

# Dynamic Multi-Pathing 7.2 Installation Guide - VMware ESXi

# Dynamic Multi-Pathing Installation Guide

Last updated: 2016-10-31

Document version: 7.2 Rev 0

## Legal Notice

Copyright © 2016 Veritas Technologies LLC. All rights reserved.

Veritas, the Veritas Logo, Veritas InfoScale, and NetBackup are trademarks or registered trademarks of Veritas Technologies LLC or its affiliates in the U.S. and other countries. Other names may be trademarks of their respective owners.

This product may contain third party software for which Veritas is required to provide attribution to the third party ("Third Party Programs"). Some of the Third Party Programs are available under open source or free software licenses. The License Agreement accompanying the Software does not alter any rights or obligations you may have under those open source or free software licenses. Refer to the third party legal notices document accompanying this Veritas product or available at:

<https://www.veritas.com/about/legal/license-agreements>

The product described in this document is distributed under licenses restricting its use, copying, distribution, and decompilation/reverse engineering. No part of this document may be reproduced in any form by any means without prior written authorization of Veritas Technologies LLC and its licensors, if any.

THE DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID. VERITAS TECHNOLOGIES LLC SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE FURNISHING, PERFORMANCE, OR USE OF THIS DOCUMENTATION. THE INFORMATION CONTAINED IN THIS DOCUMENTATION IS SUBJECT TO CHANGE WITHOUT NOTICE.

The Licensed Software and Documentation are deemed to be commercial computer software as defined in FAR 12.212 and subject to restricted rights as defined in FAR Section 52.227-19 "Commercial Computer Software - Restricted Rights" and DFARS 227.7202, et seq. "Commercial Computer Software and Commercial Computer Software Documentation," as applicable, and any successor regulations, whether delivered by Veritas as on premises or hosted services. Any use, modification, reproduction release, performance, display or disclosure of the Licensed Software and Documentation by the U.S. Government shall be solely in accordance with the terms of this Agreement.

Veritas Technologies LLC  
500 E Middlefield Road  
Mountain View, CA 94043

<http://www.veritas.com>

## Technical Support

Technical Support maintains support centers globally. All support services will be delivered in accordance with your support agreement and the then-current enterprise technical support policies. For information about our support offerings and how to contact Technical Support, visit our website:

<https://www.veritas.com/support>

You can manage your Veritas account information at the following URL:

<https://my.veritas.com>

If you have questions regarding an existing support agreement, please email the support agreement administration team for your region as follows:

Worldwide (except Japan)

[CustomerCare@veritas.com](mailto:CustomerCare@veritas.com)

Japan

[CustomerCare\\_Japan@veritas.com](mailto:CustomerCare_Japan@veritas.com)

## Documentation

Make sure that you have the current version of the documentation. Each document displays the date of the last update on page 2. The document version appears on page 2 of each guide. The latest documentation is available on the Veritas website:

<https://sort.veritas.com/documents>

## Documentation feedback

Your feedback is important to us. Suggest improvements or report errors or omissions to the documentation. Include the document title, document version, chapter title, and section title of the text on which you are reporting. Send feedback to:

[doc.feedback@veritas.com](mailto:doc.feedback@veritas.com)

You can also see documentation information or ask a question on the Veritas community site:

<http://www.veritas.com/community/>

## 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](https://sort.veritas.com/data/support/SORT_Data_Sheet.pdf)

# Contents

|                  |   |           |
|------------------|---|-----------|
| <b>Chapter 1</b> | <b>Introducing Dynamic Multi-Pathing</b> .....  | <b>6</b>  |
|                  | About Dynamic Multi-Pathing for VMware .....  | 6         |
|                  | About the SmartPool feature .....   | 7         |
| <b>Chapter 2</b> | <b>System requirements</b> .....  | <b>8</b>  |
|                  | Supported operating systems and database versions .....                               | 8         |
|                  | Disk space requirements .....   | 8         |
| <b>Chapter 3</b> | <b>Licensing products</b> .....   | <b>9</b>  |
|                  | About product licensing .....   | 9         |
|                  | Installing product license keys .....   | 10        |
|                  | Applying new license to a single host or multiple hosts using<br>vSphere Client ..... | 10        |
|                  | Applying new license to a host using vSphere Web Client .....                         | 11        |
| <b>Chapter 4</b> | <b>Installing Dynamic Multi-Pathing</b> .....   | <b>12</b> |
|                  | Preparing to install VxDMP .....  | 12        |
|                  | Installing VxDMP .....  | 13        |
|                  | Installing VxDMP Console on a Windows-based system .....                              | 13        |
|                  | Downloading the VxDMP offline bundle for ESXi .....                                   | 16        |
|                  | Downloading the administration CLI package for a remote<br>host .....                 | 17        |
|                  | Installing the VxDMP offline bundle using VMware vSphere Update<br>Manager .....      | 18        |
|                  | Installing the VxDMP offline bundle on an ESXi host using VMware<br>vSphere CLI ..... | 22        |
|                  | Installing the administration CLI .....   | 24        |
| <b>Chapter 5</b> | <b>Verifying the Dynamic Multi-Pathing<br/>    installation</b> .....                 | <b>25</b> |
|                  | Before you verify the installation .....  | 25        |
|                  | Verifying that Dynamic Multi-Pathing was installed .....                              | 26        |

|            |  |    |
|------------|--|----|
| Chapter 6  | Upgrading Dynamic Multi-Pathing .....  | 27 |
|            | Upgrading VxDMP Console .....  | 27 |
|            | Upgrading the VxDMP offline bundle .....   | 27 |
|            | Updating the array support .....   | 28 |
|            | Stale entries in the SmartPool while upgrading from VxDMP 6.2 to<br>7.2 .....                          | 28 |
| Chapter 7  | Uninstalling Dynamic Multi-Pathing .....   | 30 |
|            | Uninstalling VxDMP .....   | 30 |
|            | Unregistering VxDMP .....  | 32 |
| Appendix A | VxDMP troubleshooting .....  | 34 |
|            | Troubleshooting tips .....   | 34 |
|            | About the vxexplorer utility .....   | 35 |
|            | Troubleshooting tips for installation .....  | 35 |
|            | Console components got installed correctly but I don't see the<br>VxDMP plugin in vSphere Client ..... | 35 |
|            | The VxDMP tab is not appearing in the Web Client .....   | 35 |
|            | VxDMP and SmartPool tabs do not appear .....   | 36 |
|            | Remediating CLI or VxDMP vSphere plug-in from the server .....   | 36 |
| Index      | .....  | 38 |

# Introducing Dynamic Multi-Pathing

This chapter includes the following topics:

- [About Dynamic Multi-Pathing for VMware](#)

## About Dynamic Multi-Pathing for VMware

Dynamic Multi-Pathing for VMware 7.2 (VxDMP) is a multi-pathing solution integrated with VMware's vSphere infrastructure, which brings the established and proven enterprise-class functionality to VMware virtual environments.

VxDMP provides multi-pathing functionality for the devices that are configured on the system. VxDMP creates DMP metadevices (also known as DMP nodes) to represent all the device paths to the same physical LUN.

VxDMP provides the best in class availability, reliability, and performance by using advanced path failover and load balancing for a wide range of storage arrays. VxDMP also provides you with better visibility of the attached storage arrays, so you can efficiently manage the storage resources directly from the VMware vCenter.

VxDMP enables you to create and manage SmartPools, which are aggregates of SSDs and other local devices. SmartPools enable you to use SmartIO for caching when product component is running in the guest.

VxDMP solution consists of the following components:

- VxDMP binaries for the ESXi servers – The VxDMP binaries are provided as an ESXi offline bundle.
- Administrative UI – The UI plug-ins are registered with both vSphere Web Client and Windows-based vSphere Client.

- Administrative command line – The command line allows remote administration from a Windows or Linux remote host.

Installation of VxDMP involves installing the following components:

- VxDMP binaries on each ESXi server.
- UI plug-in service on a Windows host.
- Command line on a Windows or Linux remote host.

---

**Note:** VxDMP is referred as DMP in some sections of this document.

---

## About the SmartPool feature

Dynamic Multi-Pathing for VMware has an operating mode which enables the pooling of locally attached devices such as SSDs at the ESXi host layer. The aggregation of the local devices is called SmartPool. From the SmartPool, you can provision SmartDisks to be used as caching areas by SmartIO in the ESXi guests running Veritas InfoScale. By dividing the SmartPool into several SmartDisks, you can share the caching storage across multiple virtual machines. Using SmartPools gives you the flexibility to move virtual machines across ESXi hosts while SmartIO caching is in progress. Although each host has its own SSD, you can configure each host to have a comparable view of the SmartDisk. When you use vMotion to migrate the virtual machines that have Veritas InfoScale running, SmartIO shuts down the cache on the source node and restarts the cache on the target host. SmartIO caching stays online during the migration. You can dynamically resize the SmartPool by adding or removing storage devices to the SmartPool.

You can use this mode regardless of whether you are using DMP for VMware to manage storage multi-pathing in the host.

The SmartPool functionality is enabled by installing DMP for VMware in the ESXi host. For the SmartPool functionality, you do not need to have a separate license for DMP.

To use SmartIO in the ESXi guest, you must install Veritas InfoScale in the ESXi guest.

For more information, see the *Veritas InfoScale Virtualization Guide for VMware ESXi*.

If you plan to use DMP for VMware for multi-pathing in the host, you must have the appropriate license.

# System requirements

This chapter includes the following topics:

- [Supported operating systems and database versions](#)
- [Disk space requirements](#)

## Supported operating systems and database versions

For information on supported operating systems and database versions for various components of VxDMP, see the *Veritas InfoScale Release Notes*.

## Disk space requirements

The system where you want to install the VxDMP components must have enough free disk space.

[Table 2-1](#) provides the minimum disk space requirements for the VxDMP components.

**Table 2-1** VxDMP disk space requirements

| Component          | Disk space required |
|--------------------|---------------------|
| DMP Console        | 280 MB              |
| Administration CLI | 3.75 MB             |

# Licensing products

This chapter includes the following topics:

- [About product licensing](#)
- [Installing product license keys](#)

## About product licensing

When you purchase a Veritas product, you receive a License Key certificate. The certificate specifies the product keys and the number of product licenses purchased.

A software license is a legal instrument governing the usage or redistribution of copyright protected software. The administrator and company representatives must ensure that a server or cluster is entitled to the license level for the products installed. Veritas reserves the right to ensure entitlement and compliance through auditing.

If you encounter problems while licensing this product, visit the Veritas licensing support website.

<https://www.veritas.com/support>

When you set up VxDMP, the administration interface prompts you for a license key. Use the remote CLI or vSphere Client to install the license.

See “[Installing product license keys](#)” on page 10.

You must use a Veritas InfoScale Linux or Windows license key to:

- Install Dynamic Multi-Pathing on VMware
- Enable SmartPool functionality

If you upgrade to this release from a previous release of the Veritas software, the product installer does not change the license keys that are already installed. The existing license keys may not activate new features in this release.

# Installing product license keys

You can use only those Veritas software products for which you have purchased a license, even though other products may be included on the enclosed software media. You must use a Veritas InfoScale Linux or Windows license key to:

- Install Dynamic Multi-Pathing on VMware
- Enable SmartPool functionality

## To install a new license from a remote CLI

- 1 To get a list of the installed license keys, from the remote CLI, run the `vxdmppadm license` command.
- 2 Add a new license key if required, after accepting the End User License Agreement (EULA).

Alternatively, you can apply new license to a single or multiple hosts from the vSphere Client GUI.

See [“Applying new license to a single host or multiple hosts using vSphere Client”](#) on page 10.

You can also view a report of the DMP licenses installed in the environment.

## Applying new license to a single host or multiple hosts using vSphere Client

You can apply the VxDMP license to a host, from vSphere Client's Dynamic Multi-Pathing for VMware home view.

### To apply license to a single host or multiple hosts using VMware home view

- 1 From **vCenter Home > Solutions and Applications**, click **Dynamic Multi-Pathing**. The **Dynamic Multi-Pathing for VMware** home view with **Getting Started** tab appears.
- 2 Click the **License Management** tab.
- 3 From the list of hosts, select one or more hosts.

---

**Note:** To select multiple hosts, hold the **Ctrl** key, and click the host names.

---

- 4 To apply the license key, click **Apply**.
- 5 The **Add New License** window appears. Enter the license key.

- 6 Select the check box to accept the license agreement.
- 7 Click **Apply**.

---

**Note:** An error message appears, if any of the license keys are not applied. Select the hosts and apply the correct license keys.

---

## Applying new license to a host using vSphere Web Client

You can apply the VxDMP license to a host from Connectivity Map in the vSphere Web Client.

### To apply license to a host using vSphere Connectivity Map view

- 1 From the **vSphere Web Client** > **vCenter**, select a host.
- 2 In the content area, click **Manage** > **VxDMP** tab.
- 3 In the **Connectivity Map**, select the host.
- 4 In the **Actions** pane, click **Apply License**.  
The **Apply License** window appears.
- 5 In the **License Key** field, specify the key.
- 6 Select the license agreement check box.
- 7 Click **Add**.

# Installing Dynamic Multi-Pathing

This chapter includes the following topics:

- [Preparing to install VxDMP](#)
- [Installing VxDMP](#)

## Preparing to install VxDMP

Before you start the installation, ensure that the following prerequisites are satisfied:

For installing the VxDMP Console,

- The physical or virtual machine that hosts VxDMP Console for vCenter must run the Windows OS. Make sure that the required version of Windows OS is installed and running.

For information on supported operating systems, see the *Veritas InfoScale Release Notes*.

VxDMP console uses the ports 14241 and 14242. Ensure that these ports are not already in use, and the port 14242 is not blocked by firewall.

- You must have the privileges to install software, and to access the vCenter from the UI Console server. To register the VxDMP Plug-in, you must have the extension privileges.

For installing the administration CLI,

- The system where you want to install the administration CLI has JRE 7.0 or above installed.

# Installing VxDMP

Installation of VxDMP involves installing the following components:

- VxDMP Console on a Windows-based host  
See [“Installing VxDMP Console on a Windows-based system”](#) on page 13.
- VxDMP offline bundle on the ESXi servers  
See [“Installing the VxDMP offline bundle on an ESXi host using VMware vSphere CLI”](#) on page 22.  
See [“Installing the VxDMP offline bundle using VMware vSphere Update Manager”](#) on page 18.
- Administration CLI on a remote system  
See [“Installing the administration CLI”](#) on page 24.

You can use the Veritas software download website to download the installers for these components. After VxDMP Console is installed, you can also use vSphere Client to download the VxDMP bundle for ESXi, and the CLI from the VxDMP UI plug-in.

See [“Downloading the VxDMP offline bundle for ESXi”](#) on page 16.

See [“Downloading the administration CLI package for a remote host”](#) on page 17.

---

**Note:** You must have the administrator privileges to load the software.

---

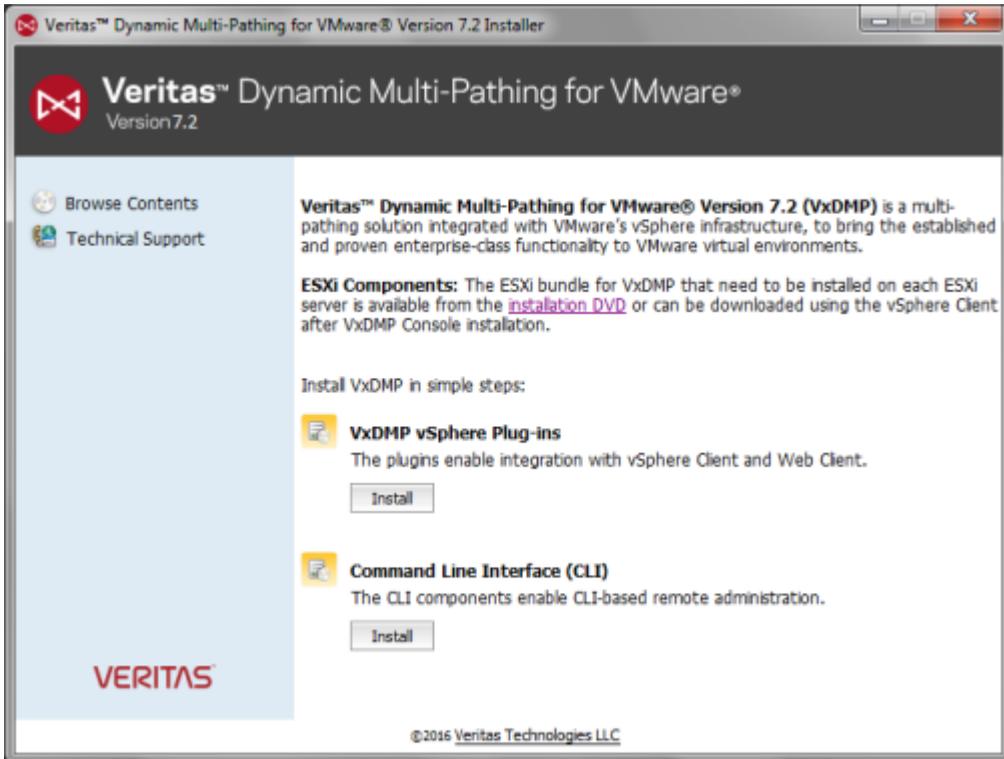
## Installing VxDMP Console on a Windows-based system

Ensure that the following prerequisites are met before you install the VxDMP Console:

- No parallel installations must be in progress
- No live updates must be in progress
- No Microsoft Windows updates must be in progress

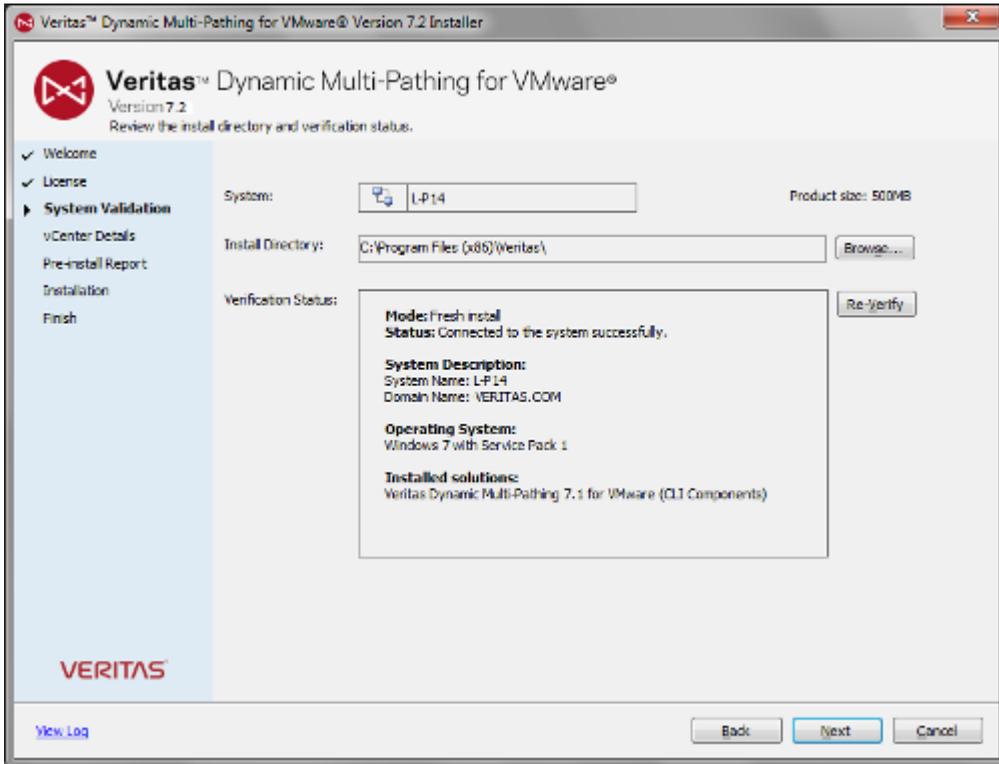
## Installing the VxDMP Console on a Windows-based system

- 1 From the installation media, download the installer to the disc drive of the physical or virtual Windows-based system where you want to install VxDMP Console.
- 2 From the root folder of the installer, click `Setup.exe`. The installation wizard appears.

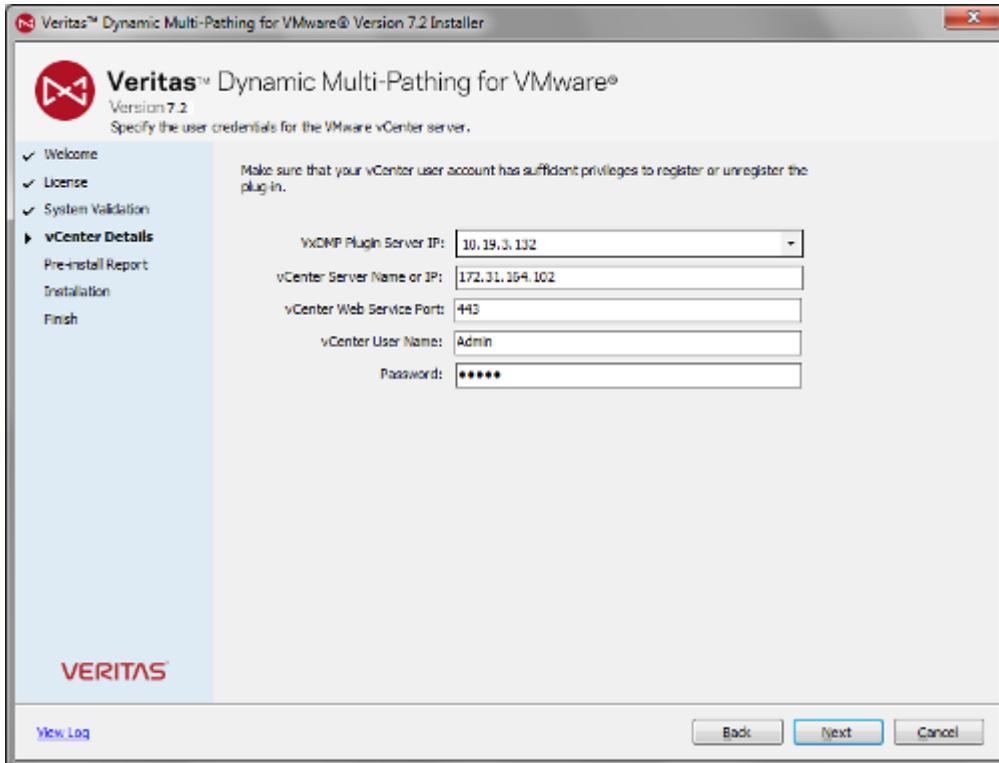


- 3 Choose to install one of the following components:
  - VxDMP vSphere Plug-ins—Click the **Install** button below the **VxDMP vSphere Plug-ins** label. A new wizard appears. Proceed to Step 4 to continue installing VxDMP vSphere Plug-ins.
  - CLI components—Click the **Install** button below the **Command Line Interface (CLI)** label. A new wizard appears. Follow the instructions in the [Installing the administration CLI](#) section to install the CLI components.
- 4 Follow the instructions in the wizard to install the VxDMP vSphere plug-ins. You must do the following:

- Accept the license agreement.
- Choose the installation destination folder.



- Click **Next**.
- Provide the vCenter administration credentials.



- Click **Next** to start the installation.
- Review the Post-install report and click **Finish** to exit.

See [“Verifying that Dynamic Multi-Pathing was installed”](#) on page 26.

## Downloading the VxDMP offline bundle for ESXi

You can use the vSphere Client GUI to download the DMP offline bundle for ESXi.

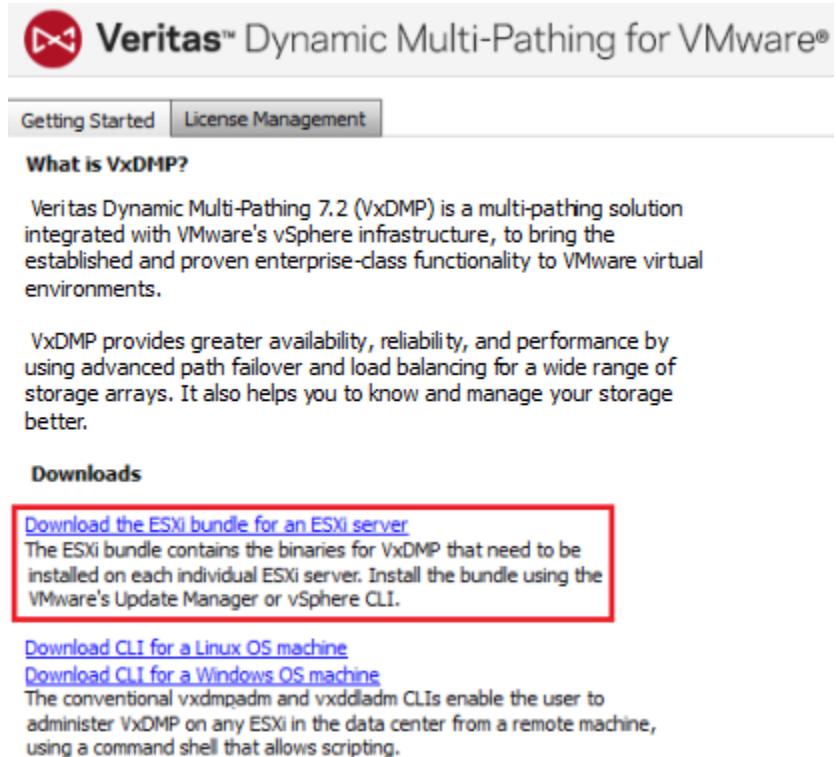
---

**Note:** To be able to download the offline bundle from the home view, make sure that for the logged in user, the IE Enhanced Security setting is set to "Off".

---

## To download the installer from vSphere Client

- 1 Log in to vSphere Client.
- 2 From **vCenter Home > Solutions and Applications**, click **Dynamic Multi-Pathing**. The **Dynamic Multi-Pathing for VMware** home view with **Getting Started** tab appears.



**Veritas™ Dynamic Multi-Pathing for VMware®**

Getting Started License Management

**What is VxDMP?**

Veritas Dynamic Multi-Pathing 7.2 (VxDMP) is a multi-pathing solution integrated with VMware's vSphere infrastructure, to bring the established and proven enterprise-class functionality to VMware virtual environments.

VxDMP provides greater availability, reliability, and performance by using advanced path failover and load balancing for a wide range of storage arrays. It also helps you to know and manage your storage better.

**Downloads**

[Download the ESXi bundle for an ESXi server](#)  
The ESXi bundle contains the binaries for VxDMP that need to be installed on each individual ESXi server. Install the bundle using the VMware's Update Manager or vSphere CLI.

[Download CLI for a Linux OS machine](#)  
[Download CLI for a Windows OS machine](#)  
The conventional vxdkpadm and vxddladm CLIs enable the user to administer VxDMP on any ESXi in the data center from a remote machine, using a command shell that allows scripting.

- 3 From **Downloads**, click **Download the ESXi bundle for an ESXi server**. The **File Download** window appears.
- 4 Click **Save** to save the .zip file in your system.

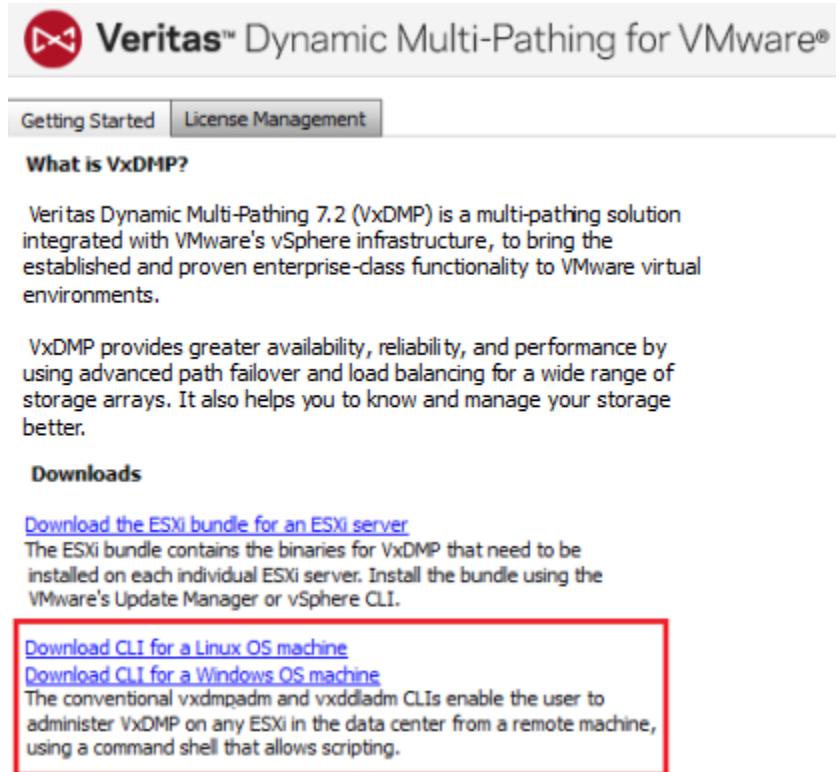
## Downloading the administration CLI package for a remote host

You can administer DMP from remote physical or virtual machines, by installing the administration CLIs on the remote machine. VxDMP CLIs are available for both Windows and Linux operating systems.

You can use the vSphere Client GUI to download the administration CLI package for a remote host.

**To download the administration CLI package for a remote host**

- 1 Log in to vSphere Client.
- 2 From **vCenter Home > Solutions and Applications**, click **Dynamic Multi-Pathing**. The **Dynamic Multi-Pathing for VMware** home view with **Getting Started** tab appears.



**Veritas™ Dynamic Multi-Pathing for VMware®**

Getting Started License Management

**What is VxDMP?**

Veritas Dynamic Multi-Pathing 7.2 (VxDMP) is a multi-pathing solution integrated with VMware's vSphere infrastructure, to bring the established and proven enterprise-class functionality to VMware virtual environments.

VxDMP provides greater availability, reliability, and performance by using advanced path failover and load balancing for a wide range of storage arrays. It also helps you to know and manage your storage better.

**Downloads**

[Download the ESXi bundle for an ESXi server](#)  
The ESXi bundle contains the binaries for VxDMP that need to be installed on each individual ESXi server. Install the bundle using the VMware's Update Manager or vSphere CLI.

[Download CLI for a Linux OS machine](#)  
[Download CLI for a Windows OS machine](#)  
The conventional vxddladm and vxddladm CLIs enable the user to administer VxDMP on any ESXi in the data center from a remote machine, using a command shell that allows scripting.

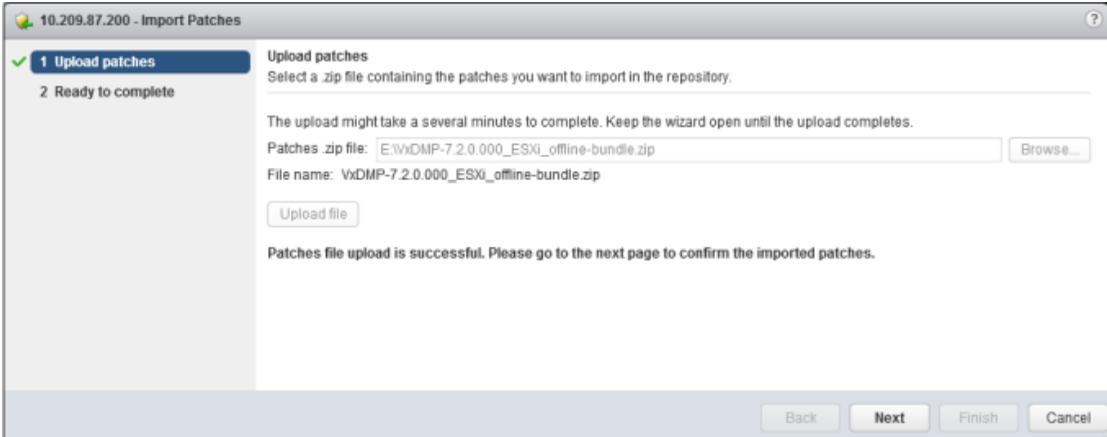
- 3 From **Downloads**, click the link to download the CLI package.

## Installing the VxDMP offline bundle using VMware vSphere Update Manager

You can install the VxDMP offline bundle using VMware vSphere Update Manager.

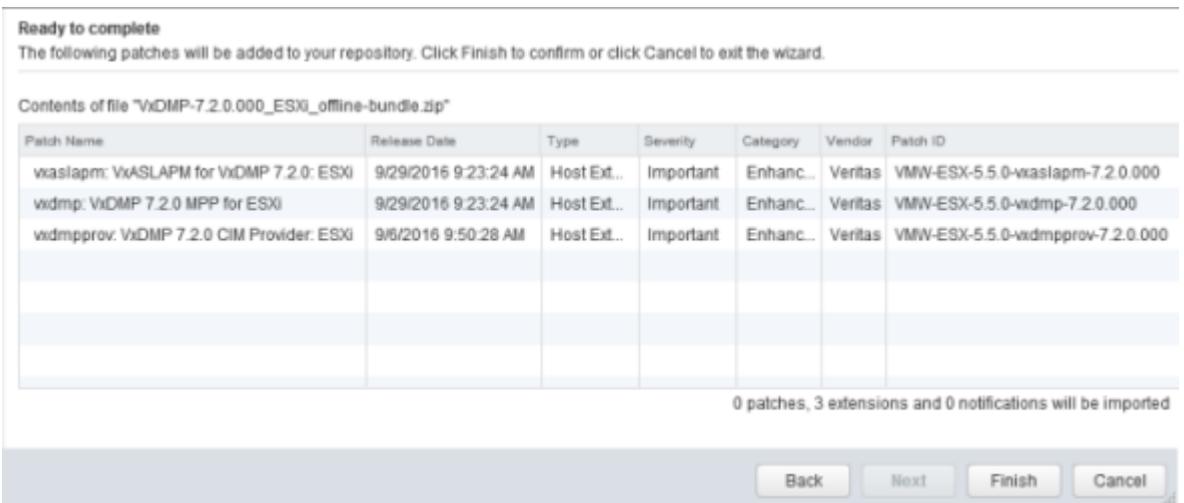
**To install the VxDMP offline bundle using Update Manager**

- 1 From the installation media, go to the `Pkgs/ESXi` directory and copy the installation package to your host.
- 2 Upload the VxDMP bundle patches to the Update Manager patch repository. In the **Upload Patches** screen, click **Browse** and select the patch. Click **Upload file** to upload the patch.



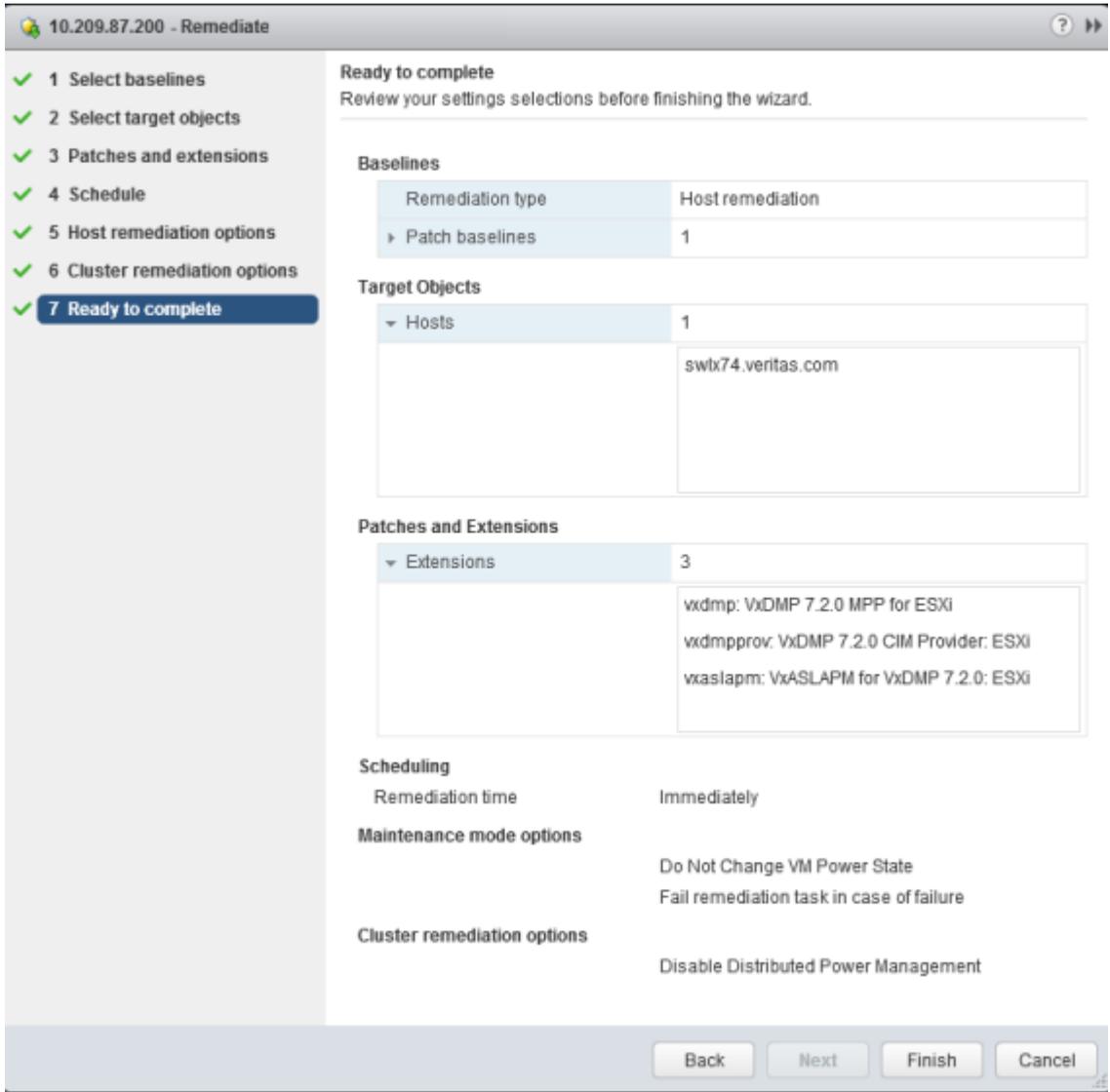
Click **Next**.

- 3 In the **Ready to complete** screen, view the patches that will be added to your repository and click **Finish** to confirm.



- 4 Check the compliance of the hosts in the datacenter to the baseline.

- 5 If any host is non-compliant, you must remediate to deploy the VxDMP bundle on the target hosts. To remediate, install the patch on the hosts that show deviation from the baseline.



After remediation, Update Manager displays the host as compliant, indicating that the patches are installed.

The screenshot shows the vSphere Update Manager interface. At the top, there are tabs for 'Getting Started', 'Summary', 'Monitor', 'Manage', and 'Related Objects'. Below these, there are sub-tabs for 'Settings', 'Scheduled Tasks', 'Alarm Definitions', 'Tags', 'Permissions', 'Sessions', 'Storage Providers', and 'Update Manager'. The 'Update Manager' sub-tab is active, showing buttons for 'Attach Baseline...', 'Scan for Updates...', 'Stage Patches...', 'Remediate...', and 'Go to Admin View'. Below these buttons, there is a section for 'Attached Baseline Groups' with a dropdown menu set to 'All Groups and Independent Baselines'. Underneath, there is a section for 'Attached Baselines' with a 'Detach Baseline...' button and a 'Filter' dropdown. A table lists the attached baselines:

| Baseline      | Type       | Compliance Status |
|---------------|------------|-------------------|
| vDMP_BaseLine | Host Patch | Unknown           |

Below the table, there is a summary of compliance status: 'Compliant (2)', 'Non-Compliant (0)', 'Incompatible (0)', and 'Unknown (5)'. A table below this summary shows the objects and their patch status:

| Object             | Patches | Last Scan Time     |
|--------------------|---------|--------------------|
| swix73.veritas.com | 3       | 9/30/2016 6:39 AM  |
| swix74.veritas.com | 3       | 9/30/2016 10:55 PM |

## Installing the VxDMP offline bundle on an ESXi host using VMware vSphere CLI

### To install the VxDMP offline bundle on an ESXi host using VMware vSphere CLI

- 1 Log on to a system that has the VMware vSphere CLI utilities installed. You need to use these to remotely install components onto an ESXi host.
- 2 Obtain the VxDMP offline bundle, by doing one of the following:
  - From the installation media, `Pkgs/ESXi`, copy the installation package to your host.
  - Download the installation package from vSphere Client. See ["Downloading the VxDMP offline bundle for ESXi"](#) on page 16.
- 3 Upload the .zip file to a local datastore on ESXi server.

- 4 Follow the instructions that are provided for VMware vSphere CLI, and install the VxDMP offline bundle remotely on any target ESXi host.

For example,

On Linux:

```
# esxcli --server=esx_server_name
--username=username --password=password
software vib install
--depot=full path of VxDMP-7.2.0.000_ESXi_offline-bundle.zip
on ESXi server
```

On Windows:

```
C:\> esxcli.exe --server=esx_server_name
--username=username --password=password
software vib install
--depot=full path of VxDMP-7.2.0.000_ESXi_offline-bundle.zip
ESXi server
```

For more information, see <http://www.vmware.com/support/developer/vcli/>

- 5 The bundle gets installed.

For example:

```
Installation Result
Message: The update completed successfully,
but the system needs to be rebooted for the changes to be effective.
Reboot Required: true
VIBs Installed: Veritas_bootbank_vxaslapm_500.7.2.0.000-464360,
Veritas_bootbank_vxdmpmpp_500.7.2.0.000-464360,
Veritas_bootbank_vxdmpprov_500.7.2.0.000-464360
VIBs Removed:
VIBs Skipped:
```

- 6 Verify that the VxDMP bundle is installed, and restart the ESXi server.

See “[Verifying that Dynamic Multi-Pathing was installed](#)” on page 26.

After installing the VxDMP offline bundle, the VxDMP solution is available in VMware vSphere Client. You must apply the Veritas InfoScale license key for the ESXi host to be able to use the multi-pathing and SmartPool features.

See “[Installing product license keys](#)” on page 10.

## Installing the administration CLI

### To install the administration CLI on Linux

- 1 Log on to the physical or virtual system where you want to install the administration CLI.
- 2 Do one of the following to obtain the Linux installation package:
  - From the installation media, copy the Linux installation package from the `Pkgs/Linux` directory.
  - Connect to the vCenter Server using the vSphere Desktop Client and download the Linux installation package. See [“Downloading the administration CLI package for a remote host”](#) on page 17.
- 3 Use the `rpm` command to install the `vxdmpadm` and `vxddladm` command line utilities under the `/opt/VRTSdmpadm/bin` directory:

```
# rpm -ivh VRTSdmpadm-7.2.0.000-ESXi.i686.rpm
```

---

**Note:** Use the `Help` command to obtain the syntax and the other available options.

---

### To install the administration CLI on Windows

- 1 Log on to the physical or virtual system where you want to install the administration CLI.
- 2 Do one of the following to install the administration CLI:
  - From the installation media, go to the `Pkgs/Common` directory and double-click **VRTSdmpadm-7.2.0.000\_x86\_64.msi**. The installation wizard appears. Follow the instructions in the wizard to install the CLI utilities.
  - Connect to the vCenter Server using the vSphere Desktop Client and download the Windows installer. See [“Downloading the administration CLI package for a remote host”](#) on page 17. Open the installer and follow the instructions in the wizard to install the CLI utilities.
  - From the installation media, go to the root folder and double-click **Setup.exe**. The installation wizard appears. Click the **Install** button below the **Command Line Interface (CLI)** label. A new wizard appears. Follow the instructions in the wizard to install the CLI utilities.

# Verifying the Dynamic Multi-Pathing installation

This chapter includes the following topics:

- [Before you verify the installation](#)
- [Verifying that Dynamic Multi-Pathing was installed](#)

## Before you verify the installation

Do the following, before you verify the installation.

- To view the VxDMP tab in vSphere Client, verify that the following settings in your Internet Explorer (IE) browser are enabled:

|                   |               |
|-------------------|---------------|
| Tools > Internet  | ■ Use SSL 2.0 |
| Options. Advanced | ■ Use SSL 3.0 |
| tab.              | ■ Use TLS 1.0 |

|                        |   |
|------------------------|---|
| Tools > Internet       | ■ Active scripting                                  |
| Options. Security tab. | ■ Run ActiveX controls and plug-ins                 |
|                        | ■ Script ActiveX controls marked safe for scripting |

|                |                        |
|----------------|------------------------|
| Tools > Manage | Shockwave Flash Object |
| Add-ons        |                        |

- To view the VxDMP tab, Veritas recommends that for the logged in user, the IE Enhanced Security setting is set to "Off". If you require to set the IE Enhanced Security setting to "On", the first time you access the VxDMP tab, you must add the console IP to the trusted zone of IE, and restart vSphere client.

- To view the VxDMP tab, verify that you have Adobe Flash installed on the system from where you run VMware vSphere Client. The VMware vSphere documentation recommends installation of Adobe Flash Player version 11.1.0 or later.

## Verifying that Dynamic Multi-Pathing was installed

After you complete the steps to install Dynamic Multi-Pathing, you must verify that the VxDMP components are installed.

### To verify that the VxDMP Console is installed

- 1 Log in to vCenter using vSphere Client.
- 2 Verify that the **vCenter Home** view displays the Dynamic Multi-Pathing for VMware solution in the **Solutions and Applications** panel.

For more information, see the troubleshooting tips for installation and administration.

See [“Console components got installed correctly but I don’t see the VxDMP plugin in vSphere Client”](#) on page 35.

### To verify that the VxDMP offline bundle is installed

- ◆ Use a VMware vSphere CLI query to verify that the VxDMP offline bundle is installed.
  - For example, for installation on an ESXi 5.x host:

On Linux:

```
# esxcli --server=esx_server_name --username=username \
--password=password software vib list | grep vx
```

On Windows:

```
C:\> esxcli.exe --server=esx_server_name --username=username \
--password=password software vib list | find /i "vx"
```

After successful installation, the summary of installation details appears.

For example,

| Name     | Version              | Vendor  | Acceptance Level | Install Date |
|----------|----------------------|---------|------------------|--------------|
| vxaslapm | 500.7.2.0.000-464360 | Veritas | VMwareAccepted   | 2015-05-05   |
| vxdmpmpp | 500.7.2.0.000-464360 | Veritas | VMwareAccepted   | 2015-05-05   |
| vxdmprov | 500.7.2.0.000-464360 | Veritas | VMwareAccepted   | 2015-05-05   |

# Upgrading Dynamic Multi-Pathing

This chapter includes the following topics:

- [Upgrading VxDMP Console](#)
- [Upgrading the VxDMP offline bundle](#)
- [Updating the array support](#)
- [Stale entries in the SmartPool while upgrading from VxDMP 6.2 to 7.2](#)

## Upgrading VxDMP Console

When upgrading VxDMP Console, ensure that there are no parallel installations, live updates, or Microsoft Windows updates in progress on the system where you upgrade.

### To upgrade the VxDMP Console on a Windows-based system

- 1 Uninstall VxDMP Console. See “[Uninstalling VxDMP](#)” on page 30.
- 2 Install VxDMP. See “[Installing VxDMP Console on a Windows-based system](#)” on page 13.

## Upgrading the VxDMP offline bundle

You need to upgrade VxDMP if a new functionality is available, or if you need to apply any fixes. You can identify from the Veritas Web site if you need to upgrade VxDMP.

See <http://sort.veritas.com>

Refer to the following steps to upgrade from the existing installed VxDMP package to the new one, for the VxDMP offline bundle for ESXi server, the VxDMP console, or the administration CLI.

#### To upgrade the VxDMP using the ESXi CLI

- 1 Download the new VxDMP offline bundle.
- 2 Put the host in the maintenance mode.
- 3 Execute the following command:

```
# esxcli --server=esx_server_name --username=username \  
--password=password software vib update \  
--depot=full_path_of_VxDMP-7.2.0.000_ESX_offline-bundle.zip
```

- 4 Remove the host from the maintenance mode, and restart the ESXi server.

## Updating the array support

You need to update or change your array support if a new array is added, or if you need to apply any fixes for the array support. You can identify from the Veritas Web site if you need to update the array support.

See the Hardware compatibility list. <http://sort.veritas.com>

#### To update the array support

- 1 From <http://sort.veritas.com>, download the `VRTSaslapm-version-offline_bundle.zip` containing the latest ASL/APM VIB file.
- 2 Install the `offline_bundle` using the `esxcli` command for ESXi 5.x. This operation causes no disruption to the virtual machines running on the ESXi.

---

**Note:** Alternatively, you can upload the new array support bundle to the VMware vSphere Update Manager patch repository, and schedule the download to the ESXi host.

---

## Stale entries in the SmartPool while upgrading from VxDMP 6.2 to 7.2

If you have Intel SSD devices configured in SmartPool and if you upgrade from 6.2 to 7.2, SmartPool displays stale entries corresponding to Intel devices even though

the corresponding Intel devices are not available on the system. This is because of a change in the unique ID; DMP uses this unique ID to represent Intel devices.

The SmartPool CLI `vxpooladm` displays the unique ID instead of device names:

```
# ./vxpooladm host=hostname user=root
passwd=root123 status groupby=device
DEVICE                TOTAL_SPACE  FREE_SPACE   VM_NAME
ALLOCATED_SPACE
=====
=====
INTEL(R) %5F%20SSD%20910%20200GB%5FC01AZ025%5Fnaa.5000CCA01300A61B 186GB
186GB                -                -
INTEL(R) %5F%20SSD%20910%20200GB%5FC01AZ025%5Fnaa.5000CCA01300A61F 186GB
186GB
```

**To remove the stale entries**

- 1** Make a note of the amount of cache assigned for the virtual machines using the `vxpooladm status` CLI.
- 2** Delete the `dmpsmartpool.info` file located at the `/etc/vx/` directory.
- 3** Reboot the system.
- 4** After the reboot, recreate the SmartPool by adding the Intel devices and reassign the cache to the virtual machines.

# Uninstalling Dynamic Multi-Pathing

This chapter includes the following topics:

- [Uninstalling VxDMP](#)
- [Unregistering VxDMP](#)

## Uninstalling VxDMP

Perform the following steps to uninstall VxDMP.

## To uninstall the VxDMP offline bundle from an ESXi 5.x host using VMware vSphere CLI

- 1 Log on to a system that has the VMware vSphere CLI utilities installed. You need to use these utilities to remotely remove the VxDMP offline bundle from an ESXi 5.x host.
- 2 Execute the command to remove software from the ESXi host.  
You can remove all the VIBs using a single command or remove the VIBs individually.

For example,

To remove all the VxDMP VIBs, use the following command:

```
# esxcli --server=esx_server_name \  
--username=username --password=password \  
software vib remove --vibName=vxdmpprov \  
--vibName=vxaslapm --vibName=vxdmpmpp
```

This command removes the CIM provider, array support, and plug-in.

To remove individual VIBs, use the following commands:

VxDMP CIM provider:

```
# esxcli --server=esx_server_name \  
--username=username --password=password \  
software vib remove --vibName=vxdmpprov
```

VxDMP Array Support:

```
# esxcli.exe --server=esx_server_name \  
--username=username --password=password \  
software vib remove --vibName=vxaslapm
```

VxDMP Plug-in:

```
# esxcli.exe --server=esx_server_name \  
--username=username --password=password \  
software vib remove --vibName=vxdmpmpp
```

- 3 Verify that the VxDMP VIBs are uninstalled.

```
# esxcli.exe --server=esx_server_name \  
--username=username --password=password \  
software vib list | grep vx
```

- 4 Restart the ESXi server, and remove the host from the maintenance mode.

#### To uninstall the administration CLI

- 1 Log on to the physical or virtual system where you have installed the administration CLI.
- 2 To uninstall the CLI for Windows, use the **Add/Remove Programs** option. To uninstall the CLI for Linux, use the `rpm` uninstall option.

#### To uninstall VxDMP Console

- 1 Log on to the system that hosts VxDMP Console for vCenter.
- 2 To uninstall the VxDMP plug-in, from the **Start** menu, use the **Add or Remove Programs** option, and uninstall Dynamic Multi-Pathing.
- 3 After the uninstallation of VxDMP Console is complete, you must restart the system manually.

You can choose to restart the system later.

---

**Note:** If the CLI and VxDMP vSphere plug-in are installed on the same server, and either of them is uninstalled, then the remaining installed component requires a remediation. See [“Remediating CLI or VxDMP vSphere plug-in from the server”](#) on page 36.

---

## Unregistering VxDMP

You can unregister the VxDMP plug-in from the vCenter servers using the `registerPlugin.bat` utility or vCenter Managed Object Browser (MOB).

#### To unregister the VxDMP plug-in using the `registerPlugin.bat` utility

- 1 Log on to the VxDMP Console server.
- 2 Run the `registerPlugin.bat` utility.
  - By default, the `registerPlugin.bat` utility is available at:

```
C:\Program Files (x86)\Veritas\DMP\bin
```

- If VxDMP is installed on a custom location, then the registerPlugin.bat utility is available at:

```
VxDMP Console install directory\DMP\bin>registerPlugin.bat
```

- 3 Execute the following command:

```
registerPlugin.bat DMPConsole_IP vCenterServer_IP vCenterserverSDK_Port\  
vCenterServer_Username vCenterServer_Password unregister script web
```

### To unregister the VxDMP plug-in using vCenter Managed Object Browser (MOB)

- 1 Go to:

```
https://vCenterServer_IP/mob/?moid=ExtensionManager
```

- 2 Log in using your vCenter Server credentials.
- 3 In the **Properties** table, verify if vxdmp and vxdmpweb extension is specified.
- 4 In the **Method** table, click **UnregisterExtension**.
- 5 In the **UnregisterExtension** window, type the string value as **com.veritas.vxdmp** .
- 6 Click **Invoke Method**.
- 7 Perform step 5 and 6 with the string value as **com.veritas.vxdmpweb**.

# VxDMP troubleshooting

This appendix includes the following topics:

- [Troubleshooting tips](#)
- [Troubleshooting tips for installation](#)

## Troubleshooting tips

Use the information in this section to diagnose the installation or operation problems that you might encounter.

Troubleshooting issues require looking at the log files created by the various components.

The following files may be required to determine the source of a problem:

- For installation issues, refer to the VxDMP Console installation log file:  
`%AllUsersProfile%\Veritas\VPI\log\date_timestamp\`
- For ESXi server issues, refer to the ESXi log files from the following locations:  
Logs for provider: `/var/log/syslog.log`  
Logs for DMP for ESXi 5.x host: `/var/log/vmkernel.log`
- For DMP Console-related issues, refer to the following locations:  
`%AllUsersProfile%\Veritas\DMP\Logs\vxdmplib.log.number`  
`%AllUsersProfile%\Veritas\DMP\Logs\vxcmd.log`
- For VxDMP Plugin-related issues, refer to the `vxdmppugin` file:  
`%AllUsersProfile%\Veritas\DMP\Logs\vxdmppugin.log`
- For VxDMP tab issues at the host or datacenter level, and home view:  
In the VxDMP tab, click the **View Log** icon.

Here, `%AllUsersProfile%` is the Windows variable that typically expands to:

C:\Documents and Settings\All Users

On Windows 2008 and 2008 R2, it typically expands to:

C:\ProgramData

In the Web Client view, **Manage > SmartPool** or **Monitor > SmartPool**, click the **Log** icon.

For logs related to the VxDMP plug-in for vSphere Web Client, refer to the following locations:

`%AllUsersProfile%\Veritas\DMP\Logs\vxdmplib.log.number`

`%AllUsersProfile%\Veritas\DMP\Logs\vxcmd.log`

---

**Note:** The log files are created on the vSphere Web Client server.

---

## About the vxexplorer utility

The `vxexplorer` utility gathers the ESXi log information. This command generates a TGZ archive in the working directory named `vxexplorer-hostname-date.tgz`.

### To run the `vxexplorer` utility

- 1 Log on to the ESXi host.
- 2 From the console, run the `vxexplorer` script.

# Troubleshooting tips for installation

## Console components got installed correctly but I don't see the VxDMP plugin in vSphere Client

Verify the following.

- The console IP is static.
- The console IP can be reached from vCenter Server using https request.
- The prerequisite settings are in place.  
See [“Before you verify the installation”](#) on page 25.

## The VxDMP tab is not appearing in the Web Client

The VxDMP tab may not appear in the Web Client interface if it is not registered in the VxDMP Console.

**To verify that the VxDMP Console is registered on the vCenter server**

- 1 Log on to the ESXi host.
- 2 From the VxDMP Console server, run the `registerPlugin.bat` utility.
  - By default, the `registerPlugin.bat` utility is available at:  
`C:\Program Files (x86)\Veritas\DMP\bin`
  - If VxDMP is installed on a custom location, then the `registerPlugin.bat` utility is available at:  
`VxDMP Console install directory\DMP\bin>registerPlugin.bat`
- 3 Execute the following command:

```
registerPlugin.bat DMPConsole_IP vCenterServer_IP  
vCenterserverSDK_Port vCenterServer_Username  
vCenterServer_Password verify script web
```

For example,

```
registerPlugin.bat 10.209.144.181 10.209.144.181 443 username  
password verify script web
```

## VxDMP and SmartPool tabs do not appear

If the VxDMP and SmartPool tabs do not appear after you install or upgrade the VxDMP vSphere plug-ins, clear the browser cache and check whether the tabs appear. If the VxDMP and SmartPool tabs do not appear even after you clear the browser cache, restart the VMware vSphere Web Client service.

**To restart the VMware vSphere Web Client service**

- 1 Log on to the system from which you installed the VxDMP vSphere plug-ins.
- 2 From the Windows Control Panel, select **Administrative Tools** and then **Services**.
- 3 Select **VMware vSphere Web Client**. Right-click and then click **Restart**.
- 4 To verify whether the tabs appear, log in to the vSphere Web Client. Select an ESXi host and click **Manage**.

The VxDMP and SmartPool tabs must appear now.

## Remediating CLI or VxDMP vSphere plug-in from the server

If the CLI and VxDMP vSphere plug-in are installed on the same server, and either of them is removed, then the remaining installed component requires a remediation.

**To repair the CLI or VxDMP vSphere plug-in**

- 1** Log on to the system from where you uninstalled CLI or VxDMP vSphere plug-in.
- 2** From the Windows **Control Panel**, select **Programs and Features**.
- 3** Select CLI or VxDMP vSphere plug-in, and click **Repair**.
- 4** Follow the instructions in the wizard to complete the repair.
- 5** Restart the system.

# Index

## A

- Add New License 10
- Add/Remove Programs 30
- Adobe Flash 25
- array support
  - updating 28

## C

- CLI or VxDMP vSphere plug-in
  - repair
    - uninstallation 36
- CLI package
  - about 6
  - disk space 8
  - downloading from GUI 17
  - installation prerequisites 12
  - installing 24
  - uninstalling 30

## D

- DMP Array Support
  - updating 28
- DMP bundle
  - downloading from GUI 16
  - installing using Update Manager 18
  - installing using VMware vSphere CLI 22
  - verifying installation 26
- DMP Console
  - disk space 8
  - installing 13
  - upgrading 27
  - verifying installation 26

## E

- esxcli 22

## H

- host
  - applying VxDMP license 10

## I

- IE 9 25
- IE settings 25
- installation
  - before verifying 25
  - prerequisites 12
  - privileges 12
  - Summary 26
  - verifying 26
- installing
  - CLI package
    - For Linux 24
    - For Windows 24
  - DMP bundle 18, 22
  - DMP Console 13
  - license
    - using CLI 10
    - using vSphere Client GUI 10

## J

- JRE 6.0 12

## L

- License
  - adding 11
  - applying new
    - vSphere Web Client 11
- license
  - about 9
  - installing 10
  - license key 9
- License Management
  - applying license 10
  - applying license in Web Client 11

## M

- maintenance mode 27–28
- Managed Object Browser (MOB) 32

**P**

port  
    14241 12  
    14242 12

**R**

registerPlugin.bat 35

**S**

supported operating systems 8

**U**

uninstalling  
    CLI package  
        Linux 30  
        Windows 30  
    VxDMP bundle 30  
    VxDMP Console 30  
unregistering VxDMP plug-in  
    using Managed Object Browser (MOB) 32  
    using registerPlugin.bat utility 32  
Update Manager 18  
updating  
    array support 28  
upgrading  
    DMP Console 27  
    VxDMP bundle 27

**V**

verifying  
    DMP bundle installation 26  
    DMP Console installation 26  
vicfg-hostops 30  
vihostupdate 26, 30  
VMware vSphere CLI 22, 30  
VRTSdmpadm 24  
vSphere Update Manager 28  
vxddladm 24  
VxDMP bundle  
    about 6  
    uninstalling 30  
    upgrading 27  
VxDMP Console  
    about 6  
    installation prerequisites 12  
    uninstalling 30

VxDMP plug-in registration  
    unregistration 32  
    verification 35  
vxdmpadm  
    license 10

**W**

Windows Server 2003 25  
Windows Server 2008 25