

Symantec™ Dynamic Multi-Pathing 6.2 Release Notes - AIX

Symantec™ Dynamic Multi-Pathing Release Notes

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- 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
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- 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
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Documentation

Product guides are available on the media in PDF format. Make sure that you are using the current version of the documentation. The document version appears on

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

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:

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<http://www.symantec.com/connect/storage-management>

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Asia-Pacific and Japan	customercare_apj@symantec.com
Europe, Middle-East, and Africa	semea@symantec.com
North America and Latin America	supportsolutions@symantec.com

Dynamic Multi-Pathing Release Notes

This document includes the following topics:

- [About this document](#)
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- [About Symantec Operations Readiness Tools](#)
- [Important release information](#)
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About this document

This document provides important information about Symantec Dynamic Multi-Pathing (DMP) version 6.2 for AIX. Review this entire document before you install or upgrade DMP.

The information in the Release Notes supersedes the information provided in the product documents for DMP.

This is "Document version: 6.2 Rev 1" of the *Symantec Dynamic Multi-Pathing Release Notes*. Before you start, make sure that you are using the latest version of this guide. The latest product documentation is available on the Symantec Web site at:

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

About Symantec Dynamic Multi-Pathing (DMP)

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

DMP is also available as a standalone product, which extends DMP metadevices to support the OS native logical volume manager (LVM). You can create LVM volumes and volume groups on DMP metadevices.

DMP supports the LVM volume devices that are used as the paging devices.

Symantec Dynamic Multi-Pathing can be licensed separately from Storage Foundation products. Veritas Volume Manager and Veritas File System functionality is not provided with a DMP license.

DMP functionality is available with a Storage Foundation (SF) Enterprise license, an SFHA Enterprise license, and a Storage Foundation Standard license.

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 Symantec Operations Readiness Tools

Symantec Operations Readiness Tools (SORT) is a website that automates and simplifies some of the most time-consuming administrative tasks. SORT helps you manage your datacenter more efficiently and get the most out of your Symantec products.

SORT can help you do the following:

Prepare for your next installation or upgrade

- List product installation and upgrade requirements, including operating system versions, memory, disk space, and architecture.
- Analyze systems to determine if they are ready to install or upgrade Symantec products and generate an Installation and Upgrade custom report.
- List patches by product or platform, and in the order they need to be installed. Display and download the most recent patches or historical patches.
- Display Array Support Library (ASL) details by vendor, platform, or Storage Foundation and High Availability (SFHA) version. ASLs make it easier to manage arrays that are connected to SFHA-based servers.
- List VCS and ApplicationHA agents, documentation, and downloads based on the agent type, application, and platform.

Identify risks and get server-specific recommendations

- Analyze your servers for potential environmental risks. Generate a Risk Assessment custom report with specific recommendations about system availability, storage use, performance, and best practices.
- Display descriptions and solutions for thousands of Symantec error codes.

Improve efficiency

- Get automatic email notifications about changes to patches, array-specific modules (ASLs/APMs/DDIs/DDDLs), documentation, product releases, Hardware Compatibility Lists (HCLs), and VCS/ApplicationHA agents.
- Quickly gather installed Symantec product and license key information from across your production environment. Generate a License/Deployment custom report that includes product names, versions, and platforms, server tiers, Symantec Performance Value Units (SPVUs), and End of Service Life dates.
- List and download Symantec product documentation including product guides, manual pages, compatibility lists, and support articles.
- Access links to important resources on a single page, including Symantec product support, SymConnect forums, customer care, Symantec training and education, Symantec FileConnect, the licensing portal, and my.symantec.com. The page also includes links to key vendor support sites.
- Use a subset of SORT features from your iOS device. Download the application at:
<https://sort.symantec.com/mobile>

Note: Certain features of SORT are not available for all products. Access to SORT is available at no extra cost.

To access SORT, go to:

<https://sort.symantec.com>

Important release information

- For important updates regarding this release, review the Late-Breaking News TechNote on the Symantec Technical Support website:
<http://www.symantec.com/docs/TECH225259>
- For the latest patches available for this release, go to:
<https://sort.symantec.com/>
- The hardware compatibility list contains information about supported hardware and is updated regularly. For the latest information on supported hardware, visit the following URL:
<http://www.symantec.com/docs/TECH211575>
- The software compatibility list summarizes each Storage Foundation and High Availability (SFHA) Solutions product stack and the product features, operating system versions, and third-party products it supports. For the latest information on supported software, visit the following URL:
<http://www.symantec.com/docs/TECH225258>

Note: Before you install or upgrade SFHA Solutions products, review the current compatibility lists to confirm the compatibility of your hardware and software.

Changes introduced in Symantec Dynamic Multi-Pathing 6.2

This section lists the changes in Symantec Dynamic Multi-Pathing 6.2.

Changes related to installation and upgrades

The product installer includes the following changes in Symantec Dynamic Multi-Pathing 6.2.

Connecting to the SORT website through a proxy server

The product installer connects to the Symantec Operations Readiness Tools (SORT) website for several purposes, such as downloading latest installer patches, and uploading installer logs; Deployment Server can connect to SORT to automatically download Maintenance or Patch release images. In this release, before running the product installer or Deployment Server, you can use the following proxy settings to connect to SORT through proxy servers:

```
# https_proxy=http://proxy_server:port
# export https_proxy
# ftp_proxy=http://proxy_server:port
# export ftp_proxy
```

Support for centralized installations using the Deployment Server

The Deployment Server is a script that makes it easier to install or upgrade SFHA releases. The Deployment Server lets you store multiple release images in one central location and deploy them to systems of any supported UNIX or Linux platform (6.1 or later). Prior to 6.1, releases still require the same platform, architecture, distribution, and version of the operating system. You can use the Deployment Server if you want to install or upgrade multiple releases and or multiple platforms.

The Deployment Server lets you do the following as described in [Table 1-1](#).

Table 1-1 Deployment Server functionality

Feature	Description
Install or Upgrade systems with Install Bundle and Install Template	<ul style="list-style-type: none"> ■ Install or upgrade systems with an Install Bundle. ■ Install packages on systems based on the information stored in Install Template.
Define or modify Install Bundles	Define or modify Install Bundles and save them using the Deployment Server.
Create Install Templates	Discover installed components on a running system that you want to replicate on to new systems.
Connecting the Deployment Server to SORT using a proxy server	Use a proxy server, a server that acts as an intermediary for requests from clients, for connecting the Deployment Server to the Symantec Operations Readiness Tools (SORT) website.

Table 1-1 Deployment Server functionality (*continued*)

Feature	Description
Platform Filtering	In Set Preference menu, choose Selected Platforms to filter the platforms that are currently being used in the deployment environment.

Note: The Deployment Server is available only for the script-based installer, not the web-based installer.

See the *Installation Guide* for more information.

Release level terminology changes

With the 6.2 release, terms that are used to describe patch-based releases have changed as follows:

Table 1-2 Release level terminology changes

Pre 6.0.1	6.0.x, 6.1, 6.1.x	6.2 and forward	Status	Available from
P-Patch	Public hot fix	Patch	Official	SORT
Hot fix	Private hot fix	Hot fix	Unofficial	Customer support

Official patch releases are available from SORT. This release was previously referred to as a P-Patch or a Public hot fix and is now referred to as a Patch. Unofficial patch releases are available from customer support. Hot fix is the only unofficial patch release.

Support for setting up ssh and rsh connection using the `pwdutil.pl` utility

The password utility, `pwdutil.pl`, is bundled in the 6.2 release under the `scripts` directory. The users can run the `pwdutil.pl` utility to set up the ssh and rsh connection automatically.

System requirements

This section describes the system requirements for this release.

Hardware compatibility list

The compatibility list contains information about supported hardware and is updated regularly. For the latest information on supported hardware go to the following URL:

<http://www.symantec.com/docs/TECH211575>

Supported AIX operating systems

This section lists the supported operating systems for this release of Symantec products. For current updates, visit the Symantec Operations Readiness Tools Installation and Upgrade page: https://sort.symantec.com/land/install_and_upgrade.

Table 1-3 shows the supported operating systems for this release.

Table 1-3 Supported operating systems

Operating systems	Levels	Chipsets
AIX 7.1	TL2, TL3	Power 5, Power 6, or Power 7
AIX 6.1	TL8, TL9	Power 5, Power 6, or Power 7

Required attributes of LUNs for DMP devices

When the `reserve_policy=single_path` and `reserve_lock=yes`, the SCSI-2 reserve may be placed on the device, which affects I/O load balancing and performance. To prevent the impact to load balancing and performance, set the `reserve_policy=no_reserve` and `reserve_lock=no` for the devices that are managed by DMP.

Set the following attributes for LUNs

1 Set the following attributes:

- If the path has the `reserve_policy` attribute set, change the `reserve_policy` attribute to `no_reserve` for all the paths.

```
# lsattr -E1 hdisk557 | grep res
reserve_policy single_path
Reserve Policy True
```

```
# chdev -l hdisk557 -a reserve_policy=no_reserve -P
hdisk557 changed
```

- If the path has the `reserve_lock` attribute set, change the `reserve_lock` attribute to `no`.

```
# lsattr -E1 hdisk558 | grep reserve_lock
reserve_lock  yes
Reserve Device on open True

# chdev -l hdisk558 -a reserve_lock=no -P
hdisk558 changed
```

- 2 Reboot the system for the changes to take effect.

Fixed issues

This section covers the incidents that are fixed in this release.

Installation and upgrades fixed issues

This section describes the incidents that are fixed related to installation and upgrades in this release.

Table 1-4 Fixed issues related to installation and upgrades

Incident	Description
3326196	Rolling upgrade may encounter a problem if open volumes from different disk groups have the same name.
3442070	If you select rolling upgrade task from the Install Bundles menu, the Installer exits with an error.

Dynamic Multi-Pathing fixed issues

This section describes the incidents that are fixed for Dynamic Multi-Pathing in this release.

Table 1-5 Dynamic Multi-Pathing fixed issues

Incident	Description
3565212	IO failure during controller giveback operations on Netapp FAS31700 in ALUA mode.
3543284	FIO device not visible.
3542713	vxddmpadm listenclosure all displays a different ENCL from array console/VOM.

Table 1-5 Dynamic Multi-Pathing fixed issues (*continued*)

Incident	Description
3526500	DMP I/O getting timeout lot earlier than 300 seconds if I/O statistics daemon is not running.
3520991	vxconfigd core dumps during vxdisk scandisks.
3502923	ESX panic while running add/remove devices from smartpool with no license installed on server.
3399323	The reconfiguration of DMP DB failed.
3373208	DMP wrongly sends APTPL bit 0 to array.
3367997	Customer was performing an OS lun removal when the system panicked.

Known issues

This section covers the known issues in this release.

Installation known issues

This section describes the known issues during installation and upgrade.

`installer -requirements` does not list RHEL 6 Update 6 and Oracle Linux 7 as supported platforms (3657260)

The `installer -requirements` command does not list RHEL 6 Update 6 and Oracle Linux 7 as supported platforms though they are qualified with version 6.2.

Workaround: The correct supported list is mentioned in the latest version of the product Release Notes. See the latest Release Notes on the Symantec website for the updated list.

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

Web installer does not ask for authentication after the first session if the browser is still open (2509330)

If you install or configure DMP and then close the Web installer, if you have other browser windows open, the Web installer does not ask for authentication in the subsequent sessions. Since there is no option to log out of the Web installer, the session remains open as long as the browser is open on the system.

Workaround: Make sure that all browser windows are closed to end the browser session and subsequently log in again.

Stopping the Web installer causes Device Busy error messages (2633924)

If you start the Web installer, and then perform an operation (such as prechecking, configuring, or uninstalling), you may get an error message saying the device is busy.

Workaround: Do one of the following:

- Kill the start.pl process.
- Start the webinstaller again. On the first Web page you see that the session is still active. Either take over this session and finish it or terminate it directly.

The VRTSsfcp62 fileset is retained after you upgrade to Symantec Dynamic Multi-Pathing 6.2 on an alternate disk (2811749)

On AIX, if you run the command `alt_disk_scenario` to perform a disk clone and upgrade from 6.0 or later to 6.2, the older version of the VRTSsfcp62 fileset is retained.

Workaround: Optionally uninstall the older VRTSsfcp60 fileset after upgrading. Retaining the older version will not cause any harm.

If you have a non-shared (detached) WPAR configured, when you install, upgrade, or install any Symantec product, the filesets in the WPAR cannot be installed, upgraded, or uninstalled correspondingly (3313690)

On AIX, if you have a non-shared (detached) workload partition (WPAR) configured, when you perform an install, upgrade, or uninstall task on any Symantec product by the Symantec product installer, the filesets cannot be installed, upgraded, or uninstalled inside the WPAR correspondingly.

Workaround: There is no workaround for this issue.

If you have a shared (system) WPAR configured, when you install, upgrade, or uninstall any Symantec product, the filesets in the WPAR are not synchronized correspondingly (3313690)

On AIX, if you have a shared (system) workload partition (WPAR) configured, when you perform an install, upgrade, or uninstall task on any Symantec product by the

Symantec product installer, the filesets may not be installed, upgraded, or uninstalled correspondingly.

Workaround: After an install, upgrade, or uninstall task, execute the following command to synchronize your WPAR with global systems:

```
# /usr/sbin/syncwpar -A
```

Migration of I/O fencing-enabled disks of VxVM disk group from EMC PowerPath TPD to VxVM DMP fails [3528561]

If I/O Fencing is enabled on some disks from VxVM disk group, migration of those disks from EMC PowerPath TPD to VxVM DMP fails with the following error messages:

```
VXFEN vxfenconfig NOTICE Driver will use SCSI-3 compliant disks.  
VXFEN vxfenconfig ERROR V-11-2-1090 Unable to register with a  
Majority of the coordination points.
```

Workaround: Restart the server.

Symantec has reported the issue to EMC PowerPath Engineering.

If the storage is disconnected during reboot, LVMs do not come online for DMP when the storage is reconnected (3511494)

When DMP native support is enabled, this issue may occur if the storage is disconnected when the system is rebooted. After the reboot when the storage is reconnected, the LVMs (other than the root LVMs) do not come online.

Workaround: Disable and enable the DMP native support.

To disable and enable DMP native support

1 Disable the DMP native support:

```
# vxddmpadm settune dmp_native_support=off
```

2 Enable the DMP native support:

```
# vxddmpadm settune dmp_native_support=on
```

DMP does not support disks from SEAGATE which do not give unique NAA IDs (3343009)

DMP does not support disks from SEAGATE which do not give unique NAA IDs.

Workaround:

There is no workaround for this issue.

For HP 3PAR array with firmware 3.1.2, all subpaths are not enabled after the reboot of the array controller (3049401)

This issue occurs on the AIX platform with the HP 3PAR array with firmware 3.1.2. After an array controller is rebooted, some of the paths through that controller remain in disabled state even after the controller is up.

Workaround:

After the controller has rebooted, use the following command to enable all of the paths:

```
# vxdisk scandisks
```

Some paths in DMP can get DISABLED if LVM volume group is created on OS device path (1978941)

On AIX, when an LVM volume group is created directly on the OS device path, the SCSI driver performs SCSI2 reservation on the rest of the paths to that LUN. As a result, some of the paths of the corresponding DMP devices may be disabled, as shown by the `vxmpadm getsubpaths` command output. For some arrays, the `vxdisk list` command shows the device in the 'error' state.

This issue is not seen when LVM volume groups are created on the DMP devices.

Example of this issue:

```
# vxdisk list | grep emc0_00bc
emc0_00bc    auto:none    -            -            online invalid

# vxmpadm getsubpaths dmpnodename=emc0_00bc
NAME        STATE[A]    PATH-TYPE[M]  CTLR-NAME  ENCLR-TYPE  ENCLR-NAME  ATTRS
-----
hdisk110    ENABLED(A)  -            fscsi0     EMC         emc0        -
hdisk123    ENABLED(A)  -            fscsi0     EMC         emc0        -
hdisk136    ENABLED(A)  -            fscsi1     EMC         emc0        -
hdisk149    ENABLED(A)  -            fscsi1     EMC         emc0        -

# vxdisk rm emc0_00bc

# mkvg -y dmxvg hdisk110
dmxvg
```

```
# lspv | egrep "hdisk110|hdisk123|hdisk136|hdisk149"
hdisk110      00c492ed6fbda6e3      dmxvg      active
hdisk123      none                        None
hdisk136      none                        None
hdisk149      none                        None

# vxdisk scandisks

# vxdmpadm getsubpaths dmpnodename=emc0_00bc
NAME          STATE[A]  PATH-TYPE[M]  CTLR-NAME  ENCLR-TYPE  ENCLR-NAME  ATTRS
=====
hdisk110     ENABLED(A)  -             fscsi0     EMC         emc0        -
hdisk123     DISABLED    -             fscsi0     EMC         emc0        -
hdisk136     DISABLED    -             fscsi1     EMC         emc0        -
hdisk149     DISABLED    -             fscsi1     EMC         emc0        -
```

To recover from this situation

- 1 Varyoff the LVM volume group:

```
# varyoffvg dmxvg
```

- 2 Remove the disk from VxVM control.

```
# vxdisk rm emc0_00bc
```

- 3 Trigger DMP reconfiguration.

```
# vxdisk scandisks
```

- 4 The device which was in DISABLED state now appears as ENABLED.

```
# vxdmpadm getsubpaths dmpnodename=emc0_00bc
NAME          STATE[A]  PATH-TYPE[M]  CTLR-NAME  ENCLR-TYPE  ENCLR-NAME  ATTRS
=====
hdisk110     ENABLED(A)  -             fscsi0     EMC         emc0        -
hdisk123     ENABLED(A)  -             fscsi0     EMC         emc0        -
hdisk136     ENABLED(A)  -             fscsi1     EMC         emc0        -
hdisk149     ENABLED(A)  -             fscsi1     EMC         emc0        -
```

Changes in enclosure attributes are not persistent after an upgrade from release prior to VxVM 5.1SP1 (2082414)

The Veritas Volume Manager (VxVM) 6.2 includes several array names that differ from the array names in releases 5.1SP1 or prior. Therefore, if you upgrade to

VxVM 6.2 from a release 5.1SP1 or earlier, changes in the enclosure attributes may not remain persistent. Any enclosure attribute set for these arrays may be reset to the default value after an upgrade to VxVM 6.2.

Workaround:

Manually reconfigure the enclosure attributes to resolve the issue.

[Table 1-6](#) shows the Hitachi arrays that have new array names.

Table 1-6 Hitachi arrays with new array names

Previous name	New name
TagmaStore-USP	Hitachi_USP
TagmaStore-NSC	Hitachi_NSC
TagmaStoreUSPV	Hitachi_USP-V
TagmaStoreUSPVM	Hitachi_USP-VM
Hitachi AMS2300 Series arrays	New array names are based on the Model Number 8x. For example, AMS_100, AMS_2100, AMS_2300, AMS_2500, etc.

In addition, the Array Support Library (ASL) for the enclosures XIV and 3PAR now converts the cabinet serial number that is reported from Hex to Decimal, to correspond with the value shown on the GUI. Because the cabinet serial number has changed, any enclosure attribute set for these arrays may be reset to the default value after an upgrade to VxVM 6.2. Manually reconfigure the enclosure attributes to resolve the issue.

The cabinet serial numbers are changed for the following enclosures:

- IBM XIV Series arrays
- 3PAR arrays

MPIO device names shown in error state (3169587)

In this release, DMP does not support extended attributes like AVID for AIX MPIO devices. In the 5.1SP1 release, DMP used to support AVID for the MPIO devices. When you upgrade from 5.1SP1 or prior release to a release 6.0 or later, DMP assigns new names to the MPIO devices.

The MPIO device may go into an error state after the upgrade, if a persistent disk access record (entry in `/etc/vx/darecs`) exists with the old name, and the device was assigned a new name.

The same issue may occur if the MPIO device name changes for another reason, such as the changed cabinet serial numbers for 3PAR or XIV devices.

Workaround:

Use the following procedure to remove the persistent disk access record and resolve the issue.

To resolve the issue with MPIO devices in error state

- 1 Remove the following file:

```
# rm /etc/vx/darecs
```

- 2 Reset the `vxconfigd` daemon:

```
# vxconfigd -kr reset
```

Adding a DMP device or its OS device path as a foreign disk is not supported (2062230)

When DMP native support is enable, adding a DMP device or its OS device path as a foreign disk using the `vxddladm addforeign` command is not supported. Using this command can lead to unexplained behavior.

Mksysb restore fails if physical volumes have identical PVIDs (3133542)

When you have multiple paths to the rootvg devices, restoring a `mksysb` backup file fails with the following error:

```
0516-1775 /usr/sbin/varyonvg: Physical volumes hdisk2 and hdisk18 have identical PVIDs.
```

This error is caused by an issue with IBM AIX.

Workaround:

Contact IBM support to obtain the fix. Refer to IBM APAR IV25286 for more details.

The DMP EMC CLARiiON ASL does not recognize mirror view not ready LUNs (3272940)

On hosts that have EMC CLARiiON mirror view not ready LUNs, if you enable or disable the switch port and then issue the `vxdisk scandisks` or `vxctl enable` command, I/O error messages are written continuously in the syslog.

The dynamic multi-pathing (DMP) request for providing information to identify mirror view not ready LUNs through in-band SCSI command is pending with EMC engineering. Not ready LUNs are special kind of LUNs which reject all kinds of I/O requests.

Because DMP does not recognize not ready LUNs, Veritas Volume Manager (VxVM) tries to bring them online. As part of the online process, VxVM issues I/Os to read the disk private region. These I/Os fail and generate error messages in syslog.

Because of events that are generated as part of the online process, the `vxattachd` script triggers the `vxdisk scandisks` command again. This cycle causes continuous I/O error messages. This problem can also cause other commands to run slowly because the VxVM configuration daemon (`vxconfigd`) is busy servicing `vxdisk scandisks`.

Workaround: Stop the `vxattachd` script and set EMC CLARiiON values, as follows:

- 1 Disable the `vxattachd` process.

For more information on how to disable `vxattachd` and what features you lose if `vxattachd` is disabled, see the `vxattachd` man page

- 2 Set the following EMC CLARiiON values:

- `recoveryoption=fixedretry`
- `retrycount=5`

Enter:

```
vxddmpadm setattr enclosure enclosure_name recoveryoption=fixedretry \  
retrycount=5
```

DMP and PowerPath coexistence with EMC VNX LUNs (3604318)

When you use a EMC PowerPath third party driver configuration and you configure some of the EMC VNX LUNs to be managed by DMP, we recommend that you use EMC PowerPath 5.7 or higher.

Virtualization known issues

There are no new virtualization known issues in this release of Symantec Dynamic Multi-Pathing (DMP).

Software limitations

This section covers the software limitations of this release.

See the corresponding Release Notes for a complete list of software limitations related to that component or product.

See [“Documentation”](#) on page 24.

DMP does not support devices in the same enclosure that are configured in different modes (2643506)

DMP does not support the configuration where two devices in the same enclosure are configured in different modes. For example, if one device is configured as ALUA and another one is configured as Active/Passive (A/P).

DMP settings for NetApp storage attached environment

To minimize the path restoration window and maximize high availability in the NetApp storage attached environment, change the default values for the DMP tunable parameters.

[Table 1-7](#) describes the DMP tunable parameters and the new values.

Table 1-7 DMP settings for NetApp storage attached environment

Parameter name	Definition	New value	Default value
dmp_restore_interval	DMP restore daemon cycle	60 seconds.	300 seconds.
dmp_path_age	DMP path aging tunable	120 seconds.	300 seconds.

The change is persistent across reboots.

To change the tunable parameters

- 1 Issue the following commands:

```
# vxddmpadm settune dmp_restore_interval=60  
  
# vxddmpadm settune dmp_path_age=120
```

- 2 To verify the new settings, use the following commands:

```
# vxddmpadm gettune dmp_restore_interval  
  
# vxddmpadm gettune dmp_path_age
```

DMP support in AIX virtualization environment (2138060)

DMP does not support exporting paths to the same LUN through both vSCSI and NPIV interfaces.

DMP treats the same LUN seen through vSCSI and NPIV interfaces as two separate LUNs, because the behavior of the LUN at the VIOC level is different due to the intermediate SCSI interface at the VIOS level for vSCSI devices.

LVM volume group in unusable state if last path is excluded from DMP (1976620)

When a DMP device is used by a native LVM volume group, do not exclude the last path to the device. This can put the LVM volume group in an unusable state.

This issue is only applicable to non-root devices.

Documentation

Product guides are available in the PDF format on the software media in the `/docs/product_name` directory. Additional documentation is available online.

Make sure that you are using the current version of documentation. The document version appears on page 2 of each guide. The publication date appears on the title page of each document. The latest product documentation is available on the Symantec website.

<http://sort.symantec.com/documents>

Documentation set

Each product in the Storage Foundation and High Availability Solutions product line includes release notes, an installation guide, and additional documents such as administration and agent guides. In most cases, you may also need to refer to the documentation for the product's components.

The SFHA Solutions documents describe functionality and solutions that apply across the product line. These documents are relevant whichever SFHA Solutions product you use.

Symantec Dynamic Multi-Pathing documentation

[Table 1-8](#) lists the documentation for Symantec Dynamic Multi-Pathing.

Table 1-8 Symantec Dynamic Multi-Pathing documentation

Document title	File name	Description
<i>Symantec Dynamic Multi-Pathing Release Notes</i>	dmp_notes_62_aix.pdf	Provides release information such as system requirements, changes, fixed incidents, known issues, and limitations of the product.
<i>Symantec Dynamic Multi-Pathing Installation Guide</i>	dmp_install_62_aix.pdf	Provides information required to install the product.
<i>Symantec Dynamic Multi-Pathing Administrator's Guide</i>	dmp_admin_62_aix.pdf	Provides information required for administering the product.

Veritas Operations Manager (VOM) is a management tool that you can use to manage Symantec Storage Foundation and High Availability Solutions products. If you use VOM, refer to the VOM product documentation at:

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

Manual pages

The manual pages for Symantec Storage Foundation and High Availability Solutions products are installed in the `/opt/VRTS/man` directory.

Set the `MANPATH` environment variable so the `man(1)` command can point to the Symantec Storage Foundation manual pages:

- For the Bourne or Korn shell (`sh` or `ksh`), enter the following commands:

```
MANPATH=$MANPATH:/opt/VRTS/man
export MANPATH
```

- For C shell (`cs`h or `tc`sh), enter the following command:

```
setenv MANPATH ${MANPATH}:/opt/VRTS/man
```

See the `man(1)` manual page.

The latest manual pages are available online in HTML format on the Symantec website at:

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