Sun Fire™ V890 Server
Product Notes

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Sun Fire V890 Server Product Notes

These Product Notes provide late-breaking information about issues related to the Sun Fire™ V890 server.

Related Documentation

A complete set of online documentation supporting Sun Fire V890 servers is available at:

`http://www.sun.com/products-n-solutions/hardware/docs/Servers`

Check these sites periodically for the latest revisions of Sun Fire V890 product documentation, including the latest version of these Product Notes.

Preinstalled Software

Your Sun Fire V890 server comes preinstalled with the Solaris™ Operating System (OS) and Java™ Enterprise System software. For important information about how to get started with the preinstalled software, go to:

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

2100 MHz System Requirements

Sun Fire V890 systems shipped with 2100 MHz CPU/Memory modules are factory upgraded to support the additional power of the 2100 MHz UltraSPARC™ IV+ processors. For more information on the software requirements and hardware upgrades for 2100 MHz systems, see the *Sun Fire V490/V890 Systems with UltraSPARC IV+ 2100 MHz CPU/Memory Modules Supplement*, located online at:

`http://www.sun.com/products-n-solutions/hardware/docs/Servers`

Software and OpenBoot Firmware Requirements

TABLE 1 lists the minimum versions of the OS and OpenBoot™ PROM (OBP) firmware required by the 1050 MHz, 1200 MHz, and 1350 MHz UltraSPARC IV CPU/Memory modules, and the 1500 MHz, 1800 MHz and 2100 MHz UltraSPARC IV+ CPU/Memory modules.

TABLE 1   Minimum Operating System and Firmware Versions

CPU/Memory Module	Operating System	Firmware Version
1050 MHz	Solaris 8 2/04	OBP 4.15.1
	Solaris 9 4/04	OBP 4.15.1
	Solaris 10 3/05	OBP 4.15.1
1200 MHz	Solaris 8 2/04	OBP 4.15.1
	Solaris 9 4/04	OBP 4.15.1
	Solaris 10 3/05	OBP 4.15.1
1350 MHz	Solaris 8 2/04	OBP 4.15.6
	Solaris 9 4/04	OBP 4.15.6
	Solaris 10 3/05	OBP 4.15.6
1500 MHz	Solaris 9 9/05	OBP 4.18.1
	Solaris 10 3/05 HW1	OBP 4.18.1
1800 MHz	Solaris 9 9/05	OBP 4.18.8
	Solaris 10 3/05 HW1	OBP 4.18.8
2100 MHz	Solaris 9 9/05	OBP 4.22.24
	Solaris 10 3/05 HW1	OBP 4.22.24

Caution – Use OBP version 4.22.24 or greater on systems equipped with 2100 MHz CPU/Memory modules. Loading an earlier version of OBP on these systems makes them unbootable.

To verify that the proper version of the operating system is installed your server, examine the `/etc/release` file. It should contain the text `Solaris X X/XX` or identify a Solaris release that is compatible with the Sun Fire V890 system.

To determine the current OpenBoot firmware version on a server, use one of the following methods:

- **While the Solaris Operating System is running, enter:**

```
# /usr/sbin/prtconf -V
```

- **Or, from the** ok **prompt, enter:**

```
ok .version
```

OpenBoot PROM Enhancements for Diagnostic Operation

Starting with version 4.15, OBP provides enhanced diagnostics that are enabled by default at power-on. These diagnostics can increase the amount of time it takes a Sun Fire V890 server to boot. They also change the behavior of some applications that detect and report information about the server.

For instance, when the OBP diagnostics are enabled, the output from the rsc-console connection is sent to the server console without a warning message. When this occurs, the RSC console may appear to not respond to RSC commands. This behavior can also occur when you are viewing rsc-console output while the front panel keyswitch of the Sun Fire V890 server is set to the Diagnostics position.

In addition, the diagnostics change the behavior of the server LEDs during startup. While power-on self-test (POST) is executing, the Power and System Fault LEDs blink simultaneously. After POST has completed and OBP diagnostics run, the LEDs return to normal function.

For more information about these enhancements, the new and redefined configuration variables, and the new standard (default) configuration, refer to *OpenBoot PROM Enhancements for Diagnostic Operation*, which is available on the Sun Fire V890 Documentation CD included with the Sun Fire V890 server.

Software Patches

This section lists the software patches that may be required for your Sun Fire V890 server. You can obtain these patches from your authorized Sun service provider or by downloading them from the SunSolve Online^{SM} web site at:

`http://sunsolve.sun.com`

For patch installation instructions, see the README file that accompanies each patch. Patches for the following versions of the Solaris OS are listed below:

- Software Patches for Solaris 10
- Software Patches for Solaris 9
- Software Patches for Solaris 8

Software Patches for Solaris 10 OS

To see a list of required software patches for Solaris 10, see the *Solaris 10 Sun Hardware Platform Guide*.

Software Patches for Solaris 9 OS

TABLE 2 lists the required and recommended patches for the Solaris 9 4/04 OS installed on a Sun Fire V890 server.

TABLE 2 **Sun Fire V890 Server Patches for Solaris 9 OS**

Patch ID	Description
Required Patches:	
112233-12 or later	SunOS 5.9: kernel patch
112817-17 or later	SunOS 5.9: SunGigaSwift Ethernet 1.0 driver patch
111847-08 or later	SAN Foundation Kit patch (MPxIO/leadville)*
113039-04 or later	SunOS 5.9: Sun StorEdge Traffic Manager patch*
113040-06 or later	SunOS 5.9: fctl/fp/fcp/usoc driver patch*
113041-04 or later	SunOS 5.9: fcip driver patch*
113042-04 or later	SunOS 5.9: qlc driver patch*
113043-05 or later	SunOS 5.9: luxadm, liba5k and libg_fc patch*
113044-04 or later	cfgadm patch*
113447-13 or later	SunOS 5.9: libprtdiag_psr patch
117171-05 or later	SunOS 5.9: kernel patch

TABLE 2   Sun Fire V890 Server Patches for Solaris 9 OS

Patch ID	Description
115553-10 or later	SunOS 5.9: USB Drivers and Framework patch
Recommended Patches:	
116363-07 or later	RSC 2.2.2 patch

* Patches 111847, 113039, 113040, 113041, 113042, 113043 and 113044 require the package SUNWsan (SAN Foundation Kit). The SUNWsan package is available via the Sun Download Center at:

http://www.sun.com/storage/san/

From that site, download the latest SAN release software/firmware upgrade.

Software Patches for Solaris 8 OS

TABLE 3 lists the required patches that are specific to the Sun Fire V890 server with the Solaris 8 02/04 OS installed. These patches are available as of the publication date of these Product Notes.

TABLE 3   Sun Fire V890 Required Patches for Solaris 8 OS

Patch ID	Description
Required Patches:	
109873-25 or later	SunOS 5.8: prtdiag and platform libprtdiag_psr.so.1 patch
109896-25 or later	USB drivers patch
110460-32 or later	SunOS 5.8: fruid/PICL plug-ins patch
110614-02 or later	SunOS 2.8: ses driver patch
111095-15 or later	SunOS 2.8: fctl/fp/fcp/usoc driver patch*
111096-08 or later	SunOS 2.8: fcip driver patch*
111097-14 or later	SunOS 2.8: qlc driver patch*
111412-13 or later	SunOS 2.8: Sun StorEdge Traffic Manager patch*
111413-12 or later	SunOS 2.8: luxadm, liba5k, and libg_fc patch*
111792-09 or later	picl plugins patch
111846-08 or later	SunOS 2.8: cfgadm patch*
111847-08 or later	SAN Foundation Kit patch*
111883-24 or later	SunOS 5.8: GigaSwiftEthernet driver patch

TABLE 3   **Sun Fire V890 Required Patches for Solaris 8 OS**

Patch ID	Description
116962-01 or later	pcisch driver patch
Recommended Patches:	
117255-01 or later	RSC 2.2.2 patch

* Patches 111095, 111096, 111097, 111412, 111413, and 111846 require the package
SUNWsan (SAN Foundation Kit). The SUNWsan package is available from the Sun
Download Center at:

`http://www.sun.com/storage/san/`

From that site, download the latest SAN release software/firmware upgrade.

Hardware and Firmware Issues

The following sections describe hardware and firmware issues associated with
Sun Fire V890 servers.

Sun PCI Cards That Support PCI Hot-Plug

For a PCI card to be successfully detached from a running operating system, each
device on the card must have a detach-safe driver. A *detach-safe* driver enables a
single instance of a driver to be closed while other instances are allowed to remain
open to service similar devices used elsewhere in the server. To be considered
detach-safe, a driver must be able to perform a basic Device Driver Interface/Device
Kernel Interface (DDI/DKI) function called `DDI_DETACH`. Any driver that does not
support the `DDI_DETACH` function is considered *detach-unsafe*.

Sun Microsystems offers a variety of hot-pluggable PCI cards that use detach-safe
device drivers. For more information about the available PCI cards, contact your Sun
representative.

Many third-party drivers (those purchased from vendors other than Sun
Microsystems) do not support the `DDI_DETACH` function. Verify any third-party PCI
card functionality and hot-plug compatibility with the vendor of the third-party card
before using the card in a production environment.

> **Note –** Always wait for a PCI hot-plug operation to complete before initiating a new operation.

For more information about Sun Fire V890 PCI hot-plug operations, refer to the *Sun Fire V890 Server Dynamic Reconfiguration Guide* (817-4166-10), available from:

■ `http://docs.sun.com`

Caution on the Use of PCI Cards Not Specifically Qualified by Sun on the Sun Fire V890 Server

To maintain robust server operation, it is extremely important to ensure that any PCI cards and associated drivers installed in a Sun Fire V890 server are qualified by Sun for use on the platform. It is possible for interactions to occur between cards and drivers on a specific bus that can lead to potential server panics or other negative outcomes if the card and driver solution is not qualified.

For an updated list of qualified PCI cards and configurations for the Sun Fire V890 server, contact your Sun authorized sales representative or service provider. For additional information, refer to this web site:

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

FC-AL Disk Drive Firmware Issues

All FC-AL disk drives installed in a Sun Fire V890 server must meet the minimum firmware revision levels for Sun Fire V890 servers. Incorrect firmware can cause a variety of server problems that are often difficult to diagnose. To determine a disk drive's firmware revision level, use the `inquiry` feature of the Solaris `format`(1M) utility. The following table lists the minimum firmware revision levels for Sun Fire V890 disk drives as of the publication date of these Product Notes.

Minimum Firmware Revision Levels

Sun Part No.	Capacity	Manufacturer	Minimum Firmware Revision Level
540-4905	72 Gbytes	Seagate ST373307FC	0638
540-5408		Seagate ST373405FC	0638
		Fujitsu MAN3735FC	1004
		Fujitsu MAP3735FC	0701

Note – Drive capacities lower than 72 Gbytes are not supported on the Sun Fire V890 server.

Note – All Sun Fire V890 disk drives that are installed at the factory, shipped as customer-installable options, or installed as field-replaceable units (FRUs) meet the minimum firmware revision levels.

Installing Sun Fire V890 FC-AL Backplane Firmware

In the unlikely event that the firmware on a Sun Fire V890 FC-AL backplane becomes corrupted, you can use a backup image to flash update the backplane with its original firmware. The flash update procedure is performed with the Solaris `luxadm` utility and is described below.

Before you can flash update the backplane firmware, you must download the firmware image from the SunSolve Online web site to the Sun Fire V890 system disk. The latest version of the backplane firmware is always available on the SunSolve Online web site at `http://sunsolve.sun.com`. To install the firmware from the SunSolve web site, see the instructions in the README file provided with the firmware image.

Note – A version of FC-AL backplane firmware for the Sun Fire V880 is included on the Solaris Supplement CD. *Do not* install this version of the firmware on the Sun Fire V890.

The firmware image is installed in the following default location on the Sun Fire V890 system disk:

`/usr/platform/SUNW,Sun-Fire-V890/lib/images/int_fcbpl_fw`

Once the image is installed in this location, perform the flash update procedure as follows.

▼ How to Flash-Update the Backplane Firmware

1. **As superuser, type the following command to bring the server to single-user mode:**

```
# init s
```

2. **Turn the front panel keyswitch to the Locked position.**

   The Locked keyswitch position prevents unauthorized programming of the server flash PROMs.

   Note – After beginning the flash update process in Step 3, you must wait at least 15 minutes after the superuser prompt appears for the update process to complete. While the server is updating the flash PROM, it might appear as though little or no activity is occurring on the server. Do not attempt any other operations until you verify that the update process has completed.

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3. **Type the following** `luxadm` **subcommand to begin the flash update process:**

```
# luxadm download -f firmware_path enclosure_name
```

   Where:

   - *firmware_path* is the location of the firmware image on the system disk—in this case, /usr/platform/SUNW,Sun-Fire-V890/lib/images/int_fcbpl_fw.
   - *enclosure_name* is the enclosure name assigned to the Sun Fire V890 internal storage array—by default, FCloop. If you need to verify the enclosure name first, use the luxadm probe subcommand.

   Note – For more information about the `luxadm` utility, see *Platform Notes: Using luxadm Software*, which is part of the Solaris on Sun Hardware Collection on the Supplement CD.

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4. **When the superuser prompt reappears, wait at least 15 more minutes for the flash process to complete.**

   This minimum wait time is required for the flash update process to propagate the firmware code to all SSC-100 controllers in the server.

5. **To verify that the flash update process has successfully completed, type the following** `luxadm` **subcommand:**

```
# luxadm display enclosure_name
```

Where *enclosure_name* is the enclosure name assigned to the Sun Fire V890 internal storage array.

The command output shows the status of each SSC-100 controller in the server. The following is an excerpt of sample output for a dual-backplane server.

```
SSC100's - 0=Base Bkpln, 1=Base LoopB, 2=Exp Bkpln, 3=Exp LoopB
     SSC100 #0:    O.K.(9228/ 3A20)
     SSC100 #1:    O.K.(9228/ 3A20)
     SSC100 #2:    O.K.(9228/ 3A20)
     SSC100 #3:    O.K.(9228/ 3A20)
```

a. **Verify that each SSC-100 controller displays an** `O.K.` **status and that each displays the same firmware version in parentheses.**

If so, the flash update process has successfully completed.

b. **Otherwise, wait another two minutes or so and repeat this step.**

6. **Once the flash update process is complete, restore the server to multiuser mode using the** `init` **command.**

For example, type:

```
# init 3
```

7. **Turn the front panel keyswitch to the Locked position.**

The Locked position is the recommended setting for normal day-to-day operations.

The server can now resume normal operation.

Hardware Watchdog Mechanism and XIR

To detect and respond to system hang conditions, the Sun Fire V890 system features a hardware watchdog mechanism—a hardware timer that is continually reset as long as the operating system is running. In the event of a system hang, the operating system is no longer able to reset the timer. The timer will then expire and cause an

automatic externally initiated reset (XIR), eliminating the need for operator intervention. When the watchdog mechanism issues the XIR, debug information is dumped to the system console.

Note – The hardware watchdog mechanism is not activated until you enable it, as described in the procedure that follows.

The XIR feature is also available for you to invoke manually, using your RSC console. You use the `xir` command manually when the system is absolutely hung and an L1-A (Stop-A) keyboard command does not work. When you issue the `xir` command manually by way of RSC, the system is immediately returned to the OBP `ok` prompt. From there, you can use OBP commands to debug the system.

You can set the OpenBoot configuration variables `post-trigger` and `obdiag trigger` to run POST or OBP Diagnostics whenever the hardware watchdog mechanism resets. For more information about using the OBP configuration variables with the hardware watchdog mechanism, refer to the *Sun Fire V890 Diagnostics and Troubleshooting Guide* (available at `http://docs.sun.com` under Sun on Sun Hardware).

▼ How to Enable the Watchdog Mechanism and Its Options

1. **Edit the** `/etc/system` **file to include the following entry.**

```
set watchdog_enable = 1
```

2. **Reboot the system so the changes can take effect.**

   To have the hardware watchdog mechanism automatically reboot the system in case of system hangs:

   a. **At the system** `ok` **prompt, type the following.**

   ```
   ok setenv error-reset-recovery = boot
   ```

   To generate automated crash dumps in case of system hangs:

   b. **At the system** `ok` **prompt, type the following.**

   ```
   ok setenv error-reset-recovery = sync
   ```

Updated Rackmounting Information for the Sun Fire V890 Server

Currently, the only supported Sun racks for the Sun Fire V890 server are the Sun StorEdge™ Expansion Cabinet (Sun part number SG-XARY030A), the Sun Fire Cabinet (Sun part number SF-XCAB), and the Sun Rack 900 (Sun part number SR9-KL038A-IP).

To rackmount a Sun Fire V890 server in the Sun™ Rack 900, use the Sun X9638A rackmounting kit.

To rackmount a Sun Fire V890 server in the Sun StorEdge Expansion Cabinet and the Sun Fire Cabinet, use the Sun X9628A rackmounting kit.

An optional door (Sun part number X9818A) is available for the Sun StorEdge Expansion Cabinet. This door is required for EMI purposes if you are rackmounting two Sun Fire V890 servers in this rack.

Note – You can install only one Sun Fire V890 server into the Sun Fire Expansion Cabinet.

Sun Fire V890 Server Rackmounting Safety Information

Caution – As stated in the *Sun Fire V890 Server Rackmounting Guide,* do not attempt to lift the server until you remove all CPU/Memory boards, all power supplies, all CPU fan trays, and all I/O fan trays. Once these components are removed, four persons are required to lift the server.

The four lifting handles included in the rackmounting kit are not designed to support the weight of a fully populated server.

Software Issues

The following sections describe various software issues associated with the Sun Fire V890 server product.

Sun Management Center Software Support

Sun Management Center support for the Sun Fire V890 systems requires as a minimum Version 3.5 Update 1. If you are running the Solaris 10 OS, you must install Version 3.5 Update 1b, as well as Sun Management Center patch 118389-07. With any version of the Solaris OS, you must install all relevant Sun Management Center patches, especially if your system is equipped with a new CPU/Memory module.

Sun StorEdge Traffic Manager Software

Sun StorEdge™ Traffic Manager software automates multipath I/O failover, fail-back, and SAN-wide load balancing on multiple platforms. It also allows you to perform dynamic database configuration. This software can help provide improved I/O performance, increased availability, and time-saving manageability on your mission-critical SAN.

To learn more about Sun StorEdge Traffic Manager software, to take an interactive tour of its features, and to price and purchase the product for your installation, go to:

```
http://www.sun.com/storage/software/storage_mgmt/traffic_manager
/index.xml
```

Open Issues

This section describes bugs and anomalies associated with the Sun Fire V890 server. In many cases, software patches that provide fixes for these bugs are available. Visit the SunSolve Online web site, or contact your Sun authorized service provider for information about patch availability. For more information, see "Software Patches" on page 4.

Also check the Platform Guide for your release of the Solaris OS. It contains information about OS-related bugs that may affect Sun Fire V890 servers.

OpenBoot Firmware Documentation

Instructions for using the firmware are provided in the *OpenBoot 4.x Command Reference Manual*, which is available at the following web site under Solaris on Sun Hardware:

```
http://docs.sun.com
```

Disabled PCI Slot Causes an `fcode_timer` Timeout During Solaris Boot

Using the `asr` command `asr-disable pci-slot`*n* (where *n* is 0-8) to disable a PCI slot with a card present in that slot is not recommended. If there is a failing card in a PCI slot, you should instead remove the card from the system.

If you do use the `asr-disable pci-slot`*n* command to disable a slot with a card present (whether or not the card is failing), the interpreter will pause, waiting for a response from the card. Since the card will not respond due to the fact it was disabled, the boot sequence will be delayed by several minutes.