

Oracle® Solaris 11.2 Release Notes

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Using This Documentation

- **Overview** – *Oracle® Solaris 11.2 Release Notes* provides some important installation, update, and runtime information that you should consider before installing or running the Oracle Solaris 11.2 operating system (OS). It describes some known issues in this release, with workarounds where available, and also includes a list of fixed bugs that were documented for the previous release.
- **Audience** – Users and system administrators who install and use the Oracle Solaris 11.2 OS.
- **Required knowledge** – Advanced troubleshooting experience in using the Oracle Solaris 11.2 OS.

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◆◆◆ CHAPTER 1

Before You Begin

This chapter discusses general installation, update, and runtime information that you need to consider before installing or running Oracle Solaris 11.2. Note that not every installation, update, and runtime consideration is covered in this chapter.

Installation Considerations

This section provides general information that you need to consider when installing Oracle Solaris 11.2.

System Requirements for Installing Oracle Solaris 11.2

The following table lists the minimum and recommended memory and disk space requirements to perform an initial installation of Oracle Solaris 11.2. You might need additional memory and disk space on your installed system.

TABLE 1-1 Installation System Requirements

Installer	Minimum Memory	Minimum Disk Space	Recommended Minimum Disk Space
Automated Installer	1.5 GB for x86	The minimum disk space needed for an automated installation varies depending on the number and size of the packages that you include in the installation.	13 GB for solaris-desktop
	2 GB for SPARC		9 GB for solaris-large-server
	8 GB for solaris-small-server		
	6 GB for solaris-minimal-server		
Live Media	1.5 GB for x86	6.7 GB	8.7 GB
Text installer	1.5 GB for x86	4.9 GB for x86	6.9 GB for x86
	2 GB for SPARC	4.9 GB for SPARC	6.9 GB for SPARC

For information about the supported systems and implementation differences between the platform types, see the *Oracle Solaris OS: Hardware Compatibility Lists* at <http://www.oracle.com/webfolder/technetwork/hcl/index.html>.

Initial Root Password Expires After Live Media Installation

After a Live Media installation, the root password is initially set to the same password as the user account that is created during installation. Because it is created in an expired state, the first time you assume the root role, you should authenticate using your own password. At this point, a message indicates that the password for the user root has expired and you will be requested to provide a new one.

If you are prompted to assume the root role after starting an administrative command from a GNOME menu item, you will be prompted to supply a new root password. If you are using the su command to assume the role, the command sequence is as follows:

```
$ su
Password:
su: Password for user 'root' has expired
New Password:
Re-enter new Password:
su: password successfully changed for root.
```

SPARC: Legacy Systems Requires Firmware Update to Boot Oracle Solaris 11.2

Some SPARC systems require a firmware update in order to boot Oracle Solaris 11.2. On systems that have not been updated, the following error message might be displayed when the system is booted:

```
os-io Cross trap sync timeout:
```

Workaround: Update your affected system's firmware to the version listed in [Table 1-2](#) before you install the Oracle Solaris 11.2 OS. The following table describes the minimum firmware level required for affected SPARC systems when running Oracle Solaris 11.2.

TABLE 1-2 Firmware Levels Required for SPARC Systems

SPARC Platform	Firmware Revision	Patch
T2000	6.7.11	139434-08
T1000	6.7.11	139435-08

SPARC Platform	Firmware Revision	Patch
Netra T2000	6.7.11	139436-07
Netra CP3060	6.7.11	None
T6300	6.7.11	139438-08
T5120/T5220	7.4.0.b	147307-01
T6320	7.4.0.b	147308-01
Netra T5220	7.4.0.b	147309-01
Netra CP3260	7.4.0.b	None
T5140/T5240	7.4.0.b	147310-01
T5440	7.4.0.b	147311-01
T6340	7.4.0.b	147312-01
Netra T5440	7.4.0.b	147313-01
Netra T6340	7.4.0.b	147314-01
T3-1	8.1.0.c	147315-02
T3-2	8.1.0.c	147316-02
T3-4	8.1.0.c	147317-02
T3-1B	8.1.0.c	147318-02
Netra T3-1	8.1.0.c	147319-02
Netra T3-1B	8.1.0.c	147320-01
Netra T3-1BA	8.1.0.c	None
M3000	1102	12573531
M4000	1102	12573537
M5000	1102	12573539
M8000	1102	12573543
M9000	1102	12573546

Note that T4, T5, M5, and M6 systems were released with firmware versions to boot Oracle Solaris 11.2. However, the firmware needs to be updated if Oracle Solaris Kernel Zones support is required. For information about hardware and software requirements for kernel zones, see [“Hardware and Software Requirements for Oracle Solaris Kernel Zones”](#) in [“Creating and Using Oracle Solaris Kernel Zones”](#).

Oracle VM Server for SPARC: WAN Boot During an Automated Install of Guest Domains Is Slower on Older System Firmware

Users of the SPARC T-Series servers from Oracle might experience a slow WAN boot during an automated installation of a guest domain if they are running an older version of the system firmware.

Workaround: For System Firmware 8.x, you must have at least version 8.1.1.b or greater. For System Firmware 7.x, you require at least version 7.4.0.d or greater. The following information shows the platforms and the required firmware version.

System Firmware 8.x supports the following platforms:

- Netra SPARC T3-1
- Netra SPARC T3-1B
- Sun SPARC T3-1
- Sun SPARC T3-2
- Sun SPARC T3-4
- Sun SPARC T3-1B
- Sun SPARC T4-1
- Sun SPARC T4-1B
- Sun SPARC T4-2
- Sun SPARC T4-4
- Sun SPARC T5-1B

System Firmware 7.x supports the following platforms:

- Sun SPARC Enterprise T5120
- Sun SPARC Enterprise T5140
- Sun SPARC Enterprise T5220
- Sun SPARC Enterprise T5240
- Sun SPARC Enterprise T5440
- Sun Blade T6320 - Sun Blade T6340

The following platforms do not have the required firmware version available:

- Netra CP3260
- Netra SPARC T3-1BA

For more information about specific versions of system firmware, see [Oracle VM Server for SPARC Release Notes](#).

setterm(1) Is Optional

Starting with Oracle Solaris 11.2, [setterm\(1\)](#) becomes a completely optional component. [setterm\(1\)](#) is no longer installed as part of the `pkg:/system/locale/extra` package.

If required, install the `pkg:/system/locale/setterm` package manually by using the `pkg` command.

```
# pkg install system/locale/setterm
```

Update Considerations

This section provides information that you need to consider when updating your system to Oracle Solaris 11.2.

Updating Your System From Oracle Solaris 11.1 to Oracle Solaris 11.2

Use the `pkg` command-line utility to update from Oracle Solaris 11.1 to Oracle Solaris 11.2. If Oracle Solaris 11.1 is installed, with or without SRUs, no special steps are required to update the system.

▼ How to Update a System From Oracle Solaris 11.1 to Oracle Solaris 11.2

1. Become an administrator.

For more information, see [“Using Your Assigned Administrative Rights”](#) in [“Securing Users and Processes in Oracle Solaris 11.2”](#).

2. Ensure that you are using a repository that contains the Oracle Solaris 11.2 packages.

This repository can either be the Oracle repositories or a copy of the repository that can be created by downloading the ISO images.

a. If you have used the beta repository, type the following command to reset to the support repository:

```
# pkg set-publisher -k ssl_key_file -c ssl_cert_file \  
-G http://pkg.oracle.com/solaris/beta \  
-g https://pkg.oracle.com/solaris/support \  
solaris
```

To obtain the SSL certificate and key, go to the <https://pkg-register.oracle.com> site, click Request Certificates, and follow the instructions.

b. If you are using the release repository, type the following command:

```
# pkg set-publisher -G http://pkg.oracle.com/solaris/beta \  
-g http://pkg.oracle.com/solaris/release
```

3. Review licenses of the Oracle Solaris 11.2 OS.

```
# pkg update --license|less
```

4. If you agree with the license terms, update the system with Oracle Solaris 11.2 packages.

```
# pkg update --accept
```

5. Reboot using the updated boot environment.

```
# reboot
```

See Also For more information, see [“Updating to Oracle Solaris 11.2”](#).

Updating From Oracle Solaris 11 or Oracle Solaris 11.1 With the Oracle Hardware Management Pack Installed

Starting with Oracle Solaris 11.2, the Oracle Hardware Management Pack packages are *not* available in the Oracle Hardware Management Pack (mp-re) repository. Instead, they are available in the Oracle Solaris 11.2 OS repository.

Workaround: If you previously had the Oracle Hardware Management Pack installed on your Oracle Solaris system, type the following command to get the updated software before updating to Oracle Solaris 11.2:

```
# pkg set-publisher --non-sticky mp-re
```

Update from MySQL 5.1 to MySQL 5.5

The procedures in this section describe how to update from MySQL 5.1 to MySQL 5.5.

▼ How to Update to MySQL 5.5 Before Updating Your System To Oracle Solaris 11.2

1. Install the MySQL 5.5 package.

```
# pkg install database/mysql-55@latest
```

2. Verify if the `mysql` service is running.


```
# svcs -a | grep mysql
```

3. **Start the MySQL 5.1 service if the service is not already running.**

```
# svcadm enable svc:/application/database/mysql:version_51
```

4. **Back up the MySQL 5.1 data.**

```
# mysqldump --all-databases > 5_1.sql
```

5. **Stop the MySQL 5.1 service and start the MySQL 5.5 service.**

```
# svcadm disable svc:/application/database/mysql:version_51
```

```
# svcadm enable svc:/application/database/mysql:version_55
```

6. **Restore the backup data from MySQL 5.1.**

```
# mysql < 5_1.sql
```

▼ How to Update to MySQL 5.5 After Updating Your System To Oracle Solaris 11.2

1. **Install the MySQL 5.5 package.**

```
# pkg install mysql55
```

2. **Stop the MySQL 5.1 service.**

```
# svcadm disable svc:/application/database/mysql:version_51
```

3. **Copy the database files to a new directory.**

```
# cp /var/mysql/5.1/data/*.db /var/mysql/5.5/data/*.db
```

4. **Start the MySQL 5.5 service.**

```
# svcadm enable svc:/application/database/mysql:version_55
```

5. **Run the `mysql_upgrade` script to fix any database incompatibilities.**

```
# /usr/mysql/5.5/bin/mysql_upgrade
```

Runtime Considerations

This section provides general information that you need to consider while running the Oracle Solaris 11.2 OS.

Java Recommendations

The default Java environment in Oracle Solaris 11.2 is Java 7. Oracle Solaris 11.2 also ships with the following versions of Java:

- Java 6 Update 75
- Java 7 Update 55
- Java 8 Update 5

Use the `pkg set-mediator` command to change the Java version.

Installing the Java 8 packages also sets Java 8 as the default Java environment on the system unless you used the `pkg(1)` mediator to set an explicit version of Java prior to the installation.

GCC 4.5.2, 4.7.3, and 4.8.2 Packages Do Not Provide `include-fixed` Header Files

The GCC 4.5.2, 4.7.3, and 4.8.2 packages do not automatically generate header files in the `include-fixed` GCC install directory. You might see compiler error messages when building applications that include header files that are not ANSI compliant.

Workaround: To generate the compliant versions of the affected header files, type the following commands:

```
# for script in /usr/gcc/4.*/lib/gcc/*-solaris2.11/4.*/install-tools/mkheaders ; do
> ${script}
> done
```

CLI Message Localization

Command-line interface (CLI) messages are not fully localized. Messages for operating system CLI components are partially localized and no longer installed by default.

Workaround: To see the localized messages for operating system CLI components, manually install the `system/osnet/locale` package.

`/usr/ccs/bin` Is a Symbolic Link to `/usr/bin`

The `/usr/ccs/bin` directory is a symbolic link to `/usr/bin`.

Because of this change, for example, the `/usr/ccs/bin:/usr/gnu/bin:/usr/bin` path in the `PATH` environment variable is now equivalent to `/usr/bin:/usr/gnu/bin`. This change might result in changes to the utilities that are found by `PATH` searches.

If the `/usr/ccs/bin` change causes issues in locating GNU utilities, the `PATH` environment variable should be rearranged to place `/usr/gnu/bin` earlier than `/usr/bin` or utilities should be invoked with a full path.

Changes to User Password States With the `passwd` Command (15806373)

Starting with Oracle Solaris 11.1, some of the password state transitions that were not allowed in Oracle Solaris 11 have been restored for authorized users. Specifically, the following password state transitions are now allowed with the `passwd` command:

- Assigning a password to a non UNIX authentication account using `passwd username`.
- Conversion of an account that has a password directly to a non UNIX authentication account.
- Ability to manually lock and unlock an account that is in a non UNIX authentication state. In this case, the `passwd -sa` command shows `NL` for the account.

These password state transitions were supported in previous Oracle Solaris releases other than Oracle Solaris 11.

Note - Assigning a new password to an account in the locked state still requires an explicit unlock with the `passwd -u` command. Also, accounts that are marked as non UNIX authentication accounts with the `passwd -N` command do not have the failed login counter increased.

For more information, see the `passwd(1)` man page.

Oracle Solaris Cluster 4.1 Support

Oracle Solaris Cluster 4.1 is not supported on Oracle Solaris 11.2. This support might be included in a future Oracle Solaris Cluster 4.1 Support Repository Update (SRU).

Kernel Zones Support on Fujitsu M10 Servers

Starting with Oracle Solaris 11.2 SRU 4 and later versions, the Oracle Solaris Kernel Zones feature is supported on Fujitsu M10 servers.

Installation Issues

This chapter describes issues that you might encounter during the installation of Oracle Solaris 11.2 and suggests workarounds where available.

Issues When Installing Oracle Solaris 11.2

The following issues might occur during or after the installation of Oracle Solaris 11.2.

Automated Installer Fails to Install on Systems With High Memory and Low Disk Space Allocation (15741363)

When installing Oracle Solaris by using the Automated Installer (AI), the installation might fail if the system has more physical RAM than disk space. The space allocated to swap and dump devices might reduce the available space for installing the OS. The following error message might be displayed:

```
ImageInsufficientSpace: Insufficient disk space available (8.84 GB) for
estimated need (9.46 GB) for Root filesystem
```

Workaround: Choose one of the following workarounds:

- If not limited by the size of the disk, allocate more space to the slice being used as a virtual device (vdev) in the root pool.

Note - On x86 systems, if necessary, allocate additional space to the Solaris2 partition.

- Disable the need for a dump and swap volume to be allocated. In the AI manifest, specify the value `true` for the `nodump` and `noswap` attributes in the `<logical>` tag of the `<target>` section. For example:

```
<logical noswap="true" nodump="true">
```

```
</logical>
```

- Define the zpool and allocate smaller swap and dump sizes in the manifest.

```
<target>
<disk whole_disk="true" in_zpool="rpool">
  <disk_keyword key="boot_disk"/>
</disk>
<logical>
  <zpool name="rpool" root_pool="true">
    <zvol name="swap" use="swap">
      <size val="2gb"/>
    </zvol>
    <zvol name="dump" use="dump">
      <size val="4gb"/>
    </zvol>
  </zpool>
</logical>
</target>
```

- Disable allocation of one swap or dump device, and allocate a specific size to the remaining device (dump or swap). The following example shows how to disable swap and add a 4 GB dump size:

```
<target>
<disk whole_disk="true" in_zpool="rpool">
  <disk_keyword key="boot_disk"/>
</disk>
<logical noswap="true">
  <zpool name="rpool" root_pool="true">
    <zvol name="dump" use="dump">
      <size val="4gb"/>
    </zvol>
  </zpool>
</logical>
</target>
```

For more information about how to edit the AI manifest, refer to the `ai_manifest(4)` man page.

Automated Installer Fails to Match Target Disks When Using Dual-Path Boot Disk (15735929)

If you install the Oracle Solaris OS on a dual-path FC boot disk, the installation fails with the following errors:

```
17:22:08 Error occurred during execution of 'target-selection'
```

```

checkpoint.
17:22:08 100% None
17:22:09 Failed Checkpoints:
17:22:09
17:22:09 target-selection
17:22:09
17:22:09 Checkpoint execution error:
17:22:09
17:22:09 Unable to locate the disk
      '[devpath='/pci@0,600000/pci@0/pci@8/pci@0,1/SUNW,
      emlxs@1,1/fp@0,0/ssd@w20350080e517b4da,6']'
      on the system.
17:22:09
17:22:09 Automated Installation Failed. See install log at
      /system/volatile/install_log
Automated Installation failed
Please refer to the /system/volatile/install_log file for details.

```

Workaround: Disconnect one of the dual-path FC cables.

SPARC: 64-bit: Automated Installer Fails Due to Unlabeled Dual-Path FC Boot Disks (15656484)

On SPARC systems, if you install the Oracle Solaris OS on a dual-path FC boot disk, the installation fails with the following errors:

```

Automated Installation failed
Please refer to the /system/volatile/install_log file for details

```

```

Apr 19 23:12:12 ssra00u23.us.abc.com svc.startd[9]:
application/auto-installer:default failed fatally: transitioned to
maintenance (see 'svcs -xv' for details)

```

Workaround: Prior to installing Oracle Solaris, format disks by using the `boot net -s` command, label the disks, and then proceed with the installation.

Multiple AI Service Name Conflicts on AI Servers (15713975)

On AI servers configured to serve multiple networks, the `mdns` daemon might warn that identical instances of AI service names are registered. The following error message might be displayed:

```

mDNSResponder: [ID 702911 daemon.error]
Client application registered 2 identical instances of service some-service._
OSInstall._tcp.local. port 5555.

```

```
mDNSResponder: [ID 702911 daemon.error]
Excessive name conflicts (10) for some-service._
OSInstall._tcp.local. (SRV); rate limiting in effect
```

Note - AI clients can still obtain the necessary information to install.

Workaround: To avoid multiple AI service name conflicts, set the exclusion or inclusion property for the `svc:/system/install/server:default` SMF service.

The following example shows how to set the `all_services/exclude_networks` and `all_services/networks` properties to include all the networks that were configured on the system.

```
# svccfg -s svc:/system/install/server:default \
setprop all_services/exclude_networks = false

# svccfg -s svc:/system/install/server:default \
delprop all_services/networks #1.#1.#1.#1/#1

# svccfg -s svc:/system/install/server:default \
delprop all_services/networks #2.#2.#2.#2/#2

...

# svccfg -s svc:/system/install/server:default \
addprop all_services/networks 0.0.0.0/0

# svcadm refresh svc:/system/install/server:default
# svcadm restart svc:/system/install/server:default
```

`#1.#1.#1.#1/#1` and `#2.#2.#2.#2/#2` are the IP addresses for the network interfaces that have been configured.

For more information about mDNS, see [“Administering Multicast DNS”](#) in [“Working With Oracle Solaris 11.2 Directory and Naming Services: DNS and NIS”](#).

SPARC: 64-bit: Automated Installer Fails to Install on an iSCSI Boot Device (15798602)

On SPARC systems, the automated installer (AI) fails to install Oracle Solaris on an iSCSI boot device. The following error message is displayed:

```
Error configuring interface:
usr/sbin/ipadm create-addr -T static -a local=10.129.170.129/24 igb0/v4
```

Workaround: Install the OS using non-vanity names with all of the network SMF properties disabled. To implement this workaround, another network interface must be available and

connected to the switch for network configuration after the installation is complete. The first interface is used for iSCSI booting.

SPARC: Net Device Names Are Mapped Incorrectly During Installation (18717446)

When you install Oracle Solaris 11.2 by using the text installer or graphical user interface, the net device names such as net0, net1, and net2 shown in the preinstallation image might not match the device names assigned postinstallation.

Workaround: Perform the following steps:

1. Access a shell or terminal window.
 - Text installer: Select option 3 (shell) from the initial menu of the text installer.
 - Live Media installation: Open a terminal window. Do not click the Install Solaris icon yet.
2. Type the following commands:

```
# pkill -TERM dlmgmtd
```

```
# exit
```

Text Installer Displays in English When Another Language Is Chosen (15744356)

When using the text installer on an equivalent of a physical console such as a web-based remote keyboard, video monitor, mouse, or VirtualBox console, the installer displays text in English even if you have chosen another language during the boot from the install media. The installer displays text in English to avoid a garbled display of non-ASCII characters.

The text installer displays localized text only on an equivalent of a serial console, for example, a service console based on SSH or telnet.

Workaround: None.

Installation Fails When a Disk Needs to Be Relabeled (18496031)

When installing Oracle Solaris, the installation might fail when a disk needs to be relabeled from EFI (GPT) to VTOC (SMI).

The following error message is displayed:

```
File "/usr/lib/python2.6/vendor-packages/libdiskmgmt/__init__.py",  
line 450, in descriptor_from_key (dtype, DESC_TYPE_MAP[dtype], name))
```

Workaround: Restart the installation process. To avoid the issue before beginning the installation process, relabel the disk to VTOC (SMI) manually by using the format command.

```
# format -L vtoc -d c2t1d0
```

```
Searching for disks...done selecting c2t1d0 [disk formatted] c2t1d0 is  
labeled with VTOC successfully.
```

x86: Xorg VESA Driver Does Not Work on Oracle VM VirtualBox If the Extensible Firmware Interface Is Enabled (15782245)

The Xorg VESA driver does not work on Oracle VM VirtualBox if the Extensible Firmware Interface (EFI) is enabled, which means that the Live Media does not boot to Xorg. Therefore, a GUI installation is not possible.

Workaround: Perform the following steps:

1. Install Oracle Solaris 11.2 using the text installer or Automated Installer (AI).
For instructions about installing Oracle Solaris 11.2, see [“Installing Oracle Solaris 11.2 Systems”](#).
2. Use the pkg command to install the solaris-desktop group package.
For instructions about installing the solaris-desktop group package, see [“Adding Software After Live Media Installation”](#) in [“Installing Oracle Solaris 11.2 Systems”](#).
3. Install the VirtualBox guest tools that include the VirtualBox Xorg native driver.

Network-Based Automated Installer Fails on x2100 Platform With nge Drivers (15681004)

If you use the network-based Automated Installer to install Oracle Solaris on an x2100 platform with an nge driver, the following error message might be displayed after a duration of time:

```
kernel$ /s11-173-x86/platform/i86pc/kernel/$ISADIR/unix -B install_media=http://  
$serverIP:5555//install/images/s11-x86,install_service=s11-173-x86,install_svc_address=  
$serverIP:5555  
loading '/s11-173-x86/platform/i86pc/kernel/$ISADIR/unix -B install_media=http://  
$serverIP:5555//install/images/s11-x86,install_service=s11-173-x86,install_svc_address=  
$serverIP:5555'
```

```
module$ /s11-173-x86/platform/i86pc/$ISADIR/boot-archive
loading ' /s11-173-x86/platform/i86pc/$ISADIR/boot-archive' ...
```

```
Error 20: Multiboot kernel must be loaded before modules
```

```
Press any key to continue...
```

This problem occurs in a PXE installation that uses BIOS version 1.1.1 and later when you use the x2100 BIOS with an nge driver.

Workaround: Choose one of the following workarounds to install Oracle Solaris on an x2100 platform with an nge driver:

- Install Oracle Solaris by using one of the following methods:
 - Automated Installer
 - Live Media
 - Text installer
- Use the bge driver instead of the nge driver.
- Change the BIOS version to version 1.0.9.

SPARC: FMA Error When an Adapter Is Connected to Boot Device (18378881)

On a SPARC T4-1 system installed with the latest Oracle VM Server for SPARC software and configured with an FC SR-IOV, the following FMA error is displayed when the qlc driver attaches to a port, the link becomes active, and an adapter is subsequently retired by the system.

```
-----
TIME          EVENT-ID                               MSG-ID          SEVERITY
-----
Mar 05 18:34:11 3744889c-5019-cbbf-a8c2-e7fc4c380075  FMD-8000-11    Minor
```

```
Problem Status: isolated
Diag Engine: eft / 1.16 System
Manufacturer: unknown
Name: ORCL,SPARC-T4-1
Part_Number: unknown
Serial_Number: 1252BDY565
Host_ID: 86230a82
```

```
...
...
...
...
...
```

```
Description: A Solaris Fault Manager module generated a diagnosis for which no message summary exists.
```

Response: The diagnosis has been saved in the fault log for examination.

Impact: The fault log will need to be manually examined using `fmdump(1M)` in order to determine if any human response is required.

Action: Use `'fmadm faulty'` to provide a more detailed view of this event. Please refer to the associated reference document at <http://support.oracle.com/msg/FMD-8000-11> for the latest service procedures and policies regarding this diagnosis.

This issue occurs during the initial system boot only on physical function (PF) devices and not on virtual function (VF) devices.

Workaround: Change the connection-options parameter to point-to-point only in the `qlc.conf` file, clear the FMA error, and then reboot the system.

iSCSI Can Connect Through an Undesired Interface on Reboot (18053874)

On an Oracle Solaris 11.2 system, iSCSI could connect through an undesired interface on reboot.

Workaround: To identify the undesired interface that is using `static-config`, type the following command and check the IP address (Local) value:

```
root@examplehost:~# iscsiadm list target -v

Target: iqn.1986-03.com.sun:02:iscsi-perf
Alias: -
TPGT: 2
ISID: 4000002a0003
Connections: 1
CID: 0
IP address (Local): 192.168.6.100:40238
IP address (Peer): 192.168.6.101:3260
Discovery Method: Static
Login Parameters (Negotiated):
  Data Sequence In Order: yes
  Data PDU In Order: yes
  Default Time To Retain: 20
  Default Time To Wait: 2
  Error Recovery Level: 0
  First Burst Length: 65536
  Immediate Data: yes
  Initial Ready To Transfer (R2T): yes
  Max Burst Length: 262144
  Max Outstanding R2T: 1
  Max Receive Data Segment Length: 32768
  Max Connections: 32
  Header Digest: NONE
```

```
Data Digest: NONE
```

Disable the iSCSI target discovery method and then enable it again.

```
# iscsiadm modify discovery -s disable
```

```
# iscsiadm modify discovery -s enable
```

libima.so Library Initialization Is Not MT-Safe (17540151)

The libima library initialization routines, `so_init()` and `InitLibrary()`, are not thread-safe functions. Therefore, the initialization routines are not called correctly for MT-safe interfaces.

Workaround: Do not use the `lazyload` parameter to link to libima. For example, do not compile the code by using the `lazyload` parameter.

```
cc example.c -mt -z lazyload -lima
```

Instead, use the following command to compile the code:

```
cc example.c -mt -z nolazyload -lima -z lazyload
```

SPARC: 64-bit: Error Opening .last-config-check File (16508057)

On SPARC systems, the `.last-config-check` file that is created or updated whenever Electronic Prognostics (EP) checks for new configuration files is not found. The following error message is displayed:

```
Feb 20 00:08:42 ssra00u27.us.oracle.com ep-maint-config[740]: [ID 702911
daemon.warning] error opening
/var/ep/platform/Sun_Blade_T6340_Server_Module/.last-config-check for write:
No such file or directory
```

Workaround: None.

◆◆◆ CHAPTER 3

Update Issues

This chapter describes issues that might occur while you are updating to Oracle Solaris 11.2.

Issues When Updating to Oracle Solaris 11.2

The following problems might occur when you update to Oracle Solaris 11.2.

Update From Oracle Solaris 11.1 to Oracle Solaris 11.2 Generates IPS pkg(5) Salvage Errors (17354101)

When updating from Oracle Solaris 11.1 to Oracle Solaris 11.2, you might see the following error message at the end of the `pkg update` operation:

```
The following unexpected or editable files and directories
were salvaged while executing the requested
package operation; they have been moved to the
displayed location in the image:
usr/lib/python2.6/vendor-packages/solaris_install/auto_install ->
/a/var/pkg/lost+found/usr/lib/python2.6/vendor-packages/
solaris_install/auto_install-20130823T064842Z
```

Workaround: Choose one of the following workarounds:

- Remove the `/usr/lib/python2.6/vendor-packages/solaris_install/auto_install/ai_get_manifest.pyc` file before the running the `pkg update` command.
- Ignore the error message.

Bad Policy Token Error When Updating From Releases Prior to Oracle Solaris 11.1 SRU 9.2 (16773078)

The following error message might be displayed when updating from releases prior to Oracle Solaris 11.1 SRU 9.2:

```
driver (<driver>) upgrade (addition of policy 'tpd_member=true') failed with
return code 1
command run was: /usr/sbin/update_drv -b /mnt -a -p tpd_member=true <driver>
command output was:
```

```
-----
Bad policy token: ``tpd_member``.
-----
```

If this error message is displayed, the first boot after the update might take longer.

Workaround: No action is required. Ignore the error message.

L3 VRRP Might Change Existing IP Configuration After an Update to Oracle Solaris 11.2 (16720867, 16727299, 16720923)

The introduction of the Layer 3 Virtual Router Redundancy Protocol (L3 VRRP) feature might change the existing IP configuration for a few systems after an update to Oracle Solaris 11.2. Certain private IP protocol properties which were previously private are now made public due to the introduction of L3 VRRP.

The following table lists the IP protocol properties that now have public names.

TABLE 3-1 IP Protocol Properties With Public Names

IP Protocol Property	Public Name
_arp_publish_count	arp_publish_count
_arp_publish_interval	arp_publish_interval
_ndp_unsolicit_count	ndp_unsolicit_count
_ndp_unsolicit_interval	ndp_unsolicit_interval
_send_redirects	send_redirects

All static IP addresses that are configured over any VRRP virtual network interface cards (VNICs) are also converted to the VRRP type.

For more information, see [“About the Layer 3 VRRP Feature”](#) in [“Configuring an Oracle Solaris 11.2 System as a Router or a Load Balancer”](#).

Workaround: No action is required.

MPxIO Support for Toshiba Internal SAS Hard Disk Drives Prevents Rollback to Any Older Version of Oracle Solaris (15824482)

Starting with Oracle Solaris 11.2, Solaris multipathing supports Toshiba hard disk drives with the following product IDs:

- AL13SEB600
- MBF2600RC
- MK1001GRZB
- MK2001GRZB

After updating to Oracle Solaris 11.2 and rebooting to the new boot environment, you cannot roll back to your older version of Oracle Solaris. The following error message is displayed:

```
root@smem10a:~# beadm activate S11U1SRU20B04-z_stress-2.10-1
Error while accessing "/dev/rdisk/c2t500003942823F352d0s0":
No such file or directory
Unable to activate S11U1SRU20B04-z_stress-2.10-1.
Error installing boot files.
```

Workaround: Choose one of the following workarounds:

- Roll back to the older version of Oracle Solaris by using Open Boot PROM (OBP) or GRand Unified Bootloader (GRUB).
 - On SPARC systems, list all available boot environments in the OBP mode and then boot the root file system for the specified boot environment.

```
{0} ok boot -L
```

```
{0} ok boot -Z rpool/ROOT/boot-environment
```

For information about booting boot environments on SPARC, see [“Booting From an Alternate Operating System or Boot Environment”](#) in [“Booting and Shutting Down Oracle Solaris 11.2 Systems”](#).

- On x86 systems, in the GRUB menu, manually select the OS version to boot instead of the default version selected by GRUB.
- Disable MPxIO configuration for the specific HBA port that is connected with the TOSHIBA disk. For more information about disabling MPxIO, see the [stmsboot\(1M\)](#) man page.

64-bit: Warnings on Systems After Updating to Oracle Solaris 11.1 SRU 17.5 or Later Versions (18536626)

After updating to Oracle Solaris 11.1 SRU 17.5 or later, the system displays the following warnings frequently on the console:

```
Mar 21 16:23:41 nova scsi: [ID 107833 kern.notice]
/pci@0,0/pci8086,3c0a@3,2/pci1000,3050@0 (mpt_sas0)
Mar 21 16:23:41 nova ext-arq alloc fail. addr 0, size e80
Mar 21 16:23:41 nova scsi: [ID 107833 kern.warning]
WARNING: /pci@0,0/pci8086,3c0a@3,2/pci1000,3050@0 (mpt_sas0)
Mar 21 16:23:41 nova alloc_extra_sgl_frame failed
```

Workaround: Ignore the warnings. The warnings are not fatal because the scsi packets are resent after the delay.

◆◆◆ CHAPTER 4

Runtime Issues

This chapter provides information about the following known issue categories while running Oracle Solaris 11.2:

- “Firmware Issues” on page 35
- “System Configuration Issues” on page 38
- “File System Issue” on page 40
- “System Administration Issues” on page 41
- “Networking Issues” on page 45
- “Security Issues” on page 46
- “Kernel Zones Issues” on page 48
- “Desktop Issues” on page 50
- “Graphics and Imaging Issue” on page 53
- “Performance Issues” on page 53
- “Hardware Issues” on page 55

Firmware Issues

This section describes firmware issues in the Oracle Solaris 11.2 release.

x86: Some Systems With BIOS Firmware Do Not Boot If the EFI_PMBR Entry in the Master Boot Record Is Not Active (15796456)

Some systems with BIOS firmware will not boot if the EFI_PMBR entry in the master boot record, which is the only partition, is not active. After installing Oracle Solaris 11.2, the system does not boot. The following message is displayed:

```
No Active Partition Found
```

Possible Cause 1: The system firmware incorrectly handles the boot disk because the boot disk is partitioned with the GUID Partition Table (GPT) partitioning scheme.

Workaround 1: Invoke the `fdisk` program and then activate the Protective Extensible Firmware Interface (EFI) partition on the boot disk.

Possible Cause 2: The system was originally installed in UEFI mode but rebooted in legacy (BIOS) mode.

Workaround 2: Install the system in legacy mode by changing the firmware setup option, for example, by selecting “Boot Mode” or a similar option.

SPARC: GPT Labeled Disk Support

GPT labeled disk support is available on SPARC based systems. The following table describes the supported firmware for SPARC platforms.

SPARC Platform	Firmware
T5	At least version 9.1
M5	At least version 9.1
T4	At least version 8.4
M10	At least version XCP2230

If your SPARC T4, T5, M5, or M10 system has older firmware, perform the following steps to download the updated firmware from My Oracle Support:

1. Sign in to [My Oracle Support](#).
2. Click the Patches & Updates tab.
3. In the Patch Search box, select the Product or Family (Advanced) search option.
4. In the Product Is field, type a partial product name to display a list of possible matches, and then select the product name.
5. Select one or more releases from the Release Is drop-down menu.
6. Click the Search button to display a list of available downloads that are listed as patches.
7. Select the patch name that you want to download.
The download page is displayed.
8. Click Download.

Note - If you do not have permissions to download the patch, see the [How Patches and Updates Entitlement Works](#) knowledge article that is available on MOS.

x86: Booting in UEFI Mode From the ISO Image Is Very Slow on Oracle VM VirtualBox

Booting in UEFI mode from the ISO image is very slow. This is a known Oracle VM VirtualBox firmware issue.

Workaround: None.

x86: Oracle Solaris Does Not Boot on Disks Using Older Emulex FC HBA Cards (15806304)

On x86 systems, Oracle Solaris does not boot on disks using older Emulex FC HBA cards.

The following error message is displayed for Emulex FC HBA cards:

```
error: no such device: 07528c2afbec7b00.  
Entering rescue mode...  
grub rescue> ls  
(hd0) (hd0,gpt9) (hd0,gpt2) (hd0,gpt1) (hd1)  
grub rescue>
```

Workaround: Choose one of the following workarounds:

- Replace the old Emulex FC HBA cards with a recent model. You can use SG-XPCIEFCGBE-E8, SG-XPCIE1FC-EM8-Z, SG-XPCIE2FC-EM8-Z, LPe16002-M6-O or LPem16002-M6-O.
- Ensure that the system boot volume is less than 2 TB.

ZFS Should Retry or Abort an Entire Transaction When a WCE LUN Gets a Power-On-Reset (15662604)

ZFS enables the write cache on pool devices and safely handles cache flushing in the event of a system power loss. However, a power-on-reset condition can potentially occur while data has not yet been committed to stable storage.

In an environment with no single point of failure, this situation is automatically detected and corrected by ZFS the next time the data is read. Routine pool scrubs of the pool can increase the detection and repair of any lost writes.

In an environment with a single point of failure, this problem could lead to data loss.

SPARC: System Fails to Boot an iSCSI LUN on an iSCSI Storage Array (15775115)

Oracle Solaris fails to boot an iSCSI LUN on an iSCSI storage array. The following error message is displayed:

```
OpenBoot 4.33.5.a, 4096 MB memory installed, Serial #10027306.
Ethernet address 0:b:5d:e2:1:2a, Host ID: 8099012a.
```

```
Rebooting with command: boot
100 Mbps full duplex Link up
Boot device: net:host-ip=10.129.158.53,
iscsi-target-ip=10.129.158.87,
iscsi-target-name=iqn.2002-03.com.pillarata:axiom.ssn.a002880bjb
File and args: kmdb
100 Mbps full duplex Link up
Can't read disk label.
Can't open disk label package
ERROR: /packages/obp-tftp: Could not open /iscsi-hba/disk
```

Evaluating:

Boot load failed

{0} ok

Workaround: If the iSCSI boot parameters are too long, modify them as network boot parameters.

For example, the command to perform an iSCSI boot in Open Boot PROM (OBP) mode is:

```
{0} ok boot net:'iSCSI boot parameters'
```

where *net* is a device alias for a value similar to `/pci@780/pci@0/pci@1/network@0`.

The iSCSI boot string is therefore very long and the string can easily reach the 255-byte limitation.

```
/pci@780/pci@0/pci@1/network@0:host-ip=10.129.158.53,
subnet-mask=255.255.255.0,router-ip=10.129.158.1,iscsi-target-ip=10.129.158.87,
iscsi-target-name=iqn.2002-03.com.pillarata:axiom.ssn.a002880,
iscsi-initiator-id=iqn.1986-03.com.sun:01:002128bd2fa0.
```

To boot your system on an iSCSI LUN, modify the iSCSI boot parameters as network boot parameters.

```
{0} ok setenv network-boot-arguments host-ip=client-IP,
router-ip=router-ip,subnet-mask=mask-value,iscsi-target-ip=Target-IP,
iscsi-target-name=iqn.1986-03.com.sun:02:iscsiboot,
iscsi-initiator-id=iqn.1986-03.com.sun:01:002128bd2fa0,iscsi-lun=0
```

root.sh Fails to Start nodeapps for IPv4 or IPv6 in an Oracle Solaris Zone (19080861, 18922918)

The `root.sh` script fails to start `nodeapps` for IPv4 or IPv6 in an Oracle Solaris Zone installed with Oracle Database 12c Release 1 (12.1.0.2.0). Attempts to start the node-level applications using the `svctl start nodeapps` command will fail as the Oracle Database uses physical network names instead of virtual network names.

The following error message is displayed:

```
CLSRSC-287: FirstNode configuration failed
```

Workaround: None. Contact your Oracle support representative for a patch update.

File System Issue

This section describes a file system issue in the Oracle Solaris 11.2 release.

Issues When Replacing or Using New Advanced Format Disk Drives on Oracle Solaris Systems

Disk manufacturers now provide larger capacity disks, also known as advanced format (AF) disks. An AF disk is a hard disk drive whose physical block size exceeds 512 bytes. AF disks use block sizes that are greater than 512 bytes, usually 4096 bytes, but their sizes can vary as follows:

- 4 KB native disk (4kn) – Uses a physical and logical block size of 4 KB
- 512-byte emulation (512e) – Uses a physical block size of 4 KB but reports a logical block size of 512 bytes

Review the following issues if you are considering the purchase of AF disks as new or replacement devices on your Oracle Solaris 11.2 system.

Lack of a Power Safe Feature on Certain Models of Advanced Format 512e Disk Drives Can Result in Data Loss

The failure of certain 512e disk drives to provide a power-safe feature can result in data loss if a power failure occurs during a read-modify-write (`rmw`) operation.

Workaround: Choose one of the following workarounds:

- Confirm with the disk manufacturer that their 512e devices provide a power-safe feature. No consistent power-safe identification appears on such drives, but they tend to be SATA drives. An indication that they are AF drives does not necessarily mean that they support 512 emulation (512e).
- Do not use these drives on an Oracle Solaris system.

Installation and Boot Support on 4kn Disks on SPARC Systems Requires a Specific PROM Version

Installing and booting Oracle Solaris 11.2 on a 4kn disk on a SPARC system requires a volume table of contents (VTOC) label and PROM version 4.34.0.

Workaround: Choose one of the following workarounds:

- If you want to install and boot Oracle Solaris 11.2 from a 4kn disk, then apply a VTOC label and confirm that your system is running this version.

For example:

```
# prtconf -pv | grep OBP
version: 'OBP 4.34.0 ... '
```

- Request a firmware upgrade from Oracle support.

For more information about using advanced format disks in Oracle Solaris 11.2, see [“Managing Devices in Oracle Solaris 11.2”](#).

System Administration Issues

This section describes system administration issues in Oracle Solaris 11.2.

svccfg validate Command Fails on a Split Manifest (15891161)

With proper multiple manifest support delivered in Oracle Solaris, the `svccfg validate` command should no longer warn about missing required property groups. However, the `svccfg validate` command fails on a split manifest.

This issue occurs when the instance delivering the manifest does not validate correctly without service methods which are defined at the service level in a separate manifest. The following error message might be displayed:

```
$ svccfg validate /lib/svc/manifest/system/console-login-vts.xml
Required property group missing: FMRI="svc:/system/console-login:vt6";
Name of missing property group="start"; Type of missing property group="method";
Template source="svc:/system/svc/restarter:default";
pg_pattern name="start"; pg_pattern type="method"

Required property group missing: FMRI="svc:/system/console-login:vt6";
Name of missing property group="stop"; Type of missing property group="method";
Template source="svc:/system/svc/restarter:default";
pg_pattern name="stop"; pg_pattern type="method"

Required property group missing: FRI="svc:/system/console-login:vt5";
Name of missing property group="start"; Type of missing property group="method";
Template source="svc:/system/svc/restarter:default";
pg_pattern name="start"; pg_pattern type="method"

Required property group missing: FMRI="svc:/system/console-login:vt2";
Name of missing property group="stop"; Type of missing property group="method";
Template source="svc:/system/svc/restarter:default";
pg_pattern name="stop"; pg_pattern type="method"

svccfg: Validation failed.
```

The warning is displayed in the manifest-import service log file rather than on the console. The warning is not fatal and does not prevent the import of the instance. Once the instance is imported, you can successfully validate the instance manually by using the `svccfg validate` command.

Workaround: Avoid using the `svccfg validate` command on split manifests.

x86: ZFS Pool Information Becomes Stale After Running the `stmsboot` Command With `-e` Option (15791271)

After running the `stmsboot` command with the `-e` option to enable the MPXIO (multipathing) feature on the next boot, the ZFS pool device path information becomes stale for a brief period. As a result, `zpool.cache` is not updated properly.

Workaround: Choose one of the following workarounds:

- Reboot the system immediately after running the `stmsboot` command with the `-e` option. Then, reboot the system again.
- Run the `zpool status` command immediately after running the `stmsboot` command with the `-e` option, which manually updates `zpool.cache`.

LDAP Warnings During System Boot (15805913)

On SPARC and x86 systems, the following warnings are displayed during system boot under certain circumstances:

```
Apr 25 09:48:17 svc.startd[13]: libldap:
Status: 2 Mesg: Unable to load configuration '/var/ldap/ldap_client_file' ('').
```

```
Apr 25 14:11:31 nwamd[698]: libldap: Status: 2 Mesg: Unable to load
configuration '/var/ldap/ldap_client_file' ('').
```

Workaround: Ignore the warnings. They do not affect the normal operation of the system once the system is booted.

Console Message Displayed During Boot (16756035)

Under certain system configurations and conditions, the following message might be displayed on the system console:

```
genunix: NOTICE: intrd: duplicate tick pointer
```

Workaround: Ignore the message. The message reports a system event that does not require user intervention.

SPARC: Suspending an M5000 Server Might Hang the System (18552774)

On a SPARC system, suspending processes on an M5000 Server might hang the system.

The following error messages are displayed on the console:

```
DR: checking devices...
DR: suspending drivers...
suspending FJSV,oplmc@200,200 (aka mc-opl)
suspending FJSV,oplmc@210,200 (aka mc-opl)
suspending su@14,400000
suspending FJSV,scfc@14,200000 (aka scfd)
suspending FJSV,panel@14,280030 (aka oplpanel)
suspending ebus@1
suspending pci10cf,138f@8,4000 (aka pcicmu)
suspending su@14,400000
...
...
...
resuming pci14e4,1648@2,1 (aka bge)
```

```
resuming pci14e4,1648@2 (aka bge)
resuming pci1000,50@1 (aka mpt)
resuming scsiclass,00@1,0 (aka sd)
```

Workaround: None. However, you can reset the M5000 server to kill all suspended processes.

SPARC: D-Bus Kernel Heap Corruption When Attempting to Remove a Bus Device (18435472)

On a SPARC system, performing a hotplug operation on a Dual 10-Gigabit SFP+ FCoE CNA card might cause the system to panic.

The following error message is displayed:

```
panic[cpu0]/thread=2a1054cbc40: kernel heap corruption detected
000002a1054cb0a0 genunix:kmem_error+4b8 (400672b58f0, d, d, 30000978030, d, 1309800)
%l0-3: 0000000001309800 ffffffffefeffe ffffffffefeffe 0000000001309800
%l4-7: 000183ea6c5fdbd0 000182da2364dcd9 00000000106b1000 0000000001309888
...
...
syncing file systems... done
dumping to /dev/zvol/dsk/rpool/dump, offset 65536, content: kernel sections:
zfs
0:07 96% done (kernel)
0:08 100% done (zfs)
100% done: 488509
(kernel) + 19168 (zfs) pages dumped, dump succeeded
rebooting...
Resetting...
```

Workaround: Do not perform hotplug operations such as `cfgadm` and `hotplug` on the Dual 10-Gigabit SFP+ FCoE CNA card. You can try to use the attention button to avoid the panic but the button might not be effective.

SPARC: 64-bit: PCIe Express Module Systems Might Intermittently Panic (18996506)

The PCIe Express Module systems, particularly T4-4 and T6300 servers, might intermittently panic under certain circumstances.

The following error message is displayed:

```
panic: Fatal error has occurred in: PCIe fabric
```

Workaround: None.

solaris10 Branded Zone Installation Fails If the fs Resources Are Added to the Zone Configuration (19976804)

On an Oracle Solaris 11.2 system, the `solaris10` branded zone installation fails if the `fs` resources are added before installing the zone.

Workaround: To add additional file systems to an Oracle Solaris 10 Zones configuration, do not add the `zonecfg fs` resources before you install the zone. Instead, add the `fs` resource when the zone is in the installed state.

Networking Issues

This section describes the network-related issues in Oracle Solaris 11.2.

addrconf Addresses Cannot Be Configured as IPMP Test Addresses (16885440)

On Oracle Solaris 11.2 systems, IPv6 `addrconf` type test addresses cannot be reliably configured on IPMP underlying interfaces. Attempts to configure `addrconf` addresses on an underlying interface will fail in a variety of ways. For example:

```
# ipadm
NAME          CLASS/TYPE STATE   UNDER  ADDR
net0          ip        ok      ipmp0   --
net1          ip        ok      ipmp0   --
ipmp0         ipmp      ok      --      --
ipmp0/v4      static    ok      --      10.134.xx.xx/24

# ipadm create-addr -T addrconf net0
ipadm: cannot create address: Insufficient memory
```

Workaround: Because IPMP test addresses are used for probe-based failure detection, you can use a static `link-local` test address instead of an `addrconf` test address.

SPARC: Creating a VNIC Fails If a Physical NIC Is Used as net-dev (19188703)

On SPARC systems, creating a VNIC fails if a physical NIC is specified as the `net-dev` parameter in the creation of a virtual switch.

The following error message is displayed:

```
HOST vsw: [ID XXXXXX kern.warning]
WARNING: vswX:vnic_create(ldoms-vswX.vportY failed. Err=2
DATE HOST vsw: [ID kern.warning]
WARNING: vswX: Unable @ DATE HOST to add new port (0xHHH), err=1
```

Workaround: Use the network vanity name (net0, net1, or net2) as the link name. For example, do not use the physical NIC name to create a virtual switch.

```
# ldm add-vsw net-dev=igb1 primary-vsw1 primary
```

Instead, use the network vanity name.

```
# ldm add-vsw net-dev=net1 primary-vsw1 primary
```

You can use the `dladm show-phys` command to find the network vanity names.

```
# dladm show-phys -P

LINK    DEVICE    MEDIA    FLAGS
net1    igb1     Ethernet  -----
```

In the example, net1 is the network vanity name.

DLMP Does Not Work on an SR-IOV Virtual Function or a Virtual Network Device in a Guest Domain (17656120)

You cannot configure a Datalink Multipathing (DLMP) aggregation on an SR-IOV NIC virtual function or a virtual network device in a guest domain.

Security Issues

This section describes issues with the security software in the Oracle Solaris 11.2 release.

ssh, sshd, and Apache Enable OpenSSL pkcs11 Engine by Default on T4, T4+ Platforms (18762585, 18764604)

Starting with Oracle Solaris 11.2, T4 instructions and Intel hardware acceleration are embedded in the OpenSSL internal crypto implementation for non-FIPS-140 OpenSSL. This change

affects the performance of `ssh`, `sshd`, and Apache because these services use the OpenSSL `pkcs11` engine by default on T4 systems and later versions.

Workaround: To obtain maximum performance, disable the OpenSSL `pkcs11` engine.

Perform the following steps to disable the `pkcs11` engine for `ssh` and `sshd` services:

1. Add the following line to the `/etc/ssh/ssh_config` and `/etc/ssh/sshd_config` files:

```
UseOpenSSL Engine no
```

2. Restart the `ssh` service.

```
# svcadm restart ssh
```

Perform the following steps to disable the `pkcs11` engine for the `apache22` service:

1. Comment out the following line in the `/etc/apache2/2.2/conf.d/ssl.conf` file:

```
# SSLCryptoDevice pkcs11
```

2. Restart the `apache22` service.

```
# svcadm restart apache22
```

Note - This issue is applicable only for the OpenSSL non-FIPS-140 module. For information about the OpenSSL FIPS-140 module, see [“Using a FIPS 140 Enabled System in Oracle Solaris 11.2”](#).

ktkt_warn Service Is Disabled by Default (15774352)

The `ktkt_warn` service, used to renew a user's Kerberos credentials and warn about credential expiry, is now disabled by default. The following error message is displayed:

```
kinit: no ktkt_warnd warning possible
```

Workaround: Choose one of the following workarounds to enable the service:

- If the system already has Kerberos configured, use the `svcadm` command to enable the service.

```
# svcadm enable ktkt_warn
```

- If Kerberos has not been configured, run the `kclient` utility to configure Kerberos, which will also enable the `ktkt_warn` service.

For more information about the `kclient` utility, see the [`kclient\(1M\)`](#) man page.

Kernel Zones Issues

This section describes issues related to kernel zones in Oracle Solaris 11.2.

Boot Arguments to the `reboot` Command Are Ignored (18177344)

Boot arguments specified with the `reboot` command within the kernel zone guest are ignored if they are already specified in the `bootargs` property of the respective kernel zone configuration.

Workaround: Specify desired boot arguments when issuing the `zoneadm reboot` subcommand in the host.

```
# zoneadm -z kzone reboot -- boot arguments
```

Kernel Zones Using Virtual CPUs Might Block Processor Set Creation or CPU Dynamic Reconfiguration (18061724)

When a kernel zone using virtual CPUs (VCPUs) is running, the VCPU threads are bound to sets of physical CPUs. This requirement can prevent CPUs from being added to processor sets or CPU dynamic reconfiguration (DR).

On SPARC systems, such kernel zones are terminated if the binding is unexpectedly lost. For example, creating a pool containing all the logical CPUs that a kernel zone VCPU thread is using might destroy the kernel zone.

The following error message is displayed when creating processor sets:

```
# psrset -c 0

created processor set 1
psrset: cannot assign processor 0: Device busy
```

The following error message is displayed during Oracle VM Server for SPARC DR:

```
# ldm set-vcpu 10 ldom

Removal of cpu 10 failed, error: cpu has bound threads
Domain ldom didn't allow removal of any VCPU
Resource modification failed
```

The following error message is displayed when creating pools:

```
# grep affinity /var/log/zones/vcpu.messages
```



```
2014-05-07 22:44:18 main error: vcpu 9 has lost all affinity.
2014-05-07 22:44:18 main error: VCPU error: lost affinity
2014-05-07 22:44:28 main error: vcpu 15 has lost all affinity.
2014-05-07 22:44:28 main error: VCPU error: lost affinity
```

Workaround: Before creating processor sets or pools or attempting CPU DR, suspend kernel zones that might be affected.

Kernel Zones Interfere With hardware-counter-overflow Interrupt (18355260)

On a system running kernel zones, the DTrace CPU performance counter (CPC) provider might time out on some CPUs on the host and guest, stop delivering hardware-counter-overflow interrupts, and provide incomplete data.

Workaround: None.

SPARC: Kernel Zones Block Live Migration of Guest Domains (18289196)

On SPARC systems, a running kernel zone within an Oracle VM Server for SPARC (previously called Sun Logical Domains) domain will block live migration of the guest domain. The following error message is displayed:

```
Live migration failed because Kernel Zones are active.
Stop Kernel Zones and retry.
```

Workaround: Choose one of the following workarounds:

- Stop running the kernel zone.

```
# zoneadm -z zonename shutdown
```
- Suspend the kernel zone.

```
# zoneadm -z zonename suspend
```

ipadm Fails With Insufficient Memory Error (18134702)

When multiple network interfaces are created in the kernel zone, the `ipadm` command fails with the following error:

```
ipadm: cannot create interface net3: Insufficient memory
```

Workaround: Increase the capped-memory value for the kernel zone. The default value is 2 GB. For example:

```
# zonecfg -z kzone1
kzone1> select capped-memory
kzone1> set physical=16g
kzone1> end
kzone1> exit
```

zoneadm install and clone Subcommands Do Not Check for Duplicate Storage Devices (18685017)

When installing a kernel zone using `zoneadm(1M) install` or `clone` subcommands, no check is performed to ensure that the kernel zones boot disk is not already in use. This problem can lead to `zoneadm(1M) install` or `clone` subcommands overwriting disks that are currently in use.

No specific error message is displayed. However, a kernel zone might fail to boot with the following message:

```
could not read host data from any boot device
```

The zpools that are configured on multiple storage devices might report checksum errors on the kernel zone that is being installed or on the kernel zone that is already using the storage device.

Workaround: Before installing a new kernel zone by using the `install` or `clone` subcommands, ensure that the storage allocated to device resources is not already in use.

Desktop Issues

This section describes desktop issues in the Oracle Solaris 11.2 release.

Evolution Application Crashes After New Installation (15734404)

The Evolution email application does not start after installing Oracle Solaris.

Workaround: After installing Evolution, log out and log in again. The application will start successfully.

SPARC: Desktop Issues With USB Keyboard, Mouse, and Physical Monitor (15700526)

When using a physical keyboard, mouse, or monitor, repeated attempts to open and use a terminal window on the Oracle Solaris Desktop can result in loss of characters and mouse control.

This issue might occur because of errors caused by missing microframes. These errors occur when full or low-speed USB 1.0 or 1.1 keyboard and mouse devices are connected to the USB ports on a system under an onboard USB 2.0 hub. However, these errors do not occur when the keyboard and the mouse devices are connected to a system USB port, which is in turn connected to an internal hub that is manually bound to the `ohci` (USB 1.0 or 1.1) driver.

Note - If you are using a virtual keyboard and mouse, all devices under the hub are forced to run at low speed. The devices will still work, but they run at a lower USB 1.0 or 1.1 speed.

Workaround: Set the value for the `ehci-port-forced-to-companion` variable in the `/kernel/drv/ehci.conf` file. The value of this variable is used by the `ehci` (USB 2.0) driver to release control of a particular port on the USB controller.

The value of the `ehci-port-forced-to-companion` variable differs based on the type of platform and the type of USB device used. The following table lists the recommended usage of USB connectors and the corresponding value of the `ehci-port-forced-to-companion` variable.

TABLE 4-1 Recommended Usage of USB Connectors and Values

SPARC Platform	Type of USB Device	Recommended Usage of USB Connectors	Value of the <code>ehci-port-forced-to-companion</code> Variable in the <code>/kernel/drv/ehci.conf</code> File
T3-1, T3-2, T4-1, T4-2	Physical keyboard or mouse	Use the front USB connector	4
T3-4, T4-4	Physical keyboard or mouse	Use the rear USB connector	3
T3-1, T4-1, T3-2, T4-2, T3-4, T4-4	Virtual keyboard or mouse	None	2

To implement the workaround, perform the following steps:

1. Connect the USB devices.
The recommended USB connectors for the devices on various platforms are listed in [Table 4-1](#).
2. Set the value of the `ehci-port-forced-to-companion` variable in the `/kernel/drv/ehci.conf` file.

For example, if the SPARC platform is T3-4 and you are using a physical keyboard, set `ehci-port-forced-to-companion=3`.

For information about the value that you can set for this variable, see [Table 4-1](#).

3. Reboot the system.

```
# init 6
```

D-Bus System Daemon Has a Small File Descriptor Limit for Sun Ray or XDMCP Server Use (15812274)

When using a Sun Ray or an XDMCP server, the D-Bus system daemon uses several file descriptors for each display. The default file descriptor limit of 256 allows only a few simultaneous client connections. A Sun Ray or an XDMCP server running on Oracle Solaris 11.2 will stop managing new displays when the file descriptor limit is exceeded.

The file descriptor limit might be exceeded after 30 to 40 client connections. This number can vary depending on the type of programs and panel applets used in desktop sessions.

Workaround: Increase the file descriptor limit in the `/lib/svc/method/svc-dbus` file to support Sun Ray or XDMCP use.

Modify line 40 in the `/lib/svc/method/svc-dbus` file from:

```
/usr/lib/dbus-daemon --system
```

to:

```
ulimit -S -n 8192 ; /usr/lib/dbus-daemon --system
```

Trusted Extensions Desktop Users Are Logged Out After 15 Minutes (18462288)

When Trusted Extensions is enabled, users are logged out after 15 minutes of idle time. However, the default value of `idletime` in the `user_attr(1M)` database specifies to lock the screen after 30 minutes.

Workaround: To restore the default behavior, add the following properties in the `/etc/security/policy.conf` file:

```
idletime=30  
idlecmd=lock
```

Note that the `idlecmd` setting is ignored unless `idletime` is also specified. These properties can also be customized for individual users by using the `usermod` command. For more information, see the [`usermod\(1M\)`](#) man page.

Graphics and Imaging Issue

This section describes a graphics and imaging issue in the Oracle Solaris 11.2 release.

x86: NVIDIA Graphics Driver Upgrade (18098413)

The bundled NVIDIA graphics driver has been upgraded to version 331.38. This driver no longer supports the G4x-G7x family of graphics processor units supported in Ultra 20, Ultra 40, Ultra 20 M2, and Ultra 40 M2 workstations.

The system does not display an explicit error message. The desktop uses the VESA graphics driver, which is slower than the NVIDIA accelerated driver and supports limited display resolutions. You might experience desktop unresponsiveness or non-optimal resolutions when using the monitors.

Workaround: Download the latest 173 legacy driver from [NVIDIA \(http://www.nvidia.com/content/global/global.php\)](http://www.nvidia.com/content/global/global.php) and install the driver following the instructions at:

<https://java.net/projects/solaris-x11/pages/NvidiaInstallation>

Performance Issues

This section describes the performance issues in the Oracle Solaris 11.2 release.

ZFS Data Cannot Be Easily Reclaimed (15942559)

On Oracle Solaris 11.2 systems, ZFS data cannot be easily reclaimed for other uses.

No explicit error message is displayed. The primary symptom is that application processing is slower because physical memory is unnecessarily restricted.

Workaround: Use the new `user_reserve_hint_pct` tunable parameter to provide a hint to the system about application memory usage. This hint can be used to limit growth of the ZFS ARC cache so that more memory stays available for applications.

For a detailed description of using this new parameter, see the [Memory Management Between ZFS and Applications in Oracle Solaris 11.2](#) MOS article.

Listing LUNs Takes Over a Minute on M6-32 Servers (18125373)

On M6-32 servers, the listing of LUNs by using commands such as `format` and `mpathadm list lu` takes more time because of the cache invalidation by an unknown thread. Whenever a command is executed to list LUNs, a fresh snapshot of LUNs is generated due to the zeroed cache, which causes a delay in listing the LUNs.

Workaround: Perform the following steps on the iSCSI Initiator:

1. Remove the links to LUNs that are not accessible.

```
# devfsadm -Cv
```

2. Remove the discovery address of the unreachable iSCSI target host.

```
# iscsiadm remove discovery-address target-address
```

SPARC: EP Service Creates Defunct Processes Every 24 Hours (16311652)

The Electronic Prognostics (EP) software, which analyzes telemetry data from a variety of physical sensors, creates a defunct process every 24 hours. As a result, performance issues can build up over time.

Workaround: Choose one of the following workarounds:

- Identify the process IDs (`pid`) of the defunct processes. Then, use the `preap` command to force the defunct processes to quit. Defunct ("zombie") processes are marked with a "Z".

```
# ps -ecl | grep "Z"
```

```
# preap defunct-pid
```

If there are multiple zombie processes, use the following command to kill all processes at once:

```
# ps -A | grep defunct | awk '{print $1}' | xargs preap
```

- Restart the system/electronic-prognostics service.

```
# svcadm restart electronic-prognostics
```

Runnable Thread Occasionally Stays in Run Queue for a Longer Period (17697871)

Sometime transient threads stay longer on the CPU. Currently, the kernel has no mechanism to detect long-running transient threads. When this condition occurs, a single runnable thread on a CPU's run queue can starve, leading to various issues such as a drop in performance and node eviction.

Workaround: Disable transient threads by setting the following attributes in the `/etc/system` file:

```
thread_transience_kernel=0
thread_transience_user=0
```

Hardware Issues

This section describes hardware issues in the Oracle Solaris 11.2 release.

SPARC: Devices on PCI Box Cannot Be Configured by hotplug on Fujitsu M10 Systems (15813959)

A peripheral component interconnect (PCI) box cannot be fully configured on Fujitsu M10 systems by using the Oracle Solaris Hotplug Framework. The I/O device node configuration is different for every platform and the resource allocation is assigned by `pcicfg_slot` variables with a fixed value.

```
# Fixed values for resource allocation
[ uts/sun4/io/pcicfg.c ]
static int pcicfg_slot_busnums = 8;
static int pcicfg_slot_memsize = 32 * PCICFG_MEMGRAN; /* 32 MB per slot */
static int pcicfg_slot_iosize = 16 * PCICFG_IOGRAN; /* 64 K per slot */
```

The resources for MEM64, MEM32, and I/O devices are allocated by a fixed value for each child device. For example, to configure four child devices, the value of the `pcicfg_slot_busnums` variable should be set to 32.

However, the Open Boot PROM (OBP) on the Fujitsu M10 platform supports configuration of the PCI box and you can successfully boot Oracle Solaris with the PCI box. The problem is seen only with the Oracle Solaris Hotplug Framework. The OS can boot with the PCI box but is not recognized by hotplug.

Workaround: To configure the system with the PCI box, perform the following steps:

1. In the /etc/system file, set the pcicfg:pcicfg_slot_busnums variable.

```
set pcicfg:pcicfg_slot_busnums = 4
```

2. Reboot the system.

```
# reboot
```

SPARC: Fujitsu M10 Server Panics During Process Exit (19230723)

A Fujitsu M10 server might panic when a process is exiting with a 0x73 trap.

Workaround: None. Contact Oracle support for updates.

fault.io.usb.eps Warning on the USB Ethernet Device (16268647)

On SPARC and x86 systems, the following warning might be displayed on the USB Ethernet device during host or service processor (SP) reboot or configuration of Oracle Integrated Lights Out Manager (ILOM) Interconnect.

TIME	EVENT-ID	MSG-ID	SEVERITY
Feb 01 03:13:32	24530921-1909-680e-e1da-9bddc2dee2f1	USB-8000-4U	Major

```
Problem Status: solved
Diag Engine   : eft / 1.16
Manufacturer  : Oracle-Corporation
Name         : SPARC-T5-2
Part_Number  : 32455808+1+1
Serial_Number : AK00184387
Host_ID      : 86464a4c
```

```
-----
Suspect 1 of 1 :
Fault class   : fault.io.usb.eps
Certainty    : 100%
Affects      : dev:///pci@340/pci@1/pci@0/pci@3/usb@0/hub@5/communications@2
Status       : faulted but still in service
```

Workaround: The warning does not affect the functionality of the USB Ethernet device. However, to disable the warning, create the /kernel/drv/usbecm.conf file and add the following line:


```
fm-capable=0;
```

Rebooting Root Domain Causes Oracle VM Server for SPARC to Panic (18936032)

On an Oracle VM Server for SPARC system, the igb SR-IOV virtual functions cause the I/O domain to panic when the root domain is rebooted.

The following error message is displayed:

```
root@racn1:~# May 22 16:20:58 racn1 in.mpathd[87]: The link has
gone down on net1

May 22 16:20:58 racn1 in.mpathd[87]: IP interface failure detected on net1 of
group ipmp0

May 22 16:21:01 racn1 in.mpathd[87]: The link has come up on net1.
panic[cpu10]/thread=2a100cc5c40: BAD TRAP: type=30 rp=2a100cc54a0 addr=0
mmu_fsr=4.
sched: data access exception:
...
...
...
syncing file systems... done
dumping to /dev/zvol/dsk/rpool/dump, offset 65536, content: kernel sections
```

The behavior of I/O domains with PCIe endpoint devices is unpredictable when the primary domain is rebooted while the I/O domains are running.

Workaround: Choose one of the following workarounds:

- Shut down the domains on the system that have PCIe endpoint devices assigned to them, before you shut down the root domain. Ensure that the domains are properly shut down before you halt, reboot, or shut down the root domain.
- Configure a domain dependency relationship between the root domain and the domains that have PCIe endpoint devices assigned to them. This dependency relationship ensures that domains with PCIe endpoint devices are automatically restarted when the root domain reboots for any reason. The dependency relationship forcibly resets the domains.

For more information, see [Oracle VM Server for SPARC 3.2 Administration Guide](#).

SPARC: Running VTS on a T3-2 Server Causes Fatal Error in the PCIe Fabric (19137125)

On a SPARC T3-2 server, any attempt to run Oracle Validation Test Suite (Oracle VTS) can cause a fatal error in the PCIe fabric regardless of whether it is started through the runvts

option (/usr/sunvts/bin/runvts), a command in a terminal window (/usr/sunvts/bin/startsunvts -t), or the graphical user interface (/usr/sunvts/bin/startsunvts -g).

The following error message is displayed:

```
scsi: WARNING: /pci@400/pci@2/pci@0/pci@e/scsi@0 (mpt_sas0):  
MPTSAS Firmware Fault, code: 6708
```

```
SUNW-MSG-ID: SUNOS-8000-0G, TYPE: Error, VER: 1, SEVERITY: Major EVENT-TIME:  
0x53b2e0eb.0x16ea32fe (0x219c653e45ed7) PLATFORM: sun4v, CSN: -, HOSTNAME: xxxxxx  
SOURCE: SunOS, REV: 5.11 11.2 DESC: Errors have been detected that require a  
reboot to ensure system integrity. See http://www.sun.com/msg/SUNOS-8000-0G for more  
information.  
AUTO-RESPONSE: Solaris will attempt to save and diagnose the error telemetry IMPACT:  
The system will sync files, save a crash dump if needed, and reboot REC-ACTION: Save the  
error  
summary below in case telemetry cannot be saved.
```

```
panic[cpu0]/thread=2a10009dc40: Fatal error has occurred in: PCIe fabric.(0x1)(0x103)
```

Workaround: Do not run VTS on the SPARC T3-2 server. However, if you need to run VTS, downgrade the version by using the following commands:

- Issue the following commands if the system/test/sunvts package is not installed:

```
# pkg change-facet facet.version-lock.consolidation/SunVTS/SunVTS-incorporation=false  
# pkg update SunVTS-incorporation@0.5.11-0.175.1.0.0.14.0  
# pkg install system/test/sunvts
```
- Issue the following commands if the system/test/sunvts package is installed:

```
# pkg change-facet facet.version-lock.consolidation/SunVTS/SunVTS-incorporation=false  
# pkg update SunVTS-incorporation@0.5.11-0.175.1.0.0.14.0  
sunvts@7.0.14-0.175.1.0.0.14.0
```

◆ ◆ ◆ **A P P E N D I X A**

Previously Documented Bugs That Are Fixed in the Oracle Solaris 11.2 Release

This appendix lists bugs that were documented in the *Oracle Solaris 11.1 Release Notes* and have been fixed in the Oracle Solaris 11.2 release.

For information about accessing bug information in BugDB, see the [Sun Systems Defects Move to Oracle's Bug Database \(Doc ID 1501467.1\)](#) knowledge article that is available on MOS.

Previously Documented Bugs Fixed in This Release

Bug Number	Title
15752666	Installation Fails If Non-ASCII Characters Are Specified in the Real Name Field
15737527	Non-GTK Applications Fail to Connect to ATOK Language Engine on Non-UTF-8 Locales
15743225	Passing a Directory to a <code>zoneadm install</code> Command Drops Profiles With Duplicate Names Under That Tree
15745450	Automated Installer Configuration Profiles Are Openly Accessible From the Web Server
15743500	Adding New Elements Using the <code>aimanifest</code> Command Fails If the Direct Next Element Is Missing
15701986	<code>sysconfig</code> and Text Installer Applications Terminate Unexpectedly From Timezone Screens
15742134	Text Installer Does Not Allow Installing Oracle Solaris Into Another Slice in the Existing Solaris2 Partition
15772100	AI Services Created From Oracle Solaris 11 Images Installs Oracle Solaris 11.1
16081077	SPARC: FMD Errors During Installation of Oracle Solaris on a T-Series Server
15805238	x86: 64-bit: DVD Installation Might Fail on Oracle's Sun Fire x4170m3 and x4270m3 Servers
16576628	x86: Some Dell Desktops Hard-Hang in UEFI Mode During the Early Kernel Boot Phase
15745201	<code>syslog</code> Reports That the <code>/etc/mail/aliases.db</code> Alias Database Is Out of Date After an Update
15796193	<code>/var/crash</code> Content Is Preserved in a Directory When Updating From Oracle Solaris 11 to Oracle Solaris 11.1
15803865	64-bit: <code>iscsiadm</code> Utility Cannot Remove the Discovery Address
15817870	Update From Oracle Solaris 11 SRU Version 12 or Later to Oracle Solaris 11.1 Fails If Fetchmail Is Installed
15821025	Update From Oracle Solaris 11 SRU Version 12 or Later to Oracle Solaris 11.1 Fails If BIND Is Installed

Previously Documented Bugs Fixed in This Release

Bug Number	Title
15732833	Custom SMF Site Profiles Should Be Placed in a Subdirectory
15740459	Sporadic Runtime Failures in an OpenMP Application
15804599	Performance of an Uncached Random Write Workload on a Pool of SSD Devices Is Low
15743718	sysconfig configure Command With the -c Option Flattens Directory Tree
15813838	zfs set/inherit mountpoint Shows a Failure Message on Oracle Solaris 10 Branded Zones
15809921	System Reboots Continuously Because of a ZFS-Related Panic
15746415	RDSv3 Support Is Required for Successful HCA DR Operation
15806802	32-bit: PCSXREG Triggers EINVAL Error for YMM and Floating-Point Registers
15813777	Incorrect Disk Can Be Selected by Interactive Installers When Two Disks With the Same volname Exist
15810394	FCoE Port Is Not Online After Creation
15813264	asr-notify Is in Maintenance Mode If Incorrect ASR Properties Are Specified
15816315	x86: cfgadm -c configure and hotplug enable Commands Fail to Configure a Hotplug or PCIe EM Slot
15819899	System Might Hang When Running the tshark Command on an Interface With Network Traffic
15824547	Network Is Unreachable for the First Time After an Installation When Switching From Automatic NCP to DefaultFixed NCP
15811125	SPARC: Update From Oracle Solaris 11 SRU 10 Fails on a System With Zones
15667780	SPARC: System Fails to Boot When SP Is in Degraded Mode
15773539	x86: CPU Power Level Warnings During System Boot
15751648	x86: Bitmapped Console Is Not Shown Properly on the NVIDIA Graphics Chipset
15758063	x86: Bundled Driver Panics When X Server Is Started in UEFI Mode
15809921	System Reboots Continuously Because of a ZFS-Related Panic