

Veritas™ Dynamic Multi-Pathing readme

AIX

DMP 5.1 Rolling Patch 1 Patch 0



Veritas™ Dynamic Multi-Pathing Readme

The software described in this book is furnished under a license agreement and may be used only in accordance with the terms of the agreement.

Product version: 5.1 RP1.0 DMP

Document version: 5.1RP1.0_DMP.1

Legal Notice

Copyright © 2010 Symantec Corporation. All rights reserved.

Symantec, the Symantec Logo, Veritas, Veritas Storage Foundation are trademarks or registered trademarks of Symantec Corporation or its affiliates in the U.S. and other countries. Other names may be trademarks of their respective owners.

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 Symantec Corporation 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. SYMANTEC CORPORATION 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, "Rights in Commercial Computer Software or Commercial Computer Software Documentation", as applicable, and any successor regulations. 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.

Symantec Corporation
350 Ellis Street
Mountain View, CA 94043
<http://www.symantec.com>

Technical Support

Symantec Technical Support maintains support centers globally. Technical Support's primary role is to respond to specific queries about product features and functionality. The Technical Support group also creates content for our online Knowledge Base. The Technical Support group works collaboratively with the other functional areas within Symantec to answer your questions in a timely fashion. For example, the Technical Support group works with Product Engineering and Symantec Security Response to provide alerting services and virus definition updates.

Symantec's support offerings include the following:

- A range of support options that give you the flexibility to select the right amount of service for any size organization
- Telephone and/or Web-based support that provides rapid response and up-to-the-minute information
- Upgrade assurance that delivers software upgrades
- Global support purchased on a regional business hours or 24 hours a day, 7 days a week basis
- Premium service offerings that include Account Management Services

For information about Symantec's support offerings, you can visit our Web site at the following URL:

www.symantec.com/business/support/index.jsp

All support services will be delivered in accordance with your support agreement and the then-current enterprise technical support policy.

Contacting Technical Support

Customers with a current support agreement may access Technical Support information at the following URL:

www.symantec.com/business/support/contact_techsupp_static.jsp

Before contacting Technical Support, make sure you have satisfied the system requirements that are listed in your product documentation. Also, you should be at the computer on which the problem occurred, in case it is necessary to replicate the problem.

When you contact Technical Support, please have the following information available:

- Product release level

- Hardware information
- Available memory, disk space, and NIC information
- Operating system
- Version and patch level
- Network topology
- Router, gateway, and IP address information
- Problem description:
 - Error messages and log files
 - Troubleshooting that was performed before contacting Symantec
 - Recent software configuration changes and network changes

Licensing and registration

If your Symantec product requires registration or a license key, access our technical support Web page at the following URL:

www.symantec.com/business/support/

Customer service

Customer service information is available at the following URL:

www.symantec.com/business/support/

Customer Service is available to assist with non-technical questions, such as the following types of issues:

- Questions regarding product licensing or serialization
- Product registration updates, such as address or name changes
- General product information (features, language availability, local dealers)
- Latest information about product updates and upgrades
- Information about upgrade assurance and support contracts
- Information about the Symantec Buying Programs
- Advice about Symantec's technical support options
- Nontechnical presales questions
- Issues that are related to CD-ROMs or manuals

Documentation feedback

Your feedback on product documentation is important to us. Send suggestions for improvements and reports on errors or omissions. Include the title and document version (located on the second page), and chapter and section titles of the text on which you are reporting. Send feedback to:

sfha_docs@symantec.com

Support agreement resources

If you want to contact Symantec regarding an existing support agreement, please contact the support agreement administration team for your region as follows:

Asia-Pacific and Japan

customercare_apac@symantec.com

Europe, Middle-East, and Africa

semea@symantec.com

North America and Latin America

supportsolutions@symantec.com

Veritas Dynamic Multi-Pathing

This document includes the following topics:

- [About Veritas Dynamic Multi-Pathing](#)
- [About this document](#)
- [About Veritas product licensing](#)
- [Installing Veritas Dynamic Multi-Pathing \(DMP\)](#)
- [System requirements](#)
- [Using VCS with Dynamic Multi-Pathing](#)
- [Early release issues and notes](#)

About Veritas Dynamic Multi-Pathing

Veritas Dynamic Multi-Pathing (DMP) provides multipathing functionality for the operating system native devices configured on the system. DMP creates DMP metadevices (also known as DMP nodes) to represent all the device paths to the same physical LUN.

In previous Veritas releases, DMP was only available as a feature of Veritas Volume Manager (VxVM). DMP supported VxVM volumes and Veritas File System (VxFS) file systems on the DMP metadevices.

This release extends DMP metadevices to support OS native logical volume managers (LVM). You can create LVM volumes and volume groups on DMP metadevices.

In this release, Veritas Dynamic Multi-Pathing does not support Veritas File System (VxFS) on DMP devices.

Veritas Volume Manager (VxVM) volumes and disk groups can co-exist with LVM volumes and volume groups, but each device can only support one of the types. If a disk has a VxVM label, then the disk is not available to LVM. Similarly, if a disk is in use by LVM, then the disk is not available to VxVM.

About this document

This document provides release information about Veritas Dynamic Multi-Pathing.

Before you continue, make sure that you are using the current version of this guide. This document version is:

Document version: 5.1RP1.0_DMP.1

To check for a later version of this guide, refer to the following link:

http://sfdoccentral.symantec.com/sf/5.1/aix/sf_notes.pdf

Review this entire document before installing Veritas Dynamic Multi-Pathing.

See the *Veritas Dynamic Multi-Pathing Administrator's Guide*.

For more information about this release, refer to the following links and documents:

Table 1-1

Description	Location
Latest patches available for this release.	https://vos.symantec.com/patch/matrix
The hardware compatibility list (HCL) contains information about supported hardware and is updated regularly. Before installing Veritas Dynamic Multi-Pathing, review the current compatibility list to confirm the compatibility of your hardware and software.	http://entsupport.symantec.com/docs/330441
Release information about Veritas Cluster Server.	See the <i>Veritas Cluster Server Release Notes</i> .

Table 1-1 (continued)

Description	Location
Information about administering Veritas Dynamic Multi-Pathing.	See the <i>Veritas Dynamic Multi-Pathing Administrator's Guide</i> .

About Veritas product licensing

This release of the Veritas products requires a license key. 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. Symantec reserves the right to ensure entitlement and compliance through auditing.

Obtain the license key before installing the product.

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

www.symantec.com/techsupp/

Installing Veritas Dynamic Multi-Pathing (DMP)

This release introduces Dynamic Multi-Pathing (DMP) support for native devices. DMP enables new or existing non-root OS native volume groups and file systems to operate over DMP devices.

To install and configure Dynamic Multi-Pathing

- 1 Make sure the requirements are met.
See “[System requirements](#)” on page 11.
- 2 You must obtain a license for DMP before installing.
See “[About Veritas product licensing](#)” on page 9.
- 3 Install Veritas Volume Manager (VxVM) 5.1RP1 in one of the following ways:
 - Install Storage Foundation 5.1 Rolling Patch 1 (5.1RP1), which includes Veritas Volume Manager as a component.
See the Storage Foundation 5.1RP1 documentation for details.
 - Install Veritas Volume Manager (VxVM) as follows:
 - Install the 5.1 Veritas Volume Manager packages:

```
# installp -acgX -d pathname VRTSvxvm VRTSaslapm  
VRTSveki VRTSvlic
```

- Apply the VxVM 5.1 RP1 patches. See the following site for the location of the latest patches:

<https://vos.symantec.com/patch/matrix>

- 4 Download the Dynamic Multi-Pathing 5.1RP1P0 binaries for your platform.

Veritas Dynamic Multi-Pathing 5.1RP1.0 for AIX:

<https://vos.symantec.com/patch/detail/4124>

See the following site for the location of the latest patches:

<https://vos.symantec.com/patch/matrix>

- 5 Remove the VRTSvlic package and add the VRTSvlic package from step 4.

```
# installp -acgX -d pathname VRTSvlic
```

- 6 Install the DMP patch from step 4.

```
# installp -acg -d ./VRTSvxvm.bff VRTSvxvm
```

- 7 Configure VxVM to install the license and start the VxVM configuration daemon (`vxconfigd`):

```
# vxinstall
```

When prompted, enter the license key for a DMP license, a Storage Foundation Standard license, or a Storage Foundation Enterprise license.

- 8 If you have native volumes in use and operating over third party multi-pathing software, perform the steps to migrate the volumes to DMP.

For details about migrating, see the *Veritas Dynamic Multi-Pathing Administrator's Guide*.

- 9 If you installed a Storage Foundation Standard or Storage Foundation Enterprise license, then enable Dynamic Multi-Pathing with the following command:

```
# vxdmpadm settune dmp_native_support=on
```

If you installed a DMP license, this operation is automated.

System requirements

Dynamic Multi-Pathing is available for the following operating systems:

LVM on AIX 5.3 and 6.1

Using VCS with Dynamic Multi-Pathing

If you have Veritas Cluster Server, install the VCS patch.

[VCS 5.1RP1P1](#)

Early release issues and notes

In this release, Veritas Dynamic Multi-Pathing has the following limitations when DMP is used with LVM devices.

Manual upgrade of the VRTSvlic package loses keyless product levels

If you upgrade the VRTSvlic package with manual steps, the product levels that were set using `vxkeyless` may be lost. The output of the `vxkeyless display` command will not display correctly.

Note: This behavior does not cause any other issues with functionality.

To prevent this, perform the following steps while manually upgrading the VRTSvlic package.

To manually upgrade the VRTSvlic package

- 1 Note down the list of products configured on the node for keyless licensing:

```
# vxkeyless display
```

- 2 Set the product level to NONE.

```
# vxkeyless set NONE
```

- 3 Upgrade the VRTSvlic package.

```
# installp -acgX -d pathname VRTSvlic
```

- 4 Restore the list of products that you noted in step 1.

```
# vxkeyless set product[product]
```

Device naming limitations

In order to use DMP for OS native device support, the device naming scheme must be enclosure-based naming (EBN) and the persistence attribute must be on.

The naming scheme cannot be changed after the feature is enabled.

Disk access name limitations

The following limitations apply to disk access names:

- You cannot change the DMP name of a device when native device support is enabled. If you must change the DMP name, you must disable the feature, update the name and again enable the feature.
- You also cannot change the name for an enclosure which has at least one DMP device that is using native device support, because that would require the DMP device name to change.
- When native multipathing is enabled, you cannot assign device names manually using the `vxddladm assign names` command.

Excluding arrays or paths from DMP

If an array includes at least one DMP device that is using native device support, you cannot exclude the array from DMP using the `vxddladm excludearray` command.

If a DMP device has the native device support enabled, you cannot exclude all of the paths from VxVM and DMP. You can exclude paths from VxVM as long as at least one path remains for the DMP device.

Third party driver and foreign device support

When DMP devices have OS native device support enabled, do not add the paths of the DMP device to VxVM under the foreign disk category.

If a DMP device has a valid VxVM label, you cannot enable native device support on that device.

You cannot enable native device support on a DMP device if the device is in co-existence with any Third Party Multi-pathing Driver (TPD) meta-device.

The Symantec testing teams have not yet certified the procedures to migrate LVM volume groups over HDLM and IBM SDD.

Object Data Manager (ODM) limitation on device names

On AIX, the Object Data Manager (ODM) has a limitation of 16 characters for device names. To address this issue, the DMP device names are truncated to fit into the ODM database. For DMP or VxVM operations, use the truncated name, as shown in the `lspv` command output.

The following example of `lspv` output shows the EMC Clariion device names that are truncated to fit the 16 character limit.

```
# lspv
.
.
.
emc_clari1_194 000fb4b1961e1c70      cx-alua      active
emc_clari1_198 000fb4b1961e29cb      cx-alua      active
emc_clari1_182 000fb4b1961e25d3      cx-alua      active
emc_clari1_184 000fb4b1961e1bad      cx-alua      active
emc_clari1_195 000fb4b1961e2114      cx-alua      active
```

Removing DMP devices from ODM

When you remove DMP devices with native device support from the system, ODM definitions for the device are not being cleaned up automatically. You must clean up the device definitions with manual steps.

DMP slab size

If the `errpt` displays error messages `LVM_IO_FAIL` with `ENOMEM` error code, then you might need to increase the size of the DMP slab allocator. Increase the size of the tunables `dmpslab_minsz` and `dmpslab_maxsz`. The default values are `dmpslab_minsz=1024` and `dmpslab_maxsz=4096`.

For example, increase the size of the `dmpslab_minsz` to 2048 and the size of the `dmpslab_maxsz` to 4096.

If you use the SMIT interface, the tunables are `Total Minimum Pages for dmp slab` and `Total Maximun Pages for dmp slab`.

DMP in a VCS environment

AIX LVM sends the `SCSI_RESERVE` flag to multi-pathing drivers. VCS detects and handles concurrency violations. If VCS is not present, the volume group should not be activated on more than one node at a time. DMP handles any split brain scenario, but otherwise activating the volume group on more than one node may lead to data corruption.

Documentation errata in vxddmpadm manual page

The `vxddmpadm` manual page is missing the description of the tunable `'dmp_native_support'`.