Sun StorEdge™ 3320 SCSI Array Release Notes

Sun Microsystems, Inc.
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Sun StorEdge 3320 SCSI Array Release Notes

This document contains important information about the Sun StorEdge™ 3320 SCSI array that was not available at the time the product documentation was published. Read this document so that you are aware of issues or requirements that can impact the installation and operation of the Sun StorEdge 3320 SCSI array.

New Features in This Release

This release includes new versions of RAID controller firmware and related enclosure firmware, Sun StorEdge Configuration Service, Sun StorEdge Command-Line Interface (CLI), and Sun StorEdge Diagnostic Reporter. It incorporates requested enhancements as well as fixes to previously known issues.

Note – The Sun StorEdge 3000 Family of storage products, including the Sun StorEdge 3510 FC array and the Sun StorEdge 3511 SATA array, are now often referred to as Sun StorageTek storage products. These are identical products. To avoid confusion, the manuals for these products will retain the old Sun StorEdge designation.

Current NVRAM Version Displayed

The RAID controller's firmware now displays the current NVRAM version installed on the controller in the View System Information window. This helps diagnose any conflicts that might have occurred if a controller was replaced or new firmware installed without resetting NVRAM. Refer to the *Sun StorEdge 3000 Family RAID*

Firmware 4.2x User's Guide, 817-3711, for instructions on how to use this feature. The RAID controller's firmware now displays the current NVRAM version installed on the controller in the View System Information window. This helps diagnose any conflicts that might have occurred if a controller was replaced or new firmware installed without resetting NVRAM. Refer to the *Sun StorEdge 3000 Family RAID Firmware 4.2x User's Guide, 817-3711,* for instructions on how to use this feature.

Note – The RAID controller firmware's Main Menu must be used to display the current NVRAM version information; it is not yet presented in the Sun StorEdge Configuration Service or Sun StorEdge CLI interfaces.

New Clear Core Dump Menu Option in Firmware

If an unrecoverable error condition occurs, the affected controller might write debug information to NVRAM. If this happens, an event message will be displayed each time the controller reboots, such as the following:

```
ALERT: Controller Unrecoverable Error 0001 00000000 00000000
45754677
```

To clear this event, from the firmware Main Menu, first record the event message in case you need to inform support personnel, and then choose system Functions → Controller Maintenance → Clear core dump. Otherwise, the message recurs each time you reboot.

Mixing Sun StorEdge 3320 and 3310 Controllers and Expansion Units

Connecting Sun StorEdge 3320 expansion units to Sun StorEdge 3310 RAID controllers is supported, but the Sun StorEdge 3320 drives will only perform at U160 speeds rather than U320 speeds. However, connecting a Sun StorEdge 3310 expansion unit to a Sun StorEdge 3320 RAID controller is not supported.

Changes to SMART Behavior When Upgrading Firmware

When upgrading controller firmware from an earlier version of 4.x, the Drive Predictable Failure Mode (SMART) will be set to "Detect only" by default if the prior setting was "Disabled." The recommended setting is "Detect and Clone+Replace" and must be set manually after the upgrade is complete.

Note – After upgrading from 4.1x to 4.2x, an array reset is necessary for the new media scan default to take effect and automatic media scanning to stop.

Obtaining Current Software and Documentation

A CD-ROM containing Sun StorEdge Configuration Service and Diagnostic Reporter software, installation and configuration documents, along with Sun StorEdge 3000 family documentation, is *not* automatically shipped with the Sun StorEdge 3120, 3310, 3320, 3510, and 3511 products. Contact your Sun sales representative if you need these contents made available on a CD-ROM.

The most recent versions of software previously shipped on CD are available by clicking the "StorageTek 3000 Family Storage Products--Related Software V 2.3 General Availability" link on this Sun Download Center page:

`http://www.sun.com/software/download/`

You can download the related hardware and software documentation by clicking the appropriate Sun StorageTek 3xxx Array link on Sun Microsystems Documentation's Workgroup Storage web page:

`http://docs.sun.com/app/docs/prod/wkgrp.disk`

Release Documentation

These release notes supplement the documents shown in TABLE 1.

TABLE 1 Sun StorEdge 3320 SCSI Array Documentation

Title	Part Number
Sun StorEdge 3000 Family Installation, Operation, and Service Manual	819-1274
Sun StorEdge 3000 Family Best Practices Manual: Sun StorEdge 3310 and 3320 SCSI Arrays	819-1275
Sun StorEdge 3000 Family RAID Controller Firmware Migration Guide	819-6573
Sun StorEdge 3000 Family FRU Installation Guide	816-7326
Sun StorEdge 3000 Family Rack Installation Guide for 2U Arrays	819-4026
Sun StorEdge 3000 Family RAID Firmware 4.2x User's Guide	817-3711
Sun StorEdge 3000 Family 2.5 Software Installation Guide	817-3764
Sun StorEdge 3000 Family Configuration Service 2.5 User's Guide	817-3337
Sun StorEdge 3000 Family Diagnostic Reporter 2.5 User's Guide	817-3338
Sun StorEdge 3000 Family CLI 2.5 User's Guide	817-4951
Sun StorEdge 3000 Family Safety, Regulatory, and Compliance Manual	816-7930

Service Contact Information

If you need help installing or using this product, call 1-800-USA-4SUN, or go to:

`http://www.sun.com/service/contacting`

Supported Operating Systems and Software

The supported operating systems are:

- Solaris 9 and 10 operating systems and later, SPARC Platform Edition
- Solaris 10 operating system and later, x86 Platform Edition
- Red Hat Linux AS 3.0 and 4.0
- Microsoft Windows 2003 Server operating systems
- IBM AIX 5.1 operating system
- HP-UX 11i operating system
- Novell Netware 5.1 and 6.5
- SUSE Linux Enterprise Server 9.0 (32-bit and 64-bit)

Supported Sun Enterprise and application software includes:

- Sun StorEdge 3000 Family Configuration Service 2.5 software
- Sun StorEdge 3000 Family Diagnostic Reporter 2.5 software
- Sun StorEdge 3000 Family CLI 2.5 software
- Sun Storage Automated Diagnostic Environment (StorADE) 2.4 software
- Solaris Logical Volume Manager software for the Solaris 9 operating system and above
- Sun Cluster 3.0, 3.1, and 3.2 software
- Sun StorEdge Enterprise Storage Manager 1.2 software
- Sun StorEdge Diagnostic Expert 1.2 (bundled with Sun StorEdge Enterprise Storage Manager 1.2)
- Sun StorEdge QFS software
- Sun StorEdge Performance Suite (with Sun StorEdge QFS software)
- Sun StorEdge Resource Management Suite software
- Sun StorEdge Availability Suite
- Sun StorEdge SAM-FS software
- Sun StorEdge Utilization Suite (with Sun StorEdge SAM-FS software)

Supported third-party software includes:

- VERITAS NetBackup 4.5 and later
- Solstice Backup 6.1 and later
- VERITAS Cluster (VCS) 3.2 and 3.5

- Microsoft Cluster Service (MSCS) for Windows 2000 Server and Windows 2003 Server
- VERITAS File System (VxFS) 3.2 and later
- Solstice DiskSuite 4.2.1 and later (for the Solaris 8 operating system)
- VERITAS Volume Manager with DMP (VxVM) 3.2 and later
- VERITAS Volume Manager 3.5, 4.0, 4.1, and 5.0. See "Downloading the VERITAS Volume Manager ASL" on page 26 for a description of how to obtain an Array Software Library (ASL) that enables the VERITAS software to work with the Sun StorEdge 3320 SCSI array.

Java Runtime Environment Requirements

Before you install Sun StorEdge Configuration Service, Sun StorEdge Diagnostic Reporter, or the Sun StorEdge CLI, make sure that your system meets the Java Runtime Environment (JRE) prerequisites shown in the Sun StorEdge 3000 Family Software Installation Guide instructions for your operating system. In general, you can use Sun JRE version 1.2.2 or later for all platforms. IBM AIX and SUSE Linux can also use IBM JRE version 1.2 or later.

Enabling a Solaris Host to Recognize New Devices and LUNs

By default, a Solaris host is configured for one host LUN per SCSI target, which is insufficient for a Sun StorEdge 3320 SCSI array. You must edit the appropriate onboard HBA driver configuration file to add more targets and LUNs, up to 32 LUNs per logical drive, and a maximum of 128 LUNs per Sun StorEdge 3320 SCSI Array.

Driver configuration files include `/kernel/drv/qus.conf`, `/kernel/drv/mpt.conf`, and `/kernel/drv/glm.conf`. Edit the file which is appropriate for your HBA.

Note – Refer to the `driver.conf(4)` man page for information and syntax to use. Refer to your HBA release notes and your HBA installation guide for specific configuration information.

Once you have edited the configuration file, reboot the host for the changes to take effect.

1. **Edit the** `/kernel/drv/qus.conf`, `/kernel/drv/glm.conf`, **or** `/kernel/drv/mpt.conf` **file (whichever is appropriate to your HBA) to add more targets and LUNs (up to 32 LUNs per logical drive, and a maximum of 128 LUNs per Sun StorEdge 3320 array).**

Note – If the file does not exist, create it using the format shown in the following examples. Allow five blank spaces between "Sun" and "StorEdge" on the first line.

In an environment where only Sun StorEdge 3320 SCSI devices are used, an example of text to add to `/kernel/drv/qus.conf`, `/kernel/drv/glm.conf`, or `/kernel/drv/mpt.conf` is:

```
device-type-scsi-options-list = "SUN     StorEdge 3320",
"SE3320-scsi-options";
SE3320-scsi-options = hexadecimal address;
```

In an environment where both Sun StorEdge 3310 and 3320 SCSI devices are used, an example of text to add to `/kernel/drv/qus.conf`, `/kernel/drv/glm.conf`, or `/kernel/drv/mpt.conf` is:

```
device-type-scsi-options-list =
          "SUN     StorEdge 3310", "SE33x0-scsi-options",
          "SUN     StorEdge 3320", "SE33x0-scsi-options";
      SE33x0-scsi-options = hexadecimal address;
```

For more information about multiple device types, refer to the `scsi_get_device_type_scsi_options(9F)` man page.

2. **Reboot the host to implement the file changes.**

The Solaris 8 operating system requires a reconfiguration reboot to create device files and implement `sd.conf` changes, but you do not need a reconfiguration reboot for the Solaris 9 or 10 operating system.

```
reboot -- -r
```

For the Solaris 9 or 10 operating system, use the following commands to create device files after you have edited `sd.conf`. No reboot is necessary with this command:

```
update_drv -f sd
devfsadm
```

The new LUNs are displayed when you perform the `format` command.

3. **To display the new LUNs, perform the following command:**

```
format
```

Supported Connection Methods and Host Adapters

The Sun StorEdge 3320 array can be connected to a host in one of two ways:

- By means of a supported host adapter
- By means of a single-ended SCSI controller embedded in a supported host

TABLE 2 lists the supported host adapters and connections.

TABLE 2 Supported Host Adapters and Connections

Operating System	Host Adapter	Part Number
Solaris operating system	An on-board SCSI port attachment (on the host system)	N/A
Solaris operating system	Sun StorEdge PCI Dual Ultra3 SCSI host adapter	(X)6758A
Solaris operating system	Dual Ultra2 SCSI and dual Gigabit Ethernet PCI adapter	(X)4422A
Solaris operating system	Ultra320 SCSI Single Channel PCI-X adapter	SG-XPCI1SCSI-LM320
Solaris operating system	Ultra320 SCSI Dual Channel PCI-X adapter	SG-XPCI2SCSI-LM320
Solaris 10 x86 Platform Edition	Ultra320 SCSI Dual Channel PCI-X adapter	X9265A LSI22320-R[3]
Solaris 10 x86 Platform Edition	SCSI - PCI Express - Dual Ultra-320 SCSI	SG-XPCIE2SCSIU320Z
Red Hat and SUSE Linux	Ultra320 SCSI Dual Channel PCI-X adapter	X9265A LSI22320-R[3]
Windows 2003	Ultra320 SCSI Dual Channel PCI-X adapter	X9265A LSI22320-R[3]
Novell Netware 5.1 and 6.5	Adaptec Dual Ultra320 SCSI PCI host adapter	Adaptec 39320A-R[4]
HP-UX operating system	HP Ultra 160 SCSI Adapter for SCSI[1]	A6829A
IBM AIX operating system	IBM Dual channel PCI Ultra3 SCSI Adapter[2]	SYM53C1010

1 This HP HBA is officially tested and supported. Equivalent HP HBAs are also supported.

2 This IBM AIX HBA is officially tested and supported. Equivalent AIX HBAs are also supported.

3 The LSI22320-R HBA is not available from Sun.

4 The Adaptec HBA is not available from Sun.

Caution – If you are using the Solaris 9 operating system and if you are using the Sun StorEdge PCI Dual Ultra3 SCSI host adapter (X)6758A, you must download and install the adapter's driver in the host where the adapter is installed. (Refer to the *Sun StorEdge PCI Dual Ultra3 SCSI Host Adapter Release Notes*, part number 816-2157, for the download procedure.) Without the driver, any array connected to the adapter is not visible to the host, since this driver is not included in the Solaris operating system.

Supported Platforms and Connection Methods

The following tables show the connection methods supported for each Sun server and operating system.

TABLE 3 shows the connection methods supported for each supported Sun SPARC-based system.

TABLE 3 Supported Sun SPARC-Based Systems and Connection Methods

	SG-XPCI2SCSI-LM320 Ultra 320 (-Z) HBA	SG-XPCI1SCSI-LM320 Ultra 320 (-Z) HBA	(X)6758A Dual-Channel Ultra 3 SCSI LVD PCI HBA	On-Board Server SCSI Host Controller Port	X(2222A and (X)4422A (-2) Dual-Channel Ultra-2 SCSI/Dual Fast Ethernet PCI HBA
Sun Java W1100z	No	Yes	No	No	No
Sun Java W2100z	No	Yes	No	No	No
Ultra™ 30 workstation	No	Yes	No	No	No
Ultra 40 workstation	No	Yes	No	No	No
Ultra 60 workstation	Yes	No	Yes	Yes	Yes
Ultra 80 workstation	Yes	No	Yes	Yes	Yes
Sun Blade™ 100 workstation	No	No	No	No	Yes
Sun Blade 150 workstation	No	Yes	No	No	Yes
Sun Blade 1000 workstation	Yes	No	Yes	Yes	Yes
Sun Blade 1500 and 1500+ workstation	Yes	No	Yes	No	Yes
Sun Blade 2000 workstation	Yes	No	Yes	Yes	Yes
Sun Blade 2500 and 2500+ workstation	Yes	No	Yes	Yes	Yes
Netra™ 20 server	Yes	No	Yes	Yes	Yes
Netra 120 server	Yes	No	Yes	Yes	Yes
Netra 100/150 server	Yes	No	No	No	No
Netra 210 server	No	No	Yes	Yes	Yes
Netra 240 server	Yes	No	Yes	Yes	Yes

TABLE 3 Supported Sun SPARC-Based Systems and Connection Methods *(Continued)*

	SG-XPCI2SCSI-LM320 Ultra 320 (-Z) HBA	SG-XPCI1SCSI-LM320 Ultra 320 (-Z) HBA	(X)6758A Dual-Channel Ultra 3 SCSI LVD PCI HBA	On-Board Server SCSI Host Controller Port	X(2222A and (X)4422A (-2) Dual-Channel Ultra-2 SCSI/Dual Fast Ethernet PCI HBA
Netra 440 server	Yes	No	Yes	Yes[3]	Yes
Netra 1280 server	Yes	No	Yes	Yes	Yes
Netra AC200 server	No	No	No	No	Yes
Netra DC200 server	No	No	No	No	Yes
Netra t 1 server	Yes	No	No	No	Yes
Netra t 1120 server	Yes	No	Yes	Yes	Yes
Netra t 100 server	Yes	No	No	No	No
Netra t 105 server	Yes	No	No	No	No
Netra t 1125 server	Yes	No	Yes	Yes	Yes
Netra t 1400 server	Yes	No	Yes	Yes	Yes
Netra t 1405 server	Yes	No	Yes	Yes	Yes
Sun Enterprise™ 220R server	Yes	No	Yes	Yes	Yes
Sun Enterprise 250 server	Yes	No	Yes	Yes	Yes
Sun Enterprise 420R server	Yes	No	Yes	Yes	Yes
Sun Enterprise 450 server	Yes	No	Yes	Yes	Yes
Sun Enterprise 3500 server	No	No	No	Yes	No
Sun Enterprise 4500 server	No	No	No[2]	Yes	No
Sun Enterprise 5500 server	No	No	No[2]	Yes	No
Sun Enterprise 6500 server	No	No	No[2]	Yes	No
Sun Enterprise 10000 server	No	No	No[2]	No	Yes/No[2]
Sun Fire™ V20z server	Yes	Yes	No	No	Yes
Sun Fire V40z server	Yes	Yes	No	No	Yes
Sun Fire V60x server	Yes	No	No	No	No
Sun Fire V65x server	Yes	No	No	No	No
Sun Fire 280R server	Yes	No	Yes	No	Yes
Sun Fire V120 server	Yes	No	No	No	No
Sun Fire V210 server	Yes	No	Yes	Yes	Yes

TABLE 3 Supported Sun SPARC-Based Systems and Connection Methods *(Continued)*

	SG-XPCI2SCSI-LM320 Ultra 320 (-Z) HBA	SG-XPCI1SCSI-LM320 Ultra 320 (-Z) HBA	(X)6758A Dual-Channel Ultra 3 SCSI LVD PCI HBA	On-Board Server SCSI Host Controller Port	X(2222A and (X)4422A (-2) Dual-Channel Ultra-2 SCSI/Dual Fast Ethernet PCI HBA
Sun Fire V240 server	Yes	No	Yes	Yes	Yes
Sun Fire V250 server	Yes	No	Yes	Yes	Yes
Sun Fire V440 server	Yes	No	Yes	Yes[3]	Yes
Sun Fire V480 server	Yes	No	Yes	No	Yes
Sun Fire V490 server	Yes	No	Yes	No	Yes
Sun Fire V880 server	Yes	No	Yes	No	Yes
Sun Fire V890 server	Yes	No	Yes	No	Yes
Sun Fire V1280 server	Yes	No	Yes	Yes	Yes
Sun Fire 2900 server	Yes	No	Yes	Yes	Yes
Sun Fire 4800 server	Yes	No	Yes	No[4]	Yes
Sun Fire 4810 server	Yes	No	Yes	No[4]	Yes
Sun Fire 6800 server	Yes	No	Yes	No[4]	Yes
Sun Fire 12000 server[1]	Yes	No	Yes	No	Yes
Sun Fire 15000 server[1]	Yes	No	Yes	No	Yes
Sun Fire T2000 server	No	Yes	No	No	No
Sun Fire E2900 server	Yes	No	Yes	Yes	Yes
Sun Fire E4900 server	Yes	No	Yes	No[4]	Yes
Sun Fire E6900 server	Yes	No	Yes	No[4]	Yes
Sun Fire E20000 server	Yes	No	Yes	No	Yes
Sun Fire E25000 server	Yes	No	Yes	No	Yes

1 These servers currently do not support the (X)4422A HBA.

2 This HBA is not supported by the specific server at this time.

3 To enable support for Sun StorEdge 3320 SCSI RAID arrays or Sun StorEdge 3320 JBOD arrays using the on-board SCSI port of the Sun Fire V440, see "Modifications for Sun Fire V440 Systems" on page 18.

4 No on-board SCSI port is available on this server.

TABLE 4 shows the connection methods supported for each supported Solaris 10 x86-based system.

TABLE 4 Supported Solaris 10 x86 Systems and Connection Methods

Server	On-board SCSI Port	SG-XPCI2SCSI-LM320 (-Z)	SG-XPCI1SCSI-LM320 (-Z)	X4422A	X5132A	X9265A LSI22320-R	X9269A	SG-(X)PCIE2SCSI U320Z
Sun Fire V60x server	Yes	No	No	No	No	Yes	No	No
Sun Fire V65x server	Yes	No	No	No	No	Yes	No	No
Sun Fire V20z server	No	Yes	Yes	Yes	Yes	Yes	No	No
Sun Fire V40z server	No	Yes	Yes	Yes	Yes	Yes	No	No
Sun Fire X4100 server	No	No	Yes	No	No	No	No	No
Sun Fire X4100M2 server	No	No	No	No	No	No	No	Yes
Sun Fire X4200 server	No	No	Yes	No	No	No	No	No
Sun Fire X4200M2 server	No	No	Yes	No	No	No	No	Yes

TABLE 5 shows the connection methods supported for supported Linux-based systems.

TABLE 5 Supported Linux Systems and Connection Methods

Server	On-board SCSI Port	SG-XPCI2SCSI-LM320	SG-XPCI1SCSI-LM320 (-Z)	X5132A	X9265A LSI22320-R	X9269A
Sun Fire V60x server	Yes	Yes	Yes	No	No	No
Sun Fire V65x server	Yes	No	No	No	No	No
Sun Fire V20z server	No	Yes	Yes	No	Yes	No
Sun Fire V40z server	Yes	Yes	Yes	No	Yes	No
Sun Fire X4100 server	No	No	Yes	No	No	No
Sun Fire X4200 server	No	No	Yes	No	No	No

TABLE 6 shows the connection methods supported for each supported Microsoft Windows, IBM AIX, HP-UX, and Novell Netware system.

TABLE 6 Supported Microsoft, HP-UX, IBM, and Novell Systems and Connection Methods

Operating System	X9265A	SG-XPCI2SCSI-LM320 (-Z)	X5132A	HP A6829A	IBM SYM53C1010
Microsoft Windows 2000 and 2003	Yes	Yes	No	No	No
IBM AIX 5.1L	No	No	No	No	Yes
HP-UX 11i	No	No	No	Yes	No
Novell Netware 5.1 and 6.5	No	No	No	Yes	Yes

Supported Cabinets

TABLE 7 shows the supported cabinets with their associated rackmount kits and other required kits. Refer to the *Sun StorEdge 3000 Family Rack Installation Guide for 2U Arrays* for installation instructions.

TABLE 7 Supported Cabinets and Associated Rackmount Kits

Cabinet Name	Cabinet Part Number(s)	Required Kit(s)	Required Kit Part Number	Maximum Number of Arrays Supported per Cabinet
Sun StorEdge 72-inch Expansion Cabinet	SG-(X)ARY030A	Rackmount Kit	(X)TA-3000-2URK-19U, (X)TA-3000-2URK-19UZ	14
Sun Fire Cabinet	SF-(X)CAB, SFE-(X)CAB	Rackmount Kit	X)TA-3000-2URK-19U, (X)TA-3000-2URK-19UZ	5
Sun Rack 900-38 Cabinet	SR9-(X)KM038A-IP	Rackmount Kit	X)TA-3000-2URK-19U, (X)TA-3000-2URK-19UZ	18
Sun Rack 1000-38 Cabinet	SRK-(X)RS038A-IP	Rackmount Kit	X)TA-3000-2URK-19U, (X)TA-3000-2URK-19UZ	18
Sun Rack 1000-42 Cabinet	SRK-(X)AZ042A-IP	Rackmount Kit	X)TA-3000-2URK-19U, (X)TA-3000-2URK-19UZ	18
Sun Fire 6800 System	F6800-1	Rackmount Kit	X)TA-3000-2URK-19U, (X)TA-3000-2URK-19UZ	3
Sun Fire E6900 System	E6900-BASE	Rackmount Kit	X)TA-3000-2URK-19U, (X)TA-3000-2URK-19UZ	2
Standard EIA Cabinets	Not Applicable	Rackmount Kit	X)TA-3000-2URK-19U, (X)TA-3000-2URK-19UZ	Varies
Telco flushmount racks	Not Applicable	Telco Front Mount Rackmount Kit	XTA-3000-2URK-19F, XTA-3000-2URK-19FZ	Varies
Telco center-of-gravity racks	Not Applicable	Telco Center Mount Rackmount Kit	XTA-3000-2URK-19C, XTA-3000-2URK-19CZ	Varies

Note – For more information about using Sun StorEdge arrays with the Sun Rack 900 and 1000 cabinets, refer to the Sun Rack 900 Qualified Products web page at `http://www.sun.com/servers/rack/approved.html`

Supported Disk Drives

TABLE 8 gives descriptions and part numbers for the disk drives supported with the Sun StorEdge 3320 SCSI array.

TABLE 8 Supported Disk Drives

Description	Part Numbers
73 GB 10,000 RPM	(X)TA-SC1NC-73G10K, TB-SC1NC-73G10K
73 GB 15,000 RPM	(X)TA-SC1NC-73G15K, TB-SC1NC-73G15K
146 GB 10,000 RPM	(X)TA-SC1NC-146G10K, TB-SC1NC-146G10K
146 GB 15,000 RPM	(X)TA-SC1NC-146G15K, TB-SC1NC-146G15K
300 GB 10,000 RPM	(X)TA-SC1NC-300G10K
300 GB 10,000 RPM	TB-SC1NC-300G10K
300 GB 15,000 RPM	(X)TA-SC1NC-300G15K (RoHS-5)
300 GB 15,000 RPM	TB-SC1NC-300G15K[1] (RoHS-5)

1 This disk drive part number is only for use with SE3320 custom-built factory configurations.

Note – In an array shipped with less than 12 drives, each empty slot in the array contains an air management sled to correctly handle the air flow and heat. Each drive slot requires either a disk drive or an air management sled.

Note – Disk drive firmware is provided through Sun disk firmware patches, which include the required download utility. Sun disk firmware patches are separate from the Sun StorEdge 3000 family firmware patches. Refer to the instructions in your disk drive firmware patch.

Caution – If you replace a disk drive, the replacement disk drive must have the same or greater capacity than the disk drive that is being replaced. You can mix capacity in the same chassis, but not spindle speed (RPM) on the same bus. For example, you can use 73-Gbyte and 146-Gbyte drives with no performance problems if both are 10K RPM drives. Violating this configuration guideline leads to poor performance. If you are adding a new disk drive, these same configuration guidelines apply.

Supported Cables

TABLE 9 lists the supported SCSI cables. Cables can be ordered using the marketing part numbers.

TABLE 9 Supported Cables

Cable Type and Length	Marketing Part Number	RoHS Compliant
VHDCI/VHDCI 0.8 m, 68-pin	(X)1136A-Z	RoHS-6
VHDCI/VHDCI 1.2 m, 68-pin	(X)1137A	595-5647-01
VHDCI/VHDCI 2 m, 68-pin	(X)1138A-Z	RoHS-6
VHDCI/VHDCI 4 m, 68-pin	(X)3830B-Z	RoHS-6
VHDCI/VHDCI 10 m, 68-pin	(X)3831B-Z	RoHS-6
HD-68/VHDCI, 0.8 m, 68-pin	(X)1132A-Z	RoHS-6
HD-68/VHDCI, 1.2 m, 68-pin	(X)1135A	595-7460-01
HD-68/VHDCI, 2 m, 68-pin	(X)3832A-Z	RoHS-6
HD-68/VHDCI, 4 m, 68-pin	(X)3830A-Z	RoHS-6
HD-68/VHDCI, 10 m, 68-pin	(X)3831A-Z	RoHS-6

Note – When you attach the provided SCSI bus cables to the Sun StorEdge 3320 SCSI array or expansion unit, it is important to tighten the cable jack screws with six full clockwise turns prior to powering up the array, to ensure proper operation.

Network Connectivity Standard Practices

It is extremely important for the proper operation and reliability of the equipment that all network connectivity adhere to Ethernet and facility wiring standards IEEE 802.3 and EIA/TIA 568B. Make sure that the cabling and patch cords for your facilities are up to these specifications, and protect the cables from excessive stress and damage. The best practice, and the one that is recommended by all facilities wiring standards, is to test your structured cable system end-to-end with a quality cable test set. Adherence to these practices will help eliminate almost all connectivity issues.

Other related standards are ISO/IEC IS 11801 (International), Cenelec EN 50173 (Europe), CSA T529 (Canada), and SAA/SNZ HB27:1996 (Australia and New Zealand).

Modifications for Sun Fire V60x or V65x Systems Running the Red Hat AS 3.0 Operating System

Adding SCSI disks to a Sun Fire V6xx system running Red Hat AS 3.0 requires a change to where the system looks for the kernel. Otherwise the new logical drive gets pushed to the front of the device list, so that `/dev/sdaX` becomes `/dev/sdbX`. After reboot, the boot partition then becomes `/dev/sdb3` and a kernel panic can result.

For Sun StorEdge 3320 SCSI arrays connected to the onboard AIC79xx, edit the `/etc/grub.conf` file (or `/etc/lilo.conf` if you use `lilo` for your bootloader). This can be done before reboot or when booting.

1. **During boot up, press 'e' at the `grub` kernel selection screen.**
2. **Go to the line that points to the kernel and press 'e' again to edit the line:**

   ```
   kernel /vmlinux-2.4.9-3.24 ro root=/dev/sda3
   ```

3. **If one drive was added to the system, change `/dev/sda3` to `/dev/sdb3`. For two new drives, change it to `/dev/sdc3`.**
4. **Press the Escape key to finish editing, and then press 'b' to boot.**

   These changes can also be made directly to the `/etc/grub.conf` file before reboot.

Modifications for Sun Fire V440 Systems

To enable Sun StorEdge 3320 RAID arrays or Sun StorEdge 3320 JBOD arrays using the on-board SCSI port of a Sun Fire V440 server running the Solaris 9 operating system, download and install the appropriate patch:

- Solaris 9: 115663-03 or above

Bootability

For embedded controllers and (X)4422A HBAs, booting from the array requires no special procedures.

Note – To ensure that the server will boot properly, the physical device must be mapped to LUN 0. Otherwise, the server will not boot properly.

To boot a host through a Sun StorEdge PCI Dual Ultra3 SCSI host bus adapter, follow the procedures in the "Bootability" chapter in the *Sun StorEdge PCI Dual Ultra3 SCSI Host Adapter Installation Guide*, part number 816-2156.

For a current list of patches for a Sun StorEdge PCI Dual Ultra3 SCSI host bus adapter, including driver patches, go to the following web site and search for "Sun StorEdge PCI Dual Ultra3 SCSI Host Adapter" in the "Search SunSolve" search area:

`http://www.sun.com/sunsolve/`

Bootability is not supported for this HBA on servers running the Solaris 10 operating system.

Required Patches

The Solaris 9 or Solaris 10 Recommended Patch Cluster is required to use Sun StorEdge Configuration Service 2.5 and Sun StorEdge Diagnostic Reporter 2.5. See "To Download and Install the Solaris Recommended Patch Cluster" on page 20 for more information.

If a Sun StorEdge PCI Dual Ultra3 SCSI Host Adapter, X6758A, is used to connect the Sun StorEdge 3320 array, the bus driver must also be updated. The updated bus driver is available in the following patches:

- Solaris 9 Operating System: 112706-05
- Solaris 10 Operating System: 119555-03

Installing Required Solaris Patches

Make sure the Solaris Recommended Patch Cluster is installed on a Solaris host before connecting the host to the array.

▼ To Download and Install the Solaris Recommended Patch Cluster

1. **Log in to the host that you want to connect to the array.**
2. **Go to:**

   `http://www.sun.com/sunsolve`
3. **Under Support, click Patches & Updates.**
4. **Under Downloads, click Recommended Patch Clusters.**
5. **Find your version of Solaris 9 or Solaris 10 in the Recommended Solaris Patch Clusters list, make sure the Readme checkbox is checked, and then click Go.**
6. **Print or save the README file from the browser window.**
7. **Click the browser's Back icon to return to the previous page.**
8. **Select the format you want in the row that begins with Solaris 9 or Solaris 10 in the Recommended Solaris Patch Clusters list, click either Download HTTP or Download FTP, and then click Go.**
9. **In the File Download dialog box, click Save.**
10. **In the Save As dialog box, type a destination directory for the patch cluster, and then click Save.**
11. **Follow the procedure in the INSTALL INSTRUCTIONS section in the README file to install the patches.**

Upgrading to Software Version 2.5 and Controller Firmware Version 4.25

The upgrade process includes:

Downloading and Installing Software Applications

Before installing the new firmware, you must upgrade the Sun StorEdge Configuration Service agent, Sun StorEdge Configuration Service console, Sun StorEdge Diagnostic Reporter, and Sun StorEdge Command-Line Interface (CLI) utility.

Because the communication protocol changes from version to version, you must install the `SUNWsscs` package on all systems that manage the storage when upgrading.

Note – If different versions of the agent and console co-exist, Sun StorEdge Configuration Service is not able to discover previously configured arrays.

▼ To Download the Software

To download the software from the Sun Download Center web site, perform the following steps.

1. **Go to:**

   `http://www.sun.com/software/download/`

2. **Under System Administration → Storage Management, click the StorageTek 3000 Family Storage Products - Related Software link.**

   You are taken to the Sun StorEdge 3000 Family Storage Products - Related software page.

3. **Click Download.**

   A Sun Download Center page is displayed.

4. **Click Download.**

   A Sun Download Login page is displayed.

5. **If not previously registered, register.**

   a. **Click the Register Now link at the bottom of the left column.**

   b. **On the registration page, enter applicable data in the required fields and click Register.**

6. **Type your Username and Password in the left column, and click Login.**

7. **On the software download page, click the link for your array and operating system.**

8. **In the dialog box that is displayed, specify a destination directory and save the file.**

▼ To Install or Upgrade the Software

Note – For installation or upgrading instructions for other operating systems, refer to the *Sun StorEdge 3000 Family 2.5 Software Installation Guide*.

To install or upgrade the software on Solaris operating systems, perform the following steps.

Note – Before you install Sun StorEdge Configuration Service, Sun StorEdge Diagnostic Reporter, or the Sun StorEdge CLI, make sure that your system meets the Java Runtime Environment (JRE) prerequisites shown in the Sun StorEdge 3000 Family Software Installation Guide instructions for your operating system. In general, you can use Sun JRE version 1.2.2 or later for all platforms. IBM AIX and SUSE Linux can also use IBM JRE version or later.

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1. **Log in as superuser to install the package.**

2. **If you are upgrading, uninstall all current versions of Sun StorEdge Configuration Service, Sun StorEdge Diagnostic Reporter, and Sun StorEdge CLI. To uninstall earlier versions of the software, type:**

```
# pkgrm filename
```

The single filename for software version 2.x is `SUNWsscs`.

The filenames for software versions 1.x are listed in TABLE 10.

TABLE 10 Software Filenames

Application	Filename
Configuration Service Agent	`SUNWscsd`
Configuration Service Console	`SUNWscsu`
Diagnostic Reporter Agent	`SUNWscsa`
Diagnostic Reporter Config Tool	`SUNWscui`
CLI	`SUNWsccli`

3. **To install the version 2.5 software package, type:**

```
# pkgadd -d . SUNWsscs
```

The Solaris installation package, `SUNWsscs`, includes the following components:

- Sun StorEdge Configuration Service agent
- Sun StorEdge Configuration Service console
- Sun StorEdge Diagnostic Reporter agent (daemon)
- Sun StorEdge Diagnostic Reporter Config Tool (UI)
- Sun StorEdge CLI

4. **Provide appropriate responses to each of the installation prompts.**

   a. **If asked if you want to restore the agent configuration, type y. (If you type n, you will need to re-enable the managing servers.)**

```
The previous configuration was saved. Do you want to restore the
configuration [y,n,?,q]: y
```

   b. **To continue with the installation, type `y` and press Return.**

```
Do you want to continue with the installation [y,n,?] y
```

After the package is installed, the following message is displayed, indicating it was installed successfully.

```
Installation of <SUNWscsd> was successful.
```

The Sun StorEdge Configuration Service components are installed in the following directories:

- `/opt/SUNWsscs/ssagent`
- `/opt/SUNWsscs/sscsconsole`

The Sun StorEdge Diagnostic Reporter components are installed in the following directories:

- `/opt/SUNWsscs/ssdiagreporterd`
- `/opt/SUNWsscs/ssdiagreporterui`

The CLI is installed in `/opt/SUNWsscs/sbin/sccli`.

5. **If you are using Sun StorEdge Configuration Service and Diagnostic Reporter to manage and monitor the storage, the following additional steps are required.**

   a. **You must set passwords for all Sun StorEdge Configuration Service users.**

Note – User passwords are deleted when Sun StorEdge Configuration Service is uninstalled. Even if you had a previously saved configuration, you still have to reenter the `ssmon`, `ssadmin`, and `ssconfig` passwords.

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   b. **Before starting the Sun StorEdge Configuration Service console, you must run the following command to specify the web browser to access online help.**

```
/opt/SUNWsscs/sscsconsole/config_sscon
```

   c. **The Sun StorEdge Configuration Service agent and the Sun StorEdge Diagnostic Reporter agent (daemon) have been installed but are not configured to start at boot time by default. To enable the Sun StorEdge Configuration Service agent to start automatically when the system boots, and to start it now, type:**

```
/etc/init.d/ssagent enable start
```

d. To enable the Sun StorEdge Diagnostic Reporter to start automatically when the system boots, and to start it now, type:

```
/etc/init.d/ssdgrptd enable start
```

Downloading and Installing Firmware

Firmware patch ID # 113730-04 is available from SunSolve to upgrade controller firmware for Sun StorEdge 3320 SCSI arrays running firmware versions earlier than 4.25 and to upgrade SAF-TE firmware earlier than 1185.

Firmware patch ID # 113730-04 provides the following firmware:

- Controller firmware 423A
- SAF-TE firmware 1185

To determine the current firmware versions for your array, see:

- "To Determine Your Current Controller Firmware Version" on page 25
- "To Determine Your Current SAF-TE Firmware Version" on page 26

To download the firmware patch, see "To Download the Firmware Patch" on page 26.

For information about installing the firmware, refer to the patch README file provided with the firmware patch.

Note – Disk drive firmware is provided through Sun disk firmware patches that include the required download utility. Sun disk firmware patches are separate from the Sun StorEdge 3000 family firmware patches. Refer to the instructions in your disk drive firmware patch.

▼ To Determine Your Current Controller Firmware Version

To determine your current controller firmware version, use one of the following methods:

- Access the controller firmware application through the serial port or through `telnet`. Select the "view system information" firmware menu option. The current firmware version is displayed as "Firmware Version."

- Using Sun StorEdge Configuration Service, highlight any component of the desired Sun StorEdge 3310 SCSI array, click on the View menu and the View Controller command, and then check the FW Rev checkbox.
- Using the Sun StorEdge CLI, enter the `show inquiry` command.

▼ To Determine Your Current SAF-TE Firmware Version

To determine your current SAF-TE firmware version, use the CLI and enter the `show safte` command. The SAF-TE version of each controller is displayed in the `Rev` column.

▼ To Download the Firmware Patch

1. **Go to** `http://sunsolve.sun.com`
2. **Under Support, click Patches and Updates.**
3. **Use PatchFinder to locate patch ID 113730-04 by entering the patch ID into the search field and click Find Patch.**
4. **Select the link for the format that you want, either HTTP or FTP next to Download Patch, or HTTP or FTP next to Download Signed Patch.**
5. **In the dialog box that appears, indicate the destination directory for the patch and proceed to download the file to that location.**
6. **Follow the instructions in the README file to install the patch.**

Downloading the VERITAS Volume Manager ASL

This section describes what you need to do to enable VERITAS Volume Manager 3.5, 4.x, and 5.0 software to work with the Sun StorEdge 3320 SCSI array on Sun hosts. VERITAS has provided an Array Support Library (ASL) that must be installed on the same host system as the Volume Manager software to enable the software to recognize the Sun StorEdge 3320 SCSI array. Follow the procedure to download the ASL and the accompanying installation guide for the Sun StorEdge 3320 SCSI array from the Sun Download Center.

▼ To Download the ASL

1. **Log in as superuser on the Sun server to be connected to the array.**
2. **Go to the All Products listing at the Sun Download Center.**

   `http://www.sun.com/software/download/products.html`
3. **Click the Downloads A-Z tab.**
4. **Under the V heading, click on VERITAS Volume Manager Array Support Library (ASL).**
5. **Choose the link that is appropriate for your platform.**
6. **Click Download to go to the Sun Download Center.**

   The page identifies the product you selected to download as VERITAS Volume Manager Array Support Library (ASL) for your platform and language.
7. **If not previously registered, register.**

   a. **Click the Register Now link at the bottom of the left column.**

   b. **On the registration page, enter the required fields and click Register.**
8. **Log in.**

   a. **Type your Username and Password in the left column, and click Login.**

   b. **On the Terms of Use page, read the license agreement, click Yes next to Accept, and click the Continue button.**

Note – In addition to the ASL that is specifically intended for your array, a recent ASL works with all Sun StorEdge 3000 family arrays. The title shown in the link for this ASL is *VERITAS VOLUME MANAGER ARRAY SUPPORT LIBRARIES (ASLs).*

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9. **Download the compressed ZIP file that contains the ASL package for the Sun StorEdge 3320 SCSI array and installation guide.**

   See the README file for the name and part number of the installation guides.
10. **Use the `unzip` command to expand the zip file.**
11. **Use `acroread` to read and print the manual, and follow the installation instructions it contains.**