

HACMP configuration information for DS4000 on pSeries/AIX Servers

January 4, 2006

Supported configurations:

The following combinations of HACMP, AIX, and DS4000 hardware and software are supported:

HACMP Software version	AIX version	FAStT200	FAStT500	DS4100	DS4300	DS4300 Turbo	DS4400	DS4500	DS4800	Storage Manager version
HACMP v4.4.1 ES & ESCRM	v4.3.3, v5.1.0	X	X		X		X	X		v8.3
HACMP v4.5 ES & ESCRM	v5.1.0, v5.2.0	X	X	X	X	X	X	X		v8.3, v8.4x, v9.1
HACMP v5.1, v5.2, v5.3	v5.1.0, v5.2.0, v5.3.0	X	X	X	X	X	X	X	X	v8.3, v8.4x, v9.1

Recommended AIX software levels:

AIX 5.3, Maintenance Level 2

IY71500+

AIX 5.2, Maintenance Level 6

AIX 5.1, Maintenance Level 8

AIX 4.3.3, Maintenance Level 11 (4.3.3.75), with the following AIX fileset versions:

devices.fcp.disk.array.rte 4.3.3.87

devices.pci.df1000f7.com 4.3.3.92

Recommended HACMP software levels:

HACMP v4.4.1 with the following APARs:

IY31483

IY31489

HACMP v4.5.0 with the following APAR:

IY45099

HACMP v5.1.0 with the following APAR:

IY66556

HACMP v5.2.0 with the following APAR:

IY73937

HACMP v5.3.0

DS4000 software and firmware requirements

DS4000 Storage Manager

v8.3

v8.42*

v9.1* <-optional

***Note:** Later versions of DS4000 Storage Manager can support DS4000 systems with previous versions of firmware. For example, SM v9.1 can manage DS4000 devices with 06.01.xx.xx and earlier firmware levels.

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Configuration limitations

For the purposes of this document, DS4000 = FAStT200, FAStT500, DS4300 (+ Turbo), DS4400, DS4500, or DS4800. These limitations are supplemental to any limitations that are already documented for DS4000 Storage systems on pSeries/AIX servers.

Install the DS4000 as is required for base pSeries/AIX environments. Please consult the [IBM DS4000 Storage Manager \(v8.3, v8.4, v9.10\) for UNIX and AIX environments](#) and [aixreadme](#) files prior to installation. Please contact an IBM Storage Specialist if you have further questions.

- Switched fabric connections between the host nodes and the DS4000 storage system are recommended. However, direct attachment from the host nodes to the DS4000 storage system in an HACMP environment is supported if, and only if, all the following restrictions and limitations are adhered to:
 - Only dual controller versions of the DS4000 storage systems are supported for direct attachment in a high-availability (HA) configuration.
 - The level of the AIX operating system is Version 5.2 or later.
 - The level of the HACMP clustering software is Version 5.1 or later.
 - All host nodes directly attaching to the DS4000 storage system must be part of the same HACMP cluster.
 - All logical drives (LUN's) surfaced by the DS4000 storage system are part of one or more enhanced concurrent mode volume groups.
 - Only the host node owning the HACMP non-concurrent resource group (which contains the enhanced concurrent mode volume group or groups) will have the volume group varyon in the active state. All other host nodes in the HACMP cluster will have the enhanced concurrent mode volume group varyon in the passive state.
 - No direct operations on the volumes in the enhanced concurrent mode volume groups may be performed (from any host nodes in the HACMP cluster) if that operation bypasses the Logical Volume Manager (LVM) layer of the AIX operating system. For example, using a DD command while logged in as the root user.
 - Each host node in the HACMP cluster must have redundant (two) fibre channel connections to the DS4000 storage system. One direct fibre-channel connection must be to controller A in the DS4000 storage system and the other direct fibre-channel connection must be to controller B in the DS4000 storage system.
 - The maximum number of host nodes in an HACMP cluster that may be directly attached to a dual-controller version of the DS4100 or the dual-controller version of the DS4300 is two.
 - The maximum number of host nodes in an HACMP cluster that may be directly attached to the DS4000 is two. Each host node must have redundant (two) direct Fibre Channel connections to the DS4000 storage system. The two direct Fibre Channel connections from each host node must to independent mini-hubs in the DS4400/4500 storage system. Therefore, this configuration requires that four host mini-hubs (Feature code 3507) be installed in the DS4400/4500 storage system, two host mini-hubs for each host node in the HACMP cluster.
- HACMP C-SPOC cannot be used to add a DS4000 disk to AIX via the 'Add a Disk to the Cluster' facility.
- Single HBA configurations are allowed, but each single HBA configuration requires that both controllers in the DS4000 be connected to a switch within the same SAN zone as the HBA.

Attention: *While Single HBA configurations are supported, it is not recommended for HACMP environments due to the fact that it introduces a single-point-of-failure in the storage I/O path.*

Usage notes specific to HACMP environments

- HACMP clusters can support 2 - 32 servers per DS4000 partition. In this environment, be sure to read and understand the AIX device drivers queue depth settings as documented in the [IBM DS4000 Storage Manager Installation and Support Guide for UNIX and AIX environments](#) publication.
- Non-clustered AIX hosts can be connected to the same DS4000 that is attached to an HACMP cluster, but must be configured on separate DS4000 host partitions.
- All disk types and DS4000 Expansion drawers are supported in HACMP clustered environments.

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- HACMP is supported in Heterogeneous server environments. For more information regarding a particular Operating System environment, refer to the specific Installation and Support Guide.

Also, check the DS4000 Storage Interoperability matrix at: <http://www-1.ibm.com/servers/storage/disk/ds4000/interop-matrix.html> for information about various platform, OS, HBA, and application support with DS4000.