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Solaris™ 8 2/04 Release Notes Supplement for Sun™ Hardware

Includes Additional Release Notes and End-of-Support Statements for the Solaris 8 2/04 Operating Environment Running on Sun Hardware Products

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Contents

Late-Breaking News

This manual provides the following information:

- Late-breaking news (this chapter)
- End-of-support and future end-of-support statements (Chapter 2)
- Open issues (Chapter 3)
- Alternate Pathing issues (Chapter 4)
- Sun Fire midrange system issues (Chapter 5)
- Sun Enterprise midrange system open issues (Chapter 6)
- Sun Enterprise™ 10000 server issues (Chapter 7)
- Sun Fire High-End Servers open issues (Chapter 8)

This manual supplements the *Solaris 8 2/04 Sun Hardware Platform Guide* and the *Solaris 8 2/04 Release Notes.*

Patches included in this release that occurred after the Solaris 8 release are listed by number in the online Solaris 8 2/04 Release Notes at:

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

No OEM Content in This Release

The Solaris 8 2/04 media includes no OEM content to support non-Sun hardware systems.

Unbundled Product Support

Although the Solaris 8 2/04 software is designed and tested to be compatible with previous releases, some applications may not be fully ABI-compliant. Contact the supplier of the unbundled product directly for information about compatibility.

If you are upgrading from an existing version of Solaris software and have installed unbundled products, either from Sun or from a different company, you must ensure that all those products are supported on the Solaris 8 2/04 operating environment prior to upgrading. Depending on the status of each unbundled product, you have three options for each unbundled product:

- Verify that the existing version of the unbundled product is supported on the Solaris 8 2/04 operating environment.
- Acquire and install a new version of the unbundled product that is supported on the Solaris 8 2/04 operating environment. Note that in this case you may need to remove the previous version of the unbundled product prior to upgrading to the Solaris 8 2/04 operating environment. See the unbundled product documentation for more details.
- Remove the unbundled product prior to upgrading to the Solaris 8 2/04 operating environment.

For additional information contact the supplier of the unbundled product or your service provider or go to:

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

Additional Supported Platforms

In addition to the platforms named in the *Solaris 8 2/04 Sun Hardware Platform Guide*, the platforms in TABLE 1-1 are also supported:

TABLE 1-1   Additional Supported Platforms for Solaris 8 2/04

System	Platform Name	Platform Group
Sun Fire E2900	SUNW,Sun-Fire	sun4u
Sun Fire E4900	SUNW,Sun-Fire	sun4u

TABLE 1-1   Additional Supported Platforms for Solaris 8 2/04 *(Continued)*

System	Platform Name	Platform Group
Sun Fire E6900	SUNW,Sun-Fire	sun4u
Sun Fire E20K	SUNW,Sun-Fire-Enterprise-20K	sun4u
Sun Fire E25K	SUNW,Sun-Fire-Enterprise-25K	sun4u

Documents on the Solaris 8 2/04 Software Supplement CD

Note – In this document, the CD labeled "Solaris 8 2/04 Software Supplement" is called the "Supplement CD".

TABLE 1-2 lists some documents available on the Supplement CD that are not included in AnswerBook™ or man page collections.

TABLE 1-2   Documents on the Supplement CD

Path	Comment
`Docs/README/README_en.html`	Readme file for Solaris 8 2/04 Software Supplement CD
`Docs/HWPG/HWPG_en.pdf`	*Solaris 8 2/04 Sun Hardware Platform Guide* (also available in hardcopy and AnswerBook form)
`Docs/VTS_PS5_DOC_SUPP/VTS_PS5_DOC_SUPP_en.pdf`	*SunVTS 5.1 Patch Set 5 Documentation Supplement*
`Docs/SSP_RN/SSP_RN_en.pdf`	*Sun Enterprise 10000 SSP 3.5 Installation Guide and Release Notes*
`Docs/COD_RN/COD_RN_en.pdf`	*Sun Enterprise 10000 Capacity on Demand 1.0 Installation Guide and Release Notes*
`Docs/SUN_E10K_DR_UG/SUN_E10K_DR_UG_en.pdf`	*Sun Enterprise 10000 Dynamic Reconfiguration User Guide*
`Docs/SUN_E10K_DR_CONFIG_GUIDE/SUN_E10K_DR_CONFIG_GUIDE_en.pdf`	*Sun Enterprise 10000 DR Configuration Guide*

TABLE 1-2 Documents on the Supplement CD *(Continued)*

Path	Comment
`Docs/FBH/FBH_en.pdf`	*Solaris Handbook for Sun Frame Buffers* (includes information about the XVR-500 frame buffer)
`Docs/REFMAN_SUPP/REFMAN_SUPP_en.pdf`	*Solaris on Sun Hardware Reference Manual Supplement*
`Docs/DMFE/DMFE_en.ps`	*Platform Notes: The dmfe Fast Ethernet Device Driver*
`Docs/SUN_FIRE_MIDRANGE_DR_UG/SUN_FIRE_ MIDRANGE_DR_UG_en.pdf`	*Sun Fire Midrange Systems Dynamic Reconfiguration User Guide*
`Docs/SUN_FIRE_15K12K_DR_UG/SUN_FIRE_15K 12K_DR_UG_en.pdf`	*Sun Fire 15K/12K Dynamic Reconfiguration User Guide*
`SunForum_3.1/Docs/sunforumUG.ps`	*SunForum™ User's Guide*
`RSC_2.2.2/Product/SUNWrscd`	*Remote System Control 2.2 User Guide* Note: This document is installed from a package as part of the RSC software installation.
`System_Management_Services_1.3/Docs/SMS _RN/SMS_RN_en.pdf`	*System Management Services (SMS) 1.3 Release Notes*
`System_Management_Services_1.3/Docs/SUN _FIRE_HIGHEND_SOG/SUN_FIRE_HIGHEND_SOG_ en.pdf`	*Sun Fire High-End Systems Software Overview Guide*
`System_Management_Services_1.3/Docs/SMS _INST/SMS_INST_en.pdf`	*System Management Services (SMS) 1.3 Installation Guide*
`System_Management_Services_1.3/Docs/ SMS_ADMIN/SMS_ADMIN_en.pdf`	*System Management Services (SMS) 1.3 Administrator Guide*
`System_Management_Services_1.3/Docs/ SMS_REFMAN/SMS_REFMAN_en.pdf`	*System Management Services (SMS) 1.3 Reference Manual*
`Docs/SMS_DR_UG/SMS_DR_UG_en.pdf`	*System Management Services (SMS) 1.3 Dynamic Reconfiguration User Guide*

Note – The _en indicates an English language document. Other languages may be indicated, depending on locale.

The Supplement CD also contains other documentation in AnswerBook packages and in man page packages. The documentation in AnswerBook packages can only be read through the AnswerBook2™ server software provided on the Solaris

Documentation CD. Documents in the man page packages can only be read through the `man` command. Refer to the *Solaris 8 2/04 Sun Hardware Platform Guide* for details on installing these packages from the Supplement CD.

Flash PROM Update for 64-Bit Operations

Some sun4u systems need to be updated to a higher level of OpenBoot™ firmware in the flash PROM before they can run the 64-bit mode of the Solaris 8 2/04 operating environment. Systems that can only run the 32-bit mode (such as those in the sun4d and sun4m platform groups) do not require updated firmware to run Solaris 8 2/04 software.

The only systems that may require this flash PROM update are the following:

■ Sun Ultra™ 1
■ Ultra 2
■ Ultra 450 and Sun Enterprise 450
■ Sun Enterprise 3000, 4000, 5000, and 6000 systems

See the *Solaris 8 2/04 Sun Hardware Platform Guide* for instructions for determining whether your system needs a flash PROM update and for instructions on performing that update.

For the Ultra and Ultra 2 systems, an antistatic wrist strap may be required for the update. If you need a wrist strap, send e-mail to `strap@sun.com`.

Flash PROM Update CD No Longer Included

As of Solaris 8 7/01, the Flash PROM multimedia AnswerBook CD is no longer available. Up-to-date instructions for updating flash PROM are still available in the *Solaris 8 2/04 Sun Hardware Platform Guide*.

Removable Media Manager Issues

The Removable Media Manager replaces the "Open Floppy" and "Open CD-ROM" options formerly found in the CDE menus and front panel. For related bug descriptions and workarounds, refer to the "Common Desktop Environment Bugs" section of "Solaris Runtime Issues" in the *Solaris 8 (SPARC Platform Edition) 10/00 Release Notes Update* on `http://docs.sun.com`.

Patch Enables Booting From DVD-ROM Media

If your system has a Toshiba SD-M1401 DVD-ROM drive with firmware revision 1007, the system cannot boot from the Solaris 8 2/04 DVD.

Workaround: Apply patch 111649-03, or a later version, to update the Toshiba SD-M1401 DVD-ROM drive's firmware. You can download patch 111649-03 or a later version by going to the SunSolve^SM website at:

`http://sunsolve.sun.com`

Patches Enable StarOffice 6.0

To install and run StarOffice 6.0 with Solaris 8 2/04, make sure that the following patches are installed on your system:

- 108434-09 or later
- 108435-09 or later

DVD-ROM/CD-ROM Drives on Headless Systems

Power management of interactive devices such as removable media is linked with power management of your monitor and the graphics card that drives your monitor. If your screen is active, devices such as the CD-ROM drive and floppy disk are kept at full-power mode. This means that if you are running a system without a monitor, these devices may go into low-power mode. If you want to restore power to the CD or floppy, simply type `volcheck` to cause the OS to get the latest status from each removable device.

Alternatively, you can disable power management on your system by using the dtpower GUI. Then the devices are not put into low-power mode even when on a headless system, but run at full power all the time. This is not a bug, but is the intended behavior.

Installing Supplement CD Products From DVD

If you are installing Solaris using a DVD and want to install any products from the Supplement CD, select the "custom installation" option in the "Select Type of Install" window.

Patch 114152-01 Available

Patch 114152-01 is now available on SunSolve for use with Solaris 8 2/04. This patch fixes two previous bugs: BugID 4775194 (which affected any user who installed the Japanese BCP package), and BugID 4775198.

This patch can be obtained from the web at:

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

End-of-Support Products

Products Not Supported in the Solaris 8 Operating Environment

Support for the following products has been discontinued. For more information, contact your support provider.

Sun4c Systems

The following sun4c architecture systems and servers based on these systems are not supported by this Solaris release:

- SPARCstation™ SLC
- SPARCstation ELC
- SPARCstation IPC
- SPARCstation IPX
- SPARCstation 1
- SPARCstation 1+
- SPARCstation 2

Note – All hardware options (such as SCSI devices) and supported configurations that are dependent upon the sun4c architecture are no longer supported. A list of these options is included in the Supplement CD `/Docs/HWPG` directory in the `EOS.html` file.

SPARCstation Voyager

SPARCstation Voyager™ systems are not supported by this Solaris release.

SPARC Xterminal 1

SPARC Xterminal 1™ systems are not supported by this Solaris release.

ShowMe TV

ShowMe TV™ is not supported by this Solaris release.

PC File Viewer

PC file viewer is not supported by this Solaris release.

PC Launcher

PC Launcher is not supported by this Solaris release.

Solaris Maintenance Updates

The Solaris Maintenance Updates (MUs), a separate patch collection provided in conjunction with the Solaris Update Releases, are not available for this release, neither as a CD image nor as a download.

The preferred mechanism for updating a Solaris release—for example, to update from the Solaris 8 2/02 operating environment to the Solaris 8 2/04 operating environment—is to use the "upgrade" mechanism (see the *Solaris 8 Advanced Installation Guide*).

Future End-of-Support Products

Support for the following products may be discontinued in future releases. For more information, contact your service provider.

sun4d Servers (32-bit only)

The following sun4d architecture servers may no longer be supported in a future release:

- SPARCserver™ 1000 systems
- SPARCcenter 2000 systems

Hardware options that are dependent on the sun4d architecture may no longer be supported in a future release.

Ethernet Quad Drivers `qe` and `qec`

Ethernet Quad drivers `qe` and `qec` may no longer be supported in a future release.

Alternate Pathing Multipath I/O

Alternate Pathing (AP) multipath I/O technology may no longer be supported in a future release. See Chapter 4 for further details.

SunHSI/S, SunFDDI/S, SunFDDI/P, `le` Drivers

SunHSI™/S, `le`, SunFDDI™/S, and SunFDDI/P drivers may no longer be supported in a future release.

Token Ring Network Drivers

SBus Token Ring and PCI bus Token Ring network drivers may no longer be supported in a future release.

SPC Driver

The SPC S-Bus interface card driver may no longer be supported in a future release. The SPC card is a serial parallel controller (S-Bus, 8-port serial, 1 parallel).

Sun4m Platform Group

The sun4m platform group may no longer be supported in a future release. This would affect the following platforms:

- SPARCclassic
- SPARCstation™ LX / LX+
- SPARCstation 4
- SPARCstation 5
- SPARCstation 10
- SPARCstation 20

Open Issues

This chapter discusses:

Application-Specific Issues

Sun StorEdge SAN: Use Latest Upgrades

If your system is configured with Sun StorEdge SAN 4.x software and firmware, determine whether the latest upgrades have been installed. More information is available at:

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

SunScreen SKIP 1.1.1 Not Supported in Solaris 8 2/04 Operating Environment

If you have SunScreen™ SKIP 1.1.1 software currently installed on your system, you should remove the SKIP packages before installing or upgrading to the Solaris 8 2/04 operating environment. The packages you should remove are: `SICGbdcdr, SICGc3des, SICGcdes, SICGcrc2, SICGcrc4, SICGcsafe, SICGes, SICGkdsup, SICGkeymg, SICGkisup`.

PCMCIA Issues

The following bugs have been filed against PCMCIA device support in this Solaris release.

Known Bugs

System Appears to Hang When the PC ATA (`pcata`) Module Is `modunloaded` (BugID 4096137)

If there is a PCMCIA I/O card in a slot that has been accessed and the card driver is unloaded (as occurs during `modunload -i 0` at the end of multi-user boot) the system appears to hang.

Workaround: Removing the card may bring the system back.

Booting the Solaris 8 Operating Environment Initially With a 64-bit Kernel May Not Create the Device `/dev/term/pc0`, PC Card Serial Driver (BugID 4162969)

When booting the Solaris 8 operating environment initially with a 64-bit kernel, the `/dev/term/pc0` hardware device node for PC card serial device may not be created.

Workaround: Boot the system with the 32-bit kernel first, then reboot with the 64-bit kernel.

LOMlite 2 Lights Out Management Software Release Notes

This release of the Lights Out Management (LOM) software is currently supported on Sun Fire V100, Sun Fire V120, Netra T1, Netra X1, Netra t1, Netra t1400/1405 servers. For configuration and operation instructions for Lights Out Management software, see the relevant chapter in the User Manual that came with the supported server platforms.

Adding the LOMlite2 Software

1. Insert the Supplemental CD and change to the LOMlite 2.0 software directory:

```
# cd /cdrom/cdrom0/Lights_Out_Management_2.0/Product
```

2. Add the LOMlite 2.0 packages, responding y to all questions:

```
# pkgadd -d . SUNWlomm SUNWlomr SUNWlomu
```

3. Verify that the LOMlite 2.0 packages were installed:

```
# pkgchk -v SUNWlomm SUNWlomr SUNWlomu
```

The LOMlite2 software is now installed. Continue by adding LOMlite2 Patch 110208 as described in the next section.

Adding LOMlite2 Patch 110208

Ensure you have the latest revision of Patch 110208 from SunSolve (revision -13 or later).

Note – The LOMlite2 software does not function unless this patch is added.

1. **Confirm the base LOMlite2 firmware version.**

   Type #. to change to the `lom>` prompt, then run `version`.

   ```
   #.
   lom>version

   LOM version:        v4.4-LW2+
   LOM checksum:       387e
   LOM firmware part#  258-7939-12
   Microcontroller:    H8S/2148
   LOM firmware build  Aug 30 2001 18:02:40
   Configuration rev.  v1.2

   lom>console
   ```

   The LOM firmware version must not be earlier than 4.5.

2. **Type `console` at the `lom>` prompt to return to the # prompt.**

3. **Confirm that the device node is present (via PROM 4.2.4):**

   ```
   # prtconf -V
   OBP 4.2.4 2001/06/13 10:10
   # prtconf | grep SUNW,lomv
                   SUNW,lomv (driver not attached)
   ```

4. **Copy the patch to a temporary directory (`/var/tmp`).**

   Confirm that the patch is present:

   ```
   # cd /var/tmp
   # ls
   110208-13.zip
   ```

5. **Extract the patch:**

   ```
   # unzip 110208-13.zip
   ```

6. **Apply the patch:**

   ```
   # patchadd 110208-13
   # reboot
   ```

7. **Confirm that the patch has been loaded:**

```
# modinfo | grep lomv
```

8. **To upgrade the firmware, type:**

```
# lom -G default
```

When prompted, type **C** to continue.

> **Note –** This process takes several minutes. Do not turn off the system while the update is progressing.

9. **Press Return to redisplay the UNIX prompt.**

> **Note –** If the system displays the ok prompt, type **go** to return to the UNIX prompt.

10. **Check the functionality by running the** `lom -a` **command:**

```
# lom -a
PSUs:
1 OK

Fans:
1 OK speed 90%
2 OK speed 86%
3 OK speed 75%

LOMlite configuration settings:
serial escape character=#
serial event reporting=default
Event reporting level=fatal, warning & information

Serial security=enabled
Disable watchdog on break=enabled
Automatic return to console=disabled
alarm3 mode=user controlled
firmware version=4.5
firmware checksum=1164
product revision=1.4
product ID=Netra T4
.
<truncated>
.
LOMlite led states:
1       on              Power
2       off             Fault
3       off             Supply A
4       off             Supply B
5       on              PSU ok
6       off             PSU fail
#
```

The software is now installed and the system is ready for use.

Solstice DiskSuite and Alternate Pathing (BugID 4367639)

A segmentation fault error occurs when invoking the Solstice DiskSuite™ 4.1.2 metatool on a Sun Enterprise 6000 system with Alternate Pathing 2.3 or 2.3.1 already installed and configured on a SPARCstorage™ Array 100 or SPARCstorage Array 200.

After invoking the metatool, the following message is displayed:

```
root@[/]>metatool &
[1]    2569
root@[/]>Initializing metatool... Done.
Discovering drives and slices... metatool: Segmentation Fault
```

Workaround: Move `/usr/lib/libssd.so.1` and `/usr/lib/libap_dmd.so.1` to `/usr/sadm/lib/lvm`.

Vulnerability in the ToolTalk Database Server Allows Root Access (BugID 4499995)

When the ToolTalk Database Server (`/usr/openwin/bin/rpc.ttdbserverd`) is enabled, remote and local attacks are possible. These attacks can potentially give root access to the system. Attacked systems can be identified by the presence of garbage files in the root directory that begin with an A.

Workaround: Remove the `rpc.ttdbserverd` line from the `inetd.conf` file. Disable the service by using the `chmod a-x` command on `/usr/openwin/bin/rpc.ttdbserverd`. Check with your Sun representative about future patches.

Veritas Installation Fails on Solaris 8 2/04 (BugID 4950830)

VERITAS File System (tm) 3.5 installation fails on systems running Solaris 8 2/04 because it depends on patch 108901, which was obsoleted by patch 108528-24. The `VRTSvxfs` installation package must be modified to remove the dependency of patch 108901-03 or later. The following error message appears:

```
ERROR: This package requires same or higher revision of
 < 108901-03 > which has not been applied to the system.
Exiting installation...
pkgadd: ERROR: checkinstall script did not complete successfully
```

Workaround: Retrieve the modified files from the Veritas website:

`http://seer.support.veritas.com/docs/264856.html`

Follow the instructions listed with the files.

Veritas `VRTSvxfs` Package Fails Installation (BugID 4820479)

When attempting to install the third-party Veritas 3.4 filesystem `vxvm` using the `pkgadd` utility, the `VRTSvxfs` package might fail installation with an error message that reads, in part:

```
ERROR:  This package requires same or higher revision
 of <  108528-02 > which has not been applied to the system.
Exiting installation...
pkgadd: ERROR: checkinstall script did not complete successfully
```

Veritas has fixed this bug in the installation script. A new revision of the Version 3.4 vxfs is available from Veritas which fixes this problem. The Version 3.5 vxfs product has also corrected this problem. Both of these versions are available directly from the Veritas web site:

`http://veritas.com`

SunVTS 5.1 Patch Set 5 (PS5) Issues

The following issues apply to the SunVTS™ 5.1 PS5 product.

New Features and Tests for This Release

The SunVTS 5.1 PS5 software is compatible with the Solaris 8 2/02, Solaris 8 HW 12/02, Solaris 8 HW 5/03, Solaris 8 HW 7/03, Solaris 8 2/04, Solaris 9, Solaris 9 9/02, Solaris 9 12/02, Solaris 9 4/03, Solaris 9 8/03, Solaris 9 12/03, and Solaris 9 4/04 operating environments. The following new features and tests are added to the SunVTS 5.1 PS5 release:

- JNI 2GB FC HBA Test (jnifctest) – Tests the functionality of the JNI FC HBA.

Note – The S24 Frame Buffer Test (tcxtest) might be discontinued in a future release of SunVTS.

Note – The SunPCi™ II Test (sunpci2test) tests both the SunPCi II and SunPCi III cards in SunVTS 5.1 PS2.

Note – All new features, tests, and test enhancements that are released in SunVTS 5.1 PS5 are documented in the *SunVTS 5.1 Patch Set 5 Documentation Supplement* (817-4350-10). This document is included on the Solaris Software Supplement CD and is available at: `http://docs.sun.com`

Refer to the *SunVTS 5.1 Patch Set 5 Documentation Supplement* for details about the new features and tests offered in this release.

Note – The name of the Remote System Control test (rsctest) has been changed to System Service Processor test (ssptest) in SunVTS 5.1 PS1. The reason for this change is that ssptest tests the Advanced Lights-Out Management (ALOM) hardware in addition to both Remote System Control 1.0 and 2.0 hardware.

Note – The SPARCstorage® Array Controller Test (plntest) is discontinued in Solaris 9 8/03.

Online Help Documentation

The online help documentation available with the SunVTS 5.1 software includes a chapter describing the RAM test (`ramtest`). This test is supported only in SunVTS 5.1 Patch Set 4 (PS4) onward.

SunVTS 5.1 Test Reference Manual Errata

This section lists corrections to errors in the Supported Test Modes tables of the following test chapters in the SunVTS 5.1 Test Reference Manual:

- Compact Disk Test (`cdtest`)

  Online test mode is supported in SunVTS 5.1.

- CPU Test (`cputest`)

  Online test mode is supported in SunVTS 5.1.

- Disk and Floppy Drives Test (`disktest`)

  Online test mode is supported in SunVTS 5.1.

- DVD Test (`dvdtest`)

  Online test mode is supported in SunVTS 5.1.

- ECP 1284 Parallel Port Printer Test (`ecpptest`)

  Online test mode is not supported in SunVTS 5.1.

- Sun StorEdge A5x00 Test (`enatest`)

  Functional and Online test modes are supported in SunVTS 5.1.

- Sun StorEdge 1000 Enclosure Test (`enctest`)

  Online test mode is supported in SunVTS 5.1.

- Environmental Test (`env2test`)

  Online and Exclusive test modes are not supported in SunVTS 5.1.

- Environmental Test (`env4test`)

  Connection test mode is supported in SunVTS 5.1

- Floating Point Unit Test (`fputest`)

  Online and Exclusive test modes are supported in SunVTS 5.1.

- Cache Consistency Test (`mpconstest`)

  Only Exclusive test mode is supported in SunVTS 5.1.

- Multiprocessor Test (`mptest`)

  Only Exclusive test mode is supported in SunVTS 5.1.

- Qlogic 2202 Board Test (`qlctest`)

Only Exclusive and Connection test modes are supported in SunVTS 5.1.

- Serial Ports Test (`sptest`)

  Online test mode is not supported in SunVTS 5.1.

- System Service Processor Test (`ssptest`)

  Exclusive test mode is supported in SunVTS 5.1.

  Functional test mode is not supported in SunVTS 5.1

- SunHSI Board Test (`sunlink`)

  Online test mode is not supported in SunVTS 5.1.

- System Test (`systest`)

  Connection test mode is not supported in SunVTS 5.1.

- Tape Drive Test (`tapetest`)

  Online test mode is not supported in SunVTS 5.1.

- S24 Frame Buffer Test (`tcxtest`)

  Connection test mode is supported in SunVTS 5.1.

SunVTS 5.1 User's Guide Errata

In Appendix A, SunVTS Window and Dialog Box Reference, Table A-11 indicates the incorrect default value of 0 (zero) for the Max Errors field of the example systest Test Parameter Options dialog box in Figure A-11. The correct default value of the Max Errors field of the systest Test Parameter Options dialog box is 1 (one) as indicated in Figure A-11.

Also in Appendix A, Table A-13 indicates the incorrect default value of 0 (zero) for the Max System Errors field of the example systest Threshold Options dialog box in Figure A-13. The correct default value of the Max System Errors field of the systest Threshold Options dialog box is 1 (one) as indicated in Figure A-13.

Possible Installation Issues

You might encounter an installation problem when you attempt to install SunVTS with an installation program other than the `pkgadd` command as described in the following subsections.

If SunVTS 5.1 software is installed in the default `/opt` directory, you cannot install a subsequent SunVTS 5.1 Patch Set release in a different directory on the same system. When this duplicate installation is attempted with `pkgadd`, the following error message occurs:

```
pkgadd: ERROR: SUNWvts is already installed at /opt. Cannot create
a duplicate installation.
```

The reason for this error is that the base package revision is the same for both SunVTS 5.1 and any subsequent SunVTS 5.1 Patch Set release. When a SunVTS 5.1 Patch Set release is installed in the default `/opt` directory which already has SunVTS 5.1 software installed, the installation completes successfully with the following warning message:

```
This appears to be an attempt to install the same architecture and
 version of a package which is already installed.   This
 installation will attempt to overwrite this package.
```

Installation Package Dependency Issue for Solaris 8 (RFE ID 4823716)

From SunVTS 5.1, the SunVTS software depends on XML packages that are not included with the Solaris 8 2/02 distribution. For Solaris 9, all of the prerequisite packages are installed with the End User Solaris Software Group as a minimum.

Note – The additional XML packages are available on the Solaris 8 HW 12/02 through Solaris 8 2/04 Software Supplement CD-ROMs and not on the Solaris 8 2/02 Software Supplement CD-ROM. Although SunVTS 5.1 installation is supported on Solaris 8 2/02, the XML packages are not included in the Solaris 8 2/02 distribution.

You may install SunVTS 5.1 on Solaris 8 2/02, Solaris 8 HW 12/02, Solaris 8 HW 5/03, Solaris 8 HW 7/03, or Solaris 8 2/04. If you choose to install SunVTS 5.1 or later on any of these releases, you must separately install the required XML packages (`SUNWlxml`[32-bit] and `SUNWlxmlx`[64-bit]) from either the Solaris 8 HW 12/02, Solaris 8 HW 5/03, Solaris 8 HW 7/03, or Solaris 8 2/04 Software Supplement CD-ROM.

Note – SunVTS 4.6, which is delivered on the Solaris 8 2/02 Software Supplement CD-ROM, does not have the XML packages dependency and is supported on Solaris 8 2/02. SunVTS 5.1 is also supported on Solaris 8 2/02 if the XML packages are installed from the Solaris 8 HW 12/02 through Solaris 8 2/04 Software Supplement CD-ROM.

For Solaris 8 releases:

1. Install the minimum End User Solaris Software Group.

2. Install the XML packages `SUNWlxml`(32 bit) and `SUNWlxmlx`(64 bit) from either the Solaris 8 HW 12/02, Solaris 8 HW 5/03, Solaris 8 HW 7/03, or Solaris 8 2/04 Software Supplement CD-ROM.

Note – These XML packages are not available in the Solaris 8 2/02 distribution.

3. Install `SUNWzlib`(32 bit) and `SUNWzlibx`(64 bit) packages from the Entire Solaris Software Group from either the Solaris 8 2/02, Solaris 8 HW 12/02, Solaris 8 HW 5/03, Solaris 8 HW 7/03, or Solaris 8 2/04 Software CD-ROM.

Note – The XML packages depend on the `SUNWzlib`(32 bit) and `SUNWzlibx`(64 bit) packages which are not part of the End User Solaris Software Group for Solaris 8 2/02, Solaris 8 HW 12/02, Solaris 8 HW 5/03, Solaris 8 HW 7/03, or Solaris 8 2/04.

4. Install the optional `SUNWcpc(x)`/`SUNWcpcu(x)` packages only if you want to enable displaying certain performance counters for certain CPU and memory tests. Otherwise, these packages need not be installed.

   The `SUNWcpc(x)`/`SUNWcpcu(x)` packages are included in the Entire Solaris Software Group for Solaris 8 2/02, Solaris 8 HW 12/02, Solaris 8 HW 5/03, Solaris 8 HW 7/03, and Solaris 8 2/04. These packages are not included in the End User Solaris Software Group for Solaris 8 2/02, Solaris 8 HW 12/02, Solaris 8 HW 5/03, Solaris 8 HW 7/03, nor Solaris 8 2/04.

To install SunVTS for Solaris 9 and later releases:

1. Install the End User Solaris Software Group (or any software group).

   The XML packages (`SUNWlxml`[32-bit] and `SUNWlxmlx`[64-bit]) and the `SUNWzlib` packages (`SUNWzlib`[32 bit] and `SUNWzlibx`[64 bit]) are part of the End User Solaris Software Group (and Entire Solaris Software Groups) for Solaris 9 releases.

2. Install the optional `SUNWcpc(x)`/`SUNWcpcu(x)` packages only if you want to enable displaying certain performance counters for certain CPU and memory tests. Otherwise, these packages need not be installed.

The SUNWcpc(x)/SUNWcpcu(x) packages are part of the Entire Solaris Software Group and not the End User Solaris Software Group.

Installation Issue:
32-bit Only Systems and Web Start 2.0 (Bug ID 4257539)

Web Start 2.0 may not install SunVTS on systems that do not have the Solaris 64-bit environment installed. Web Start 2.0 removes the SunVTS 32-bit packages when the SunVTS 64-bit packages cause the installation to suspend.

Workaround: Use the `pkgadd` command to install the 32-bit SunVTS packages as described in the *SunVTS 5.1 User's Guide*.

Installation Issue:
Security and Web Start 2.0 (Bug ID 4362563)

When you install SunVTS using Web Start 2.0, you are not prompted to enable the Sun Enterprise Authentication Mechanism™ (SEAM) Kerberos v5, SunVTS security feature. The installation defaults in a way that installs SunVTS without this high level of security. If you do not want the high-level security, there is no problem.

Workaround: To enable the high-level SEAM security, use the `pkgadd` command to install SunVTS packages as described in the *SunVTS 5.1 User's Guide*.

Installation Issue:
The Installation Directory With Web Start 2.0 Is Not User-Definable (Bug ID 4243921)

When you attempt to install SunVTS using Web Start 2.0, you are unable to change the directory where SunVTS is installed. SunVTS will be installed in `/opt`.

Workaround: Use the `pkgadd -a none` command to install SunVTS in the directory of your choice as described in the *SunVTS 5.1 User's Guide*.

Installation Recommendation:
Install and Uninstall Using the Same Program

Use the same tool or utility for installation and removal of the SunVTS software. If you use `pkgadd` for installation, use `pkgrm` to uninstall; if you use Web Start for installation, use the Product Registry to uninstall.

Workaround: None.

Possible Runtime Issues

Patch for Testing CPUs on Sun Fire E25K Systems

When performing the following SunVTS tests on Sun Fire E25K systems with 72 UltraSPARC IV processors (144 CPU IDs), the following issues might occur:

- `systest` - A Bus Error (core dumped) error might occur (Bug ID 4981458)
- `mptest` - The test could hang (Bug ID 4982924)
- `mpconstest` - The test could fail because of too many CPU IDs (Bug ID 4982944)
- `cmttest` - The test times out (Bug ID 4982948)
- `cmttest` - The test fails (Bug ID 4981014)

Workaround: Look for the latest version of Patch ID 116042 at:

`http://sunsolve.sun.com`

Using `cmttest` (Bug ID 4981014)

`cmttest` is not currently supported for Netra servers with Jaguar UltraSPARC IV CMTs (Chip Multiprocessors).

Workaround: None.

Using `systest` on Sun Fire 15K Systems (Bug ID 4981458)

When performing `systest` on Sun Fire 15K systems with 72 UltraSPARC IV processors (144 cpuIDs), a Bus Error (core dumped) error might occur.

Workaround: None.

Adding Boards to Sun Fire 15K Systems (Bug ID 4959606)

On Sun Fire 15K systems, adding new boards might cause some of the processor and memory related tests to perform ineffectively. Specifically, `cmttest` might fail to recognize the CMT processors on the new board. Similar failures might also occur in `l2sramtest`, `l1dcachetest`, `dtlbtest`, `ramtest`, `bustest`, `mptest`, and `fputest`.

Workaround: Reboot the system after adding a new board.

pfbtest *Fails When Used in the Gnome Desktop Environment (Bug ID 4938281)*

pfbtest might fail when performed in the Gnome desktop environment on a Sun XVR-100 graphics accelerator if the test is performed in the default console window.

This failure does not occur in the Solaris 8 2/02 and Solaris 8 HW 3/03 operating environments. If this failure occurs, you see an error message similar to the following:

```
pfb3(pfbtest)              passes: 26 errors: 12
```

Workaround: None.

Using ecpptest *(Bug ID 4482992)*

An ecpp/parallel port driver issue might cause ecpptest to fail. The failure rate is three out of 130 machines; the time to fail is about 10 hours.

Note – This driver issue exists only in Solaris 8 software.

Workaround: None.

Using sutest *and* disktest *Simultaneously (Bug ID 4858028)*

Sun Blade 100 and 150 systems with SunVTS can produce data corruption errors when the serial port controller (southbridge) is also handling other heavy traffic such as data access from and to the IDE hard disk.

With SunVTS simultaneously running sutest and disktest on Sun Blade 100 and 150 systems, you might see sutest report failures similar to the following:

```
07/11/03 16:35:58 dt214-175 SunVTS5.1ps2: VTSID 6003 sutest.ERROR su0:
"data miscompare, cnt = 2910, exp = 0x5e, obs = 0x4e, receive device =
/dev/term/a, source device = /dev/term/a, baud rate = 9600"
Probable_Cause(s): <system load too heavy for selected baud rate>
<loopback connection defective> <bad serial port hardware> <system
software error> Recommended_Actions: <reduce system load> <lower baud
rate> <check loopback connection> <if the problem persists, contact
authorized Sun service provider>
```

The difference between the expected (`exp`) and the observed (`obs`) values is always 0x10.

The long term technical fix for this problem will involve the installation of a patch or driver to be released in the near future. The root cause of this failure is still under investigation.

Workaround: Do not perform `sutest` and `disktest` simultaneously.

Using `zulutest` (Bug ID 4753578)

If you perform the Sun XVR-4000 Graphics Accelerator Test (`zulutest`) on a system that was powered on without running X-Windows, you must bring up X-Windows on the Sun XVR-4000 Graphics Accelerator device under test and kill the X-Windows process before performing `zulutest`. Otherwise, the Convolve subtest might fail, and other subtests might also fail.

Note – You must enable multisampling with the `fbconfig` command before performing the following workaround. To perform `zulutest` with X-Windows (CDE) the following workaround is not necessary.

Workaround: To bring up X-Windows on the Sun XVR-4000 Graphics Accelerator device under test, enter the following command:

```
/usr/openwin/bin/Xsun -dev /dev/fbs/device_name &
```

It takes 30 to 45 seconds before Xsun comes up. To kill the Xsun process, enter the following command:

```
pkill -KILL Xsun
```

Once the Xsun process is killed, the `zulutest` can be performed without the incorrect subtest errors.

The Sun XVR-4000 Graphics Accelerator cannot perform video read back in Interlaced and Stereo modes because the Convolve subtest cannot keep up.

For `zulutest` to be able to perform the Convolve subtest, multisampling must be enabled.

Workaround: None.

Using `pkginfo -c sunvts` Command

The command `pkginfo -c sunvts` does not produce any output in SunVTS 5.1. This situation correctly implements the `-c` option of the `pkginfo` command.

Workaround: Use the following command to receive SunVTS 5.1 package information:

```
# pkginfo -l SUNWvts SUNWvtsx SUNWvtsmn
```

You can also use either of the following commands to receive additional SunVTS 5.1 package information:

```
# pkginfo | grep vts
# showrev -p | grep vts
```

Workaround: None.

Using `sutest` (Bug ID 4750344)

Performing `sutest` on a port that is being used as console causes `sutest` to fail.

Workaround: Do not perform `sutest` on a port that is being used as a console.

Using `afbtest` in a Gnome Environment (Bug ID 4871535)

Using `afbtest` in a Gnome environment might stop the Xserver when the screen-saver is set to disable. If the Xserver is stopped, `afbtest` might fail immediately with the following error messages:

```
SunVTS5.1ps4: VTSID 7012 vtsk.INFO : *Failed test*
 afb0(afbtest)           passes: 0       errors: 1
SunVTS5.1ps4: VTSID 6063 afbtest.ERROR fbs/afb0: Can't access XWindows.
Probable_Cause(s): <Software error.>
Recommended_Action(s): <Try running xhost(1) or contact your system
 administrator.>
```

Workaround: Type the `xhost +` command on the machine being tested and continue the test; the `afbtest` will pass.

librt *Objects Do Not Transition to Multi-User Mode (BugID 4479719)*

SunVTS may fail in multi-user mode when semaphores are created improperly.

Workaround: Kill and restart `picld` after the machine reaches multiuser mode, but before running SunVTS:

```
# /etc/init.d/picld stop
# /etc/init.d/picld start
```

Using jnifctest *(Bug ID 4965226)*

An error might occur when `jnifctest` is performed on a system with 5 JNI ports. This error occurs on one card and the error can be seen using the data pattern 0x00000000. The value returned for the `fcio_errno` statistic is 65 (decimal).

Workaround: Turn off the self-test or perform the test on one port only.

Using disktest *(Bug ID 4915233)*

When performing `disktest`, the test might probe and premount the Solstice DiskSuite (SDS) partitions as mirrors.

Workaround: Set the `BYPASS_FS_PROBE` parameter to 0.

Creating Schedules (Bug ID 4946695)

If the `/var/opt/SUNWvts/sched_manage` directory is not present, schedules cannot be created.

Workaround: Create the `/var/opt/SUNWvts/sched_manage` directory before creating schedules.

qlctest *Internal Loopback Failure (Bug ID 4704300)*

The `qlctest` 10-bit/1-bit internal loopback subtests might fail when performed on Sun Fire V880 platforms. This problem is fixed in the latest SAN Foundation software.

Workaround: Install the Sun StorEdge SAN Foundation Software 4.2 or later from: `http://www.sun.com/storage/san/`

Sun Remote System Control 2.2 Release Notes

This document deals with Sun Remote System Control (RSC) 2.2 hardware and software issues. For complete information about using RSC, see the *Sun Remote System Control (RSC) 2.2 User's Guide.*

What's New in RSC 2.2

Several new features are available in RSC 2.2:

- The RSC GUI requires an updated version of the Java™ Runtime Environment, Java 2 Standard Edition (J2SE) Runtime Environment Version 1.3.0_02 or greater. You can download the appropriate version from one of these Web sites:
  - Solaris—`http://www.sun.com/solaris/java`
  - Windows—`http://java.sun.com/j2se/1.3/`
- Client support has been added for the Microsoft Windows 2000 operating environment. RSC 2.2 does not support Windows 95.
- Sun Fire V480 servers include a new hardware feature, a Locator LED on the system's front and rear panels. RSC software allows you to toggle the state of these LEDs to help identify a particular system that may be located in a rack with other servers.
- Support for a maximum of 16 RSC user accounts has been added. A maximum of 10 users can be logged in at one time. However, the increased number of user accounts does not affect the limitation of five concurrent `telnet` or GUI login sessions per server.

Before Installing Sun Remote System Control Software

RSC software is included as part of the default installation set for this Solaris Supplement CD. You should install RSC server components on a compatible Solaris server only; you can install the client software on any computer that meets the Solaris or Windows operating environment requirement. You must install and configure the RSC software before you can use RSC.

Important: Before upgrading from a previous version of RSC server software or reinstalling the software, log in to the server as superuser and back up your configuration data using the following commands:

```
# rscadm show > remote_filename
# rscadm usershow >> remote_filename
```

Use a meaningful file name that includes the name of the server that RSC controls. After installation, you can refer to this file to restore your configuration settings if necessary. Reverting to a previous version of RSC server software after installing version 2.2 is not recommended. However, if you do revert, you will need to restore your configuration information and also power cycle the server.

You can install the RSC 2.2 server software package, SUNWrsc, on:

- A Sun Fire V480 server running the Solaris 8 2/02 through Solaris 8 2/04 operating environment
- A Sun Fire V880 server running the Solaris 8 7/01 operating environment or another Solaris version that supports the RSC 2.2 product
- A Sun Fire 280R server running the Solaris 8 1/01 operating environment or another Solaris version that supports the RSC 2.2 product
- A Sun Enterprise 250 server running one of the following operating environments:
  - Solaris 2.6
  - Solaris 7
  - Solaris 8

You can install the RSC 2.2 client software packages on:

- Any other computer running the Solaris 2.6, Solaris 7, or Solaris 8 operating environment. The packages are SUNWrscj (GUI) and SUNWrscd (documentation).
- Any computer running one of the following Microsoft Windows operating environments:
  - Windows 98
  - Windows 2000
  - Windows NT 4.0

    The file used to install the RSC GUI and documentation for the Microsoft Windows operating environments is SunRsc.exe.

- Client computers require Java 2 Standard Edition (J2SE) Runtime Environment Version 1.3.0_02 or a subsequent 1.3.x version to run RSC 2.2 software. RSC 2.2 software does not run using J2SE Runtime Environment Version 1.2.x. You can download the appropriate version from one of these Web sites:
  - Solaris—http://www.sun.com/solaris/java
  - Windows—http://java.sun.com/j2se/1.3/

Installation on the Solaris operating environment places the *Sun Remote System Control (RSC) 2.2 User's Guide* in the location /opt/rsc/doc/*locale*/pdf/user_guide.pdf. Installation on the Windows operating environment places the User's Guide in the location C:\Program Files\Sun Microsystems\Remote System Control\doc*locale*\pdf\user_guide.pdf.

The following sections describe Sun Remote System Control (RSC) 2.2 issues.

RSC General Issues

This section describes issues that affect RSC running on all platforms (Sun Enterprise 250, Sun Fire 280R, Sun Fire V880, and Sun Fire V480 servers):

Alert Messages May Be Delayed (BugID 4474273)

If the RSC variables `page_enabled` and `mail_enabled` are set to `true` and multiple alert messages are generated within a short interval, the first message is delivered in a timely fashion but each subsequent message issued during the interval is delayed by 3-4 minutes.

Keyswitch Position in RSC GUI Is Unknown When RSC Is on Battery Power (BugID 4492888)

When the RSC card is running on battery power, the keyswitch slot in the RSC GUI displays as a gray dot, and the mouse-over text on the keyswitch reads Current Keyswitch Position Unknown.

Wrong Information Provided on `alerts.html` (BugID 4522646)

When configuring the `page_info1` or `page_info2` fields, you may use any digit or the alphanumeric characters #, @, and , (comma) when specifying a pager phone number, but the PIN area may only contain digits (0-9). In the RSC GUI, the online help for this function is incorrect. For more information about how to configure RSC to work with a pager, refer to the *Sun Remote System Control (RSC) 2.2 User's Guide*.

`rsc-console` Will Switch to Tip Connection During Boot if `diag-switch?` Is Set to `true` (BugID 4523025)

If `diag-switch?` is set to true and you use the `bootmode -u` command to reboot your workstation, `rsc-console` will revert to the serial (tip) connection after Solaris restarts, even if you have previously redirected the console to RSC.

If this occurs, manually redirect the console ouput to RSC again after the reboot operation has completed. *Refer to the Sun Remote System Control (RSC) 2.2 User's Guide* for more information.

Power On From GUI/CLI Is Allowed, Yet Doesn't Work, With Keyswitch Turned to Off (BugID 4524277)

If the system's state changes from battery power to standby power and the keyswitch is in the off position, the RSC software should generate a warning that you cannot turn the system power back on when you issue a `poweron` command from either the CLI or the GUI. The RSC software should issue this warning. You need to move the keyswitch back into the on position.

If this happens, use the `resetrsc` command.

RSC `bootmode -u` Command Fails to Toggle the Console (BugID 4525310)

This intermittent problem has been observed on Sun Fire V880 servers running OpenBoot PROM version 4.4.6. Occasionally, the `bootmode -u` command fails to redirect the console to RSC. If this happens, use the `resetrsc` command.

OBP 4.4.3 Displays `ERROR: RSC-Initiated Reset` Instead of a Warning Message (BugID 4514863)

On servers running OpenBoot PROM software version 4.4.3, an RSC-initiated system reset produces the following message:

```
ERROR: RSC-initiated Reset
```

This message serves as a warning-level message only; no action is required.

RSC Restart Error on Japanese Windows 98 Systems

If you install the RSC client on the Japanese version of Microsoft Windows 98, RSC does not start again once you exit from the client and the `javaw stack error` appears, unless you reboot the system. This situation occurs only on the initial version of Windows 98, and does not happen on other versions of Microsoft Windows (95, 98 Second Edition, NT).

Workaround: Download and install the Microsoft IME98 Service Release 1 (IME98-SR1) from the Microsoft Website. The crash does not occur after IME98-SR1 has been installed.

RSC Issues for Sun Fire 280R, Sun Fire V880, and Sun Fire V480 Servers

This section describes issues that affect RSC running on Sun Fire 280R, Sun Fire V880, and Sun Fire V480 servers.

Removing and Installing the RSC Card

CAUTION: Removing or installing the RSC card while the system has the AC power cord connected could damage your system *or* your RSC card. Only qualified service personnel should remove or replace the RSC card. Contact your qualified service representative to perform this service operation.

Before you follow the procedures in the *Sun Fire 280R Server Service Manual* or *Sun Fire 880 Server Service Manual* to remove or install the RSC card, perform this procedure to ensure that there is *no AC power present* in the system.

1. **Shut down and halt the system.**

2. **With the system at the** `ok` **prompt, turn the keyswitch to the Off position.**

   Standby power is still present in the system at this point.

3. **Disconnect all AC power cords from their back panel receptacles.**

   This ensures that there is no standby power voltage present in the system.

4. **Follow the procedure you require in your service manual.**

Additional RSC Alerts

RSC generates the following alerts on a Sun Fire 280R or Sun Fire V880 server when the RSC card begins battery use after a power interruption:

`00060012: "RSC operating on battery power."`

RSC generates the following alerts when the host system has shut down from RSC. The messages appear in the log history.

`00040000: "RSC Request to power off host."`

`00040029: "Host system has shut down."`

If you shut down the system using the keyswitch, or by using the OpenBoot PROM `poweroff` command, the above alert 00040029 is the only alert displayed.

These alerts are not documented in the *Sun Remote System Control (RSC) 2.2 User's Guide.*

Going from Battery to Standby, the Locator LED Will Turn On in the GUI (BugID 4524272; Sun Fire V480 Servers Only)

When the RSC hardware changes state from battery power to standby power, the Locator LED on the Sun Fire V480 appears illuminated in the GUI only. It does not illuminate on the system.

If this situation happens, use the `resetrsc` command.

RSC Issues for Sun Fire 280R Servers Only

This section describes issues that affect RSC running on Sun Fire 280R servers only. See the *Sun Fire 280R Server Product Notes* for other Sun Fire 280R server issues.

Soft Reset With `xir` Does Not Work Correctly (BugID 4361396, 4411330)

The `xir` command does not bring the server to the `ok` prompt as expected. This issue may have been resolved for your server type; see your hardware platform release notes.

Boot Sequence Sometimes Bypasses RSC (BugID 4387587)

In rare instances, the system may bypass the RSC card during startup. To check whether the system booted and is online, use the `ping` command to see if the card is alive, or log in using `telnet` or `rlogin`. If the system is not connected to the network, establish a `tip` connection to the system. (Be sure that console I/O is not directed to the RSC card.) Use the `tip` connection to view boot messages on the troubled system, or reboot the system. For help in diagnosing the problem, see your hardware Owner's Guide.

False Drive Fault Reported at Power On (BugID 4343998, 4316483)

When you power on the system, it may report a false internal drive fault that is recorded in the Sun Remote System Control (RSC) log history.

If the error is reported by RSC, you should disregard the report if the system boots successfully to the Solaris operating environment. In most cases the erroneous fault does not reappear. You can verify the disk after the boot process by using the `fsck` utility.

> **Note –** Any disk drive error message reported by the Solaris operating environment is a real disk drive error.

If a disk fault is reported at the `ok` prompt and the system fails to boot to the Solaris operating environment, there may be a problem with the disk drive. Test the disk drive with the OpenBoot Diagnostics tests documented in the "Diagnostics, Monitoring, and Troubleshooting" chapter in the *Sun Fire 280R Server Service Manual.*

Command `rscadm resetrsc` Fails (BugID 4374090)

After a cold restart or after powering on the system, the RSC command `rscadm resetrsc` fails; this is a known condition. You need to reset the host system for the command to function correctly.

There are three ways you can reset the host. Use one of the following commands:

- At the `ok` prompt, execute the `reset-all` command.
- At the RSC command-line interface (CLI) prompt, issue the `reset` command.
- At the Solaris CLI prompt, issue the `reboot` command.

The RSC `rscadm resetrsc` command will now function correctly.

RSC Issue for Sun Fire V880 Servers Only

This section describes an issue that affects RSC running on Sun Fire V880 servers only.

Soft Reset With `xir` Does Not Work Correctly (BugID 4361396, 4411330)

The `xir` command does not bring the server to the `ok` prompt as expected. This issue may have been resolved for your server type; see your hardware platform release notes.

RSC Issues for Sun Enterprise 250 Servers Only

This section describes issues that affect RSC running on Sun Enterprise 250 servers only. See the *Sun Enterprise 250 Server Product Notes* for other Sun Enterprise 250 server issues.

Increased Number of RSC User Accounts Not Supported

Support for a maximum of 16 RSC user accounts has been added for RSC 2.2. However, Sun Enterprise 250 servers continue to be limited to four RSC user accounts because of hardware limitations.

Do Not Run OpenBoot PROM `fsck` Command From the RSC Console (BugID 4409169)

Do not issue the `fsck` command from the redirected RSC console.

Reset the system's `input-device` and `output-device` settings to `ttya`. Then reboot the system and access the system through its local console or terminal and execute the OpenBoot PROM `fsck` command directly.

Do Not Run OpenBoot PROM `boot -s` Command From the RSC Console (BugID 4409169)

The command `boot -s` does not work from the RSC console.

Reset the system's `input-device` and `output-device` settings to `ttya`. Then reboot the system and access the system through its local console or terminal and execute the `boot -s` command directly.

Change to the `serial_hw_handshake` Variable Requires a System Reboot (BugID 4145761)

In order for changes to the RSC configuration variable `serial_hw_handshake` to take effect, the server must be rebooted. This also affects the Enable Hardware Handshaking check box in the RSC graphical user interface. This limitation is not stated in the documentation.

Power Supply Alerts Display Incorrect Index in the GUI (BugID 4521932)

In the Sun Enterprise 250, the power supplies are numbered 0 and 1, but the RSC GUI refers to them as Power Supply 1 and Power Supply 2 in the event log and in alerts.

Platform-Specific Issues

Netra T4/Netra T20 Issues

System Incorrectly Reports Removed Device Links (BugID 4418718)

When calling `luxadm remove_device /dev/rdsk/c1t1d0s2`, the system asks for confirmation and reports that the disk is spinning down and being taken offline. When the disk is removed, pressing Return causes the system to report that the device links are removed.

However, the device links are not removed. The disk can then be re-inserted and used without running the `luxadm insert_device` command. When the command is subsequently run, the system reports that no new devices were added and the following message is produced at the console:

```
bash-2.03# luxadm remove_device /dev/rdsk/c1t1d0s2

 WARNING!!! Please ensure that no filesystems are mounted on these device(s).
 All data on these devices should have been backed up.

The list of devices which will be removed is:
  1: Device name: /dev/rdsk/c1t1d0s2
     Node WWN:    2000002037e367e4
     Device Type:Disk device
     Device Paths:
      /dev/rdsk/c1t1d0s2

Please verify the above list of devices and
then enter 'c' or <CR> to Continue or 'q' to Quit. [Default: c]:
stopping:  /dev/rdsk/c1t1d0s2....Done
offlining: /dev/rdsk/c1t1d0s2....Done

Hit <Return> after removing the device(s)

Device: /dev/rdsk/c1t1d0s2
  Logical Nodes being removed under /dev/dsk/ and /dev/rdsk:
        c1t1d0s0
        c1t1d0s1
        c1t1d0s2
        c1t1d0s3
        c1t1d0s4
        c1t1d0s5
        c1t1d0s6
        c1t1d0s7

Device: /dev/rdsk/c1t1d0s2
  Logical Nodes being removed under /dev/dsk/ and /dev/rdsk:
        c1t1d0s0
        c1t1d0s1
        c1t1d0s2
        c1t1d0s3
        c1t1d0s4
        c1t1d0s5
        c1t1d0s6
        c1t1d0s7

 bash-2.03# ls -l /dev/dsk/c1t1*
lrwxrwxrwx   1 root     root           70 May  4 19:07 /dev/dsk/c1t1d0s0 -> ../
../devices/pci@8,600000/SUNW,qlc@4/fp@0,0/ssd@w2100002037e367e4,0:a
```

```
lrwxrwxrwx   1 root     root            70 May  4 19:07 /dev/dsk/c1t1d0s1 -> ../
../devices/pci@8,600000/SUNW,qlc@4/fp@0,0/ssd@w2100002037e367e4,0:b

bash-2.03# ls -l /dev/rdsk/c1t1*
lrwxrwxrwx   1 root     root            74 May  4 19:07 /dev/rdsk/c1t1d0s0 -> ../
../devices/pci@8,600000/SUNW,qlc@4/fp@0,0/ssd@w2100002037e367e4,0:a,raw
lrwxrwxrwx   1 root     root            74 May  4 19:07 /dev/rdsk/c1t1d0s7 -> ../
../devices/pci@8,600000/SUNW,qlc@4/fp@0,0/ssd@w2100002037e367e4,0:h,raw
.
.
/* the following errors are caused by SUNWvts reprobe looking for said disk */

bash-2.03#
8012   05/22/01 14:05:07 Failed on iotcl DKIOCGMEDIAINFO: 6: No such device or
address

8012   05/22/01 14:05:41 Failed on iotcl DKIOCGMEDIAINFO: 6: No such device or
address

8012   05/22/01 14:07:25 Failed on iotcl DKIOCGMEDIAINFO: 6: No such device or
address

bash-2.03# luxadm insert_device
Please hit <RETURN> when you have finished adding Fibre Channel
Enclosure(s)/Device(s):

Waiting for Loop Initialization to complete...
 No new device(s) were added!!
```

To work around, enter the following when luxadm remove_device claims to have completed successfully:

```
# devfsadm -C -c disk
```

Not All USB Zip Drives Found (BugID 4453787)

If four USB Iomega zip drives are attached, prtconf indicates that no driver is loaded after the system has booted. drvconf starts a system probe that finds only two of the four USB zip drives.

Running cat on the /dev/usb/hub0 file causes the system to add the two zip drives.

Workaround: Do not use more than two zip drives in the current release.

LOMlite2 `reset-x` Does Not Reset CPUs (BugID 4462131)

The LOMlite2 `reset-x` command does not currently reset the CPUs. Look for this functionality in a later revision of the OpenBoot PROM.

Sun Blade Systems

Invalid Warning During System Boot (BugID 4519441)

A warning message may appear when booting a Netra ct 800 or Sun Blade™ 100 system which reads:

```
invalid vector intr: number 0x7de, pil 0x0
```

This message is benign and can be ignored.

Documentation Errata

The following documentation errors have been found in the Solaris 8 2/04 documents.

Note – Some documents and CDs provided with this release have names based on the Solaris 8 2/02 release. These are included intentionally for use with the Solaris 8 2/04 operating environment. The contents of these documents and CDs have not been changed since the earlier release.

Solaris 8 2/04 Sun Hardware Platform Guide

SMS Version

References to System Management Services (SMS) in the *Solaris 8 2/04 Sun Hardware Platform Guide* mistakenly list version 1.4. Instead, SMS 1.3 is supported in this release.

PC Launcher

Non-English versions of this document might mention the PC Launcher software as included on the Supplement CD. However, this software is not supported in this Solaris release.

References to MPxIO Documentation

The *Sun Enterprise 10000 SSP 3.5 User Guide, Sun Enterprise 10000 Dynamic Reconfiguration User Guide*, and the *Sun Enterprise 10000 DR Configuration Guide* contain references to a document that is not available, namely the *MPxIO Installation and Configuration Guide*.

The MPxIO product is now called the Sun StorEdge™ Traffic Manager. Information on installing and configuring the Sun StorEdge Traffic Manager is provided in the *Sun StorEdge™ Traffic Manager Software Installation and Configuration Guide*, available on the Sun Network Storage Solutions website:

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

To access this document:

1. **Go to** `http://www.sun.com/storage/san` **and click the "Sun StorEdge™ SAN3.0 release Software/Firmware Upgrades and Documentation" link.**

2. **Sign on or register.**

3. **Click the "Download STMS Install/Config Guide, Solaris/SPARC (.35 MB)" link.**

SSP 3.5 Installation Guide and Release Notes

Page 8: In the description of the `snmpd` memory leaks (Bug ID 4486454), you must be superuser on the main SSP to stop and start SSP daemons, not user `ssp` as indicated in the text.

Pages 75 and 99: The references to the *Solaris 8 Installation Supplement* are incorrect. Refer to the *Solaris 8 Advanced Installation Guide* for details.

`eri(7d)` Man Page

The `eri(7d)` man page incorrectly states that the `eri.conf` file is in the `/kernel/drv/sparcv9/eri.conf` file

The correct location is: `/kernel/drv/eri.conf`

Other Issues

Network Drivers Installed by Default

The Computer Systems Installer CD automatically installs the Network Drivers from the Supplement CD. Drivers for the SunATM™, SunHSI/S, SunHSI/P, SunFDDI/S, and SunFDDI/P cards are now installed by default when the Solaris 8 2/04 operating environment is installed. Error messages might be displayed if you do not have some of the corresponding hardware installed. You can ignore these error messages.

Serial Parallel Controller Driver Does Not Support Dynamic Reconfiguration (BugID 4177805)

This `spc` driver does not support Dynamic Reconfiguration features in the Solaris 8 operating environment.

Some DVD and CD-ROM Drives Fail to Boot Solaris (BugID 4397457)

The default timeout value for the SCSI portion of the SunSwift PCI Ethernet/SCSI host adapter (X1032A) card does not meet the timeout requirements of the Sun SCSI DVDROM drive (X6168A). With marginal media, the DVD-ROM occasionally experiences timeout errors. The only exceptions are Sun Fire 6800, 4810, 4800, and 3800 systems, which overwrite the SCSI timeout value via OBP.

Workaround for other platforms: use the on-board SCSI interfaces or DVD-ROM compatible SCSI adapters, such as X1018A (SBus: F501-2739-xx) or X6540A (PCI: F375-0005-xx).

FDDI May Hang During Heavy Load (BugIDs 4485758, 4174861, 4486543)

The PCI FDDI card has known hardware problems related to `DTXSUSP` (DMA TX process suspend interrupt) and `DRXSUSP` (DMA RX process suspend interrupt) bits in the `MAIN_CONTROL` and `MAIN_STATUS` registers. These hardware bugs minimally affect FDDI functionality under normal conditions. However, under a *very* heavy TX or RX load, the card posts an unexpected interrupt. The system posts the error message, "Interrupt level 6 is not serviced". After 20 such errors, the `pcipsy` driver shuts down interrupt processing for the FDDI and hangs FDDI.

Monitor Goes Blank When Stop-A Is Pressed During Screen Lock (BugID 4519346)

The monitor may go blank if all of the following conditions occur:

- Your frame buffer card is a Creator3D or an Elite3D.
- The "Blank Screen" screen saver is used.
- Stop-A is pressed while in the blank screen mode.

Workaround: If your screen saver is enabled, choose any pattern other than "Blank Screen."

U-Code Does Not Reload After IFB Driver Unloaded (BugID 4532844)

At the command line login, systems with Expert3D or Expert3D-Lite cards may be unable to start a window system or dtlogin.

Workaround:

1. **Remotely log into the troubled system as superuser.**

2. **Stop all** `ifbdaemon` **processes:**

```
# sh /etc/init.d/ifbinit stop
```

3. **Start all** `ifbdaemon` **processes:**

```
# sh /etc/init.d/ifbinit start
```

USB Dual Framework

This software release features a dual USB framework. The original framework, released with Solaris 8 2/02, is provided for compatibility with all preexisting USB drivers. It supports USB 1.0 and USB 1.1 devices, and operates devices connected to on-board and other USB 1.0 or 1.1 ports.

Note – On-board USB ports include those next to the rear fan on Sun Blade 1500 and 2500 systems, and the two ports at the bottom of the Sun Blade 1500 system's front panel. If your Sun Blade 1500 or 2500 system came with the IEEE 1394 and USB 2.x card, it also has three USB 2.0 ports next to two IEEE 1394 ports, located in the rear near the bottom of the system.

The USBA 1.0 framework (new in Solaris 8 HW 5/03) is more evolved, and as such offers better performance and support for more devices than the original framework. It supports high speed USB 2.0 devices, and operates devices connected to the computer's USB 2.0 ports. Thus, the "dual framework" refers to the old USBA framework which supports only USB 1.0/1.1 devices, and the new USBA 1.0 framework which supports both USB 1.1 and USB 2.0 devices.

This dual framework release is supported on Sun Blade 1500 and Sun Blade 2500 systems. Systems pre-equipped with the IEEE 1394 and USB 2.x card support USB 2.0 through the card's USB 2.0 ports. Additionally, some aftermarket PCI USB 2.0 cards may work. For a listing of Solaris Verified PCI USB 2.0 cards for use with other platforms, see:

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

Optimal USB Device Connections

The USB console keyboard and mouse must be connected through an on-board USB port. This is required in order use them as console devices which can boot, halt and examine a system, and allow the window manager to start.

All other USB 1.1 devices can be connected to any USB port on the computer. Note, however, that any device connected to a USB 2.0 port on the computer can take advantage of the USBA 1.0 framework.

For best performance, connect USB 2.0 storage devices to a USB 2.0 computer port (optionally through a USB 2.0 hub). While USB 2.0 devices can function on other ports, they operate significantly slower when using USB 1.1.

Device Restrictions

USB 1.x devices do not function when connected through a USB 2.0 hub to a computer USB 2.0 port. You can connect the USB 2.0 hub to an on-board or other USB 1.1 port, use a USB 1.1 hub, or bypass the hub and plug the USB 1.x device directly into a USB port on the computer.

Administration of the Dual Framework

Please see `http://www.sun.com/desktop/whitepapers.html` for a link to a guide which discusses administration of USB devices on both frameworks. It is more complete than the System Administration Guide, which covers only the original framework.

All USB Storage Devices Treated as Removable Media

This change was implemented to fix inconsistent behavior in previous releases, where some USB storage devices were seen as removable devices and others were not.

What This Change Means

In general, USB devices now operate with a more consistent interface, and are easier to use:

- The `rmformat(1)` program can now be used to format USB storage devices, instead of other, more complicated programs such as `format(1M)`.
- USB hard drives with a FAT file system can be mounted and used.
- Non-root users can now access USB storage devices, since a root-privileged mount command is no longer needed. The volume manager mounts it and makes it available under `/rmdisk`. (See "Caveats" on page 48 for restrictions.)
- All USB storage devices are power managed, except for those which support log sense pages. Devices with log sense pages are usually SCSI devices connected through a USB to SCSI bridge device.
- Error handling is more forgiving for removable media devices, with increased timeouts for recovery or preparing for the drive to become ready.

Caveats

- External removable media applications might not work correctly if they make assumptions about the size of the media or are not largefile aware. For example, a number field containing a disk size may overflow.

- If a new USB device is connected while the system is down, a reconfiguration boot (`boot -r`) is required for the volume manager to find it for automatic mounting. If a new device is connected while the system is up, the volume manager must be restarted. Refer to `vold(1M)`, `scsa2usb(7D)`, the System Administration Guide, and for more information.
- The `format(1M)` program must now be started in expert mode (`-e`) in order to see any USB storage device. In previous releases, those USB storage devices which were not seen as removable media could be seen without the `-e` switch. You must either answer questions about device geometry or furnish an entry for `/etc/format.dat` in order to utilize the program.
- Some applications which make DKIOCEJECT `ioctls` may have returned ENOTTY for non-removable media. These now succeed with no effect because the device is treated as a removable media device.
- Setting `removable=false` in `/kernel/drv/scsa2usb.conf` (original framework) or `/kernel/drv/usba10_scsa2usb.conf` (USBA 1.0 framework) for a particular device type overrides the forced treatment of that device type as removable media. Use this option if compatibility with previous releases is an issue. Please see these configuration files for more details.
- For best performance, connect USB 2.0 storage devices to a USB 2.0 computer port (optionally through a USB 2.0 hub). While USB 2.0 devices can function on other ports, they operate significantly slower when using USB 1.1.

Known Bugs

The `vold` Process Does Not See USB Devices After a Non-Reconfigure Reboot (Bug ID: 4799998)

USB storage devices are not automatically seen by the `vold` process after a non-reconfigure reboot, due to a boot-time delay in starting the USB frameworks.

Workaround: use any of the four workarounds listed below.

- As root, edit the `/etc/init.d/initusb` script. Change the entry `sleep 60` to `sleep 5`. This alleviates the delay in starting the USB frameworks, and almost always causes the `vold` process to find the devices automatically; however, it also increases the boot time by a few seconds. If a device still is not found, hotplug it as in the second workaround listed.
- Hotplug the USB storage device two minutes after the system has given the login prompt. This method must be repeated for each USB storage device after every reboot.
- As root, stop and restart `vold`:

```
# /etc/init.d/volmgt stop
# /etc/init.d/volmgt start
```

Do this after every reboot, two minutes after the system has given the login prompt.

- As root, send a `SIGHUP` signal to the `vold` process to rescan for devices:

```
# pkill -HUP vold
```

Do this after every reboot, two minutes after the system has given the login prompt.

Note – Due to a bug inthe `vold` process, CD-ROM drives might eject their media in response to this signal.

---

ugen *Returns EIO on Bulk Write Out Endpoints for a USB Canon Scanner (BugID 4786786)*

The generic USB (`ugen`) driver only works with devices that support setting of configurations and alternate interfaces. Attempts to open data endpoints on devices which do not support these settings fail with an I/O error. Please see Chapter 9 of the USB 2.0 spec (`http://www.usb.org`) for more information.

Enumeration Fails if String Descriptor Is Not Provided (BugID 4798619)

As part of first-order identification (enumeration) to the operating system, USB devices say whether or not they provide a string descriptor (used to identify the device for messages). A system cannot use USB devices that say they provide such a descriptor and then fail to provide that descriptor.

Slow Enumeration Might Prevent Device Connection (BugID 4735465)

Some USB devices fail to identify themselves within the system's allotted window. If this happens, the user sees the following error message:

```
WARNING:   (usba10_ohci0): Connecting device on port x failed
```

Workaround: Hot-plugging the device again might successfully identify it.

USB Floppy Devices

USB floppy devices appear as removable media devices, as all other USB disks do. USB floppy devices are not managed by the `fd` (floppy) driver. Applications which issue `ioctl(2)` calls intended for the `fd` driver fail. Applications which issue only `read(2)` and `write(2)` calls succeed. Some other applications, such as SunPCI and `rmformat`, do work.

Use With Volume Manager and File Manager

Volume Manager sees the USB floppy as a SCSI removable media device. Volume Manager makes the device available for access under `/rmdisk`.

File Manager does not fully support the USB floppy at this time. Floppies containing a `ufs` file system can be opened, renamed and formatted from the File Manager's Removable Media Manager. However, the only action that the Removable Media Manager can take with a floppy containing a `pcfs` file system is to open it. Floppies containing either type of file system can successfully drag and drop files.

Always perform a reconfigure boot (`boot -r`) when rebooting your system, if you plan to use a connected USB floppy device with Volume Manager and File Manager. When you hotplug a new USB floppy device, you must stop and restart `vold` in order for `vold` to find the newly connected device.

Manual Configuration

This section describes how to use a USB floppy without the File Manager.

After plugging in the device, find the device's name:

```
# cd /dev/rdsk
# devfsadm -C
# ls -l c*0 | grep usb
lrwxrwxrwx   1 root     root          55 Mar  5 10:35 c2t0d0s0 ->
../../devices/pci@1f,0/usb@c,3/storage@3/disk@0,0:a,raw
```

Here, the device name shows as `c2t0d0s0`. The device can be accessed as raw device `/dev/rdsk/c2t0d0s0`, and as block device `/dev/dsk/c2t0d0s0`.

Floppies support both `pcfs(7FS)` and `ufs` file systems. Below are examples of how the different file systems are used. The examples assume a device of `/dev/[r]dsk/c2t0d0s0`.

If multiple device names are displayed, determine which name corresponds to the USB floppy device:

1. Insert a floppy disk into the USB floppy device.

2. Cycle through each device, attempting to access each device (using od(1) on that device's raw partition, for example).

   The USB floppy's indicator lamp lights up when you have found the floppy.

Floppies support both pcfs(7FS) and ufs file systems. The following commands are examples of how to use the two file systems. The examples assume a device of /dev/[r]dsk/c2t0d0s0.

Use the following commands to create and use the floppy as a pcfs file system:

 Format:

```
 rmformat -Flong /dev/rdsk/c4t0d0s0
```

Create 1.4 Mb file system:

```
 mkfs -F pcfs -o nofdisk,size=2880 /dev/rdsk/c4t0d0s0
```

Mount:

```
 mount -F pcfs /dev/dsk/c4t0d0s0:c /mnt
```

Unmount:

```
  umount /mnt
```

Use the following commands to create and use the floppy as a ufs file system:

Format:

```
 rmformat -Flong /dev/rdsk/c4t0d0s0
```

Create filesystem:

```
 newfs /dev/rdsk/c4t0d0s0
```

Mount:

```
mount /dev/dsk/c4t0d0s0 /mnt
```

Unmount:

```
umount /mnt
```

SunFDDI and Diskless Booting (BugID 4390228)

The SunFDDI PCI board (FDDI/P) does not support diskless booting. The SunFDDI SBus board (FDDI/S) supports diskless booting on sun4m and sun4u platforms only.

Multiple Sun GigaSwift Ethernet Cards May Hang System (BugID 4336400, 4365263, 4431409)

Your system may experience heavy CPU usage or may hang if more than two Sun GigaSwift Ethernet cards are installed.

System May Hang When the `cpr` Module Runs (BugID 4466393)

If you are running any version of the Solaris 8 software with an Expert3D or Expert3D-Lite card, you may experience problems after `cpr` runs.

Workaround: Install Patch 108576-15 or greater.

Unable to Disconnect SCSI Controllers With DR (BugID 4446253)

Performing a `cfgadm -c disconnect` (bus quiesce) command when the SCSI bus is unconfigured does not succeed.

Workaround: If the SCSI bus is unconfigured, use the `cfgadm -c configure` command before attempting the `cfgadm -c disconnect` command.

Command `cfgadm -c unconfigure` Fails Due to `qlc detach` Failure (BugID 4881110)

Using the `cfgadm -c unconfigure` command might fail if a qlc driver fails to detach. The following error message appears:

```
>cfgadm -c unconfigure pcisch6:sg8slot5
cfgadm: Component system is busy, try again: unconfigure failed
```

Workaround: Download the SAN 4.3 packages from:

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

`wrsm` Driver Not Loaded Automatically (BugID 4975878)

The Sun Fire Link RSM (`wrsm`) driver is not loaded automatically at the kernel boot time if no `wrsm` configuration has been previously established.

Workaround: Use the command:

```
# /usr/platform/sun4u/sbin/wrsmconf topology
```

Tearing Down an RSM Connection Can Cause an Application to Dump Core (BugID 4966095)

When a DR `unconfigure` operation is performed on a system board containing permanent memory, all I/O devices are quiesced for approximately 75 seconds. The default timeout value for remote procedure calls to WRSM is 5 seconds, which means attempts to write to the WCI interrupt page during this quiescent period fail.

Workaround: Do not disconnect a system board containing permanent memory while a Sun Fire Link cluster is in use. If you do attempt to do so, you are prompted to confirm that you want to disconnect the board. Enter no to cancel the disconnect request:

```
# cfgadm -c disconnect N0.SB0
System may be temporarily suspended, proceed (yes/no)? no
cfgadm: Configuration operation cancelled: disconnect N0.SB0
```

AP 2.3.1 on Sun Enterprise Servers

AP 2.3.1 on Sun Enterprise Servers

This section contains the release notes for Alternate Pathing (AP) 2.3.1 on Sun Enterprise 3*x*00, 4*x*00, 5*x*00, 6*x*00, and 10000 servers.

AP enables you to define and control alternate physical paths to peripheral devices, adding increased availability and a level of fault recovery to your server. If a physical path to a device becomes unavailable, an alternate path can be used. For more information, see the *Sun Enterprise Server AP 2.3.1 User Guide* in the AnswerBook2 Alternate Pathing 2.3.1 Collection.

Future AP Support

AP multipath I/O technology is being retired in favor of the newer, more scalable technologies presented by Sun StorEdge Traffic Manager and IPMP.

These modern technologies present better overall multipath solutions, with refined, user-friendly interfaces that are well integrated with Solaris. IPMP also provides true automatic switching for networks upon error detection.

If you use AP for its I/O multipath capabilities, you are encouraged to unconfigure your AP installations, and begin utilizing these newer technologies for I/O multipath control.

All 3 technologies are available during the Solaris 8 timeframe. However, be advised that AP will no longer be available in Solaris 9.

Installation Issues

If you are upgrading from Solaris 2.6 or Solaris 7 software to Solaris 8 software and have AP 2.1 or AP 2.2 on your system, you must upgrade to AP 2.3 or AP 2.3.1. The following sections include references to a volume manager because most systems have one installed.

Note – AP 2.3.1 installation is Solaris operating environment specific. If you have already installed AP 2.3.1 on your system and choose to upgrade your operating system at a later date, you must follow the upgrade procedure to remove the AP 2.3.1 software using `pkgrm` and re-install AP 2.3.1.

This section contains an overview of the entire upgrade process, which requires you to use several sections from different publications. You should ensure that you have the following publications before you start the upgrade:

- *Solaris 8 2/04 Release Notes Supplement for Sun Hardware* (available in printed form in your Solaris 8 2/04 Media Kit)
- *Solaris 8 2/04 Sun Hardware Platform Guide* (available in printed form in your Solaris 8 Media Kit or in AnswerBook2 format on the Sun Hardware Supplements CD)
- *Sun Enterprise Server Alternate Pathing 2.3.1 User Guide* (available in AnswerBook2 format on the Sun Hardware Supplements CD in your Solaris 8 Media Kit)
- Your Volume Manager User's Guide
- Your Volume Manager Installation and Product Notes

Note – Before attempting an upgrade, verify that your volume manager supports the Solaris 8 software.

Note – You must follow the sequence given here to successfully complete the upgrade.

In general, you will perform the following tasks:

- Unconfigure your volume manager.
- Remove the previous version of AP.
- Upgrade to the Solaris 8 operating environment.
- Install AP 2.3.1.
- Install and reconfigure your volume manager.

Specifically, you must perform the following tasks:

1. Read "Performing an Upgrade of AP" in the *Solaris 8 2/04 Sun Hardware Platform Guide*.

2. Commit any uncommitted AP metadevices (see Step 1 in "To Upgrade to AP 2.3.1" in the *Solaris 8 2/04 Sun Hardware Platform Guide*).

3. Unconfigure your volume manager using the documentation provided by the specific vendor.

Note – With regard to AP, no additional steps need to be taken to do this other than those recommended by the manufacturer to unconfigure the volume manager.

When the volume manager has been unconfigured and you are instructed to install the new operating environment, stop at that point and remove your previous version of AP. Do *not* install Solaris 8 software at this time.

4. Remove the current AP configuration using "Remove the current AP configuration." of the *Solaris 8 2/04 Sun Hardware Platform Guide*.

5. Upgrade to Solaris 8 using "Upgrade the Solaris operating environment (if applicable) now" in the *Solaris 8 2/04 Sun Hardware Platform Guide*.

6. Upgrade to AP 2.3.1 using instructions in the *Solaris 8 2/04 Sun Hardware Platform Guide*.

7. Install your volume manager according to your manufacturer's instructions.

When upgrading AP 2.3.1, unless both paths are accessible when you run `ap_upgrade_begin`, `ap_upgrade_finish` completes but is unable to recreate your path groups. No error message appears.

General Issues

This section contains general issues that involve AP on Sun Enterprise servers. Read this section before you attempt to install or configure AP.

Note – If you are upgrading to AP 2.3.1 on *all* Sun Enterprise 10000 domains, then you can safely remove the `SUNWapssp` package software from the SSP workstation using `pkgrm`. If, however, any domain will remain at an earlier version of AP, then you must *not* remove the AP software on the SSP workstation. In either case, leaving AP software on SSP workstations has *no* effect on AP 2.3.1.

Supported Devices

The following devices are supported by the AP software on Sun Enterprise servers:

- Sun SPARCstorage™ Arrays recognized by AP using the `pln(soc)` controllers

- Sun StorEdge A5000 recognized by AP using sf(socal) or fp(qlc) controllers
- Sun StorEdge T3 recognized by AP using sf(socal) or fp(qlc) controllers
- Sun Enterprise E3500 internal drives recognized by using sf(socal) or fp(qlc) controllers
- SunFastEthernet™ 2.0 (hme)
- SunFDDI/S 6.0 (nf) SAS (Single-Attach Station) and DAS (Dual-Attach Station)
- SCSI-2/Buffered Ethernet FSBE/S and DSBE/S (le)
- Quad Ethernet (qe)
- Sun Quad FastEthernet™ (qfe)
- Sun Gigabit Ethernet 2.0 (ge)

The following table lists the devices supported in each release:

TABLE 4-1   AP Support Matrix

AP Version	Solaris Release	NICs									Disk Controllers	Storage Products
		ge	hme	le	nf	bf	hi	qe	qfe	vge		
2.0	2.5.1		X	X	X	X	X	X	X		pln/soc	SSA
2.0.1	2.5.1		X	X	X	X	X	X	X		pln/soc, sf/socal	SSA, A5000
2.1	2.6	X	X	X	X			X	X	X	pln/soc, sf/soc	SSA, A5000
2.2	7	X	X	X	X			X	X		pln/soc, sf/socal, fp/qlc*	SSA, A5000
* - fp/qlc support for AP 2.2 requires a patch for Solaris 7 (included in Solaris 7 11/99) and for AP 2.2. Refer to http://www.sunsolve.com for more information.												
† - fp/qlc support requires Solaris 7 11/99 or Solaris 8.												
§ - AP 2.3 has not been optimized for Sun StorEdge T3 support.												

TABLE 4-1   AP Support Matrix

AP Version	Solaris Release	NICs									Disk Controllers	Storage Products
		ge	hme	le	nf	bf	hi	qe	qfe	vge		
2.3	2.6	X	X	X	X			X	X	X	pln/soc, sf/socal	SSA, A5000,
	7	X	X	X	X			X	X		pln/soc, sf/socal, fp/qlc†	SSA, A5000, T3§
	8	X	X	X	X				X		pln/soc, sf/socal, fp/qlc	SSA, A5000, T3§
2.3.1	8	X	X	X	X				X		pln/soc, sf/socal, fp/qlc	SSA, A5000, T3
* - fp/qlc support for AP 2.2 requires a patch for Solaris 7 (included in Solaris 7 11/99) and for AP 2.2. Refer to `http://www.sunsolve.com` for more information.												
† - fp/qlc support requires Solaris 7 11/99 or Solaris 8.												
§ - AP 2.3 has not been optimized for Sun StorEdge T3 support.												

SunFDDI and Gigabit Ethernet Devices

AP 2.3.1 validation tests were performed on SunFDDI/S (revision 7.0) and Gigabit Ethernet (revision 2.0). If you install either of these devices, you must use the revision level that was tested, unless a higher revision level exists. In addition, you must install all of the available patches for these devices. Refer to `http://www.sunsolve.sun.com` for more information about the patches.

Sun StorEdge A3000

The Sun StorEdge A3000 supports failover capabilities that are similar to those provided by AP 2.3.1. Because of this, AP 2.3.1 does not support the Sun StorEdge A3000. See that product's documentation for more information about its failover support.

Sun StorEdge A5000

AP 2.3.1 supports the Sun StorEdge A5000 for this release.

Sun StorEdge A7000

AP 2.3.1 does not support the Sun StorEdge A7000 for this release.

Sun StorEdge T3

AP 2.3.1 supports the Sun StorEdge T3 in a path optimized AP configuration with this release. Path optimization refers to the efficient distribution of I/O traffic for the T3.

Software Compatibility

The following lists includes the possible combinations of AP and Solaris software you can install on a Sun Enterprise server.

- Solaris 8 with AP 2.3.1 and DR
- Solaris 8 with AP 2.3 and DR
- Solaris 7 with AP 2.3.1 and DR
- Solaris 7 with AP 2.3 and DR
- Solaris 7 with AP 2.2 and DR
- Solaris 2.6 with AP 2.3.1 and DR
- Solaris 2.6 with AP 2.3 and DR
- Solaris 2.6 with AP 2.1 and DR
- Solaris 2.5.1 with AP 2.0.1 and DR (Sun Enterprise 10000 server only)
- Solaris 2.5.1 with AP 2.0 and DR (Sun Enterprise 10000 server only)

Note – AP does not support DR model 3.0, which runs on Sun Enterprise 10000 domains running the Solaris 8 2/02 operating environment. AP does support DR model 2.0 on Sun Enterprise 10000 domains. For details on the multipathing software compatible with DR model 3.0, refer to the *SSP 3.5 Installation Guide and Release Notes*.

AP Patches

Check the SunSolve website on a regular basis for any AP patches that may be available, and apply the recommended patches:

`http://sunsolve.Sun.com`

Dynamic Reconfiguration (DR) Issues

The DR Attach operation can complete without the controller being immediately accessible to AP. You must verify that the physical device is present before switching to the new controller using `apconfig`.

A Sun Enterprise 10000 server running the Solaris 2.6 operating environment requires Patch 106284-02 for AP 2.3.1 to run correctly with the `dr_daemon`.

Boot Disk Issues

AP 2.3.1 provides support for only one alternately pathed boot disk plus a mirror disk per domain.

In order to fix inconsistencies in boot recovery behavior, device aliases for the boot disk are not supported.

Boot recovery is architecture generic in AP 2.3.1. Boot recovery works on Sun Fire as well as Starfire platforms.

IPMP Issues

IPMP/AP path groups are not supported for this release.

Sun Fibre Channel Port Driver (qlc/fp) Issues

A SENA device that uses the qlc/fp drivers is considered a different physical device than a SENA device that uses the socal/sf stack. SENA devices do not support mixed configurations where qlc/fp and socal/sf drivers service a single SENA device. Therefore, the two devices cannot be combined in an AP metadevice.

Revising the firmware on a physical SENA device using socal/sf drivers to use qlc/fp drivers for your Fibre Channel controllers is the same as replacing the hardware with a different type of controller. (The converse is also true.) You must unconfigure Alternate Pathing on such controllers *before* you revise the firmware. For example:

```
# apdisk -d sf:0
# apdb -C
```

Revise the SENA firmware.

After you have performed the revision, recreate your pathgroups using the new device names, for example:

```
# apdisk -c -pfp:0 -a fp:1
# apdb -C
```

> ⚠ **Note –** If you change firmware without unconfiguring AP, file systems available from the new alternately-pathed controllers may not be accessible. If those file systems are required during boot, your system can become unbootable.

AP Documentation Locations

Documentation for AP 2.0 and 2.0.1 can be found in their respective collections under Hardware -> Enterprise Servers at docs.sun.com.

AP 2.1 and 2.2, however, are in the Hardware -> Solaris on Sun Hardware AnswerBook collection at docs.sun.com.

AP 2.3 and 2.3.1 are in their own collections under Hardware -> Enterprise Servers.

Known Bugs/RFEs

Panic while switching unplumbed metanetwork. (BugID 4361968)

Fixed Bugs

This section contains the synopses and Sun BugID number of the more important bugs that have been fixed since the AP 2.3 release (Solaris 8). This list does not include all of the fixed bugs.

(RFE) An immediate switch of path using AP after DR configure forces it into a 'T' state. (BugID 4265982)

(RFE) AP handling for individual target failure, FC hubs/fabric, and daisy chaining. (BugID 4276330)

(RFE) Hang on Sun Enterprise 3500 with mirrored internal disk pull out with AP and sds. (BugID 4297492)

Read/write errors during ctrl failover with Sun StorEdge T3 Array partner group or 2x2 expansion. (BugID 4342963)

Multiple ".probe" execution causes LUNs on UNIX host to fail with ENODEV. (BugID 4347014)

ENXIO from Sun StorEdge T3 ONLINE Master immediately after .probe initiated ctlr failure. (BugID 4347016)

Other Bugs

This section contains the synopses and Sun BugID number of the more important bugs that have been discovered regarding AP 2.3.1 and the Solaris 8 operating environment. This list does not include all bugs.

Other Fixed Bugs

ssd: Serial Number Should Be Obtained From the Unit Serial Number Page (Bug ID 4295457)

Description: AP depends on Sun Device ID functions; specifically `ddi_devid_compare()`. Any device that AP supports must adequately interface with the Sun Device ID. This leads to a direct dependency on the resolution of Sun BugID 4295457. Thus, there is a dependency on three separate patches:

- Patch 105356-15 for Solaris 2.6
- Patch 107458-09 for Solaris 7
- Patch 109524-01 for Solaris 8

Solution: You can obtain these patches from SunSolve at:
`http://sunsolve.sun.com`

`qfe` *Driver Does Not Respond With DL_OK_ACK To a DL_ENABMULTI_REQ Primitive (Bug ID 4241749)*

Systems running the Solaris 7 operating environment using `qfe` controllers should install patch 107743-06, to prevent system hangs when switching pathgroups with `qfe` controllers in them.

Solution: You can obtain Patch 107743-06 from SunSolve at:
`http://sunsolve.sun.com`

Open Issues for Sun Fire Midrange Systems

This chapter describes open issues related to the Sun Fire midrange servers -- the Sun Fire E6900/E4900/6800/4810/4800/3800 systems -- running Solaris 8 2/04 software.

For information about the earlier Sun Enterprise midrange servers -- the Sun Fire 6500/6000/5500/5000/4500/3500/3000 systems -- see Chapter 6.

Dynamic Reconfiguration on Sun Fire Midrange Systems

This section describes DR on Sun Fire midrange systems running Solaris 8 2/04 software. This is the first release of Solaris 8 software to support the new Sun Fire E6900 and E4900 systems. The first system controller (SC) firmware release to support these systems is 5.16.0.

TABLE 5-1 shows acceptable combinations of Solaris software and SC firmware for each Sun Fire midrange system to run DR. If the platform listed in the first column is running the Solaris release shown in the second column, the minimum SC firmware release is on that same line in the third column.

TABLE 5-1   Minimum SC Firmware for Each Platform/Solaris Release

Platform	Solaris Release	Minimum SC Firmware
E6900/E4900	Solaris 8 2/04 only	5.16.0
6800/4810/4800/3800	Solaris 8 2/04	5.13.0
6800/4810/4800/3800	Solaris 8 2/02	5.12.6

For the latest patch information, see http://sunsolve.sun.com

---

Note – Your Sun Fire midrange system should run the latest SC firmware version to take advantage of the most recent bug fixes and added features.

Sun Management Center

Sun Management Center software supports DR on domains running Solaris 8 2/04 software. Refer to the SunMC Software Supplement for Sun Fire Midrange Systems for complete instructions.

System-Specific DR Support

To view system-specific DR information, run the cfgadm(1M) command. System boards are indicated as class "sbd." CompactPCI (cPCI) cards are shown as class "pci." You may see other DR classes, as well.

To view the classes that are associated with attachment points, run the following command as superuser:

```
# cfgadm -s "cols=ap_id:class"
```

You can list use the cfgadm command with its -a option to list dynamic attachment points. To determine the class of a specific attachment point, add the point as an argument to the above command.

Page Retire Feature

The Dynamic Reconfiguration (DR) feature has been enhanced to take advantage of the Solaris Page Retire feature. DR now lets you logically detach a system board that is experiencing a high number of memory errors, in some cases where it would not let you do so before. The board can then be serviced to correct any failing memory problems.

Upgrading the System Firmware

Each firmware patch includes a file called `Install.info`, which contains firmware installation instructions. You can find all firmware patches for your system on SunSolve.

Known DR Limitations

This section contains known DR software limitations of the Sun Fire midrange systems.

General DR Limitations

- Before performing any DR operation on an I/O (IBx) board, enter the following command to stop the `vold` daemon:

```
# sh /etc/init.d/volmgt stop
```

  After the DR operation has successfully completed, enter the following command to re-start the `vold` daemon:

```
# sh /etc/init.d/volmgt start
```

- On Sun Fire midrange systems, DR supports neither SAI/P (BugID 4466378) nor HIPPI/P. Previous releases did not support the SunHSI/P driver, but the bug that prevented support, 4496362, was fixed in patch 106922 (2.0) and 109715 (3.0). For more information see SunSolve.
- You must execute the `devfsadm(1M)` command to see any changes that have been made, especially in regard to changes from PCI to cPCI.
- Do not reboot nor reset the system controller (SC) during DR operations. In addition, do not perform a flashupdate, which requires a reboot upon completion.

Limitations Specific to CompactPCI

- You can unconfigure a CompactPCI (cPCI) I/O assembly only if all the cards in the board are in an unconfigured state. If any cPCI card is busy (such as with a plumbed/up interface or a mounted disk), the board unconfigure operation fails with the status "busy." All cPCI cards should be unconfigured before attempting to unconfigure the cPCI I/O assembly.
- When a multipath disk is connected to two cPCI cards, it is possible to see disk activity across the cards when none is expected. For this reason, make sure that there is no activity on the local side of the resource. This is more likely to occur when attempting to perform DR operations on a cPCI card that shows a busy status, even when there is no activity on the local side of the resource. A subsequent DR attempt may be required.
- When a user lists attachment points using the `cfgadm`(1M) command with the `-a` option, cPCI slots and PCI buses are all listed as attachment points. The `cfgadm -a` command displays an attachment point for a PCI bus as `N0.IB8::pci0`. There are four such attachment points for each cPCI board. The user should not perform DR operations on these, nor on the sghsc attachment point (which the `cfgadm -a` command displays as `N0.IB8::sghsc4`), because DR is not actually performed, and some internal resources are removed. However, there is no harm in doing so.
- In order for DR to function properly with cPCI cards, the levers on all cPCI cards that are inserted at Solaris boot time must be fully engaged.

Procedures for Bringing a cPCI Network Interface (IPMP) Online or Offline

▼ To Take a cPCI Network Interface (IPMP) Offline and Remove It

1. Retrieve the group name, test address, and interface index by typing the following command.

```
# ifconfig interface
```

For example, `ifconfig hme0`

2. **Use the** if_mpadm(1M) **command as follows:**

```
# if_mpadm -d interface
```

This takes the interface offline and causes the failover addresses to be failed over to another active interface in the group. If the interface is already in a failed state, then this step simply marks and ensures that the interface is offline.

3. **(Optional) Unplumb the interface.**

This step is required only if you want to use DR to reconfigure the interface automatically at a later time.

4. **Remove the physical interface.**

Refer to the cfgadm(1M) man page and the *Sun Fire Midrange Systems Dynamic Reconfiguration User Guide* for more information.

▼ To Attach and Bring Online a cPCI Network Interface (IPMP)

1. **Attach the physical interface.**

Refer to the cfgadm(1M) man page and the *Sun Fire Midrange Systems Dynamic Reconfiguration User Guide* for more information.

After you attach the physical interface, it is automatically configured using settings in the hostname configuration file (/etc/hostname.*interface*, where *interface* is a value such as hme1 or qfe2).

This triggers the in.mpathd daemon to resume probing and detect repairs. Consequently, in.mpathd causes original IP addresses to failback to this interface. The interface should now be online and ready for use under IPMP.

Note – If the interface had not been unplumbed and set to the OFFLINE status prior to a previous detach, then the attach operation described here would not automatically configure it. To set the interface back to the ONLINE status and failback its IP address after the physical attach is complete, enter the following command: if_mpadm -r *interface*

Operating System Quiescence

This section discusses permanent memory, and the requirement to quiesce the operating system when unconfiguring a system board that has permanent memory.

A quick way to determine whether a board has permanent memory is to run the following command as superuser:

```
# cfgadm -av | grep permanent
```

The system responds with output such as the following, which describes system board 0 (zero):

```
N0.SB0::memory connected configured ok base address 0x0, 4194304
KBytes total, 668072 KBytes permanent
```

Permanent memory is where the Solaris kernel and its data reside. The kernel cannot be released from memory in the same way that user processes residing in other boards can release memory by paging out to the swap device. Instead, cfgadm uses the copy-rename technique to release the memory.

The first step in a copy-rename operation is to stop all memory activity on the system by pausing all I/O operations and thread activity; this is known as *quiescence*. During quiescence, the system is frozen and does not respond to external events such as network packets. The duration of the quiescence depends on two factors: how many I/O devices and threads need to be stopped; and how much memory needs to be copied. Typically the number of I/O devices determines the required quiescent time, because I/O devices must be paused and unpaused. Typically, a quiescent state lasts longer than two minutes.

Because quiescence has a noticeable impact, cfgadm requests confirmation before effecting quiescence. If you enter:

```
# cfgadm -c unconfigure N0.SB0
```

The system responds with a prompt for confirmation:

```
System may be temporarily suspended, proceed (yes/no)?
```

If you are using SunMC to perform the DR operation, a pop-up window displays this prompt.

Enter **yes** to confirm that the impact of the quiesce is acceptable, and to proceed.

Dynamic Reconfiguration Software Bugs

This section lists the more important bugs that have been discovered during testing of DR. This list does not include all bugs.

Known Dynamic Reconfiguration Bugs

`cryptorand` Exited After Removing CPU Board With Dynamic Reconfiguration (BugID 4456095)

Description: If a system is running the `cryptorand` process, which is found in the SUNWski package, an unconfigure of memory, such as part of a CPU/Memory (SB) board disconnect, causes `cryptorand` to close with messages recorded in `/var/adm/messages`. This action denies random number services to secure sub-systems, and any memory present when `cryptorand` is started should not be unconfigured.

The `cryptorand` process supplies a random number for `/dev/random`. After `cryptorand` is started, the amount of time before `/dev/random` becomes available depends on the amount of memory in the system. It takes about two minutes per GB of memory. Applications that use `/dev/random` to get random numbers may experience temporary blockage. It is not necessary to restart `cryptorand` if a CPU/memory board is added to a domain.

Workaround: If a CPU/memory board is removed from the domain, restart `cryptorand` by entering the following command as superuser:

```
# sh /etc/init.d/cryptorand start
```

SBM Sometimes Causes System Panic During DR Operations (BugID 4506562)

Description: A panic may occur when a system board that contains CPUs is removed from the system while Solaris Bandwidth Manager (SBM) is in use.

Workaround: Do not install SBM on systems that will be used for DR trials, and do not perform CPU system board DR operations on systems with SBM installed.

DR Commands Hang Waiting for rcm_daemon While Running ipc, vm, and ism Stress (BugID 4508927)

Description: In rare cases, a quiesce of the Solaris software fails to stop certain user threads, and to restart others, which remain in a stopped state. Depending on the threads affected, applications running on the domain may stop running and other DR operations may not be possible until the domain is rebooted.

Workaround: Do not use DR to remove a board that contains permanent memory.

Unable to Disconnect SCSI Controllers Using DR (BugID 4446253)

Description: When a SCSI controller is configured but not busy, it cannot be disconnected using the DR `cfgadm(1M)` command.

Workaround: None.

`cfgadm_sbd` Plugin Signal Handling Is Completely Broken (BugID 4498600)

Description: When a single-threaded or multi-threaded client of the `cfgadm` library issues concurrent `sbd` requests, the system may hang.

Workaround: None. To avoid this bug, do not run in parallel multiple instances of `cfgadm` targeting system boards, and do not send signals, such as `CTRL-C`, to long-running `cfgadm` operations.

DR Operations Hang After a Few Loops When CPU Power Control Is Also Running (BugID 4114317)

Description: When multiple concurrent DR operations occur, or when `psradm` is run at the same time as a DR operation, the system can hang because of a mutex deadly embrace.

Workaround: Perform DR operations serially (one DR operation at a time); and allow each to complete successfully before running `psradm`, or before beginning another DR operation.

System May Panic When `send_mondo_set` Times Out (BugID 4518324)

Description: A Sun Fire system may panic if one or more of the CPU boards are sync paused during a DR operation. Sync pause is required to attach or detach boards. If there are outstanding `mondo` interrupts, and for any reason the SC is not able to complete sync pause within the one-second `send_mondo timeout` limit, the system panics.

Test `sdrfunc_072.pl` Panicked in DDI Layer (BugID 4622581)

Description: A cPCI slot operation cannot be performed concurrently with a PCI bus operation. If at least one second does not separate these actions, the system may panic. The risk is very small for manual cfgadm operations, but higher for automated executions, such as those done in a shell script.

Workaround: Insert at least a one second delay between cPCI slot DR operations and PCI bus DR operations when automating these operations.

DR Disconnect on Gigaswift cPCI Device Causes `ifconfig` Hang (BugID 4942945)

Description: Under heavy network load, a disconnect operation on a Gigaswift cPCI device appears to hang. This problem occurs because the disconnect calls `ifconfig` to unplumb the interface, and the process is unable to make progress under heavy load. This problem applies to `ifconfig` unplumb operations that are initiated manually, as well.

Workaround: Do not attempt to disconnect or unplumb a Gigaswift cPCI device when heavy traffic is present.

page_retire Does Not Update Retired Page List in Some Cases (BugID 4893666)

Description: If non-permanent memory is unconfigured, the system removes retired pages from the retired pages list to prevent them from becoming dangling pages - that is, pages that point to physical memory that would have been unconfigured.

When permanent memory is unconfigured, a target board is identified and unconfigured first. Once a target board is ready, the contents of the source board (the permanent memory) are copied to the target board. The target board is then "renamed" (memory controllers are programmed) to have the same address range as

the source board. What this means is that if the source board contained any retired pages, these pages would not be dangling pages after the rename. They would point to valid addresses, but the physical memory behind those addresses is in the target board. The problem is that the physical memory is probably good (does not contain ECC errors).

Workaround: None.

Page Removal Causes a Good Page to be Removed After a DR Operation (BugID 4860955)

Description: The automatic page removal feature may result in removal of a good page after a DR operation.

Workaround: Disable `automatic_page_removal`.

Cannot DR out cPCI IB with P0 Disabled (BugID 4798990)

For more information about this bug, please see Sun Alert 56880.

Description: On Sun Fire E6900/E4900/6800/4810/4800/3800 systems, a Compact PCI (cPCI) I/O board cannot be unconfigured when Port 0 (P0) on that board is disabled. This problem exists only on systems running Solaris 9, running Solaris 8 with Sun Patch 108528-11 through -27 and possibly later, or running Solaris 8 with Sun Patch 111372-02 through -04. It occurs only during DR operations that involve cPCI boards, and displays an error message similar to the following:.

```
# cfgadm –c unconfigure IB7
```

Workaround: If you do not need to disable P0 itself, disable its slots, instead.

Open Issues for Sun Enterprise Midrange Systems

This chapter contains the latest information for the Sun Enterprise midrange servers -- the Sun Enterprise 6500/6000/5500/5000/4500/4000/3500/3000 systems -- running Solaris 8 2/04 software.

For information about the newer Sun Fire E6900/E4900/6800/4810/4800/3800 systems, see Chapter 5.

The Solaris 8 operating environment includes support for the CPU/memory boards and most I/O boards in the systems mentioned above.

Note – This release may be the last Solaris release to support the Sun Enterprise midrange servers, which have been replaced by the Sun Fire midrange servers.

Dynamic Reconfiguration of Sun Enterprise Midrange Systems

These release notes provide the latest information on Dynamic Reconfiguration (DR) functionality for Sun Enterprise midrange systems running the Solaris 8 2/04 operating environment. For more information about DR on these systems, refer to the *Dynamic Reconfiguration User's Guide for Sun Enterprise 3x00, 4x00, 5x00, and 6x00 Systems*.

The Solaris 8 2/04 release includes support for CPU/memory boards and most I/O boards in Sun Enterprise midrange systems.

Supported Hardware

Before proceeding, verify that your system supports DR. If you see the following message on your console or in your console logs, the hardware is of an older design and not suitable for DR.

```
Hot Plug not supported in this system
```

Supported I/O boards are listed in the "Solaris 8" section on the following Web site:

http://sunsolve5.sun.com/sunsolve/Enterprise-dr

I/O board Type 2 (graphics), Type 3 (PCI), and Type 5 (graphics and SOC+) are not supported.

Firmware Notes

FC-AL Disk Arrays or Internal Drives

For Sun StorEdge A5000 disk arrays or for internal FC-AL disks in the Sun Enterprise 3500 system, the firmware version must be ST19171FC 0413 or a subsequently compatible version. For more information, refer to the "Solaris 8" section at the following web site:

http://sunsolve5.sun.com/sunsolve/Enterprise-dr

PROM Updates for CPU and I/O Boards

Only Sun Enterprise midrange servers running CPU PROM version no earlier than 3.2.22 (firmware patch ID 103346) support the Solaris 8 2/04 release. This firmware is available from the SunSolve web site. See "How to Obtain Firmware" on page 79.

Older versions of the CPU PROM may display the following message during boot:

```
Firmware does not support Dynamic Reconfiguration
```

Note – CPU PROM 3.2.16 and earlier versions do not display this message; however, they do not support DR of CPU/memory boards.

1. **To see your current PROM revision, enter** `.version` **and** `banner` **at the** `ok` **prompt.**

   The system displays information similar to the following:

```
ok .version
Slot  0 - I/O Type 1 FCODE 1.8.22 1999/xx/xx 19:26  iPOST 3.4.22 1999/xx/xx 19:31
Slot  1 - I/O Type 1 FCODE 1.8.22 1999/xx/xx 19:26  iPOST 3.4.22 1999/xx/xx 19:31
Slot  2 - CPU/Memory OBP   3.2.22 1999/xx/xx 19:27  POST  3.9.22 1999/xx/xx 19:31
Slot  3 - I/O Type 4 FCODE 1.8.22 1999/xx/xx 19:27  iPOST 3.4.22 1999/xx/xx 19:31
Slot  4 - CPU/Memory OBP   3.2.22 1999/xx/xx 19:27  POST  3.9.22 1999/xx/xx 19:31
Slot  5 - CPU/Memory OBP   3.2.22 1999/xx/xx 19:27  POST  3.9.22 1999/xx/xx 19:31
Slot  6 - CPU/Memory OBP   3.2.22 1999/xx/xx 19:27  POST  3.9.22 1999/xx/xx 19:31
Slot  7 - CPU/Memory OBP   3.2.22 1999/xx/xx 19:27  POST  3.9.22 1999/xx/xx 19:31
Slot  9 - CPU/Memory OBP   3.2.22 1999/xx/xx 19:27  POST  3.9.22 1999/xx/xx 19:31
Slot 11 - CPU/Memory OBP   3.2.22 1999/xx/xx 19:27  POST  3.9.22 1999/xx/xx 19:31
Slot 12 - CPU/Memory OBP   3.2.22 1999/xx/xx 19:27  POST  3.9.22 1999/xx/xx 19:31
Slot 14 - CPU/Memory OBP   3.2.22 1999/xx/xx 19:27  POST  3.9.22 1999/xx/xx 19:31
ok banner
16-slot Sun Enterprise E6500
OpenBoot 3.2.22, 4672 MB memory installed, Serial #xxxxxxx.
Ethernet address 8:0:xx:xx:xx:xx, Host ID: xxxxxxx.
```

How to Obtain Firmware

For information about updating your firmware, refer to the "Solaris 8" section at the following website:

http://sunsolve5.sun.com/sunsolve/Enterprise-dr

At this site, there is information on how to:

- Download the DR-capable PROM firmware
- Upgrade the PROM

If you cannot use the Web site, contact your Sun support service provider for assistance.

Software Notes

Enabling Dynamic Reconfiguration

In the `/etc/system` file, two variables must be set to enable DR and an additional variable must be set to enable the removal of CPU/memory boards.

1. **Log in as superuser.**

2. **To enable DR, edit the** `/etc/system` **file and add the following lines to the** `/etc/system` **file:**

```
set pln:pln_enable_detach_suspend=1
set soc:soc_enable_detach_suspend=1
```

3. **To enable the removal of a CPU/memory board, add this line to the** `/etc/system` **file:**

```
set kernel_cage_enable=1
```

Setting this variable enables the memory unconfiguration operation.

4. **Reboot the system to put the changes into effect.**

Quiesce Test

On a large system, the `quiesce-test` command (`cfgadm -x quiesce-test sysctrl0:slot`*number*) may run as long as a minute or so. During this time no messages are displayed if `cfgadm` does not find incompatible drivers. This is normal behavior.

Disabled Board List

If a board is on the disabled board list, an attempt to connect the board may produce an error message:

```
# cfgadm -c connect sysctrl0:slotnumber
cfgadm: Hardware specific failure: connect failed: board is
disabled: must override with [-f][-o enable-at-boot]
```

1. **To override the disabled condition, use the force flag (**`-f`**) or the enable option (**`-o enable-at-boot`**) with the** `cfgadm` **command:**

```
# cfgadm -f -c connect sysctrl0:slotnumber
```

```
# cfgadm -o enable-at-boot -c connect sysctrl0:slotnumber
```

1. **To remove all boards from the disabled board list, set the** `disabled-board-list` **variable to a null set with the system command:**

```
# eeprom disabled-board-list=
```

1. **If you are at the OpenBoot prompt, use this command instead of the above to remove all boards from the disabled board list:**

```
OK set-default disabled-board-list
```

For further information about the `disabled-board-list` setting, refer to the section "Specific NVRAM Variables" in the *Platform Notes: Sun Enterprise 3x00, 4x00, 5x00, and 6x00 Systems* manual in the Solaris on Sun Hardware Collection AnswerBook set in this release.

Disabled Memory List

For information about the OpenBoot PROM `disabled-memory-list` setting, refer to the section "Specific NVRAM Variables" in the *Platform Notes: Sun Enterprise 3x00, 4x00, 5x00, and 6x00 Systems* in the Solaris on Sun Hardware Collection AnswerBook set in this release.

Unloading Detach-Unsafe Drivers

If it is necessary to unload detach-unsafe drivers, use the `modinfo(1M)` line command to find the module IDs of the drivers. You can then use the module IDs in the `modunload(1M)` command to unload detach-unsafe drivers.

Interleaved Memory

A memory board or CPU/memory board that contains interleaved memory cannot be dynamically unconfigured.

To determine if memory is interleaved, use the `prtdiag` command or the `cfgadm` command.

To permit DR operations on CPU/memory boards, set the NVRAM `memory-interleave` property to `min`.

For related information about interleaved memory, see "Memory Interleaving Set Incorrectly After a Fatal Reset (BugID 4156075)" on page 82 and "DR: Cannot Unconfigure a CPU/Memory Board That Has Interleaved Memory (BugID 4210234)" on page 83.

Self-Test Failure During a Connect Sequence

If the error "cfgadm: Hardware specific failure: connect failed: firmware operation error" is displayed during a DR connect sequence, remove the board from the system as soon as possible. The board has failed self-test, and removing the board avoids possible reconfiguration errors that can occur during the next reboot.

If you want to immediately retry the failed operation, you must first remove and reinsert the board, because the board status does not allow further operations.

Known Bugs

The following list is subject to change at any time. For the latest bug and patch information, refer to:

http://sunsolve5.sun.com/sunsolve/Enterprise-dr.

cfgadm -v Not Working Properly (BugID 4149371)

The memory test should give occasional indications that it is still running. During a long test, the user cannot easily determine that the system is not hanging.

Workaround: Monitor system progress in another shell or window, using vmstat(1M), ps(1), or similar shell commands.

Memory Interleaving Set Incorrectly After a Fatal Reset (BugID 4156075)

Memory interleaving is left in an incorrect state when a Sun Enterprise *x*500 server is rebooted after a Fatal Reset. Subsequent DR operations fail. The problem only occurs on systems with memory interleaving set to min.

Workarounds: Two choices are listed below.

1. **To clear the problem after it occurs, manually reset the system at the OK prompt.**

1. **To avoid the problem before it occurs, set the NVRAM** memory-interleave **property to** max**.**

   This causes memory to be interleaved whenever the system is booted. However, you may find this option to be unacceptable, as a memory board containing interleaved memory cannot be dynamically unconfigured. See "DR: Cannot Unconfigure a CPU/Memory Board That Has Interleaved Memory (BugID 4210234)" on page 83.

vmstat Output Is Incorrect After Configuring Processors (Bug ID 4159024)

vmstat shows an unusually high number of interrupts after configuring CPUs. With vmstat in the background, the interrupt field becomes abnormally large (but this does not indicate a problem exists). In the last row in the example below, the interrupts (in) column has a value of 4294967216:

```
#  procs       memory               page              disk          faults      cpu
 r b w   swap   free   re  mf pi po fr de sr s6 s9 s1 --   in    sy    cs us sy id
 0 0 0 437208 146424  0   1  4  0  0  0  0  0  1  0  0   50    65    79  0  1 99
 0 0 0 413864 111056  0   0  0  0  0  0  0  0  0  0  0  198   137   214  0  3 97
 0 0 0 413864 111056  0   0  0  0  0  0  0  0  0  0  0  286   101   200  0  3 97
 0 0 0 413864 111072  0  11  0  0  0  0  0  0  1  0  0 4294967216 43 68 0  0 100
```

Workaround: Restart vmstat.

DR: Cannot Unconfigure a CPU/Memory Board That Has Interleaved Memory (BugID 4210234)

Cannot unconfigure a CPU/memory board that has interleaved memory.

To unconfigure and subsequently disconnect a CPU board with memory or a memory-only board, it is necessary to first unconfigure the memory. However, if the memory on the board is interleaved with memory on other boards, the memory cannot currently be unconfigured dynamically.

Memory interleaving can be displayed using the prtdiag or the cfgadm commands.

Workaround: Shut down the system before servicing the board, then reboot afterward. To permit future DR operations on the CPU/memory board, set the NVRAM memory-interleave property to min. See also "Memory Interleaving Set Incorrectly After a Fatal Reset (BugID 4156075)" on page 82 for a related discussion on interleaved memory.

DR: Cannot Unconfigure a CPU/Memory Board That Has Permanent Memory (BugID 4210280)

To unconfigure and subsequently disconnect a CPU board with memory or a memory-only board, it is necessary to first unconfigure the memory. However, some memory is not currently relocatable. This memory is considered permanent.

Permanent memory on a board is marked "permanent" in the cfgadm status display:

```
# cfgadm -s cols=ap_id:type:info
Ap_Id Type Information
ac0:bank0 memory slot3 64Mb base 0x0 permanent
ac0:bank1 memory slot3 empty
ac1:bank0 memory slot5 empty
ac1:bank1 memory slot5 64Mb base 0x40000000
```

In this example, the board in slot3 has permanent memory and so cannot be removed.

Workaround: Shut down the system before servicing the board, then reboot afterward.

cfgadm Disconnect Fails When Running Concurrent cfgadm Commands (BugID 4220105)

If a cfgadm process is running on one board, an attempt to simultaneously disconnect a second board fails.

A cfgadm disconnect operation fails if another cfgadm process is already running on a different board. The message is:

```
cfgadm: Hardware specific failure: disconnect failed: nexus error
during detach: address
```

Workaround: Do only one cfgadm operation at a time. If a cfgadm operation is running on one board, wait for it to finish before you start a cfgadm disconnect operation on a second board.

Cannot Drain and/or Detach Sun Enterprise Server Boards That Host QFE Cards (BugID 4231845)

A server configured as a boot server for Solaris 2.5.1-based Intel platform clients has several `rpld` jobs running, whether or not such devices are in use. These active references prevent DR operations from detaching these devices.

Workaround: Perform a DR detach operation:

1. **Remove or rename the** `/rplboot` **directory.**

2. **Shut down NFS services with this command:**

   ```
   # sh /etc/init.d/nfs.server stop
   ```

3. **Perform the DR detach operation.**

4. **Restart NFS services with this command:**

   ```
   # sh /etc/init.d/nfs.server start
   ```

Sun Enterprise 10000 Release Notes

This chapter contains the release notes for the following features on the Sun Enterprise 10000 server: SSP 3.5, dynamic reconfiguration (DR), InterDomain Networks (IDNs), and the Solaris operating environment on Sun Enterprise 10000 domains.

SSP 3.5 Open Issues

For an overview of SSP 3.5 functionality, refer to the *SSP 3.5 Installation Guide and Release Notes*. The list of open bugs in that document is accurate as of the date of its publication. Sun suggests you check the SunSolve website on a regular basis for the SSP patches available for SSP 3.5:

`http://sunsolve.Sun.com`

If you need to install SSP software patches, be sure to install the patches on both the main and spare SSP, as explained in the *SSP 3.5 Installation Guide and Release Notes*.

Note – For the Solaris 8 2/04 release, be aware that SSP Patch 112178 has been applied to the SSP 3.5 software. This patch fixes bug 4505031, which involves the repeated display of a prompt that asks whether the system is to be configured as an SSP for the Sun Enterprise 10000 server. This prompt appears after the installation of the Solaris operating environment. The patch does not affect basic SSP 3.5 software functionality.

Dynamic Reconfiguration

Release notes and other technical information in this section apply only to dynamic reconfiguration (DR) software on a domain of the Sun Enterprise 10000 system running Solaris 8 2/04 software.

General Issues

This section contains general issues that involve DR on the Sun Enterprise 10000 server. You should read this section before you attempt to install or configure DR.

DR and Bound User Processes

For Solaris 8 2/04, DR does not automatically unbind user processes from CPUs that are being detached. Users must perform this operation themselves before initiating a detach sequence. The drain operation fails if CPUs are found with bound processes.

Problem with `oprom_checknodeid()` during DR (4474330)

A panic can occur under certain circumstances when the `/dev/openprom` interface accesses the PROM device tree after a DR disconnect. The `openprom` driver caches node information that can become invalid after a DR disconnect. As a result, OpenBoot PROM can be passed a bad node address.

Workaround: To minimize the possibility of encountering this situation, discontinue using applications, such as `prtconf`, that use the `/dev/openprom` interface during or immediately before or after a DR disconnect operation. Note that `picld`(1M) uses the `/dev/openprom` driver.

QFE Fails to Resume After DR Detach (4499428)

After the qfe driver is suspended during a DR operation quiesce of the Solaris operating environment, the qfe driver might not resume correctly. This results in a loss of network connectivity. If this condition occurs, the domain will still be accessible through the network console from the SSP.

Workaround: Reset the qfe device by executing the following sequence of commands from the network console:

```
# ifconfig qfe_device down
# ifconfig qfe_device up
```

Where *qfe_device* is the affected qfe device, e.g. qfe0.

Enabling DR 3.0 Requires an Extra Step in Certain Situations (Bug ID 4507010)

If you upgrade or perform a fresh install of the Solaris operating environment on a domain before you upgrade the SSP to SSP 3.5, the domain will not be properly configured for DR 3.0.

Workaround: Run the following command as superuser on the domain, after the SSP has been upgraded to SSP 3.5. This workaround is not necessary until DR 3.0 is enabled on the domain.

```
# devfsadm -i ngdr
```

InterDomain Networks (IDN)

General Issues

For a domain to become part of an IDN, all boards in that domain that have active memory must have at least one active CPU.

Solaris Operating Environment

This section contains general issues, known bugs, patches, and notes about the Solaris 8 2/04 operating environment on the Sun Enterprise 10000 server.

General Issues

Alternate Pathing (AP), dynamic reconfiguration (DR), and InterDomain Networks are supported in the Solaris 8 2/04 release.

Note – If you intend to use DR model 3.0 on a Sun Enterprise 10000 domain, you must install SSP 3.5 on your System Service Processor before you begin the fresh install or upgrade of the Solaris 8 2/04 operating environment on that domain. SSP 3.5 supports the Solaris 8 2/04 operating environment on Sun Enterprise 10000 domains.

Note – Do not use the Solaris 8 2/04 Installation CD to install or upgrade the Solaris operating environment on Sun Enterprise 10000 domains. Begin installation from the Solaris 8 2/04 Software 1 of 2 CD, as explained in the *SSP 3.5 Installation Guide and Release Notes*.

Solaris 8 2/04 and Boot-Disk Partition Sizes

If you are upgrading the operating environment from Solaris 2.6 to Solaris 8 2/04 and you used the partition layout suggested in the *SMCC Hardware Platform Guide Solaris 2.6*, the partitions might not be large enough for the upgrade. For instance, the /usr partition must be at least 653 megabytes. If /usr is smaller than the size needed to perform the upgrade, suninstall uses the Dynamic Space Reallocation (DSR) mode to reallocate the space of the disk partitions.

DSR may calculate a partition layout which is not acceptable for some systems. For instance, DSR may select partitions that appear to DSR as being unused (non-UFS partitions which may contain raw data or other types of file systems). If DSR selects a used partition, data loss may occur. Therefore, you must know the current status of the partitions DSR wants to use before you allow DSR to continue with the reallocation of the disk partitions.

After DSR presents an acceptable layout and you choose to proceed with the reallocation, DSR adjusts the affected file systems, and the upgrade continues. However, if you cannot constrain the layout so that it is acceptable for your needs, then you may need to manually repartition the boot device, or you may have to perform a fresh install.

OpenBoot PROM Variables

Before you perform the `boot net` command from the OpenBoot PROM prompt (ok), you must verify that the `local-mac-address?` variable is set to *false*, which is the factory default. If the variable is set to *true*, you must ensure that this value is an appropriate local configuration.

> **Note –** If `local-mac-address?` is set to true, it may prevent the domain from successfully booting over the network.

In a `netcon(1M)` window, you can use the following command at the OpenBoot PROM prompt to display the values of the OpenBoot PROM variables:

```
ok printenv
```

▼ To Set the `local-mac-address?` Variable

1. **If the variable is set to** `true`**, use the** `setenv` **command to set it to** `false`**.**

```
ok setenv local-mac-address? false
```

Known Bugs

Booting a Sun Enterprise 10000 System in 32-Bit Mode (BugID 4348354)

Sun Enterprise 10000 systems with 64 Gbytes of memory cannot boot the Solaris 8 2/04 operating environment in 32-bit mode.

Open Issues for Sun Fire High-End Systems

This chapter describes open issues related to the Sun Fire high-end servers -- the Sun Fire E25K/E20K/15K/12K systems -- running Solaris 8 2/04 software.

Dynamic Reconfiguration on Sun Fire High-End Systems

Dynamic reconfiguration (DR) has two components: one that runs in the System Management Services (SMS) environment on the system controller (SC), another that runs in the Solaris environment on the domains.

This section describes open issues about domain-side DR running on Solaris 8 2/04 software. For information about SMS-side DR, see the *System Management Services Dynamic Reconfiguration User Guide* and the *System Management Services Release Notes* that correspond to the SMS release your system is running.

Known Dynamic Reconfiguration Bugs

This section lists important domain-side DR bugs known to exist as of the publication date of this document.

DR Operations Hang After a Few Loops When CPU Power Control Is Also Running (BugID 4114317)

When multiple concurrent DR operations occur, or when `psradm` is run at the same time as a DR operation, the system can hang because of a mutex deadly embrace.

Workaround: Perform DR operations serially (one DR operation at a time); and allow each to complete successfully before running `psradm`, or before beginning another DR operation.

Unable to Disconnect SCSI Controllers Using DR (BugID 4446253)

When a SCSI controller is configured but not busy, it cannot be disconnected using the DR `cfgadm(1M)` command.

Workaround: None.

DR Commands Hang Waiting for `rcm_daemon` While Running `ipc`, `vm`, and `ism` Stress (BugID 4508927)

In rare cases, a quiesce of the Solaris software fails to stop certain user threads, and to restart others, which remain in a stopped state. Depending on the threads affected, applications running on the domain may stop running and other DR operations might not be possible until the domain is rebooted.

Workaround: Do not use DR to remove a board that contains permanent memory.

`cfgadm_sbd` Plugin Signal Handling Is Completely Broken (BugID 4498600)

Description: When a single-threaded or multi-threaded client of the `cfgadm` library issues concurrent `sbd` requests, the system may hang.

Workaround: None. To avoid this bug, do not run in parallel multiple instances of `cfgadm` targeting system boards, and do not send signals, such as CTRL-C, to long-running `cfgadm` operations.

System Panics During Concurrent Slot 1 DR and PCI Hotplug Operations (BugID 4797110)

Unconfiguring an hsPCI I/O board at the same time a PCI option card is being configured into it causes a system panic. For example, the panic would occur if the following commands were executed simultaneously. In this example, `pcisch18:e03b1slot2` is one of the four PCI Slots on IO3:

```
# cfgadm -c unconfigure IO3
# cfgadm -c configure pcisch18:e03b1slot2
```

Workaround: Do not execute a PCI hotplug operation while an hsPCI I/O board is being unconfigured.

PCI Slot With Empty Cassette May Show `disconnected` State After DR Operation(BugID 4809799)

Due to a race condition, a PCI slot with an empty cassette may show `disconnected` state rather than the usual `connected` state after a DR operation on a Slot 1 I/O board (hsPCI). The PCI Slot with an empty cassette should be in `connected` state forFRUID purposes. For example:

```
PCI Slot with empty cassette showing incorrect state:
# cfgadm -al pcisch17:e00b1slot0
pcisch17:e00b1slot0 unknown disconnected unconfigured unknown

PCI Slot with empty cassette showing correct state:
# cfgadm -al pcisch17:e00b1slot0
pcisch17:e00b1slot0 unknown connected unconfigured unknown
```

Workaround: Run the `cfgadm` command to put the PCI Slot in a connected state. For example:

```
# cfgadm -c connect pcisch17:e00b1slot0
```

Sequence of Copy-Rename/Reboot Events Causes OS to Hang During Quiesce Stage (BugID 4806726)

A hang can occur when permanent memory from a 32 GB board has been unconfigured, a copy-rename writes it to a target board that has less than 32 GB of memory, and another copy-rename attempts to write it to a third board with less than 32GB. One example might be where memory is moved from a 32 GB board to a 8GB board, then to a 16GB board.

Workaround: Do not assign permanent memory to a 32 GB board, or do not have a mix of boards that have 32 GB of memory and those that do not in a domain when it is unconfigured.

page_retire Might Not Update Retired Page List (BugID 4893666)

If non-permanent memory is unconfigured, the system removes retired pages from the retired pages list to prevent them from becoming dangling pages - that is, pages that point to physical memory that would have been unconfigured.

When permanent memory is unconfigured, a target board is identified and unconfigured first. Once a target board is ready, the contents of the source board (the permanent memory) are copied to the target board. The target board is then "renamed" (memory controllers are programmed) to have the same address range as the source board. Therefore, if the source board contains any retired pages, these pages are not dangling pages after the rename. They point to valid addresses, but the physical memory behind those addresses is in the target board. The problem is that the physical memory is probably good (does not contain ECC errors).

Workaround: None.

Page Removal Causes a Good Page to be Removed After a DR Operation (BugID 4860955)

The automatic page removal feature may result in removal of a good page after a DR operation.

Workaround: Disable automatic_page_removal.

DR Detach Fails With `Solaris Failed to Deprobe` Error (BugID 4873095); DR Attach Fails With `Cannot Read Property Value: Device Node 0x0: Property Name` (BugID 4913987)

These errors can occur on systems with devices that define a nonunique `portID`. For example, if you attempt a DR operation on a CPU for which the `portID` is defined as 0x000000, and the sytem contains an I/O device whose `portID` is also defined as 0x000000, the DR operation fails.

Workaround: None.

Known Non-DR Bugs

Incorrect Board Speed Displayed (BugID 4964679)

The Prtdiag, psrinfo, and cfgadm commands on a Sun Fire E25K or E20K might incorrectly display the speed at which the board is rated, not the actual speed.

Workaround: see your licensed Sun Service personnel for possible fixes.