

HP StorageWorks

1000 Modular Smart Array

application note

Migrating to active/active controllers in OpenVMS environments

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1000 Modular Smart Array application note - Migrating to active/active controllers in OpenVMS environments

About this document

This guide provides information about migrating existing OpenVMS® MSA installations from a single-controller, active/passive configuration to a dual-controller, active/active configuration.

Major topics include:

- [Overview](#), page 5
- [Preparing for the migration](#), page 5
- [Upgrading the MSA to active/active](#), page 7
- [Verifying](#), page 10

Intended audience

This guide is intended for OpenVMS administrators, technical support personnel, and storage administrators for MSA, who have experience with:

- OpenVMS operating system on AlphaServers and Integrity Servers
- OpenVMS Multi-path software
- SRM console on AlphaServers
- EFI shell on Integrity Servers
- HP StorageWorks Modular Smart Array product line, SAN infrastructures, and SAN switch fabrics

HP technical support

Telephone numbers for worldwide technical support are listed on the HP support website:

<http://www.hp.com/support/>.

Collect the following information before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

Accessing future product updates

HP strongly recommends that customers sign up online using the Subscriber's choice website:

<http://www.hp.com/go/e-updates>.

- Subscribing to this service provides you with e-mail updates on the latest product enhancements, newest versions of drivers, and firmware documentation updates as well as instant access to numerous other product resources.
- After signing up, you can quickly locate your products by selecting **Business support** and then **Storage** under Product Category.

Related documentation for the MSA1500

User documents for the MSA1500 can be found in the shipping carton, on the Documentation CD, and on the MSA1500 Technical Documents web page: <http://www.hp.com/go/msa1500cs>.

A partial list of MSA1500-related documents includes:

- *MSA1500 Configuration Overview poster*
- *MSA1500 Installation Guide* (May 2006 or later)
- *MSA1500 Compatibility Guide*
- *MSA1000/1500 Firmware Updating Guide*
- *MSA1000/1500 Command Line Interface User Guide* (May 2006 or later)
- *MSA1500 Maintenance and Service Guide*
- *HP Array Configuration Utility User Guide*

Related documentation for the MSA1000

User documents for the MSA1000 can be found in the shipping carton, on the Documentation CD, and on the MSA1000 Technical Documents web page: <http://www.hp.com/go/msa1000>.

A partial list of MSA1000-related documents includes:


- *MSA1000 Configuration Overview poster*
- *MSA1000 Installation Guide* (October 2006 or later)
- *MSA1000 Compatibility Guide*
- *MSA1000/1500 Firmware Updating Guide*
- *MSA1000/1500 Command Line Interface User Guide* (May 2006 or later)
- *MSA1000 Maintenance and Service Guide*
- *HP Array Configuration Utility User Guide*

HP websites

- <http://www.hp.com>
- <http://www.hp.com/storage>
- http://www.hp.com/service_locator
- <http://www.hp.com/support/manuals>
- <http://www.hp.com/support/downloads>
- <http://www.hp.com/go/msa>
- <http://www.hp.com/go/msa1500cs>
- <http://www.hp.com/go/msa1000>

Overview

This document outlines the steps required to install new MSA dual-controllers, running active/active firmware, in an OpenVMS environment. This document also contains the steps required to migrate existing single or dual controller MSA active/passive firmware configurations to dual controller active/active configurations in an OpenVMS environment.

 **NOTE:** OpenVMS does not support MSA1500 configurations with active/passive firmware versions. Only active/active dual controller configurations are supported on OpenVMS for MSA1500. OpenVMS does support both active/passive and active/active firmware on MSA1000.

Active/active feature set:

- Supports simultaneous I/O processing on the controllers to provide better performance and high availability.
- Supports explicit controller ownership using the MSA Command Line Interface (CLI).
- Supports implicit LUN failover to the other controller for optimized I/O processing.
- Starting with version 8.3, OpenVMS contains an optimization algorithm that automatically routes I/O to the optimized path for LUNS on asymmetrical active/active controllers.

Active/active limitations:

- The MSA supports a maximum of 32 LUNs.


Preparing for the migration

IMPORTANT:

- The MSA1500 ships with 4.94 controller firmware. This firmware version is not supported under OpenVMS and must be upgraded to V7.
 - With MSA, HP does not support flashing back from active/active firmware to active/passive firmware. The result is a loss of the array configuration.
 - The controller cache module must be a minimum of 256MB. 128MB is no longer supported.
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 **NOTE:** Before proceeding with the upgrade, you must understand the following:

- Single-controller configurations are not supported in active/active environments. Active/active environments must have two controllers installed in the MSA.
 - Currently installed MSA1000 controller firmware must be 4.48 or later.
 - During the migration process:
 - Do not move the target Fibre Channel cable from one port on a fabric switch to another port.
 - Do not change the switch domain.
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 **CAUTION:** A full backup of the OpenVMS operating system files and data volumes is highly recommended before starting the upgrade process. HP is not responsible for data loss incurred during the upgrade process.

Step	Description	Check
1	<p>Review or obtain the following documents on the MSA website:</p> <ul style="list-style-type: none"> QuickSpecs Command Line Interface User Guide MSA1000/1500 Firmware Updating Guide <p>MSA 1500 website: http://www.hp.com/go/msa1500cs</p> <p>MSA 1000 website: http://www.hp.com/go/msa1000</p> <p>Obtain the latest active/active controller firmware files (version 7.0 or later). Go to the MSA website, and then click Software, firmware & drivers.</p>	<input type="checkbox"/>
2	Backup the OS and data volumes.	<input type="checkbox"/>
3	Verify successful backup of OS and data volumes.	<input type="checkbox"/>
4	Document and diagram the existing switch fabric configuration.	<input type="checkbox"/>
5	<p>Record existing device names and Fibre Channel HBA hardware paths of servers. (This information is required to verify the configuration after the firmware upgrade process is complete.)</p> <p>From the server console, enter: show dev dga/full/out=mydisk_config.txt</p>	<input type="checkbox"/>
6	<p>Record the World Wide Port Names (WWPN) of the Fibre Channel HBAs connected to the MSA. (This information is required to verify the configuration after the firmware upgrade process is complete.)</p> <ul style="list-style-type: none"> From the server console, enter: show dev fg/full/out=myHBA_config.txt and make a note of the ports. From the server console, enter: show dev gg/full/out=myctrldevs_config.txt This command displays a listing of current command devices. 	<input type="checkbox"/>
7	<p>View and record the current configuration of all hard drives and associated LUNs. From the MSA Command Line Interface (CLI), enter: show tech_support</p>	<input type="checkbox"/>
8	If needed, install additional supported HP Fibre Channel HBAs in the server.	<input type="checkbox"/>
9	<p>Verify that the latest HBA firmware and EFI drivers (Integrity Servers only) are installed. Go to the HP OpenVMS systems website, and then select your server family from the Related links list.</p> <p>HP OpenVMS systems website: http://h71000.www7.hp.com/</p> <hr/> <p>NOTE: When selecting firmware versions under Integrity servers, OpenVMS uses the same versions as HP-UX. The HPUX version should be selected.</p> <hr/>	<input type="checkbox"/>
10	<p>The fibre channel drivers and multipath software drivers are an integral part of the OVMS operating system. Verify that the latest OpenVMS fibre channel drivers are installed. Download the latest FIBRE_SCSI patch kit for your operating system version from the HP IT Resource Center website: http://www1.itrc.hp.com/</p>	<input type="checkbox"/>

Upgrading the MSA to active/active

When upgrading your firmware to active/active determine which of the following matches your existing configuration:

Upgrading existing single MSA1000 controllers to active/active

Step	Description	Check
1	<p>Install the additional MSA array controller and I/O module using instructions shipped with the controller. This can be done while the OS is still booted.</p> <hr/> <p>NOTE: Before installing the additional array controller, be sure that both controllers have the same cache size installed.</p> <hr/> <p>After installing the additional array controller, allow the auto-cloning process to compare the firmware on the two controllers and clone the firmware from the previously updated controller to the additional controller.</p> <p>The message, <code>MSA STARTUP COMPLETE</code> displays on the controller LCD panel when the additional controller reboots.</p>	<input type="checkbox"/>
2	Ensure that the additional controller has a unique controller identifier assigned, as described in the <i>MSA1000/1500 Firmware Updating Guide</i> .	<input type="checkbox"/>
3	To make the additional controller visible to the OS, at the server console, enter: MCR SYSMAN IO AUTO/LOG	<input type="checkbox"/>
4	Follow the steps in the “For existing OpenVMS installations” section of the <i>MSA1000/1500 Firmware Updating Guide</i> .	<input type="checkbox"/>

Upgrading existing dual MSA1000 controllers to active/active

Follow the steps in the “For existing OpenVMS installations” section of the *MSA1000/1500 Firmware Updating Guide*.

Installing new MSA 1500 controllers active/active (data device only)

Step	Description	Check
1	<p>Install both MSA array controllers using instructions shipped with the controllers.</p> <hr/> <p>NOTE: Ensure that both controllers have the same cache size installed.</p> <hr/> <p>The message, MSA STARTUP COMPLETE displays on each controller LCD panel when the controllers boot.</p>	<input type="checkbox"/>
2	<p>At the MSA CLI, add connections as required for server HBAs, ensuring that the profile is set to OpenVMS.</p> <p>Add connections syntax:</p> <pre>add connection <ConnectionName> <wwpn=xxxxxxxx-xxxxxxxx> [profile=profile_name] [offset=offset_value]</pre> <hr/> <p>NOTE: The WWPNs used in specifying the new connections are those of the server HBAs recorded in step 6, page 6 of "Preparing for the migration".</p> <hr/> <p>Example command:</p> <pre>CLI> add connection MSA-1 wwpn=12345678-12345678 profile=OpenVMS</pre> <p>Example response:</p> <pre>Connection MSA-1 has been added successfully. Profile OpenVMS is set for the new connection.</pre> <hr/> <p>NOTE: LUNs can be created and presented either before or after the firmware upgrade.</p> <hr/> <p>See the <i>MSA 1000/1500 Command Line Interface User Guide</i> for detailed information on adding connections.</p>	<input type="checkbox"/>
3	<p>Follow the steps in the "For existing OpenVMS installations" section of the <i>MSA 1000/1500 Firmware Updating Guide</i>.</p>	<input type="checkbox"/>

Installing new MSA 1500 controllers active/active (system disk/device)

Step	Description	Check
1	<p>Install both MSA array controllers using instructions shipped with the controllers.</p> <hr/> <p>NOTE: Ensure that both controllers have the same cache size installed.</p> <hr/> <p>The message, MSA STARTUP COMPLETE displays on each controller LCD panel when the controllers boot.</p>	<input type="checkbox"/>
2	<p>At the MSA CLI, add connections as required for server HBAs, ensuring that the profile is set to OpenVMS.</p> <p>Add connections syntax:</p> <pre>add connection <ConnectionName> <wwpn=xxxxxxxx-xxxxxxxx> [profile=profile_name] [offset=offset_value]</pre> <hr/> <p>NOTE: The WWPNs used in specifying the new connections are those of the server HBAs recorded in step 6, page 6 of "Preparing for the migration".</p> <hr/> <p>Example command:</p> <pre>CLI> add connection MSA-1 wwpn=12345678-12345678 profile=OpenVMS</pre> <p>Example response:</p> <pre>Connection MSA-1 has been added successfully. Profile OpenVMS is set for the new connection.</pre> <p>See the <i>MSA 1000/1500 Command Line Interface User Guide</i> for detailed information on adding connections.</p> <hr/> <p>NOTE: At least one LUN must be created and presented, for OpenVMS to be installed to, before initiating the OpenVMS install procedure and subsequent firmware update. OpenVMS must be installed in order to be able to access and execute the firmware update utility.</p>	<input type="checkbox"/>
3	<p>Follow the steps in the "For new OpenVMS installations" section of the <i>MSA 1000/1500 Firmware Updating Guide</i>.</p>	<input type="checkbox"/>

Upgrading existing dual MSA 1500 controllers to active/active

Follow the steps in the "For existing OpenVMS installations" section of the *MSA 1000/1500 Firmware Updating Guide*.

Verifying

Step	Description	Check
1	Verify the new firmware version as specified in the <i>MSA 1000/1500 Firmware Updating Guide</i> .	<input type="checkbox"/>
2	Verify that all MSA devices and LUNs are visible, and that all connected HBA paths are present and responding. From the server console, enter: SHOW DEV DG/FULL The output should be compared to the output recorded in step 5, page 6 of " Preparing for the migration ".	<input type="checkbox"/>
3	At the MSA CLI, verify the connection status for each HBA and ensure that the associated profile is OpenVMS. The output should be compared to the output recorded in step 6, page 6 of " Preparing for the migration ".	<input type="checkbox"/>