

What are the Initiator, Arraycommpath, and Failovermode settings for PowerPath, DMP, PVLlinks, and native failover software?

See the *Installation Roadmap for CLARiiON Storage Systems, P/N 069001166* for the required failovermode, initiator type settings etc. for any failover software that is not listed in this knowledgebase solution.

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What are the Initiator, Arraycommpath, and Failovermode settings for PowerPath, DMP, PVLlinks, and native failover software?

AIX

Parameter	PowerPath	DMP (AIX 5.1, 5.2, 5.3 only) ⁷	MPIO
Initiator Type	3 (CLARiiON open)	3 (CLARiiON open)	3 (CLARiiON open)
Arraycommpath	1 (Enabled) ¹	1 (Enabled)	1 (Enabled)
Failovermode	3 <i>-or-</i> 4 ⁶	1 <i>-or-</i> 2 <i>-or-</i> 4 ¹³	1 <i>-or-</i> 4 ¹⁹
UnitSerialNumber	Array	Array	Array

Apple

Parameter	ATTO HBA stack
Initiator Type	3 (CLARiiON open)
Arraycommpath	1 (Enabled)
Failovermode	4
UnitSerialNumber	Array

HP-UX

Parameter	HP-UX 11i v1 & 11i v2				HP-UX 11i v3
	PVLlinks	No PVLlinks	PowerPath	DMP	Native, PowerPath, DMP
Initiator Type (AccessLogix)	HP auto trespass	HP no auto trespass	HP no auto trespass	HP no auto trespass	CLARiiON Open ²⁰ – <i>or-</i> HP no auto trespass ⁸
Array Systemtype (non AccessLogix)	2	decimal 10 (hex a)	decimal 10 (hex a)	N/A	N/A
Arraycommpath	0 (Disabled) <i>-or-</i> 1 (Enabled) ²	0 (Disabled) <i>-or-</i> 1 (Enabled) ²	1 (Enabled)	1 (Enabled)	1 (Enabled)
Failovermode	0	0	1 <i>-or-</i> 4 ¹⁵	1 <i>-or-</i> 2 ¹⁴	4
UnitSerialNumber	LUN <i>or</i> Array ³	LUN <i>or</i> Array ³	LUN <i>or</i> Array ³	LUN <i>or</i> Array ³	LUN <i>or</i> Array ³

IRIX

Parameter	Native Failover
Initiator Type	9 (SGI)
Arraycommpath	0
Failovermode	0
UnitSerialNumber	Array

Linux

Parameter	PowerPath	DMP	DM-MPIO
Initiator Type	3 (CLARiiON Open)	3 (CLARiiON Open)	3 (CLARiiON Open)
Arraycommpath	1 (Enabled)	1 (Enabled)	1 (Enabled)
Failovermode	1 <i>-or-</i> 4 ¹¹	1 <i>-or-</i> 2 <i>-or-</i> 4 ⁹	1 <i>-or-</i> 4 ¹⁰
UnitSerialNumber	Array	Array	Array

Open VMS

Parameter	Native Failover
Initiator Type	Decimal 28/ hexadecimal 1C (Compaq/Tru64)
Arraycommpath	1 (enabled)
Failovermode	1 <i>or</i> 4 ²¹
UnitSerialNumber	LUN

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NetWare

Parameter	PowerPath
Initiator Type	3 (CLARiiON open)
Arraycomppath	1 (Enabled)
Failovermode	1
UnitSerialNumber	Array

Solaris

Parameter	PowerPath	DMP	MPxIO or STMS
Initiator Type	3 (CLARiiON Open)	3 (CLARiiON Open)	3 (CLARiiON Open)
Arraycomppath	1 (Enabled)	1 (Enabled)	1 (Enabled)
Failovermode	1 <i>-or-</i> 4 ¹¹	1 <i>-or-</i> 2 <i>-or-</i> 4 ⁴	1 <i>-or-</i> 4 ¹²
UnitSerialNumber	LUN or Array ⁵	LUN or Array ⁵	LUN or Array ⁵

Tru64

Parameter	Native Failover
Initiator Type	decimal 28/ hexadecimal 1C (Compaq/Tru64)
Arraycomppath	1 (Enabled)
Failovermode	0
UnitSerialNumber	Array

VMware

Parameter	PowerPath	Native Failover
Initiator Type	3 (CLARiiON Open)	3 (CLARiiON Open)
Arraycomppath	1 (Enabled)	1 (Enabled)
Failovermode	1 <i>-or-</i> 4 ¹⁶	1 <i>-or-</i> 4 ¹⁷
UnitSerialNumber	Array	Array

Windows

Parameter	PowerPath	DMP (Windows 2000, 2003, 2008 only)	Native Failover (Windows Server 2008 only)
Initiator Type	3 (CLARiiON open)	3 (CLARiiON open)	3 (CLARiiON open)
Arraycomppath	1 (Enabled)	1 (Enabled)	1 (Enabled)
Failovermode	1 <i>-or-</i> 4 ¹¹	1 <i>-or-</i> 4 ¹⁸	4
UnitSerialNumber	Array	Array	Array

Celerra

See solution emc95145 for standard parameters or settings for Celerra systems running with CLARiiON storage arrays.

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Footnotes:

1. For AIX, arraycomppath should be set to Enabled (1). Also see footnote 6.
2. For HP-UX, arraycomppath can be 1 (Enabled) or 0 (Disabled); either will establish connectivity with the storage system. However, if diskinfo is to be used, then use "0" for the setting (emc68877) or diskinfo will return zero bytes for the alternate path.
3. For HP-UX 11i v1.0, UnitSerialNumber may have been changed to LUN if problems were experienced with the device display in the HP-UX SAM utility.
4. For Sun Solaris installations using VERITAS VxVM, set failovermode as follows:
 - VERITAS VxVM 4.X with PowerPath: failovermode MUST be set as required by PowerPath
 - VERITAS VxVM 4.0 MP2 and VxVM 4.1: failovermode can be set to 1 or 2 with DMP
 - VERITAS VxVM 4.0 MP1 and earlier, without PowerPath: failovermode MUST be set to 2
 - VERITAS VxVM 5.0 MP3 (no RP) and earlier, failovermode MUST be set to 1
 - VERITAS VxVM 5.0 MP3RP1 and above: failovermode settings are as follows:
 - FLARE 24 or earlier: failovermode MUST be set to 1
 - FLARE 26 or later:
 - failovermode may be set to 4 for ALUA behavior, or
 - failovermode may be set to 1 for active/passive behavior

Note: Additional VERITAS packages may need to be installed.

Note: When failovermode is set to 2 in 4.0 MP2 and 4.1, the LUNs may trespass back and forth between SPs during boot, which makes boot time much longer. This also generates excessive failover error messages in the console and messages file, therefore setting failovermode to 1 is recommended but not required.

5. The UnitSerialNumber setting is dependent on the configuration. Select the proper setting as follows:

For Solaris 2.6, 2.7, 8:

- a. For DMP or PowerPath, determine if any of the following packages are present:
 - Solstice DiskSuite (SUNWmdr)
 - Sun Cluster 3.x (SUNWscr)
 - VERITAS DBE/AC (VRTSdbac)
 - SFRAC (VRTSdbac)
- b. Perform the applicable sub-step:
 - If none of the packages listed above are present, the UnitSerialNumber MUST be set to ARRAY.

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- If any of the packages listed above are present, set the UnitSerialNumber as follows:
 - SDS, SC 3.x, SFRAC: UnitSerialNumber MUST be set to LUN
 - VRTSvcs with I/O fencing: UnitSerialNumber MUST be set to LUN
 - VRTSvcs without I/O fencing: UnitSerialNumber MUST be set to ARRAY

The following indicates whether I/O fencing is enabled:

- The /etc/VRTSvcs/conf/config/main.cf file contains a line of "UseFence = SCSI3".
- The /etc/vxfentab file is not empty.
- The /sbin/vxfenadm -g all -f /etc/vxfentab command returns at least one SCSI3 keys.

For Solaris 9 and 10: the unit serial number MUST be set to ARRAY.

6. Note PowerPath 4.5.0 is available by RPQ only, and earlier versions are EOL. The minimum version for NDU support is PowerPath 4.5.1.

- For AIX running PowerPath versions between 4.5.1 and 5.3 (no Service Pack): failovermode should be 3.
- For PowerPath 5.3 SP1 and above failovermode settings are as follows:
 - FLARE 02.xx, 03.xx, and 04.xx earlier than 04.28.000.5.704: failovermode MUST be set to 3
 - FLARE 04.28.000.5.704 or later: failover mode MUST be set to either 3 or 4:
 - failovermode may be set to 4 for ALUA behavior, or
 - failovermode may be set to 3 for active/passive behavior

See PowerPath Release Notes for any further restrictions

7. For CLARiiON array support with DMP only, VxVM 4.0 MP2 and VxVM 4.0 MP3 require DGC-Clar version 3.0. DGC-Clar version 3.0 can be obtained on the Symantec web site, at the following link: <http://seer.entsupport.symantec.com/docs/276079.htm>

This applies to both CX-series and CX3-series arrays.

8. You may use "CLARiiON Open" or "HP No Auto Trespass" if your applications use only Persistent Device Special Files (DSFs), also known as Agile DSFs, which have the format /dev/disk/disk42 and /dev/rdisk/42.

You must use "HP No Auto Trespass" if your applications require Legacy DSFs, which have the format /dev/dsk/c2t1d0 and /dev/rdsk/c2t1d0. September 2007 HP-UX bundle (0709) is required.

For more information, see the HP-UX 11i v3 Persistent DSF Migration Guide (http://docs.hp.com/en/dsfmigration/persistent_dsf_migration.pdf).

Note: If using the Navisphere agent.config file, ensure that the appropriate "OptionsSupported" setting is in the file, otherwise the initiator setting on the array will be changed when the Navisphere agent starts up. To maintain the Navisphere Manager initiator

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setting, uncomment the "OptionsSupported" line in the agent.config file, and change it to state "OptionsSupported ArrayType".

9. For Linux installations using VERITAS VxVM, set failovermode as follows:

- VERITAS VxVM 4.x or 5.x, with PowerPath: failovermode MUST be set as required by PowerPath
- VERITAS VxVM 4.x without PowerPath: failovermode MUST be set to 2
- VERITAS VxVM 5.0 MP3RP2 without HF3, and earlier, failovermode MUST be set to 1
- VERITAS VxVM 5.0 MP3RP2HF3 and above: failovermode settings are as follows:
 - FLARE 24 or earlier: failovermode MUST be set to 1
 - FLARE 26 or later:
 - failovermode may be set to 4 for ALUA behavior, or
 - failovermode may be set to 1 for active/passive behavior

10. For Linux DM-MPIO, failovermode settings are as follows:

- FLARE 24 or earlier: failovermode MUST be set to 1
- FLARE 26 or later:
 - Novell SLES:
 - Novell SLES 10.1 (SP1) or above: failovermode may be set to 1 for active/passive behavior, or
 - Novell SLES 10.1 (SP1) or above: failovermode may be set to 4 for ALUA behavior
 - Novell SLES 10.0 (no SP) or below: failovermode MUST be set to 1
 - RedHat RHEL 4.x:
 - RHEL 4.6 or above: failovermode may be set to 1 for active/passive behavior, or
 - RHEL 4.6 or above: failovermode may be set to 4 for ALUA behavior
 - RHEL 4.5 or below: failovermode MUST be set to 1
 - RedHat RHEL 5.x:
 - RHEL 5.1 or above: failovermode may be set to 1 for active/passive behavior, or
 - RHEL 5.1 or above: failovermode may be set to 4 for ALUA behavior
 - RHEL 5.0: failovermode MUST be set to 1
 - Asianux:
 - Asianux 3.1 or above: failovermode may be set to 1 for active/passive behavior, or
 - Asianux 3.1 or above: failovermode may be set to 4 for ALUA behavior
 - Asianux 3.0: failovermode MUST be set to 1
 - Other Linux distributions: failovermode MUST be set to 1

11. For PowerPath for Solaris, Linux and Windows, failovermode settings are as follows:

- FLARE 24 or earlier: failovermode MUST be set to 1
- FLARE 26 or later:

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- PowerPath 5.0 or earlier: failovermode MUST be set to 1
- PowerPath 5.1 or later: failovermode may be set to 4 for ALUA behavior, or
- PowerPath 5.1 or later: failovermode may be set to 1 for active/passive behavior

12. For Solaris MPxIO or STMS, failovermode settings are as follows:

- FLARE 24 or earlier: failovermode MUST be set to 1
- FLARE 26 or later:
 - Solaris 9 with SAN 4.4.7 thru 4.4.11: failovermode MUST be set to 1
 - Solaris 9 with SAN 4.4.12 or later: failovermode may be set to 1 for active/passive behavior, or
 - Solaris 9 with SAN 4.4.12 or later: failovermode may be set to 4 for ALUA behavior
 - Solaris 10 U2 or earlier: failovermode MUST be set to 1
 - Solaris 10 U3 or later: failovermode may be set to 1 for active/passive behavior, or
 - Solaris 10 U3 or later: failovermode may be set to 4 for ALUA behavior

Note: Use of failovermode = 4 (ALUA) with MPxIO/STMS cannot be supported with clustering environments requiring SCSI2 Reservations such as 2 node Sun Clusters, except for CX4 arrays operating with FLARE 04.28.000.5.704 or later.

13. For AIX installations using VERITAS VxVM, set failovermode as follows:

- VERITAS VxVM 4.x or 5.x, with PowerPath: failovermode MUST be set as required by PowerPath
- VERITAS VxVM 4.x without PowerPath: failovermode MUST be set to 2
- VERITAS VxVM 5.0 MP1-RP3 or later, but prior to MP3-RP2: failovermode must be set to 1. Required for CLARiiON NDU support.
- VERITAS VxVM 5.0 MP3-RP2 or later: failovermode must be set to either 1 (active/passive) or 4 (ALUA). Required for CLARiiON NDU support.

14. For HP-UX installations using VERITAS VxVM, set failovermode as follows:

- VERITAS VxVM 4.x or 5.x, with PowerPath: failovermode MUST be set as required by PowerPath
- VERITAS VxVM 4.x or 5.x without PowerPath:
 - VxVM 4.x (11i v1 and 11i v2): failovermode must be set to 2
 - VxVM 5.x (11i v2):
 - non-clustered hosts: failovermode can be set to either 1 or 2
 - clustered hosts: failovermode must be set to 1

15. For PowerPath for HP-UX, failovermode settings are as follows:

- FLARE 24 or earlier: failovermode MUST be set to 1
- FLARE 26 or later:
 - PowerPath 5.1 or earlier: failovermode MUST be set to 1
 - PowerPath 5.1.1 or later:
 - For HP-UX 11i v1 or v2: failovermode MUST be set to 1
 - For HP-UX 11iv3: failovermode MUST be set to 4

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16. For PowerPath for VMware, failovermode settings are as follows:
 - FLARE 24 or earlier: failovermode MUST be set to 1
 - FLARE 26 or later:
 - Failovermode is recommended to be set to 4 for ALUA behavior or
 - Failovermode may be set to 1 for active/passive behavior

17. For VMware native failover, failovermode settings are as follows:
 - CX and CX3 series arrays: failovermode MUST be set to 1
 - CX4 arrays operating with FLARE revisions prior to 04.28.000.5.704: failovermode MUST be set to 1
 - CX4 arrays operating with FLARE 04.28.000.5.704 or later:
 - ESX 2.x or 3.x: Failovermode MUST be set to 1
 - ESX 4.0 or above:
 - Failovermode is recommended to be set to 4 for ALUA behavior or
 - Failovermode may be set to 1 for active/passive behavior

18. For using DMP within VERITAS Storage Foundation for Windows, set failovermode as follows:
 - VERITAS VxVM 5.0 and earlier, failovermode MUST be set to 1
 - VERITAS VxVM 5.1 and above: failovermode settings are as follows:
 - FLARE 24 or earlier: failovermode MUST be set to 1
 - FLARE 26 or later:
 - Failovermode is recommended to be set to 4 for ALUA behavior, or
 - Failovermode may be set to 1 for active/passive behavior

19. For AIX MPIO, set failovermode as follows:
 - For AIX 5.x
 - AIX 5.2, 5.3 TL8 SP7 (5300-08-07) and earlier: failovermode MUST be set to 1
 - AIX 5.3 versions 5300-08-08, 5300-09-05, 5300-10-02, 5300-11 and later:
 - FLARE 28 or earlier: failovermode MUST be set to 1
 - FLARE 29 or later:
 - Failovermode is recommended to be set to 4 for ALUA behavior, or
 - Failovermode may be set to 1 for active/passive behavior
 - For AIX 6.x
 - AIX 6.1 TL1 SP5 and earlier: failovermode MUST be set to 1
 - AIX 6.1 versions 6100-01-06, 6100-02-05, 6100-03-02, 6100-04 and above:
 - FLARE 28 or earlier: failovermode MUST be set to 1
 - FLARE 29 or later:
 - Failovermode is recommended to be set to 4 for ALUA behavior, or
 - Failovermode may be set to 1 for active/passive behavior

20. When using VERITAS VxVM 5.x thin LUN reclamation feature with HP-UX 11i v3, initiator type MUST be set to "CLARiON open".

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21. FLARE Release 28 and 29: Failover mode 1 must be used for VMS hosts.

FLARE 30 and later:

- Failover mode 4 is recommended for all VMS clusters, and non-clustered hosts running VMS V8.3 or higher.
- Failover can be either 1 or 4 for non-clustered hosts running lower than VMS V8.3