

High Availability Support AMS2000

Preface

Date: 03/28/09

This document contains a list of combinations of Operating Systems, High Availability (Clusters and/or Path Managers) software and AMS2000.

It represents HDS's current connectivity support position of the AMS2000 with various versions of different vendor's Cluster Server and Path Manager installed on various Operating Systems versions.

(This matrix does not cover HDLM- there is a separate HDLM support matrix found in Hifire Supporting Documents section.

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Operating System's Supported

Please refer to hds.com web page for currently supported OS configurations located under

Technical information - product interoperability documentation:

[Hds.com](http://hds.com) -> products->storage system ->Resource library(right hand side of screen) ->Technical information-> product interoperability

How to use this document -

1. There are 2 sections in this document - for host connections connected to AMS2000 FC ports select the section titled FC interface; for iSCSI host connections connected to AMS2000 iSCSI ports select the section titled iSCSI interface
- 2.This matrix will not track the non Hitachi vendors end of life(EOL) and end of support(EOS) policies for listed products.
3. If you can not find a match to the desired HA combination then first determine if the Host/HA configuration is end of support(EOS) by checking with both OS and HA Vendor. Although, after confirming with OS and HA vendors that the desired combination is not EOL or EOS, in many cases it is best to upgrade your configuration to match the levels listed in the matrix. If the OS/HA combination is EOS, then an upgrade to a listed OS /HA configuration will be necessary. If not EOS and not listed then a special request for support must be submitted by the HDS account representative.

For a comprehensive technical description of the any of the Products indicated in this document and a definitive guide to features parameters, please refer to the official published specifications and/or user guides for such Products.

High Availability Support AMS2000

FC Interface

= not supported

OS	Version	MultiPath	Version	Cluster		Support Status				
				Version		Direct	Switch			
Solaris (SPARC)	8	VxVM-DMP	4.1 (MP1/2 or later)	None	---	V3.2 (*14)	V3.2 (*14)			
				VCS	4.1 (MP1/2 or	V3.2 (*14)	V3.2 (*14)			
				SFRAC	4.1 (MP1/2 or	V3.2 (*14)	V3.2 (*14)			
			5.0 (MP1/MP3 or later)	None	---	V3.2 (*15)	V3.2 (*15)			
				VCS	5.0 (MP1 or later)	V3.2 (*15)	V3.2 (*15)			
				SFRAC	5.0 (MP1 or later)	V3.2 (*15)	V3.2 (*15)			
		MPxIO (*2)	Bundle	None	---	V3.2	V3.2			
				SunCluster	-----	-----	-----			
		9	VxVM-DMP	4.1 (MP1/2 or later)	None	---	V3.2 (*14)	V3.2 (*14)		
					VCS	4.1 (MP1/2 or	V3.2 (*14)	V3.2 (*14)		
					SFRAC	4.1 (MP1/2 or	V3.2 (*14)	V3.2 (*14)		
				5.0 (MP1/MP3 or later)	None	---	V3.2 (*15)	V3.2 (*15)		
	VCS				5.0 (MP1 or later)	V3.2 (*15)	V3.2 (*15)			
	SFRAC				5.0 (MP1 or later)	V3.2 (*15)	V3.2 (*15)			
	MPxIO (*2)		Bundle	None	---	V3.2	V3.2			
				SunCluster	3.2	V3.2	V3.2			
	10 U3, U4, U5		VxVM-DMP	4.1 (MP1/2 or later)	None	---	V3.2 (*14)	V3.2 (*14)		
					VCS	4.1 (MP1/2 or	V3.2 (*14)	V3.2 (*14)		
					SFRAC	4.1 (MP1/2 or	V3.2 (*14)	V3.2 (*14)		
				5.0 (MP1/MP3 or later)	None	---	V3.2 (*15)	V3.2 (*15)		
		VCS			5.0 (MP1 or later)	V3.2 (*15)	V3.2 (*15)			
		SFRAC			5.0 (MP1 or later)	V3.2 (*15)	V3.2 (*15)			
		MPxIO (*2)	Bundle	None	---	V3.2	V3.2			
				SunCluster	3.2	V3.2	V3.2			
Solaris (x64)		10 U4, U5	VxVM-DMP	5.0 MP3	None	---	V4.5	V4.5		
					VCS	5.0 MP3	V4.5	V4.5		
					SFRAC	5.0 MP3	-----	-----		
			MPxIO (*2)	Bundle	None	---	V3.2	V3.2		
	SunCluster				3.2	V4.5	V4.5			
	HP-UX (PA-RISC)		11i V1.0	PVLink	Bundle	None	---	V3.2	V3.2	
MC/SG		11.15				V3.2	V3.2			
11i V2.0		PVLink				Bundle	None	---	V3.2	V3.2
							MC/SG	11.17, 11.18	V3.2	V3.2
11i V2.0		VxVM-DMP	5.0 (MP1 or later)	None	---	V4.5 (*13)	V4.5 (*13)			
				VCS	5.0 (MP1 or later)	V4.5 (*13)	V4.5 (*13)			
		11i V3.0	Native Multi-path (*3)	Bundle	None	---	V3.2	V3.2		
					MC/SG	11.17, 11.18	V3.2	V3.2		
11i V3.0		VxVM-DMP	5.0 (rp1 or later)	None	---	V4.5(*13)	V4.5(*13)			
				VCS	5.0 (rp1 or later)	V4.5(*13)	V4.5(*13)			

OS	MultiPath		Cluster		Support Status				
	Version		Version		Direct	Switch			
HP-UX (IPF)	11i V2.0	PVLlink	Bundle	None	---	V3.2	V3.2		
				MC/SG	11.17, 11.18	V3.2	V3.2		
		VxVM-DMP	5.0 (MP1 or later)	None	---	V4.5 (*13)	V4.5 (*13)		
	11i V3.0	Native Multi-path (*3)	Bundle	VCS	5.0 (MP1 or later)	V4.5 (*13)	V4.5 (*13)		
				None	---	V3.2	V3.2		
		MC/SG	11.17, 11.18	V3.2	V3.2				
AIX	5.2 TL09, TL10	None	---	VCS	5.0 (MP1 or later)	V4.5 (*13)	V4.5 (*13)		
				None	---	V3.2	V3.2		
				HACMP	5.3	V3.2	V3.2		
5.3 TL05, TL06, TL07, TL08	None	---	---	HACMP	5.4, 5.4.1	V3.2	V3.2		
				VxVM-DMP(*4)	5.0 (MP1 or later)	None	---	v4.5	v4.5
				VCS	5.0 (MP1 or later)	v4.5	v4.5		
6.1 TL00, TL01	None	---	---	HACMP	5.4.1	V3.2	V3.2		
				MSCS	1.0	V3.2	V3.2		
				MSCS	1.0	V4.5	V4.5		
Windows (IA32)	2003 SP1, R2, SP2	None	---	MSCS	1.0	V3.2	V3.2		
				VxVM-DMP	5.1 DMP DSM	None	---	V3.2	V3.2
				Microsoft DSM (*5)	Bundle	None	---	V3.2	V3.2
2008	None	---	---	MSCS	1.0	V3.2	V3.2		
				MSCS	1.0	V3.2	V3.2		
				MSCS	1.0	V3.2	V3.2		
Windows (x64)	2003 SP1, R2, SP2	None	---	MSCS	1.0	V3.2	V3.2		
				VxVM-DMP	5.1 DMP DSM	None	---	v4.5	v4.5
				MSCS	1.0	v4.5	v4.5		
	2008	None	---	---	MSCS	1.0	V3.2	V3.2	
					MSCS	1.0	V3.2	V3.2	
					MSCS	1.0	V3.2	V3.2	
RedHat (IA32) (*6)	4.5, 4.6, 4.7	Device Mapper	v0.4.5-21 (4.5 bundle)	None	---	V3.2	V3.2		
				RH Cluster	Bundle	V3.2	V3.2		
				None	---	V3.2	V3.2		
	5.1, 5.2	Device Mapper	v0.4.5-27 (4.6 bundle)	None	---	V3.2	V3.2		
				RH Cluster	Bundle	V3.2	V3.2		
				None	---	V3.2	V3.2		
v0.4.7-12 (5.1 bundle)	Device Mapper	v0.4.7-17 (5.2 bundle)	None	---	V3.2	V3.2			
			RH Cluster	Bundle	V3.2	V3.2			
			None	---	V3.2	V3.2			
RedHat (x64) (*6)	4.5, 4.6, 4.7	VxVM-DMP	4.1 (MP1 or later)	None	---	V4.5	V4.5		
				VCS	4.1 (MP1 or later)	V4.5	V4.5		
				SFRAC	4.1 (MP1 or later)	V4.5	V4.5		
		Device Mapper	v0.4.5-21 (4.5 bundle)	None	---	V3.2	V3.2		
				RH Cluster	Bundle	V3.2	V3.2		
				None	---	V3.2	V3.2		
	5.1, 5.2	VxVM-DMP	5.0 (MP3 or later)	None	---	V4.5	V4.5		
				VCS	5.0 (MP3 or later)	V4.5	V4.5		
				None	---	V3.2	V3.2		
		Device Mapper	v0.4.5-27 (4.6 bundle)	None	---	V3.2	V3.2		
				RH Cluster	Bundle	V3.2	V3.2		
				None	---	V3.2	V3.2		
v0.4.7-12 (5.1 bundle)	Device Mapper	v0.4.7-17 (5.2 bundle)	None	---	V3.2	V3.2			
			RH Cluster	Bundle	V3.2	V3.2			
			None	---	V3.2	V3.2			
v0.4.7-17 (5.2 bundle)	Device Mapper	v0.4.7-17 (5.2 bundle)	None	---	V3.2	V3.2			
			RH Cluster	Bundle	V3.2	V3.2			
			None	---	V3.2	V3.2			

OS	MultiPath		Cluster		Support Status		
	Version		Version		Direct	Switch	
SuSE (IA32)	9 SP3	Device Mapper	Bundle	None	---	V3.2	V3.2
	10 SP1, SP2	Device Mapper	v0.4.7-34-18 (SP1 bundle)	None	---	V3.2	V3.2
		Device Mapper	v0.4.7-34.38 (SP2 bundle)	None	---	----	V3.2/B
SuSE (x64)	9 SP3	Device Mapper	Bundle	None	---	V3.2	V3.2
	10 SP1, SP2	VxVM-DMP	5.0(MP3 or later)	None	---	V4.5	V4.5
		VCS	5.0 (MP3 or later)	V4.5	V4.5		
		Device Mapper	v0.4.7-34-18 (SP1 bundle)	None	---	V3.2	V3.2
Device Mapper	v0.4.7-34.38 (SP2 bundle)	None	---	----	V3.2/B		
Asianux (IA32)	2.0 SPx	Device Mapper	Bundle	None	---	V3.2	V3.2
	3.0 SP0	Device Mapper	Bundle	None	---	V3.2	V3.2
Asianux (x64)	2.0 SPx	Device Mapper	Bundle	None	---	V3.2	V3.2
		Asianux Failover Driver (*8)	8.01.06-fo (Bundle)	None	---	V3.2	V3.2
	3.0 SP0	Device Mapper	Bundle	None	---	V3.2	V3.2
VMware (IA32)	3.0.1, 3.0.2, 3.0.3	Native MP	Bundle	None	---	N/A	V3.2
	3.5 U0, U1, U2	Native MP	Bundle	None	---	N/A	V3.2
VMware (x64)	3.0.3	Native MP	Bundle	None	---	N/A	V3.2
	3.5 U1, U2	Native MP	Bundle	None	---	N/A	V3.2
Mac OSX (x64)	10.5	XSAN (*11)	1.4.2	None	---	V3.2	V3.2
Tru64	5.1a, 5.1b	Native MP	Bundle	None	---	---	V3.2
				TruCluster	Bundle	---	---
NetWare(OES Netware)	6.5 SP6, SP7	Bundled	bundled	None	None	v 3.2	V3.2
Novell OES	SLES9 SP3	Bundled	Bundled	None	None	v3.2	v3.2
	SLES10 SP1	Bundled	Bundled	None	None	V3.2	v3.2
OpenVMS (Alpha)	8.2	Bundled	Bundled	None	None	V3.2	V3.2
	8.3	Bundled	Bundled	None	None	V3.2	V3.2
OpenVMS (IPF)	8.3-1h1	Bundled	Bundled	None	None	V3.2	V3.2

[Solaris]

*2 : MPxIO

- The setting of host side depends on the Solaris version.

[Solaris 10 U5]

The patch "138308-02"(SPARC) or "138309-02"(x64/x86) is required.

The file "kernel/drv/scsi_vhci.conf" should be default setting. (The description "HITACHI DF600F" should be removed.)

[Solaris 10 U4 or prior] load-balance="round-robin";

The file "/kernel/dr auto-failback="enable";

device-type-scsi-options-list = "HITACHI DF600F", "symmetric-option";

- For Sun Cluster, host group option of AMS2000 should be default setting.

*14 : Storage Foundation 4.1 MP2 - Please download the ASL from <<http://seer.entsupport.symantec.com/docs/305201.htm>>.

*15 : Storage Foundation 5.0 MP1, MP2 (MP3 or later includes the ASL .)

- Please download the ASL from <<http://support.veritas.com/docs/306853.htm>>.

OS	Version	MultiPath	Version	Cluster	Version	Support Status	
						Direct	Switch

[HP-UX]

- *3 : Native Multi-path
 - Please set the "Round-robin" for Load Balance Policy.
- *13 : Storage Foundation 5.0 MP1
 - In case of 11.23, please download the ASL from <<http://seer.entsupport.symantec.com/docs/311485.htm>>.
 - In case of 11.31, please download the ASL from <<http://seer.entsupport.symantec.com/docs/311589.htm>>.

[AIX]

- *4 : Symantec Product for AIX
 - Please confirm the TL version which Symantec supports.

[Windows]

- *5 : Microsoft DSM
 - Please open the "MPIO" icon from Control Panel and register the "HITACHI DF600F" as MPIO device. After OS recognizes the LU of AMS2000, set "Round-robin" for each LUN by using Device Manager.

[Linux]

- *6 : Support Policy for Linux
 - RedHat Enterprise Linux AS and ES are the same from the point of connectivity view.
 - Oracle Enterprise Linux connectivity is supported same as connectivity to RedHat Enterprise Linux. According to Oracle, Oracle Enterprise Linux is fully compatible - both source and binary - with RedHat Enterprise Linux. Please refer to "<http://www.oracle.com/technologies/linux/el4cert-ds.pdf>".
- *8 : Asianux Failover Driver
 - QLogic HBA is required, and need to set the paramater "ql2xfailover=1" and "ql2xlbType=2" in /etc/modprobe.conf.
- *9 : Symantec Product for Linux
 - Please confirm the kernel version which Symantec supports.

[Mac OSX]

- *11 : XSAN
 - XSAN provides only host side multipathing not target multipathing. This means that there is no way to have switch or storage redundancy in the SAN. This is not a valid software as "High Availability".

[Symantec Storage Foundation]

- AMS2000 supports A/A type of VxVM-DMP with new ASL for AMS2000.

High Availability Support AMS2000

iSCSI Interface

= not supported

OS	Version	MultiPath		Cluster		Support Status
			Version		Version	Direct/ Switch
Windows (IA32)	2003 SP1, R2, SP2	Microsoft DSM	v2.07	None	---	V4.3/B
				MSCS (*3)	1.0	V4.3/B
	2008	Microsoft DSM	Bundle	None	---	V4.3/B
				MSCS (*3)	1.0	V4.3/B
Windows (x64)	2003 SP1, R2, SP2	Microsoft DSM	v2.07	None	---	V4.3/B
				MSCS (*3)	1.0	V4.3/B
	2008	Microsoft DSM	Bundle	None	---	V4.3/B
				MSCS (*3)	1.0	V4.3/B
RedHat (x64) (*4)	4.6, 4.7	Device Mapper	Bundle (0.4.5-27)	None	---	V4.3/B
		Device Mapper	Bundle (0.4.5-31)	None	---	V4.3/B
	5.0, 5.2	Device Mapper	Bundle (0.4.7-8)	None	---	V4.3/B
			Bundle (0.4.7-17)	None	---	V4.3/B
Solaris (SPARC)	10 U4	MPxIO (*6)	Bundle	None	---	V4.3/B
AIX	5.3	None	---	None	---	---

<Windows>

*2 : Microsoft DSM + MPIO

- Please select the "Round Robin" for the path management policy of MPIO.

*3 : MSCS

- When you use MSCS with Microsoft DSM on Windows2000 and Windows2003, following settings are required. When you use Windows2008 or HDLM, these setting are not required.

- (1) Set registry "HKLM\System\CurrentControlSet\Services\MSiSCDSM\PersistentReservation\Persistent Reservation" according to the Microsoft's document.
- (2) Enable the parameter "Unique Reserve Mode 1" of AMS2000.

<Linux>

*4 : Linux

- RedHat Enterprise Linux AS and ES are same from the point of connectivity view.

- Oracle Enterprise Linux connectivity is supported same as connectivity to RedHat Enterprise Linux. According to Oracle, Oracle Enterprise Linux is fully compatible - both source and binary - with RedHat Enterprise Linux. Please refer "<http://www.oracle.com/technologies/linux/el4cert-ds.pdf>".

- And, "sync" command might not respond in RHEL4 when a path failure is occurring. In this case, you need to reboot the server.

- RHEL5 may hung-up when host issues the heavy IO and the path failure occurs. (Kernel bug at iscsi_tcp.c:1302)

<Solaris>

*6 : Solaris10 and MPxIO

- Solaris patch "119090-25"(SPARC) or "119091-26"(x64/x86) is required.
- The setting of host side depends on the Solaris version.

[Solaris 10 U5]

The patch "138308-02"(SPARC) or "138309-02"(x64/x86) is required.

The file "kernel/drv/scsi_vhci.conf" should be default setting. (The description "HITACHI DF600F" should be removed.)

[Solaris 10 U4 or prior]

The patch "119090-25"(SPARC) or "119091-26"(x64/x86) is required.

The file "/kernel/drv/scsi_vhci.conf" should be edited as below.

```
load-balance="round-robin";
auto-failback="enable";
device-type-scsi-options-list = "HITACHI DF600F", "symmetric-option";
symmetric-option = 0x1000000;
```