey), Add Space, Configuration, Compliance, Target Setup, Target Sitemap, and Target Information. The main content area displays three line graphs for the selected volume 'vvol\_Jumpbox\_vg/Config\_2ca7411d'. The top graph is 'Latency' in ms over time (8:20 AM to 9:00 AM on March 28, 2018). The middle graph is 'IOPS' (Reads, Writes, Total) over the same period. The bottom graph is 'Bandwidth' in MB/s over the same period. All graphs show data for multiple series, with the specific volume being monitored highlighted by a green checkmark icon.

FIGURE 10. Navigating to the Volumes page

From there the volume information should be shown. All volumes are on the left. A green check indicates snapshots. The search box should restrict results. “Include Inactive” shows volumes that no longer exist, and time and read / write / total radio buttons should work on selected volumes, which should be multiselect enabled.

## Add Space

The Add Space functionality makes system level changes to the plug-in hosts. It generally requires root access to do so. Ensure that you are aware of the implications of the Add Space functionality.

Navigate to the **Add Space** page from the FlashArray menu.

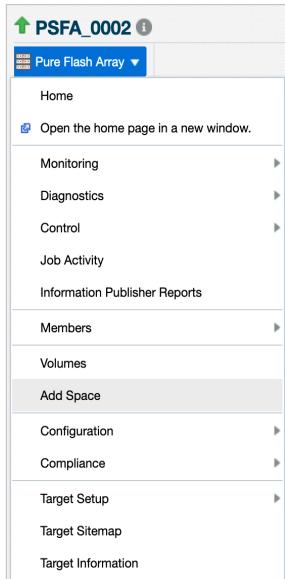


FIGURE 11. Add Space page

From the **Add Space** page, there are three different options for adding space via the plug-in: **Add Space to LVM**, **Add Space to ASM**, and **Add Space to ZFS**.

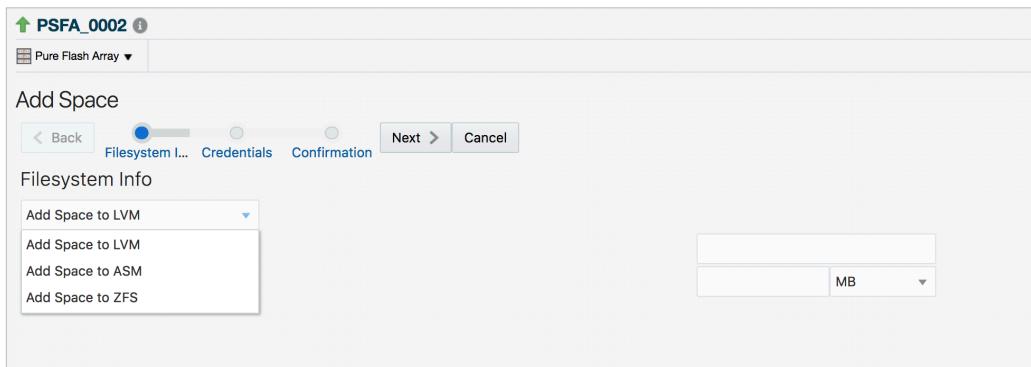


FIGURE 12. Add Space – Select Type

## ADD SPACE TO LVM

The **Add Space to LVM** functionality will create a new Pure Storage volume, attach the volume to a host, and extend the specified logical volume to the new Pure Storage volume.

### Prerequisites:

1. The plug-in is only supported on Oracle Linux, RedHat Linux and CentOS versions 6 and 7.
2. The plug-in hostname, the actual hostname, and the hostname in Pure Storage **MUST** be the same for the process to succeed.

From the **Add Space to LVM** page, enter the name of the logical volume to extend, enter the size of the new volume, and select the size type (MB, GB, TB) from the drop down.

LVM Name: \* test  
Additional Space : \* 10

Size Type: GB

FIGURE 13. Add Space to LVM - Filesystem Info

Click **Next**. Select or enter credentials to execute the process.

Credential  Preferred Credential  Named Credential  New Credential  
Credential Name: NC\_HOST\_ROOT

Attribute	Value
UserName	root
Password	*****

FIGURE 14. Add Space to LVM – Credentials

Click **Next**.

**Add Space**

Filesystem I... Credentials Confirmation

**Confirmation**

Filesystem Info	Credential Info
Filesystem Name: test Filesystem Size : 10GB	Host Cred Set Name: NC_HOST_ROOT

FIGURE 15. Add Space to LVM – Finish

Click **Finish**. The Add Space to LVM process will execute and a result message will be displayed.

### ADD SPACE TO ASM

The **Add Space to ASM** functionality will create a new Pure Storage volume, attach the volume to a host, and extend the specified ASM disk group to the new Pure Storage volume.

#### Prerequisites:

1. Oracle ASM must be configured with **oracleasm**. udev setups are not supported.
2. The plug-in hostname, the actual hostname, and the hostname in Pure Storage **MUST** be the same for the process to succeed.

From the **Add Space to ASM** page, enter the name of the ASM disk group to extend, enter the size of the new volume, and select the size type (MB, GB, TB) from the drop down. In this scenario, the Oracle Home for the ASM instance, the ASM SID, and the user that owns the ASM instance need to be specified as well.

**Add Space**

Filesystem I... Credentials Confirmation

**Filesystem Info**

Add Space to ASM

Diskgroup Name: *	DATA
15	GB
/u01/app/grid/product/12.1.0/grid	+ASM
oracle	oracle

FIGURE 16. Add Space to ASM – ASM Info

Click **Next**. Select or enter credentials to execute the process.

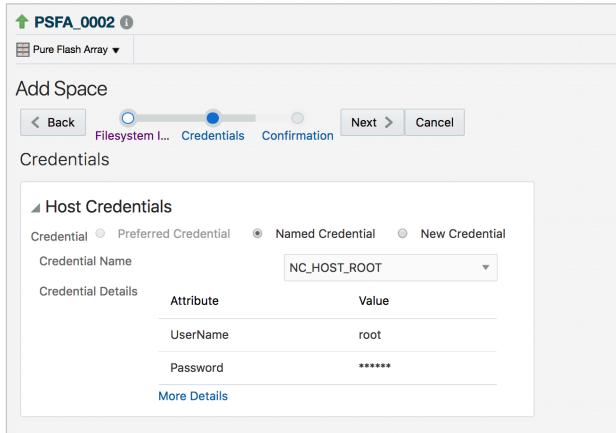


FIGURE 17. Add Space to ASM – Credentials

Click **Next**.

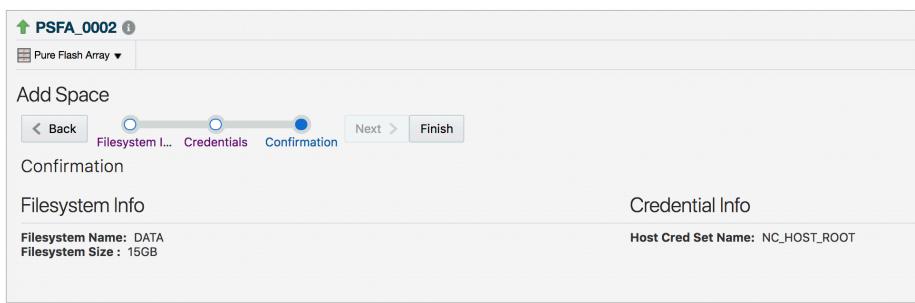


FIGURE 18. Add Space to ASM – Finish

Click **Finish**. The Add Space to ASM process will execute and a result message will be displayed.

### ADD SPACE TO ZFS

The **Add Space to ZFS** functionality will create a new Pure Storage volume, attach the volume to a host, and extend the specified zpool to the new Pure Storage volume.

#### Prerequisites:

1. This is only supported on Solaris 10 and 11.
2. The plug-in hostname, the actual hostname, and the hostname in Pure Storage **MUST** be the same for the process to succeed.

From the **Add Space to ZFS** page, enter the name of the zpool to extend, enter the size of the new volume, and select the size type (MB, GB, TB) from the drop down.

The screenshot shows the 'Add Space' wizard in progress. The current step is 'Filesystem Info'. The user has selected 'Add Space to ZFS'. The 'ZFS Storage Pool Name:' field is set to 'u01'. The 'Additional Space:' field is set to '10 GB'. The interface includes navigation buttons: Back, Next >, and Cancel.

FIGURE 19. Add Space to ZFS – Filesystem Info

Click **Next**. Select or enter credentials to execute the process.

The screenshot shows the 'Add Space' wizard in progress. The current step is 'Credentials'. The user has selected 'Named Credential' and chosen 'NC\_HOST\_ROOT\_SPARC'. The 'Credential Details' table shows 'UserName' as 'root' and 'Password' as '\*\*\*\*\*'. The interface includes navigation buttons: Back, Next >, and Cancel.

FIGURE 20. Add Space to ZFS – Credentials

Click **Next**.

The screenshot shows the 'Add Space' wizard in progress. The current step is 'Confirmation'. The summary information on the left includes 'Filesystem Name: u01' and 'Filesystem Size: 10GB'. On the right, under 'Credential Info', it shows 'Host Cred Set Name: NC\_HOST\_ROOT\_SPARC'. The interface includes navigation buttons: Back, Next >, and Finish.

FIGURE 21. Add Space to ZFS – Finish

Click **Finish**. The Add Space to ZFS process will execute and a result message will be displayed.

## ASM Reclamation Utility

The ASM Reclamation Utility is a new job that becomes available with the Pure Storage FlashArray plugin. The ASRU consolidates the fragmented data within an ASM disk group to allow for the Pure Storage array to reclaim unused space in the underlying volumes. The Pure Storage FlashArray target must be on the same host as the disk group.

Navigate to **Enterprise**, then **Job**, then **Activity**.

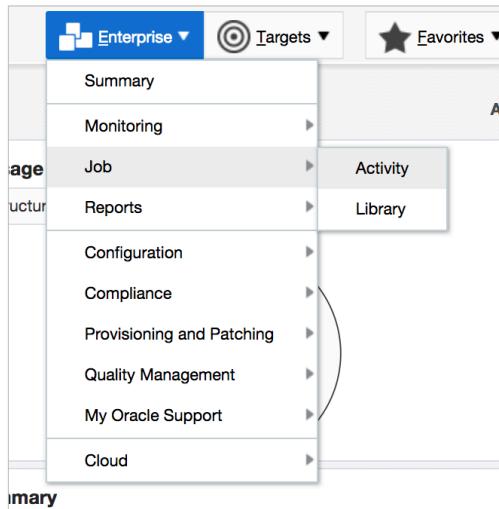


FIGURE 26. Job Activity

Click on **Create Job**.

A screenshot of the Oracle Enterprise Manager 'Jobs' page. At the top, there are three summary boxes: 'Jobs with Problems in the last 24 hrs' (16 Problems), 'Activity in Last 24 hrs' (49 Job Runs), and 'Jobs Scheduled' (0). Below these are search criteria and a 'Start Time' set to 'Last 24 Hours'. The main area is titled 'Available Criteria' and lists filters for 'Name', 'Owner', 'Status' (Succeeded, Active, Problems, Error), and 'Problems'. To the right is a table titled 'Jobs' with columns 'Name', 'Run', 'Status', and 'Scheduled'. The table lists several jobs, all of which have a status of 'Skipped' and 1 execution, with dates ranging from March 28 to March 29.

FIGURE 27. Create Job

Select **ASM Reclamation Utility** from the Job List.

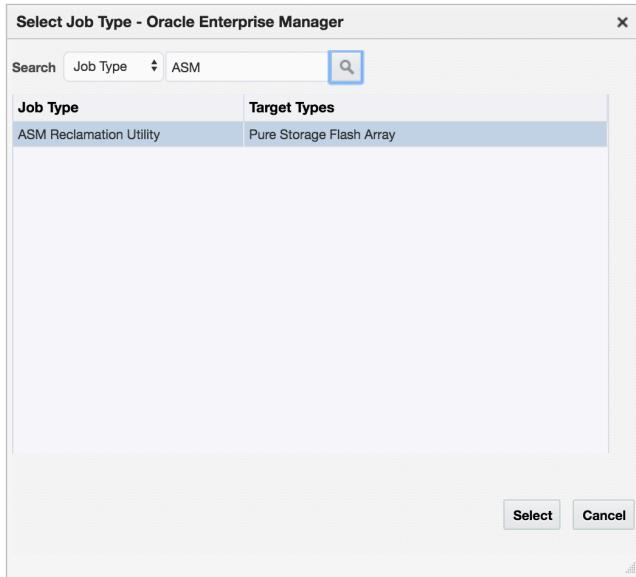


FIGURE 28. ASRU Job

Enter details about the **Job**, including **Name**, and select a **Target**.

FIGURE 29. ASRU Job – Details

Click **Parameters**. Enter the required three parameters:

- **Disk Group** – the ASM disk group from which to reclaim space
- **ASM SID** – the SID of the ASM instance (usually +ASM)
- **Oracle Home** – the Oracle home of the ASM instance, usually the Grid home

**Job**  
**Create 'ASM Reclamation Utility' Job**

[Cancel](#) [Save to Library](#) [Submit](#)

[General](#) **Parameters** [Credentials](#) [Schedule](#) [Access](#)

* DISK GROUP	<input type="text"/>	Target Properties
Enter the disk group for space reclamation.		Target properties can be used in parameters Property names are case-sensitive. To escape '%', use '%%'.
* ASM SID	<input type="text"/>	Name Description
Enter the SID for the ASM instance.		%end_root% location of Agent
* ORACLE_HOME	<input type="text"/>	%perlbin% location of Perl binary used by Agent
Enter the ORACLE_HOME for the ASM instance.		%targetName% target name
		%targetType% target type
		%ordl_gtp_contact% Contact
		%ordl_gtp.lifecycle_status% Lifecycle Status
		%ordl_gtp.department% Department
		%ordl_gtp.deployment_type% Deployment Type
		%ordl_gtp.site% Site
		%ordl_gtp.downtime_contact% Downtime Contact
		%ordl_gtp.cs% Customer Support Identifier
		%ordl_gtp.os% Operating System
		%ordl_gtp.line_of_bus% Line of Business
		%ordl_gtp.cost_center% Cost Center
		%ordl_gtp.location% Location
		%ordl_gtp.target_version% Target Version
		%ordl_gtp.platform% Platform
		%ordl_gtp.comment% Comment
		%ARRAY_HOST% Array Hostname / IP Address
		%API_TOKEN% API Token

[Cancel](#) [Save to Library](#) [Submit](#)

FIGURE 30. ASRU Job – Parameters

Select **Credentials**, **Schedule**, and **Access**, if desired. Click **Submit** to start the ASM Reclamation Utility job.

## UNDEPLOY THE PLUG-IN

### Delete the Pure Storage FlashArray Target

There are two methods of deleting the Pure Storage FlashArray target:

#### THROUGH THE OEM CONSOLE

1. From the **Target Home** menu, select **Target Setup**, and then **Remove Target**

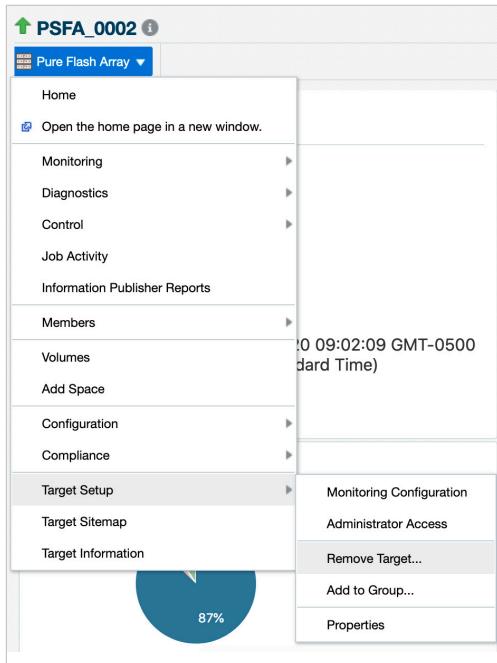


FIGURE 31. Delete Target

2. Select **Ok**.

#### THROUGH THE EMCLI UTILITY

1. Type the following command:

```
$ emcli delete_target -name=<Target Name> -type=pure_flash_array
```

2. The deploy will run in the background after the following output:

```
Target <Target Name>:pure_flash_array deleted successfully
```

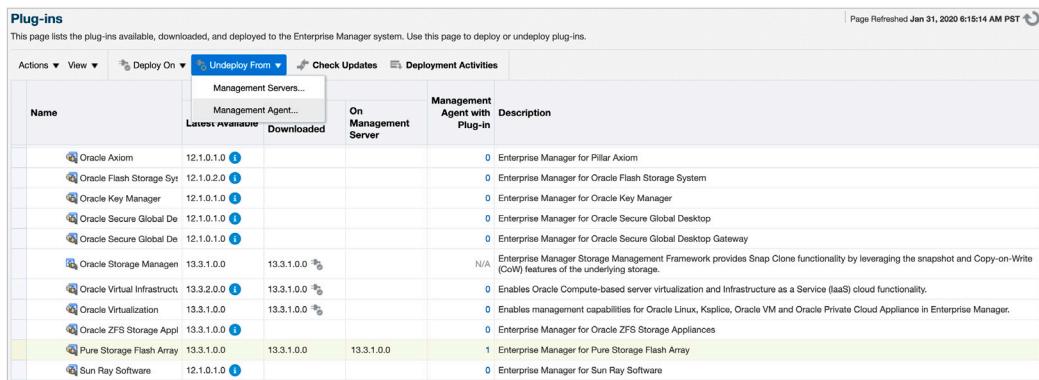
## Undeploy the Plug-in on the Oracle Management Agent (OMA)

Again, there are two methods of undeploying an OMA:

### THROUGH THE OEM CONSOLE

To undeploy the plug-in through the console:

1. From the **Setup** menu, select **Extensibility**, and then **Plug-ins**.
2. From the **Plug-ins** page, select the **Pure Storage FlashArray** plug-in. Then select **Undeploy From** and choose **Management Agent**.



The screenshot shows the 'Plug-ins' page in the OEM Console. The title bar says 'Plug-ins' and 'Page Refreshed Jan 31, 2020 8:18:14 AM PST'. Below the title, a message reads: 'This page lists the plug-ins available, downloaded, and deployed to the Enterprise Manager system. Use this page to deploy or undeploy plug-ins.' There are several tabs at the top: 'Actions ▾ View ▾', 'Deploy On ▾', 'Undeploy From ▾' (which is highlighted in blue), 'Check Updates', and 'Deployment Activities'. The main table has columns: 'Name', 'Latest Available', 'Management Agent...', 'Downloaded', 'On Management Server', 'Management Agent with Plug-in', and 'Description'. The 'Pure Storage Flash Array' plug-in is highlighted in yellow and has a green checkmark in the 'Status' column under 'Management Agent with Plug-in'. Other entries include Oracle Axiom, Oracle Flash Storage Sy, Oracle Key Manager, Oracle Secure Global De, Oracle Secure Global De, Oracle Storage Manager, Oracle Virtual Infrastruct, Oracle Virtualization, Oracle ZFS Storage Appl, Sun Ray Software, and Oracle Axiom.

Name	Latest Available	Management Agent...	Downloaded	On Management Server	Management Agent with Plug-in	Description
Oracle Axiom	12.1.0.1.0				0	Enterprise Manager for Pillar Axiom
Oracle Flash Storage Sy	12.1.0.2.0				0	Enterprise Manager for Oracle Flash Storage System
Oracle Key Manager	12.1.0.1.0				0	Enterprise Manager for Oracle Key Manager
Oracle Secure Global De	12.1.0.1.0				0	Enterprise Manager for Oracle Secure Global Desktop
Oracle Secure Global De	12.1.0.1.0				0	Enterprise Manager for Oracle Secure Global Desktop Gateway
Oracle Storage Manager	13.3.1.0.0				N/A	Enterprise Manager Storage Management Framework provides Snap Clone functionality by leveraging the snapshot and Copy-on-Write (CoW) features of the underlying storage.
Oracle Virtual Infrastruct	13.3.2.0.0				0	Enables Oracle Compute-based server virtualization and Infrastructure as a Service (IaaS) cloud functionality.
Oracle Virtualization	13.3.1.0.0				0	Enables management capabilities for Oracle Linux, Ksplice, Oracle VM and Oracle Private Cloud Appliance in Enterprise Manager.
Oracle ZFS Storage Appl	13.3.1.0.0				0	Enterprise Manager for Oracle ZFS Storage Appliances
Pure Storage Flash Array	13.3.1.0.0			13.3.1.0.0	1	Enterprise Manager for Pure Storage Flash Array
Sun Ray Software	12.1.0.1.0				0	Enterprise Manager for Sun Ray Software

FIGURE 32. Undeploy From OMA

3. In the **Undeploy Plug-in from Management Agent** page, select an OMA for undeployment and click **Continue**.
4. In the **Undeploy Plug-in from Management Agent: Pre-requisite Checks** page, verify that the checks were successfully completed and click **Next**.
5. In the **Undeploy Plug-in from Management Agent: Review** page, click **Undeploy** to deploy the plug-in on the OMA.
6. In the **Undeploy Plug-in from Management Agent: Confirmation** page, click **Show Status** to view the steps of the undeployment.
7. In the **Deployment Activities** page, verify that the undeployment was successful with a green checkmark in the **Status** column.

### THROUGH THE EMCLI UTILITY

1. Type the following command:

```
$ emcli undeploy_plugin_from_agent -agent_names=<Hostname of agent>:<Port>
-plugin=vlss.pure.xvp1:13.3.1.0.0
```

2. The deploy will run in the background after the following output:

```
Plug-in undeployment from the Management Agents is in progress
```

Use "emcli get\_plugin\_deployment\_status -plugin=vlss.pure.xvp1" to track the plug-in undeployment status.

3. Verify the deployment is successful by running the status command:

```
$ emcli get_plugin_deployment_status -plugin=vlss.pure.xvp1
```

## Undeploy the Plug-in on the Oracle Management Server (OMS)

There are two methods to undeploy from the OMS:

### THROUGH THE OEM CONSOLE

To undeploy the plug-in through the console:

1. From the **Setup** menu, select **Extensibility**, and then **Plug-ins**.
2. From the **Plug-ins** page, select the **Pure Storage FlashArray** plug-in. Then select **Undeploy From** and choose **Management Servers**.

The screenshot shows the 'Plug-ins' page in the OEM interface. At the top, there are navigation options: Actions, View, Deploy On (with 'Undeploy From' highlighted), Check Updates, and Deployment Activities. Below this is a table with columns: Name, Status (Linux Available, Management Agent... Downloaded), On Management Server, Management Agent with Plug-in, and Description. The Pure Storage FlashArray plug-in is highlighted in yellow in the table. The table contains the following data:

Name	Status	On Management Server	Management Agent with Plug-in	Description
Servers, Storage and Network				
Oracle Axiom	12.1.0.1.0			Enterprise Manager for Pillar Axiom
Oracle Flash Storage Sys	12.1.0.2.0			Enterprise Manager for Oracle Flash Storage System
Oracle Key Manager	12.1.0.1.0			Enterprise Manager for Oracle Key Manager
Oracle Secure Global De	12.1.0.1.0			Enterprise Manager for Oracle Secure Global Desktop
Oracle Secure Global De	12.1.0.1.0			Enterprise Manager for Oracle Secure Global Desktop Gateway
Oracle Storage Manag	13.3.1.0.0	13.3.1.0.0	N/A	Enterprise Manager Storage Management Framework provides Snap Clone functionality by leveraging the snapshot and Copy-on-Write (CoW) features of the underlying storage.
Oracle Virtual Infrastuct	13.3.2.0.0	13.3.1.0.0		Enables Oracle Compute-based server virtualization and Infrastructure as a Service (IaaS) cloud functionality.
Oracle Virtualization	13.3.1.0.0	13.3.1.0.0		Enables management capabilities for Oracle Linux, Ksplice, Oracle VM and Oracle Private Cloud Appliance in Enterprise Manager.
Oracle ZFS Storage Appl	13.3.1.0.0			Enterprise Manager for Oracle ZFS Storage Appliances
Pure Storage Flash Array	13.3.1.0.0	13.3.1.0.0		Enterprise Manager for Pure Storage Flash Array
Sun Ray Software	12.1.0.1.0			Enterprise Manager for Sun Ray Software

FIGURE 33. Undeploy from OMS

3. In the **Undeploy Plug-in from Management Servers: Plug-ins** page, enter the SYS credentials for the repository or select existing credentials and click **Next**.
4. In the **Undeploy Plug-in from Management Servers: Review** page, click **Undeploy** to undeploy the plug-in from the OMS.
5. In the **Undeploy Plug-in from Management Servers: Confirmation** page, click **Show Status** to view the steps of the deployment.
6. In the **Deployment Activities** page, verify that the undeployment was successful with a green checkmark in the **Status** column.

## THROUGH THE EMCLI UTILITY

1. Type the following command:

```
$ emcli undeploy_plugin_from_server -sys_password=<Repository SYS password>
-pplugin=vlss.pure.xvp1:13.3.1.0.0
```

2. The deploy will run in the background after the following output:

```
Undeployment of plug-in from the management servers is in progress
Use " emcli get_plugin_deployment_status -plugin=vlss.pure.xvp1 "
to track plug-in un-deployment status.
```

3. Verify the deployment is successful by running the status command:

```
$ emcli get_plugin_deployment_status -plugin=vlss.pure.xvp1
```

## DELETE PLUG-IN PACKAGE

To delete the plug-in package entirely, you must use the console:

1. From the **Setup** menu, select **Extensibility**, and then **Self-Update**
2. Select **Plug-In**, and select Pure Storage FlashArray plug-in. Then select **Delete** from the **Actions** menu.

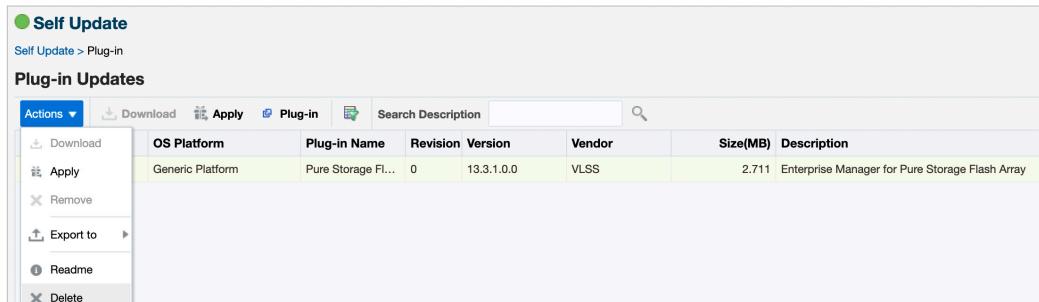


FIGURE 34. Delete package

## TROUBLESHOOTING

### Add Space Functionality

*Execution of **Add Space** does not work?*

Do the **agent\_name**, the **hostname**, and the host name in Purity all match? If not, the **Add Space** functionality will not work.

Are you running with a privileged account? **root** is generally required to make system level changes.

Log information can be found in <**AGENT\_HOME**>/agent\_inst/sysman/emd/pfa\_admin.log

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