Oracle® Solaris Studio 12.4: Installation Guide

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- **Overview** – Describes how to perform the following tasks:
  - Install the Oracle Solaris Studio12.4 software on Oracle Solaris 10 platforms and supported Linux platforms using the package installer
  - Install the required Oracle Solaris 10 patches on Oracle Solaris 10 platforms
  - Install the Oracle Solaris Studio 12.4 software on Oracle Solaris 11 platforms using the `pkg` command with the Image Packaging System (IPS)
  - Install the Oracle Solaris Studio12.4 software on any supported platform using the tar file
  - Uninstall the Oracle Solaris Studio12.4 software on Oracle Solaris 10 platforms and supported Linux platforms
  - Uninstall the Oracle Solaris Studio12.4 software on Oracle Solaris 11 platforms
- **Audience** – Application developers, system developers, architects, support engineers
- **Required knowledge** – Programming experience, software development testing, aptitude to build and compile software products

Product Documentation Library

The product documentation library is located at `http://docs.oracle.com/cd/E37069_01`.

System requirements and known problems are included in the "Oracle Solaris Studio 12.4: Release Notes ".

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Oracle customers have access to electronic support through My Oracle Support. For information, visit `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info` or visit `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs` if you are hearing impaired.

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♦ ♦ ♦ CHAPTER 1

Overview of Installation Options

Oracle Solaris Studio can be installed in several different ways depending on your needs and your system platform. This chapter describes the installation options.

Comparing Installation Options and Platforms

The following table compares the installation options.

TABLE 1-1 Installation Options for Each Platform

Installation Option	Platform	Support Available	For More Information
Graphical installer	Oracle Solaris 10 Oracle Linux Red Hat Linux	Yes	Chapter 2, “Installing Oracle Solaris Studio 12.4 on Oracle Solaris 10 and Linux”
Command-line installer	Oracle Solaris 10 Oracle Linux Red Hat Linux	Yes	Chapter 2, “Installing Oracle Solaris Studio 12.4 on Oracle Solaris 10 and Linux”
IPS package installation	Oracle Solaris 11.2	Yes	Chapter 3, “Installing Oracle Solaris Studio 12.4 On Oracle Solaris 11”
Tar file	All platforms	No updates or patches	Chapter 4, “Installing Oracle Solaris Studio 12.4 From a Tar File”

♦ ♦ ♦ CHAPTER 2

Installing Oracle Solaris Studio 12.4 on Oracle Solaris 10 and Linux

This chapter describes how to install Oracle Solaris Studio 12.4 software.

Installation Tasks on Oracle Solaris 10 and Linux

The following table shows the order of tasks you must perform to install Oracle Solaris Studio 12.4 on Oracle Solaris 10 and Linux.

Note - If you have not yet downloaded the Oracle Solaris Studio 12.4 distribution for your platform, you can get it from the `Oracle Solaris Studio download page` and save it to a temporary *download-directory* such as `/var/tmp`.

TABLE 2-1 Task Map for Installing Oracle Solaris Studio on Oracle Solaris 10 and Linux

Task	For Information
1. Verify that the system on which you are installing Oracle Solaris Studio 12.4 meets the minimum hardware and operating system requirements for this release.	"System Requirements" in "Oracle Solaris Studio 12.4: Release Notes "
2. Verify that the system has the required system software packages.	"Required System Software Packages" in "Oracle Solaris Studio 12.4: Release Notes "
3. Determine whether you are going to display the installer locally or remotely.	"Choosing Local or Remote Display of the Installer" on page 12
4. (Optional) Prepare for installing on an NFS file system if installing on a network.	"Installing to an NFS-Mounted File System" on page 13
5. Determine whether you are going to use the interactive graphical installer or the non-interactive command-line installer.	"Choosing an Installation Method" on page 14
6. Install the Oracle Solaris Studio packages.	"Using the Installer on Oracle Solaris 10 and Linux Platforms" on page 14
7. Install the required OS patches.	"Installing the Required Oracle Solaris 10 Patches" on page 19
8. (Optional) Install the runtime libraries and the required OS patches on systems where applications built by	"Installing Only the Runtime Libraries on Oracle Solaris 10 and Linux" on page 20

Task	For Information
Oracle Solaris Studio are to be run but where Oracle Solaris Studio is not installed.	"Installing the Required Oracle Solaris 10 Patches" on page 19

Choosing Local or Remote Display of the Installer

This section is relevant to users who plan to install the software using the graphical installer or command-line installer on Oracle Solaris 10 or Linux systems.

You can display the installer either locally or remotely while you are installing the Oracle Solaris Studio software:

- *Local display.* The source computer and the display computer are the same.The graphical installer window or command-line installer messages are displayed on the same computer that contains the downloaded files and runs the installer.
- *Remote display.* The source computer and the display computer are different computers. The source computer contains the downloaded files and runs the installer. The display computer displays the graphical installer window or command-line installer messages. To install using a remote display, see "How to Prepare for Installation Using a Remote Display" on page 12.

▼ How to Prepare for Installation Using a Remote Display

1. **Type the following command on both the source computer and the display computer:**

   ```
   % hostname
   ```

   The hostnames are used in subsequent steps.

2. **Type the following command on the display computer:**

   ```
   % xhost + source-computer-name
   ```

   Replace *source-computer-name* with the output of the `hostname` command entered on the source computer, which is the computer that contains the downloaded files.

   The `xhost` command enables programs running on the source computer to send their displays to the X server on the display computer.

3. **Log in to the source computer using `ssh -X` and become superuser (root)**

You can use `ssh` with the `-X` option to forward the X display content back to the display computer. The source computer might not allow remotely logging in as root, so you might need to log in using your own username and become root after connecting to the source computer as shown below.

```
% ssh -X source-computer-name
Password: your password-on-source-computer
% su
Password: root-password-on-source-computer
```

4. **On the source computer, set your DISPLAY variable to the display computer.**

   If you use the C shell, type:

   ```
   # setenv DISPLAY display-computer-name:n.n
   ```

   If you use the Bourne shell, type:

   ```
   # DISPLAY=display-computer-name:n.n

   # export DISPLAY
   ```

   If you use the Korn shell, type:

   ```
   # export DISPLAY=display-computer-name:n.n
   ```

   Replace *display-computer-name*:*n.n* with the output of the `hostname` command entered on the display computer.

   You can type `echo $DISPLAY` on the display computer to see the display number, such as :2.0

Installing to an NFS-Mounted File System

To install the Oracle Solaris Studio software on an NFS-mounted filesystem, you must run the installer on a system that meets the Oracle Solaris Studio system requirements regardless of where the NFS partition is mounted. See “System Requirements” in “Oracle Solaris Studio 12.4: Release Notes ”.

Note - The best way to share the product image as an NFS-mounted filesystem is to export it from a server that meets the Oracle Solaris Studio system requirements. Run the installer on the server and share the directory in which the software is installed. Use the following NFS install procedure only if your NFS server is *not* a supported platform for the product.

In the following procedure, the server is the machine with the physical disk on which the installed software will reside, and the client is the machine on which you run the installer and which NFS-mounts the shared filesystem from the server.

▼ How to Prepare for Installing the Oracle Solaris Studio Software on an NFS-mounted Filesystem

This procedure describes how to share a file system to a client machine where you will run the installer.

1. **On the file server, share the filesystem with options to enable root on the client machine to have full access to the shared filesystem:**

   `share -F nfs -o root=`*client-machine*`,rw`** *filesystem*

2. **On the client machine mount the shared filesystem with read/write access:**

   `mount` *server-machine:filesystem installation-directory*

Choosing an Installation Method

There are two ways to use the installer script to install the Oracle Solaris Studio 12.4 software packages on Oracle Solaris 10 and Linux platforms:

Installation Method	Description
Interactive graphical mode	The graphical installer is an installation wizard that displays pages for a series of installation steps. On each page, you can quit, go back to the previous step, or go on to the next step. You can choose the installation directory and which components of the Oracle Solaris Studio 12.4 software you want to install. Or you can run the installer to install only the runtime libraries.
Non-interactive command-line mode	The non-interactive command-line mode of the package installer installs all components, or specified components, of the Oracle Solaris Studio 12.4 software, or only the runtime libraries, silently.

Using the Installer on Oracle Solaris 10 and Linux Platforms

If you have not yet downloaded the Oracle Solaris Studio 12.4 distribution for your platform, you can get it from the `Oracle Solaris Studio download page` and save it to a temporary *download-directory* such as `/var/tmp`.

You can install the Oracle Solaris Studio 12.4 software on a single-user system. Or you can install the software on a server for use by client systems with the same architecture.

Tip - Installation from a network location can take a significant amount of time. If possible you should make a copy of the installation bundle on each system where you plan to install the software and run the installer locally.

Before you install, see the following table for some installation conditions and options for the installer that you might need to consider.

TABLE 2-2 Oracle Solaris Studio Special Installation Conditions on Oracle Solaris 10 and Linux

Installation Condition	Procedure
Installing in a Non-Global Zone	To install the software in a zone on an Oracle Solaris 10 system, run the installer in that zone. If you are installing in the global zone and want the software to be available in that zone only, select the Install in Current Zone Only checkbox in the graphical installer, or specify the `--current-zone-only` option when starting the command-line installer.
Installing on an Oracle Solaris Server for Use by Clients With a Different Architecture	You can install the Oracle Solaris Studio software on a server running Oracle Solaris 10 for use by client systems with a different architecture. You can install the software on a SPARC based server for use by x86 based client systems. Or you can install the software on an x86 based server for use by SPARC based client systems. To install the software for SPARC based systems on an x86 based system, or vice versa, specify the `--ignore-arch` option when you start the installer.
Installing on Multiple Systems	To install the software on multiple systems, you can use the `--record` *state_file*`.xml` option when starting the graphical installer to record an installation that you can repeat using the `--state` *state_file*`.xml` option with the command-line installer.
Installing in an Alternative Root Directory	To install the software using an alternative root directory, use the command-line installer with the `--use-alternative-root` *directory* option.
Installing the IDE and other graphical tools on a Desktop System	Using the graphical installer, you can select an option to generate a zip file containing a distribution of the IDE, dbxtool, and Code Analyzer configured for installation on a desktop system with almost any operating system. After you have installed the Oracle Solaris Studio 12.4 software on an Oracle Solaris 10 or Linux system, you can use the `solstudio --generate-desktop-distr` command or a menu item in the IDE to generate the same desktop distribution. You can unzip this distribution file on a desktop system. When you run the tools on that desktop system, they will recognize the server on which you generated the distribution as a remote host, and access the tool collection (compilers, make tool, and debugger) in your Oracle Solaris Studio server installation.

For information about all the command line options, see the Appendix A, "Command-Line Options for the Installer, Uninstaller, and `install_patches` Utility for Oracle Solaris 10 and Linux Platforms".

How to Install Using the Graphical Installer on Oracle Solaris 10 or Linux

The graphical installer lets you choose the installation directory and select which components of the Oracle Solaris Studio 12.4 software you want to install. For a complete list of the valid command-line options when starting the graphical installer, see "Command-Line Options for the Graphical Installer" on page 59.

Before You Begin Make sure you have done the preliminary tasks before installing. See the "Installation Tasks on Oracle Solaris 10 and Linux" on page 11.

1. **Become superuser (root) or privileged user.**

   ```
   su
   Password: root-password
   ```

2. **Change to the directory where you saved the downloaded distribution, using one of the following commands:**

   ```
   # cd download-directory/SolarisStudio12.4-solaris-sparc-pkg
   ```

   ```
   # cd download-directory/SolarisStudio12.4-solaris-x86-pkg
   ```

   ```
   # cd download-directory/SolarisStudio12.4-linux-x86-rpm
   ```

3. **Start the installer script.**

   ```
   # ./solarisstudio.sh
   ```

   The installer analyzes the system to ensure the Java version is correct. If the Java version found on your path is not Java version 1.7.0_25 or newer you see a warning but the installer might still be able to work. However you must have Java version 1.7.0_25 or newer to use the Java-based tools such as the IDE and Performance Analyzer.

   Tip - If an appropriate Java version is available but not on your path, you can click Cancel and restart with the option `solarisstudio.sh --javahome` *path-to-java* to avoid the warning.

4. **Click Next to proceed.**

   The Oracle Solaris Studio Installer gives you the option of customizing your installation by selecting which components of the software to install.

5. **Select individual components you want to install or all components and click Next to proceed.**

6. **Type or browse to the directory path where you want to install the software.**

   The default installation directory is `/opt`.

7. **(Optional) If you do not want to create links, deselect the option Create Symbolic Links in /usr/bin.**

   The links make it easy to find the compilers and tools because `/usr/bin` is on all users' paths by default.

8. **(Optional) If you want to install the software in all zones, deselect the option Install Oracle Solaris Studio Software to Current Zone Only.**

   This option displays when you are running the installer on a system that has zones. By default, the software installs to the current zone only. When you run the installer in the global zone, installing in the current zone makes the installed product visible only in the global zone.

9. **(Optional) If you want to generate a zip file distribution of the IDE, dbxtool, and Code Analyzer configured for a desktop operating system, select Generate Desktop Distribution During Installation.**

   The generated zip file `desktop-distribution.zip` is placed in the `lib` directory in your Oracle Solaris Studio installation.

10. **Click Next to proceed to the Summary page.**

    On the Summary page, verify that the list of components to be installed is correct and that you have adequate space on your system for installation.

11. **Click Install to start the installation.**

    The installer shows progress of the installation and informs you when the installation is complete.

12. **Click Finish to exit the installer.**

Next Steps See "Installing the Required Oracle Solaris 10 Patches" on page 19 for information about installing patches.

▼ How to Install Using the Command-Line Installer

By default, the command-line installer installs all components of the Oracle Solaris Studio 12.4 software silently in the default installation directory `/opt`.

You can select which components you want to install by specifying the `--install-components` option when you start the installer.

Use the `--print-components-description` option or see "Command-Line Options for the Command-Line Installer" on page 60 for a list of the component names you can specify with this option.

You can start the installer with the `--installation-location` *directory* option to install the components in a directory of your choice. For a complete list of the valid command-line options when starting the command-line installer, see "Command-Line Options for the Command-Line Installer" on page 60.

1. **Become superuser (root) or privileged user.**

```
su
Password: root-password
```

2. **Change to the directory where you saved the downloaded distribution, using one of the following commands:**

```
# cd download-directory/SolarisStudio12.4-solaris-sparc-pkg

# cd download-directory/SolarisStudio12.4-solaris-x86-pkg

# cd download-directory/SolarisStudio12.4-linux-x86-rpm
```

Tip - If you want the installer to generate a zip file containing a distribution of the IDE, dbxtool, and Code Analyzer configured for a desktop operating system, include the `--generate-desktop-distr` option in the following step. The generated zip file is placed in the `lib` directory in your Oracle Solaris Studio installation.

---

3. **Start the installer in non-interactive mode.**

```
# ./solarisstudio.sh --non-interactive
```

The installer runs silently and returns your prompt when installation is complete. For details about the installation, see the log file in the `/.nbi/log` directory.

The installer also analyzes the system to ensure the Java version is correct. If the Java version found on your path is not Java version 1.7.0_25 or newer you see a warning because you must have Java version 1.7.0_25 or newer to use the Java-based tools such as the IDE and Performance Analyzer. The installation is complete even if you get the Java warning.

Next Steps See "Installing the Required Oracle Solaris 10 Patches" on page 19 for information about installing patches.

Installing the Required Oracle Solaris 10 Patches

Several operating system patches are required for the proper operation of the compilers and tools in the Oracle Solaris Studio 12.4 release on Oracle Solaris 10 platforms. See Appendix C, "Patch Identification Numbers and Descriptions for Oracle Solaris 10 Platforms" for more information about the patches.

To install the required Oracle Solaris 10 patches, run the `install_patches.sh` utility that is included in the downloaded distribution.

If you are running the graphical installer, the System Analysis page informs you if your system does not have the required OS patches (unless you specified the `--nfs-server` option when starting the installer). You can then run the `install_patches.sh` utility by clicking More Info, and then clicking Execute install_patches.sh Now.

If you are running the command-line installer, run the `install_patches.sh` utility after installation to ensure that your system has the required OS patches.

If you have installed the Oracle Solaris Studio 12.4 software on an Oracle Solaris 10 server and the software is going to be used from client systems, then do the following:

1. On each client system, mount the directory on the server into which you downloaded the package installer.

   ```
   # mount server:filesystem download-directory
   ```

2. Change to the directory where you saved the downloaded distribution, using one of the following commands:

   ```
   # cd download-directory/SolarisStudio12.4-solaris-sparc-pkg

   # cd download-directory/SolarisStudio12.4-solaris-x86-pkg

   # cd download-directory/SolarisStudio12.4-linux-x86-rpm
   ```

3. On each Oracle Solaris 10 client system, run the `install_patches.sh` utility to install the required Oracle Solaris 10 patches.

   ```
   # ./install_patches.sh
   ```

When the patch installation is complete, see Chapter 5, "After Installing Oracle Solaris Studio 12.4" for information about setting up user access and testing the installation.

See "Installing Only the Runtime Libraries on Oracle Solaris 10 and Linux" on page 20 to determine if you need to install the runtime libraries on other systems.

Installing Only the Runtime Libraries on Oracle Solaris 10 and Linux

The required runtime libraries are installed automatically when you install Oracle Solaris Studio 12.4 on Oracle Solaris 10 and Linux.

You can also use the installer to separately install the libraries on systems where Oracle Solaris Studio will not be installed but the runtime libraries are needed:

- The runtime libraries must be installed on any systems where applications built using Oracle Solaris Studio 12.4 will be executed.
- If you install runtime libraries in a global zone, you might also need to install them in the nonglobal zones as well.
- If an installation of Oracle Solaris Studio is shared over NFS, the runtime libraries must be installed on NFS client systems before the clients can use the shared installation.

Note - If you run the installer to install only the libraries on a system, and later decide to install the full Oracle Solaris Studio release on the system, you must first run the uninstaller to uninstall the libraries.

See the following sections for instructions using the graphical installer and the command-line installer.

▼ How to Install Runtime Libraries With the Graphical Installer

1. **Become superuser (root) by typing:**

   ```
   su
   Password: root-password
   ```

2. **Change to the directory where you saved the downloaded distribution, using one of the following commands:**

   ```
   # cd download-directory/SolarisStudio12.4-solaris-sparc-pkg
   ```

   ```
   # cd download-directory/SolarisStudio12.4-solaris-x86-pkg
   ```

   ```
   # cd download-directory/SolarisStudio12.4-linux-x86-rpm
   ```

3. **Start the installer with the `--libraries-only` option.**

   ```
   # ./solarisstudio.sh --libraries-only
   ```

4. **On the Oracle Solaris Studio Installer page, click Next.**

5. **On the Oracle Solaris Studio Installation page, specify a different installation directory if you do not want to install the libraries in the default installation directory `/opt`.**

   The Summary page displays to indicate where the libraries will be installed and the space required.

6. **Click Install to start the installation.**

   When the installation is complete the Setup Complete page is displayed.

7. **Click Finish to exit the installer.**

▼ How to Install Runtime Libraries Using the Command-line Installer

Before You Begin Verify that the system has required Oracle Solaris 10 patches. See Appendix C, “Patch Identification Numbers and Descriptions for Oracle Solaris 10 Platforms”.

1. **Become superuser (root) by typing:**

   ```
   % su
   Password: root-password
   ```

2. **Change to the directory where you saved the downloaded distribution, using one of the following commands:**

   ```
   # cd download-directory/SolarisStudio12.4-solaris-sparc-pkg
   ```

   ```
   # cd download-directory/SolarisStudio12.4-solaris-x86-pkg
   ```

   ```
   # cd download-directory/SolarisStudio12.4-linux-x86-rpm
   ```

3. **Start the installer by typing:**

   ```
   # ./solarisstudio.sh --non-interactive --libraries-only
   ```

4. **The installer runs silently and returns your prompt when installation is complete. It writes a log file in the `/.nbi/log` directory.**

♦ ♦ ♦ CHAPTER 3

Installing Oracle Solaris Studio 12.4 On Oracle Solaris 11

This chapter describes how to install Oracle Solaris Studio 12.4 on Oracle Solaris 11.

Installation Tasks on Oracle Solaris 11

The following table shows the order of tasks you must perform to install Oracle Solaris Studio 12.4 on Oracle Solaris 11.

TABLE 3-1 Task Map for Installing Oracle Solaris Studio on Oracle Solaris 11

Task	For Information
1. Verify that the system meets the system requirements	"System Requirements" in "Oracle Solaris Studio 12.4: Release Notes "
2. Verify that the system has the required system software packages	"Required System Software Packages" in "Oracle Solaris Studio 12.4: Release Notes "
3. Verify that you have permissions to install software on the system	"Verifying Required Privileges to Install IPS Packages" on page 23
4. Install the system libraries that are required by Oracle Solaris Studio on Oracle Solaris 11.	"Updating Oracle Solaris 11 System Libraries Required by Oracle Solaris Studio 12.4" on page 24
5. Download and install the certificate and key and add publisher for Oracle Solaris Studio IPS packages	"Downloading the Certificate and Key" on page 36
6. Install the Oracle Solaris Studio packages	"Installing Oracle Solaris Studio 12.4 on Oracle Solaris 11" on page 37
7. (Optional) Install the runtime libraries and the required system libraries on systems where applications built by Oracle Solaris Studio are to be run but where Oracle Solaris Studio is not installed.	"Installing Only the Runtime Libraries on Oracle Solaris 11" on page 41 "Updating Oracle Solaris 11 System Libraries Required by Oracle Solaris Studio 12.4" on page 24

Verifying Required Privileges to Install IPS Packages

Make sure you have permission to install IPS packages using the following methods.

- Use the `profiles` command to list the rights profiles that are assigned to you.

  If you have the Software Installation rights profile, you can use the `pfexec` command to install and update packages without becoming superuser. For example:

  ```
  $ pfexec pkg install package-name
  ```

  Other rights profiles also provide installation privilege, such as System Administrator rights profile.
- Depending on the security policy at your site, you might be able to use the `sudo` command with your user password to execute a privileged command. For example:

  ```
  $ sudo pkg install package-name
  ```
- Use the `roles` command to list the roles that are assigned to you.

  If you have the `root` role, you can use the `su` command with the root password to assume the `root` role. For example:

  ```
  # pkg install package-name
  ```

See "Adding and Updating Software in Oracle Solaris 11.2 " in the Oracle Solaris 11.2 Information Library for more information about installation privileges.

Updating Oracle Solaris 11 System Libraries Required by Oracle Solaris Studio 12.4

Before you can install Oracle Solaris Studio 12.4 on Oracle Solaris 11, you must ensure that some required system libraries are updated. These libraries are included with the Oracle Solaris 11 operating system in the `sunpro-incorporation` consolidation package, not with Oracle Solaris Studio.

Since these libraries are also used by Oracle Solaris Studio itself, you must install the libraries on Oracle Solaris 11.2 before installing Oracle Solaris Studio.

An updated version of the `sunpro-incorporation` package has been added to the Oracle Solaris 11 release repository to address issues fixed in Oracle Solaris 11.2 SRU01 since Oracle Solaris 11.2 was released.

These instructions assume you are familiar with basics of the Oracle Solaris 11 Image Packaging System (IPS). A brief video introduction to IPS is available at `http://download.oracle.com/otndocs/tech/OTN_Demos/IPS/IPS-demo.html`.

For more extensive coverage of IPS, see "Adding and Updating Software in Oracle Solaris 11.2 " in the Oracle Solaris 11.2 Information Library.

Update the required system libraries using one of the following methods, depending on whether you have purchased a support contract for Oracle Solaris to obtain access to the support repository:

If you have access to the Oracle Solaris 11 support repository:

Update your system to the latest Oracle Solaris 11.2 Support Repository Update (SRU). Access to the Oracle Solaris 11 support repository requires an Oracle Solaris 11 Support Contract. For details, refer to the article `How to Update Oracle Solaris 11 Systems from Oracle Support Repositories`.

See a sample session in "Example 1: Updating a Oracle Solaris 11.1 Boot Image to the Latest SRU from the Oracle Solaris 11 Support Repository" on page 27.

If you do not have access to the Oracle Solaris 11 support repository:

1. Update your system to Oracle Solaris 11.2 from the Oracle Solaris 11 release repository at `http://pkg.oracle.com/solaris/release` as documented in *Updating to Oracle Solaris 11.2* in the Oracle Solaris 11.2 Information Library.
2. Unlock the `sunpro-incorporation` package on the system to be updated. See the instructions "Unlocking the `sunpro-incorporation` Package" on page 25.
3. Update the `sunpro-incorporation` package from the packages provided in the Oracle Solaris 11 release repository as described in "Updating the `sunpro-incorporation` Package in a New Boot Environment " on page 26. The process is similar to the one described in the article `How to Update Only Java on Your Oracle Solaris 11 System` if "`sunpro`" is substituted for "`java`" in shell commands shown in the article.
4. (Optional) Relock the `sunpro-incorporation` package as described in "Relocking the `sunpro-incorporation` Package" on page 27.

The examples for unlocking and updating the `sunpro-incorporation` package are shown in the session in "Example 2: Updating the `sunpro-incorporation` Package from the Oracle Solaris 11 Release Repository" on page 30.

If you decide later to synchronize the system with the latest Oracle Solaris 11.2 SRU, you can do so after obtaining access to the Oracle Solaris 11 support repository. For details of synchronizing, see "Example 3: Synchronizing `sunpro-incorporation` with the Latest SRU from the Oracle Solaris 11 Support Repository" on page 33.

Unlocking the `sunpro-incorporation` Package

This task is needed in order to update to the required version of system libraries on Oracle Solaris 11.2 from the Oracle Solaris 11 release repository without updating the entire operating system to the latest Oracle Solaris 11.2 SRU.

This unlocking procedure is shown in the session in "Example 2: Updating the `sunpro-incorporation` Package from the Oracle Solaris 11 Release Repository" on page 30.

1. Become root on the system to be updated.
2. Verify the version of the `sunpro-incorporation` package to make sure it needs updating. Type the following command:

```
# pkg list sunpro-incorporation
NAME (PUBLISHER)                                  VERSION                    IFO
consolidation/sunpro/sunpro-incorporation         0.5.11-0.175.2.0.0.37.0    i--
```

   The version `0.5.11-0.175.2.0.0.37.0` indicates the package needs to be updated.
3. Type the following command to unlock the `sunpro-incorporation` package:

```
# pkg change-facet facet.version-lock.consolidation/sunpro/sunpro-incorporation=false
```

   Now you can update the `sunpro-incorporation` package as described in "Updating the `sunpro-incorporation` Package in a New Boot Environment " on page 26.

Updating the `sunpro-incorporation` Package in a New Boot Environment

An updated version of the `sunpro-incorporation` package has been added to the Oracle Solaris 11 release repository to address issues fixed in Oracle Solaris 11.2 SRU01 since Oracle Solaris 11.2 was released.

This procedure shows you to install the updated version of `sunpro-incorporation` from the Oracle Solaris 11 release repository after the `sunpro-incorporation` package is unlocked as described in "Unlocking the `sunpro-incorporation` Package" on page 25.

Note - Creating a new named boot environment as shown in this procedure is optional. If you do not specify the `--be-name` option, a backup boot environment will be created and the update will be applied to the currently active boot environment. In this case, no reboot will be required.

---

1. Become root on the system to be updated.
2. Type the following to create a new boot environment with updated Oracle Solaris Studio 12.4 system libraries:

```
# be_name=new boot environment name
# pkg update --be-name $be_name sunpro-incorporation
```

This procedure is shown in the session in "Example 2: Updating the `sunpro-incorporation` Package from the Oracle Solaris 11 Release Repository" on page 30.

Proceed to "Downloading the Certificate and Key" on page 36 after updating the `sunpro-incorporation` package.

Relocking the `sunpro-incorporation` Package

Relocking the `sunpro-incorporation` package keeps the package in sync with the rest of the system after the system is updated.

Note - If you did not update the system to the latest Oracle Solaris 11.2 SRU, you cannot relock the `sunpro-incorporation` package. You must leave it unlocked. Skip the rest of this section and proceed to "Downloading the Certificate and Key" on page 36.

You should perform this step only if you previously unlocked the `sunpro-incorporation` package to install the system libraries from the Oracle Solaris 11 release repository, then obtained a support contract and updated the system to the latest Oracle Solaris 11.2 SRU from the Oracle Solaris 11 support repository.

1. Become root on the system where you had previously unlocked `sunpro-incorporation` and subsequently updated to the latest Oracle Solaris 11.2 SRU.
2. Type the following to create a new boot environment with updated Oracle Solaris Studio 12.4 runtime libraries:

```
# pkg change-facet facet.version-lock.consolidation/sunpro/sunpro-incorporation=true
```

This step is shown in the session in "Example 3: Synchronizing `sunpro-incorporation` with the Latest SRU from the Oracle Solaris 11 Support Repository" on page 33.

Example Update Scenarios for Oracle Solaris 11

This section shows the following example update scenarios for Oracle Solaris 11. If you do not have a support contract, only Example 2 is relevant.

Example 1: Updating a Oracle Solaris 11.1 Boot Image to the Latest SRU from the Oracle Solaris 11 Support Repository

This example shows a terminal session for upgrading a system from Oracle Solaris 11.1 to the latest SRU from the Oracle Solaris 11 support repository when you have an Oracle Solaris 11 support contract. The system's default publisher is already configured to point to the Oracle Solaris 11 support repository. See "Example 3: Synchronizing `sunpro-incorporation` with the

Latest SRU from the Oracle Solaris 11 Support Repository" on page 33 for details on how to do this.

The terminal session shows the following:

- Lists the currently installed versions of the `entire` and `sunpro-incorporation` packages. The output reflects the versions originally delivered in Oracle Solaris 11.1.
- Lists all available versions of both packages in the Oracle Solaris 11 support repository. The output shows that newer versions of both are available, reflecting the latest Oracle Solaris 11.2 SRU.
- Updates the system to the latest Oracle Solaris 11.2 SRU. This is a lengthy update since it includes all SRUs delivered for Oracle Solaris 11.1 and Oracle Solaris 11.2 at the time of the update. The session shows that the system is updated in a named new boot environment, leaving the current boot environment unchanged.

Although it is not shown here, the system reports some recoverable errors during the installation of a package included in one of the Oracle S11.1 SRUs. The error messages can safely be ignored, as documented in the "Oracle Solaris 11.2 Release Notes " in the Oracle Solaris 11.2 Information Library.

```
root@x86box:~# beadm list
BE                     Active Mountpoint Space   Policy Created
--                     ------ ---------- -----   ------ -------
s11.1_example          NR     /          47.67G  static 2014-09-15 09:14
root@x86box:~# pkg list entire
NAME (PUBLISHER)                                   VERSION                    IFO
entire                                             0.5.11-0.175.1.0.0.24.2    i--
root@x86box:~# pkg list sunpro-incorporation
NAME (PUBLISHER)                                   VERSION                    IFO
consolidation/sunpro/sunpro-incorporation          0.5.11-0.175.1.0.0.19.0    i--
root@x86box:~# pkg publisher
PUBLISHER                   TYPE     STATUS P LOCATION
solaris                     origin   online F https://pkg.oracle.com/solaris/support/
root@x86box:~# pkg list -af entire
NAME (PUBLISHER)                                   VERSION                    IFO
entire                                             0.5.11-0.175.2.2.0.5.0     ---
entire                                             0.5.11-0.175.2.1.0.5.0     ---
entire                                             0.5.11-0.175.2.0.0.42.0    ---
entire                                             0.5.11-0.175.1.21.0.4.1    ---
entire                                             0.5.11-0.175.1.20.0.5.0    ---
...
entire                                             0.5.11-0.175.1.0.0.24.2    ---
...
root@x86box:~# pkg list -af sunpro-incorporation
NAME (PUBLISHER)                                   VERSION                    IFO
consolidation/sunpro/sunpro-incorporation          0.5.11-0.175.2.1.0.4.0     ---
consolidation/sunpro/sunpro-incorporation          0.5.11-0.175.2.0.0.37.0    ---
consolidation/sunpro/sunpro-incorporation          0.5.11-0.175.1.19.0.4.0    ---
...
consolidation/sunpro/sunpro-incorporation          0.5.11-0.175.1.0.0.19.0    i--
...
root@x86box:~# pkg update --accept --be-name s11.1_example_s11.2sru02
```

```
------------------------------------------------------------
Package: pkg://solaris/consolidation/osnet/osnet-
incorporation@0.5.11,5.11-0.175.2.2.0.5.2:20140904T200410Z
License: lic_OTN

...
            Packages to remove:   7
           Packages to install:  90
            Packages to update: 498
           Mediators to change:   2
       Create boot environment: Yes
Create backup boot environment:  No

DOWNLOAD                                  PKGS         FILES    XFER (MB)   SPEED
Completed                               595/595   40141/40141  872.6/872.6  1.2M/s

PHASE                                          ITEMS
Removing old actions                         7707/7707
Installing new actions                      29119/29119
...
Updating modified actions                   30920/30920
Updating package state database                Done
Updating package cache                         505/505
Updating image state                           Done
Creating fast lookup database                  Done

A clone of s11.1_example exists and has been updated and activated.
On the next boot the Boot Environment s11.1_example_s11.2sru02 will be
mounted on '/'.  Reboot when ready to switch to this updated BE.


---------------------------------------------------------------------------
NOTE: Please review release notes posted at:

http://www.oracle.com/pls/topic/lookup?ctx=E26502&id=SERNS
---------------------------------------------------------------------------

root@x86box:~# beadm list
BE                        Active Mountpoint Space   Policy Created
--                        ------ ---------- -----   ------ -------
s11.1_example             N      /          9.80M   static 2014-09-15 09:14
s11.1_example_s11.2sru02 R      -          53.74G  static 2014-09-15 09:59
root@x86box:~# reboot
Connection to x86box.example.com closed by remote host.
Connection to x86box.example.com closed.
```

After the system is rebooted, log in as a normal user and verify that both the `entire` and `sunpro-incorporation` packages have been updated:

```
...
Oracle Corporation      SunOS 5.11      11.2    August 2014
(x86box)% beadm list
BE                        Active Mountpoint Space   Policy Created
--                        ------ ---------- -----   ------ -------
```

```
s11.1_example            -      -          12.35M  static 2014-09-15 09:14
s11.1_example_s11.2sru02 NR     /          53.99G  static 2014-09-15 09:59
(x86box)% pkg list entire
NAME (PUBLISHER)                                  VERSION                    IFO
entire                                            0.5.11-0.175.2.2.0.5.0     i--
(x86box)% pkg list sunpro-incorporation
NAME (PUBLISHER)                                  VERSION                    IFO
consolidation/sunpro/sunpro-incorporation         0.5.11-0.175.2.1.0.4.0     i--
(x86box)%
```

Note - To update the system to S11.2 SRU1, the `pkg update` command in the above example can be changed to:

```
root@x86box:~# pkg update --accept --be-name s11.1_example_s11.2sru01
 entire@0.5.11,0.5.11-0.175.2.1
```

Example 2: Updating the `sunpro-incorporation` Package from the Oracle Solaris 11 Release Repository

In this example, the system has been updated to Oracle Solaris 11.2 from the Oracle Solaris 11 release repository. The example shows that the release repository has a newer version of the `sunpro-incorporation` package than the version normally installed by `pkg install` from the release repository.

The terminal session shows the following tasks:

- Verifies that:
  - System default publisher points at the Oracle Solaris 11 release repository
  - System `entire` package version is that of Oracle Solaris 11.2 build 42
  - System `sunpro-incorporation` package version is that of Oracle Solaris 11.2 build 37
  - Oracle Solaris 11 release repository contains a newer version of `sunpro-incorporation`.
- Unlocks the `sunpro-incorporation` package. Unlocking the `sunpro-incorporation` package enables `pkg update` to install the newer version of the package.
- Updates the `sunpro-incorporation` package from the Oracle Solaris 11 release repository to create a new boot image
- Reboots the new boot image

```
root@x86box:~# pkg publisher
PUBLISHER                 TYPE     STATUS P LOCATION
solaris                   origin   online F http://pkg.oracle.com/solaris/release/
root@x86box:~# pkg list entire
NAME (PUBLISHER)                                  VERSION                    IFO
entire                                            0.5.11-0.175.2.0.0.42.0    i--
root@x86box:~# pkg list sunpro-incorporation
```

```
NAME (PUBLISHER)                                  VERSION                    IFO
consolidation/sunpro/sunpro-incorporation         0.5.11-0.175.2.0.0.37.0    i--
root@x86box:~# pkg list -af sunpro-incorporation
NAME (PUBLISHER)                                  VERSION                    IFO
consolidation/sunpro/sunpro-incorporation         0.5.11-0.175.2.1.0.4.0     ---
consolidation/sunpro/sunpro-incorporation         0.5.11-0.175.2.0.0.37.0    i--
root@x86box:~# pkg facet
FACET                                                                 VALUE SRC
root@x86box:~# pkg change-facet facet.version-lock.consolidation/sunpro/sunpro-
incorporation=false
            Packages to change:   1
     Variants/Facets to change:   1
       Create boot environment:  No
Create backup boot environment: Yes
PHASE                                          ITEMS
Removing old actions                             1/1
Updating package state database                 Done
Updating package cache                           0/0
Updating image state                            Done
Creating fast lookup database                   Done
Updating package cache                           1/1
root@x86box:~# pkg update -nv sunpro-incorporation
            Packages to update:        6
     Estimated space available: 49.37 GB
Estimated space to be consumed: 57.27 MB
       Create boot environment:       No
Create backup boot environment:      Yes
          Rebuild boot archive:       No

Changed packages:
solaris
  consolidation/sunpro/sunpro-incorporation
    0.5.11,5.11-0.175.2.0.0.37.0:20140414T130238Z ->
 0.5.11,5.11-0.175.2.1.0.4.0:20140728T200719Z
  developer/assembler
    0.5.11,5.11-0.175.2.0.0.37.0:20140414T130241Z ->
 0.5.11,5.11-0.175.2.1.0.4.0:20140728T200720Z
  system/library/c++-runtime
    0.5.11,5.11-0.175.2.0.0.37.0:20140414T130401Z ->
 0.5.11,5.11-0.175.2.1.0.4.0:20140728T200722Z
  system/library/math
    0.5.11,5.11-0.175.2.0.0.37.0:20140414T130409Z ->
 0.5.11,5.11-0.175.2.1.0.4.0:20140728T200728Z
  system/library/mmheap
    0.5.11,5.11-0.175.2.0.0.23.0:20130916T153150Z ->
 0.5.11,5.11-0.175.2.1.0.4.0:20140728T200732Z
  system/library/openmp
    0.5.11,5.11-0.175.2.0.0.37.0:20140414T130412Z ->
 0.5.11,5.11-0.175.2.1.0.4.0:20140728T200733Z
root@x86box:~# pkg update --be-name s11.2_plus_studio12.4_runtime -v sunpro-incorporation
            Packages to update:        6
     Estimated space available: 49.37 GB
Estimated space to be consumed: 57.27 MB
       Create boot environment:      Yes
```

```
     Activate boot environment:      Yes
Create backup boot environment:       No
          Rebuild boot archive:       No

Changed packages:
solaris
  consolidation/sunpro/sunpro-incorporation
    0.5.11,5.11-0.175.2.0.0.37.0:20140414T130238Z ->
 0.5.11,5.11-0.175.2.1.0.4.0:20140728T200719Z
  developer/assembler
    0.5.11,5.11-0.175.2.0.0.37.0:20140414T130241Z ->
 0.5.11,5.11-0.175.2.1.0.4.0:20140728T200720Z
  system/library/c++-runtime
    0.5.11,5.11-0.175.2.0.0.37.0:20140414T130401Z ->
 0.5.11,5.11-0.175.2.1.0.4.0:20140728T200722Z
  system/library/math
    0.5.11,5.11-0.175.2.0.0.37.0:20140414T130409Z ->
 0.5.11,5.11-0.175.2.1.0.4.0:20140728T200728Z
  system/library/mmheap
    0.5.11,5.11-0.175.2.0.0.23.0:20130916T153150Z ->
 0.5.11,5.11-0.175.2.1.0.4.0:20140728T200732Z
  system/library/openmp
    0.5.11,5.11-0.175.2.0.0.37.0:20140414T130412Z ->
 0.5.11,5.11-0.175.2.1.0.4.0:20140728T200733Z
DOWNLOAD                                  PKGS         FILES    XFER (MB)   SPEED
Completed                                  6/6         46/46      3.1/3.1  6.5M/s

PHASE                                          ITEMS
Removing old actions                           21/21
Installing new actions                         27/27
Updating modified actions                      33/33
Updating package state database                 Done
Updating package cache                           6/6
Updating image state                            Done
Creating fast lookup database                   Done
Updating package cache                           1/1

A clone of s11.2_42 exists and has been updated and activated.
On the next boot the Boot Environment s11.2_plus_studio12.4_runtime will be
mounted on '/'.  Reboot when ready to switch to this updated BE.

Updating package cache                           1/1
root@x86box:~# reboot
Connection to x86box.example.com closed by remote host.
Connection to x86box.example.com closed.
```

The following commands are performed as a normal user to verify:

- The `sunpro-incorporation` package is unlocked.
- The `sunpro-incorporation` package and one of its incorporated packages have both been updated to version 0.5.11-0.175.2.1.0.4.0.
- The rest of the system remains at version 0.5.11-0.175.2.0.0.42.0, same as in Oracle Solaris 11.2.

```
(x86box)% pkg facet
FACET                                                          VALUE SRC
facet.version-lock.consolidation/sunpro/sunpro-incorporation   False local
(x86box)% pkg list entire
NAME (PUBLISHER)                                  VERSION                    IFO
entire                                            0.5.11-0.175.2.0.0.42.0    i--
(x86box)% pkg list -af sunpro-incorporation
NAME (PUBLISHER)                                  VERSION                    IFO
consolidation/sunpro/sunpro-incorporation         0.5.11-0.175.2.1.0.4.0     i--
consolidation/sunpro/sunpro-incorporation         0.5.11-0.175.2.0.0.37.0    ---
(x86box)% pkg list sunpro-incorporation
NAME (PUBLISHER)                                  VERSION                    IFO
consolidation/sunpro/sunpro-incorporation         0.5.11-0.175.2.1.0.4.0     i--
(x86box)% pkg list system/library/openmp
NAME (PUBLISHER)                                  VERSION                    IFO
system/library/openmp                             0.5.11-0.175.2.1.0.4.0     i--
(x86box)%
```

Example 3: Synchronizing `sunpro-incorporation` with the Latest SRU from the Oracle Solaris 11 Support Repository

This example shows how to synchronize the system that was used in "Example 2: Updating the `sunpro-incorporation` Package from the Oracle Solaris 11 Release Repository" on page 30 with the latest SRU from the Oracle Solaris 11 support repository.

Note - You would only need to do this if you previously unlocked and updated the `sunpro-incorporation` package from the Oracle Solaris 11 release repository and then obtained a support contract and have access to the Oracle Solaris 11 support repository.

The example assumes that a key and certificate for the Oracle Solaris 11 support repository were already copied to the `/var/pkg/ssl` directory, as described in the article `How to Update Oracle Solaris 11 Systems From Oracle Support Repositories` on the Oracle Technology Network.

The terminal session shows how to do the following:

- Use the key and certificate to configure the system's default publisher to point to the Oracle Solaris 11 support repository `https://pkg.oracle.com/solaris/support`, as explained in the article.
- Update the system to the latest Oracle Solaris 11.2 SRU.
- Relock the `sunpro-incorporation` package after the system has been updated to the latest Oracle Solaris 11 SRU.

Note that the system can still be updated to a Oracle Solaris 11.2 SRU if the `sunpro-incorporation` package has been unlocked and updated from the release repository, as described in the previous example.

The `sunpro-incorporation` package cannot be locked unless the package version is in sync with the rest of the system. In this example, the system is updated before the package is relocked.

```
(x86box)% beadm list
BE                      Active Mountpoint Space   Policy Created
--                      ------ ---------- -----   ------ -------
s11.2_42                -      -          9.26M   static 2014-09-02 18:10
s11.2_plus_ss12.4_rtlibs NR     /          45.89G  static 2014-09-09 17:09
(x86box)% pkg list entire
NAME (PUBLISHER)                                  VERSION                    IFO
entire                                            0.5.11-0.175.2.0.0.42.0    i--
(x86box)% pkg list sunpro-incorporation
NAME (PUBLISHER)                                  VERSION                    IFO
consolidation/sunpro/sunpro-incorporation         0.5.11-0.175.2.1.0.4.0     i--
(x86box)% su - root
Password:
...
root@x86box:~# pkg publisher
PUBLISHER                   TYPE     STATUS P LOCATION
solaris                     origin   online F http://pkg.oracle.com/solaris/release/
root@x86box:~# ls -l /var/pkg/ssl
total 6
-rw-r--r--   1 root     root         786 Sep  9 15:44 pkg.oracle.com.key.certificate.pem
-rw-r--r--   1 root     root         887 Sep  9 15:44 pkg.oracle.com.key.pem
root@x86box:~# pkg set-publisher \
>  -k /var/pkg/ssl/pkg.oracle.com.key.pem \
>  -c /var/pkg/ssl/pkg.oracle.com.key.certificate.pem \
>  -g https://pkg.oracle.com/solaris/support/ \
>  -G http://pkg.oracle.com/solaris/release/ solaris
root@x86box:~#
root@x86box:~# pkg publisher
PUBLISHER                   TYPE     STATUS P LOCATION
solaris                     origin   online F https://pkg.oracle.com/solaris/support/
root@x86box:~# beadm list
BE                      Active Mountpoint Space   Policy Created
--                      ------ ---------- -----   ------ -------
s11.2_42                -      -          9.26M   static 2014-09-02 18:10
s11.2_plus_ss12.4_rtlibs NR     /          46.00G  static 2014-09-09 17:09
root@x86box:~# pkg update --accept --be-name s11.2_sru01 entire
            Packages to remove:   1
            Packages to update:  63
       Create boot environment: Yes
Create backup boot environment:  No
DOWNLOAD                                  PKGS         FILES    XFER (MB)   SPEED
Completed                                 64/64     3548/3548  228.4/228.4  1.5M/s

PHASE                                          ITEMS
Removing old actions                         475/475
Installing new actions                       522/522
Updating modified actions                   4272/4272
Updating package state database                 Done
Updating package cache                         64/64
```

```
Updating image state                            Done
Creating fast lookup database                   Done
Updating package cache                           1/1

A clone of s11.2_plus_ss12.4_rtlibs exists and has been updated and activated.
On the next boot the Boot Environment s11.2_sru01 will be
mounted on '/'.  Reboot when ready to switch to this updated BE.

Updating package cache                           1/1
root@x86box:~# beadm list
BE                      Active Mountpoint Space   Policy Created
--                      ------ ---------- -----   ------ -------
s11.2_42                -      -          9.26M   static 2014-09-02 18:10
s11.2_plus_ss12.4_rtlibs N      /          376.0K  static 2014-09-09 17:09
s11.2_sru01             R      -          47.72G  static 2014-09-09 17:29
root@x86box:~# reboot
Connection to x86box.example.com closed by remote host.
Connection to x86box.example.com closed.
...
```

The terminal session shows how to verify the following as a normal user:

- The system has been updated to Oracle Solaris 11.2 SRU 1.
- The `sunpro-incorporation` package remains at the version previously updated from the Oracle Solaris 11 release repository.

```
(x86box)% beadm list
BE                      Active Mountpoint Space   Policy Created
--                      ------ ---------- -----   ------ -------
s11.2_42                -      -          9.26M   static 2014-09-02 18:10
s11.2_plus_ss12.4_rtlibs -      -          10.15M  static 2014-09-09 17:09
s11.2_sru01             NR     /          47.83G  static 2014-09-09 17:29
(x86box)% pkg list entire
NAME (PUBLISHER)                                  VERSION                    IFO
entire                                            0.5.11-0.175.2.1.0.5.0     i--
(x86box)% pkg list sunpro-incorporation
NAME (PUBLISHER)                                  VERSION                    IFO
consolidation/sunpro/sunpro-incorporation         0.5.11-0.175.2.1.0.4.0     i--
```

Now that the system entire package has been updated, the `sunpro-incorporation` package is in sync with the rest of the system.

The terminal session shows the root user locking the `sunpro-incorporation` package in sync with the rest of the system.

```
(x86box)% su - root
Password:
...
root@x86box:~# pkg facet
FACET                                                           VALUE SRC
facet.version-lock.consolidation/sunpro/sunpro-incorporation    False local
root@x86box:~# pkg change-facet facet.version-lock.consolidation/sunpro/sunpro-
incorporation=true
```

```
           Packages to change:   1
     Variants/Facets to change:   1
       Create boot environment:  No
Create backup boot environment: Yes
PHASE                                          ITEMS
Installing new actions                           1/1
Updating package state database                 Done
Updating package cache                           0/0
Updating image state                            Done
Creating fast lookup database                   Done
Updating package cache                           1/1
root@x86box:~# beadm list
BE                      Active Mountpoint Space   Policy Created
--                      ------ ---------- -----   ------ -------
s11.2_42                -      -          9.26M   static 2014-09-02 18:10
s11.2_plus_ss12.4_rtlibs -      -          10.15M  static 2014-09-09 17:09
s11.2_sru01             NR     /          48.00G  static 2014-09-09 17:29
s11.2_sru01-backup-1    -      -          100.0K  static 2014-09-10 12:41
root@x86box:~# pkg facet
FACET                                                          VALUE SRC
facet.version-lock.consolidation/sunpro/sunpro-incorporation     True  local
root@x86box:~#
```

Downloading the Certificate and Key

To install Oracle Solaris Studio 12.4 on an Oracle Solaris 11 system, you must have a Oracle Solaris Studio certificate and key.

If you have previously obtained a certificate and key for the Oracle Solaris Studio package repository, you can use those and do not need to obtain new ones. You can download them again after you log in to the `https://pkg-register.oracle.com` page.

To download the certificate and key:

1. On the Welcome page at `https://pkg-register.oracle.com`, click Request Certificates.
2. If prompted, sign in to your Oracle Online account.
3. In the Available Repositories page next to Oracle Solaris Studio, click Request Access.

   If you already have been granted access to the repository you can get details and instructions on how to set up the repository on your system by clicking Show Details.
4. On the Request Access page, scroll down to the bottom and click Accept to accept the license agreement.
5. On the Product Details page, click the *certificate page* link.
6. On the Your Certificate page, click Download Key to download and save the key `pkg.oracle.com.key.pem` to your browser's default download location.
7. Click Download Certificate to download and save the certificate `pkg.oracle.com.certificate.pem` to your browser's default download location.

This is your key and certificate pair to authenticate your client to `pkg.oracle.com`. It is valid for every repository hosted on pkg.oracle.com.

Installing Oracle Solaris Studio 12.4 on Oracle Solaris 11

You use the Image Packaging System (IPS) to install Oracle Solaris Studio 12.4 on Oracle Solaris 11 systems.

The Oracle Solaris Studio publisher includes the packages shown in Table B-2. You can install the entire release from the package repository or install individual packages for the compilers and tools you want to use.

Before you install, see the following table for some installation conditions you might need to consider.

TABLE 3-2 Oracle Solaris Studio Installation Conditions

Installation Condition	Procedure
Installing in a Non-Global Zone	To install the software in a non-global zone on an Oracle Solaris 11 system, execute the installation commands in that zone.
Installing on Multiple Systems	On Oracle Solaris 11 platforms, you can install the Oracle Solaris Studio 12.4 software on multiple systems by remotely logging in to each system and installing the software from the Oracle Solaris Studio publisher.
Installing the IDE and other graphical tools on a Desktop System	After you have installed the Oracle Solaris Studio 12.4 software on an Oracle Solaris 11 platform, you can use the `solstudio --generate-desktop-distr` command or a menu item in the IDE to generate a zip file containing a distribution of the IDE, dbxtool, and Code Analyzer configured for installation on a desktop system with almost any operating system. You can unzip this distribution file on a desktop system. When you run the IDE on that system, the IDE will recognize the server on which you generated the distribution as a remote host, and access the tool collection (compilers, make tool, and debugger) in your Oracle Solaris Studio server installation.

▼ How to Install Oracle Solaris Studio 12.4 from the Package Repository

Before You Begin See “Installation Tasks on Oracle Solaris 11” on page 23 to ensure you have done the preliminary tasks including verifying permissions to install software on the system.

1. **Create a directory in `/var/pkg` to store the key and certificate you downloaded from `pkg-register.oracle.com`.**

```
% mkdir -m 0775 -p /var/pkg/ssl
```

2. **Copy the key and certificate into the directory.**

```
% cp -i download-directory/pkg.oracle.com.key.pem /var/pkg/ssl
% cp -i download-directory/pkg.oracle.com.certificate.pem /var/pkg/ssl
```

3. **Add the Oracle Solaris Studio publisher.**

```
% pkg set-publisher \
-k /var/pkg/ssl/pkg.oracle.com.key.pem \
-c /var/pkg/ssl/pkg.oracle.com.certificate.pem \
-G '*' -g https://pkg.oracle.com/solarisstudio/release solarisstudio
```

4. **To list the Oracle Solaris Studio 12.4 packages, type:**

```
% pkg list -af 'pkg://solarisstudio/developer/solarisstudio-124/*'
NAME (PUBLISHER)                                  VERSION                    IFO
developer/solarisstudio-124/backend (solarisstudio) 12.4-1.0.0.0             ---
developer/solarisstudio-124/c++ (solarisstudio)   12.4-1.0.0.0               ---
developer/solarisstudio-124/cc (solarisstudio)    12.4-1.0.0.0               ---
developer/solarisstudio-124/code-analyzer (solarisstudio) 12.4-1.0.0.0       ---
developer/solarisstudio-124/dbx (solarisstudio)   12.4-1.0.0.0               ---
developer/solarisstudio-124/dbxtool (solarisstudio) 12.4-1.0.0.0             ---
developer/solarisstudio-124/dmake (solarisstudio) 12.4-1.0.0.0               ---
developer/solarisstudio-124/fortran (solarisstudio) 12.4-1.0.0.0             ---
developer/solarisstudio-124/library/c++-libs (solarisstudio) 12.4-1.0.0.0    ---
developer/solarisstudio-124/library/f90-libs (solarisstudio) 12.4-1.0.0.0    ---
developer/solarisstudio-124/library/math-libs (solarisstudio) 12.4-1.0.0.0   ---
developer/solarisstudio-124/library/oic-libs (solarisstudio) 12.4-1.0.0.0    ---
developer/solarisstudio-124/library/perflib (solarisstudio) 12.4-1.0.0.0     ---
developer/solarisstudio-124/library/studio-gccrt (solarisstudio) 12.4-1.0.0.0 ---
developer/solarisstudio-124/oic (solarisstudio)   12.4-1.0.0.0               ---
developer/solarisstudio-124/performance-analyzer (solarisstudio) 12.4-1.0.0.0 ---
developer/solarisstudio-124/studio-common (solarisstudio) 12.4-1.0.0.0       ---
developer/solarisstudio-124/studio-ide (solarisstudio) 12.4-1.0.0.0          ---
developer/solarisstudio-124/studio-ja (solarisstudio) 12.4-1.0.0.0           ---
developer/solarisstudio-124/studio-legal (solarisstudio) 12.4-1.0.0.0        ---
developer/solarisstudio-124/studio-zhCN (solarisstudio) 12.4-1.0.0.0         ---
```

If you use the Package Manager graphical application you will be able to locate the newly discovered packages when you restart the Package Manager.

5. **To do a dry run of an installation of the entire distribution to see what will be installed, type:**

```
# pkg install -nv solarisstudio-124
           Packages to install:       23
     Estimated space available: 33.95 GB
Estimated space to be consumed:  2.77 GB
```

```
       Create boot environment:       No
Create backup boot environment:       No
          Rebuild boot archive:       No

Changed packages:
solaris
  developer/library/lint
    None -> 0.5.11,5.11-0.175.1.0.0.20.0:20120709T162225Z
solarisstudio
  developer/solarisstudio-124
    None -> 12.4,5.11-1.0.0.0:20141014T181118Z
  developer/solarisstudio-124/backend
    None -> 12.4,5.11-1.0.0.0:20141014T180159Z
  developer/solarisstudio-124/c++
    None -> 12.4,5.11-1.0.0.0:20141014T180237Z
  developer/solarisstudio-124/cc
    None -> 12.4,5.11-1.0.0.0:20141014T180346Z
  developer/solarisstudio-124/code-analyzer
    None -> 12.4,5.11-1.0.0.0:20141014T180351Z
  developer/solarisstudio-124/dbx
    None -> 12.4,5.11-1.0.0.0:20141014T180354Z
  developer/solarisstudio-124/dbxtool
    None -> 12.4,5.11-1.0.0.0:20141014T180411Z
  developer/solarisstudio-124/dmake
    None -> 12.4,5.11-1.0.0.0:20141014T180414Z
  developer/solarisstudio-124/fortran
    None -> 12.4,5.11-1.0.0.0:20141014T180438Z
  developer/solarisstudio-124/library/c++-libs
    None -> 12.4,5.11-1.0.0.0:20141014T180343Z
  developer/solarisstudio-124/library/f90-libs
    None -> 12.4,5.11-1.0.0.0:20141014T180418Z
  developer/solarisstudio-124/library/math-libs
    None -> 12.4,5.11-1.0.0.0:20141014T180514Z
  developer/solarisstudio-124/library/oic-libs
    None -> 12.4,5.11-1.0.0.0:20141014T180527Z
  developer/solarisstudio-124/library/perflib
    None -> 12.4,5.11-1.0.0.0:20141014T180826Z
  developer/solarisstudio-124/library/studio-gccrt
    None -> 12.4,5.11-1.0.0.0:20141014T181033Z
  developer/solarisstudio-124/oic
    None -> 12.4,5.11-1.0.0.0:20141014T180515Z
  developer/solarisstudio-124/performance-analyzer
    None -> 12.4,5.11-1.0.0.0:20141014T181016Z
  developer/solarisstudio-124/studio-common
    None -> 12.4,5.11-1.0.0.0:20141014T181033Z
  developer/solarisstudio-124/studio-ide
    None -> 12.4,5.11-1.0.0.0:20141014T181037Z
  developer/solarisstudio-124/studio-ja
    None -> 12.4,5.11-1.0.0.0:20141014T181111Z
  developer/solarisstudio-124/studio-legal
    None -> 12.4,5.11-1.0.0.0:20141014T181115Z
  developer/solarisstudio-124/studio-zhCN
    None -> 12.4,5.11-1.0.0.0:20141014T181115Z
```

6. **To do a dry run of a single component, type:**

```
# pkg install -nv solarisstudio-124/package-name
```

For example, for the C++ compiler:

```
# pkg install -nv solarisstudio-124/c++
           Packages to install:        11
     Estimated space available:  33.95 GB
Estimated space to be consumed: 415.39 MB
       Create boot environment:        No
Create backup boot environment:        No
          Rebuild boot archive:        No

Changed packages:
solaris
  developer/library/lint
    None -> 0.5.11,5.11-0.175.1.0.0.20.0:20120709T162225Z
solarisstudio
  developer/solarisstudio-124/backend
    None -> 12.4,5.11-1.0.0.0:20141014T180159Z
  developer/solarisstudio-124/c++
    None -> 12.4,5.11-1.0.0.0:20141014T180237Z
  developer/solarisstudio-124/cc
    None -> 12.4,5.11-1.0.0.0:20141014T180346Z
  developer/solarisstudio-124/library/c++-libs
    None -> 12.4,5.11-1.0.0.0:20141014T180343Z
  developer/solarisstudio-124/library/math-libs
    None -> 12.4,5.11-1.0.0.0:20141014T180514Z
  developer/solarisstudio-124/library/studio-gccrt
    None -> 12.4,5.11-1.0.0.0:20141014T181033Z
  developer/solarisstudio-124/studio-common
    None -> 12.4,5.11-1.0.0.0:20141014T181033Z
  developer/solarisstudio-124/studio-ja
    None -> 12.4,5.11-1.0.0.0:20141014T181111Z
  developer/solarisstudio-124/studio-legal
    None -> 12.4,5.11-1.0.0.0:20141014T181115Z
  developer/solarisstudio-124/studio-zhCN
    None -> 12.4,5.11-1.0.0.0:20141014T181115Z
```

7. **Install either the entire distribution or specific packages.**

   - **To install the complete Oracle Solaris Studio 12.4 release including all compilers and tools, type:**

     ```
     # pkg install solarisstudio-124
     ```

   - **To install specific packages type the following:**

     ```
     # pkg install solarisstudio-124/package-name solarisstudio-124/package-name ...
     ```

     where the *package-name* is one of the packages listed when you did the dry run of the entire distribution installation. The packages are also listed in Table B-2.

Next Steps See the next section about additional installation options and tips. See Chapter 5, "After Installing Oracle Solaris Studio 12.4" for information about setting up user access and testing the installation.

Installing Only the Runtime Libraries on Oracle Solaris 11

The required runtime libraries are installed automatically when you install the complete `solarisstudio-124` package.

You must separately install the Oracle Solaris Studio runtime libraries on machines where Oracle Solaris Studio will not be installed but the runtime libraries are needed:

- The runtime libraries must be installed on any machines where applications built using Oracle Solaris Studio 12.4 will be executed.
- If you install runtime libraries in a global zone, you might also need to install them in the nonglobal zones as well.
- If an installation of Oracle Solaris Studio is shared over NFS, the runtime libraries must be installed on NFS client systems before the clients can use the shared installation.

▼ How to Install Only the Runtime Libraries on Oracle Solaris 11

This procedure is needed only for systems described above where the complete release has not been installed.

Before You Begin Verify that the Oracle Solaris 11 system has the been updated to required system libraries. See "Updating Oracle Solaris 11 System Libraries Required by Oracle Solaris Studio 12.4" on page 24.

Verify that the system is configured to use the Oracle Solaris Studio package repository as described in steps 1 through 3 in "How to Install Oracle Solaris Studio 12.4 from the Package Repository" on page 37.

You must have privileges to install software on the system.

1. **Become root or a user privileged to install software.**

2. **Verify that Oracle Solaris Studio 12.4 is not already installed on the system by typing the following:**

```
# pkg list 'developer/solarisstudio-124/*'
pkg list: No packages matching 'developer/solarisstudio-124/*' installed
```

3. **Install the libraries by typing the following:**

```
# pkg install solarisstudio-124/library/c++-libs \
solarisstudio-124/library/f90-libs \
solarisstudio-124/library/math-libs \
solarisstudio-124/library/perflib \
solarisstudio-124/library/studio-gccrt
```

You should see output similar to the following:

```
           Packages to install:  9
       Create boot environment: No
Create backup boot environment: No
DOWNLOAD                                PKGS         FILES    XFER (MB)   SPEED
Completed                                9/9     4872/4872  185.5/185.5 14.1M/s

PHASE                                          ITEMS
Installing new actions                   5189/5189
Updating package state database                Done
Updating package cache                          0/0
Updating image state                           Done
Creating fast lookup database                  Done
Reading search index                           Done
Updating search index                           9/9
Updating package cache                          2/2
```

4. View the installed packages by typing the following:

```
# pkg list  developer/solarisstudio-124/\*
NAME (PUBLISHER)                                  VERSION                    IFO
developer/solarisstudio-124/library/c++-libs (solarisstudio) 12.4-1.0.0.0              i--
developer/solarisstudio-124/library/f90-libs (solarisstudio) 12.4-1.0.0.0              i--
developer/solarisstudio-124/library/math-libs (solarisstudio) 12.4-1.0.0.0              i--
developer/solarisstudio-124/library/perflib (solarisstudio) 12.4-1.0.0.0               i--
developer/solarisstudio-124/library/studio-gccrt (solarisstudio) 12.4-1.0.0.0
 i--
developer/solarisstudio-124/studio-common (solarisstudio) 12.4-1.0.0.0                i--
developer/solarisstudio-124/studio-ja (solarisstudio) 12.4-1.0.0.0               i--
developer/solarisstudio-124/studio-legal (solarisstudio) 12.4-1.0.0.0               i--
developer/solarisstudio-124/studio-zhCN (solarisstudio) 12.4-1.0.0.0               i--
```

Additional required packages were automatically installed.

Next Steps Verify that users on this system are able to use Oracle Solaris Studio 12.4. See Chapter 5, “After Installing Oracle Solaris Studio 12.4”.

♦ ♦ ♦ CHAPTER 4

Installing Oracle Solaris Studio 12.4 From a Tar File

This chapter describes how to install Oracle Solaris Studio 12.4 from a tar file on any platform.

Downloading and Installing Oracle Solaris Studio 12.4 From a Tar File

The following instructions explain how to install Oracle Solaris Studio 12.4. These instructions apply to installation on Oracle Solaris 10, Oracle Solaris 11, and Linux platforms.

Note - When you install from a tar file you cannot get support or patches for the product from Oracle. If you want such support you must use a package installer. See Chapter 2, “Installing Oracle Solaris Studio 12.4 on Oracle Solaris 10 and Linux” or Chapter 3, “Installing Oracle Solaris Studio 12.4 On Oracle Solaris 11”.

▼ How to Install Oracle Solaris Studio 12.4 From a Tar File

You do not need to become `root` or have system administrator privileges to install this release using the tar file.

However, you must have privileges on Oracle Solaris 10 to install patches to the operating system that are needed by Oracle Solaris Studio. You must also have privileges on Oracle Solaris 11 to update the operating system for changes needed by Oracle Solaris Studio.

Before You Begin Make sure that your system meets the “System Requirements” in “Oracle Solaris Studio 12.4: Release Notes ” and has the “Required System Software Packages” in “Oracle Solaris Studio 12.4: Release Notes ”.

1. **If you have not already downloaded the tar file for your platform, go to the Oracle Solaris Studio tar file download page and save it to a temporary** *download-directory* **such as `/var/tmp`.**

2. **Change to the directory where you want to install the software.**

   ```
   % cd your-install-location
   ```

3. **Extract the tar file using the appropriate command for your platform:**

   ```
   % bzcat download-directory/SolarisStudio12.4-solaris-sparc-bin.tar.bz2 | tar -xf -
   ```

   ```
   % bzcat download-directory/SolarisStudio12.4-solaris-x86-bin.tar.bz2 | tar -xf -
   ```

   ```
   % bzcat download-directory/SolarisStudio12.4-linux-x86-bin.tar.bz2 | tar -xf -
   ```

   The contents are unpacked in a directory named: `SolarisStudio12.4-`*OS*`-`*platform*`-bin` where *OS* is `solaris` or `linux` and *platform* is `sparc` or `x86`.

   The *installation-directory* is *your-install-location*`/SolarisStudio12.4-`*OS*`-`*platform*`-bin`.

   On Linux, after the tar file is extracted, see Chapter 5, “After Installing Oracle Solaris Studio 12.4” for information about setting up user access and testing the installation.

4. **(Oracle Solaris 10 only) Install the operating system patches as described below.**

   The `SolarisStudio12.4-solaris-sparc-bin` and `SolarisStudio12.4-solaris-x86-bin` directories contain a script `install_patches.sh` for installing patches for Oracle Solaris 10.

   ```
   # installation-directory/install_patches.sh
   ```

   When the patch installation is complete, see Chapter 5, “After Installing Oracle Solaris Studio 12.4” for information about setting up user access and testing the installation.

5. **(Oracle Solaris 11 only) Install the operating system updates as described in “Updating Oracle Solaris 11 System Libraries Required by Oracle Solaris Studio 12.4” on page 24.**

♦ ♦ ♦ CHAPTER 5

After Installing Oracle Solaris Studio 12.4

This chapter describes tasks you might want to perform after you install Oracle Solaris Studio 12.4 to ensure that installation is complete.

Setting Up Access to the Developer Tools and Man Pages

If you did not enable the installer to create symbolic links in `/usr/bin` and `/usr/share/man`, you might need to change your `PATH` and `MANPATH` environment variables to enable use of the Oracle Solaris Studio 12.4 software.

Type the following commands on a system where you want to run Oracle Solaris Studio to determine whether you need to set up your access to the Oracle Solaris Studio 12.4 software tools and man pages:

```
% which cc
/opt/solarisstudio12.4/bin/cc
% man codean
Reformatting page.  Please wait... done.

User Commands                                           codean(1)

NAME
     codean - Command Line Interface of Code Analyzer
...
```

If the `which` command returns the message `no cc in` *paths* or the reports the path to another version of the `cc` command, you need to set your `PATH`.

If the `man` command returns `No manual entry for codean`, you need to set your `MANPATH`.

On Oracle Solaris platforms	Add the path */install-dir*`/solarisstudio12.4/bin` to your `PATH` environment variable.

	Add the path */install-dir*`/solarisstudio12.4/man` to your `MANPATH` environment variable.
On Linux platforms	Add the path */install-dir*`/oracle/solarisstudio12.4/bin` to your `PATH` environment variable.
	Add the path */install-dir*`/oracle/solarisstudio12.4/man` to your `MANPATH` environment variable.

By default the *install-dir* is `/opt`.

Note - You should not have any references to any other version of Oracle Solaris Studio in your `LD_LIBRARY_PATH` setting. If an incompatible library is referenced by tools such as Performance Analyzer, the tool might fail and the reason will be difficult to diagnose.

Testing Your Oracle Solaris Studio 12.4 Installation

You might want to test your installation, to make sure it was properly installed on your system. If programs in your installation do not start properly, see "Fixing a Failed Installation or Uninstallation" on page 54.

▼ How to Test Your Installation

Execute some commands to test the installation.

1. **Make sure the version of Java on your path is at least 1.7.0_25:**

```
% java -version
java version "1.7.0_45"
Java(TM) SE Runtime Environment (build 1.7.0_45-b18)
Java HotSpot(TM) Server VM (build 24.45-b08, mixed mode)
```

2. **Test your installation by checking the version of a program such as Performance Analyzer:**

```
% analyzer -V
analyzer: Oracle Solaris Studio Performance Analyzer 12.4 SunOS_i386  2014/10/09
```

3. **Start Performance Analyzer:**

```
% analyzer &
```

You should see the Welcome page of Performance Analyzer.

How to Test For Installation of System Patches or Updates

This procedure shows errors you might see when the required system patches or updates have not been installed.

In this example, Oracle Solaris Studio was installed from a tar file into the directory `/export/home/example/solarisstudio12.4` on an Oracle Solaris 10 system. The compiler successfully compiles a simple program when no compiler options are used, but returns errors when the `-O` option is used.

1. **Create a simple program such as the following `hello.c` file:**

```
#include <stdio.h>

main()
{
    printf("hello, world\n");
}
```

2. **Compile the program without any compiler options except `-V` to show the version info, and then run the `a.out` binary:**

```
% cc -V hello.c
cc: Sun C 5.13 SunOS_i386 2014/10/21
acomp: Sun C 5.13 SunOS_i386 2014/10/21
ld: Software Generation Utilities - Solaris Link Editors: 5.10-1.1505
% a.out
hello world
%
```

The program compiles and runs without issues.

3. **Compile again adding the `-O` option:**

```
% cc -O -V hello.c
cc: Sun C 5.13 SunOS_i386 2014/10/21
acomp: Sun C 5.13 SunOS_i386 2014/10/21
compiler(iropt) error:  iropt: dlsym() could not find function _mmheap_create

/export/home/example/solarisstudio12.4/lib/compilers/iropt'quit+0x3e [0x8285dfe]
/export/home/example/solarisstudio12.4/lib/compilers/iropt'0x24acfa [0x829acfa]
/export/home/example/solarisstudio12.4/lib/compilers/iropt'main+0x17 [0x8341417]
/export/home/example/solarisstudio12.4/lib/compilers/iropt'_start+0x72 [0x80947c2]
cc: Fatal error in /export/home/example/solarisstudio12.4/lib/compilers/iropt
cc: Status 134
```

The error occurs because the required system library `/lib/libmmheap.so.1` has not been updated or installed.

Next Steps If the program compiled with `-O`, there is nothing further you need to do.

If the program did not compile and produced similar errors, a system administrator must install the required updates or patches:

- For Oracle Solaris 10, see "Installing the Required Oracle Solaris 10 Patches" on page 19.
- For Oracle Solaris 11, see "Updating Oracle Solaris 11 System Libraries Required by Oracle Solaris Studio 12.4" on page 24.

Getting Started with Oracle Solaris Studio 12.4

See the following documents to get started with Oracle Solaris Studio 12.4:

"Oracle Solaris Studio 12.4: Overview "
"What's New in Oracle Solaris Studio 12.4 "

Go to the `Oracle Solaris Studio developer portal` for more information, videos, articles, and more.

♦ ♦ ♦ CHAPTER 6

Uninstalling the Oracle Solaris Studio 12.4 Software

This chapter includes information about the following:

Uninstalling the Oracle Solaris Studio 12.4 Software on Oracle Solaris 10 and Linux Platforms

This section explains how to uninstall the Oracle Solaris Studio 12.4 if it was installed using a package installer.

Uninstalling When Previous Releases of Oracle Solaris Studio or Sun Studio Software Are Installed

If you installed the Oracle Solaris Studio 12.4 software on an Oracle Solaris 10 or Linux system that has previous Oracle Solaris Studio or Sun Studio software installations, then only Oracle Solaris Studio 12.4 is removed when you run the uninstaller. The uninstaller removes all of the installed Oracle Solaris Studio 12.4 product components.

Choosing Local Display or Remote Display of the Uninstaller

You can display an uninstaller either locally or remotely while you are uninstalling Oracle Solaris Studio 12.4 software.

▼ Preparing for Uninstallation Using a Remote Display

1. **On the display computer, enable client access to the X server by typing the following on the command line:**

   xhost + *source-computer-name*

   Replace *source-computer-name* with the output of the `/usr/bin/hostname` command entered on the source computer, which is the computer that contains the downloaded files.

2. **Log in to the source computer using `ssh -X` and become a superuser (root).**

   You can use `ssh` with the `-X` option to forward the X display content back to the display computer. The source computer might not allow remotely logging in as root, so you might need to log in using your own username and become root after connecting to the source computer as shown below.

   ```
   % ssh -X source-computer-name
   Password: your password-on-source-computer
   % su
   Password: root-password-on-source-computer
   ```

3. **On the source computer, set your DISPLAY variable to the display computer.**

   If you use the C shell, type:

   ```
   # setenv DISPLAY display-computer-name:n.n
   ```

   If you use the Bourne shell, type:

   ```
   # DISPLAY=display-computer-name:n.n
   # export DISPLAY
   ```

   If you use the Korn shell, type:

   ```
   # export DISPLAY=display-computer-name:n.n
   ```

   Replace *display-computer-name* with the output of the `/usr/bin/hostname` entered on the display computer.

   You can type `echo $DISPLAY` on the display computer to see the display number, such as :2.0

Uninstalling the Software with the Uninstaller

You can uninstall all of the installed components of the Oracle Solaris Studio 12.4 software using the graphical uninstaller or the command-line uninstaller.

▼ How to Uninstall Using the Graphical Uninstaller on Oracle Solaris 10 and Linux

1. **Become superuser (root) by typing:**

   ```
   % su
   Password: root-password
   ```

2. **Go to the installation directory, for example, `/opt/solarisstudio12.4`.**

3. **Start the graphical uninstaller by typing:**

   ```
   # ./uninstall.sh &
   ```

4. **On the Summary page, click Uninstall to start uninstalling.**

   When the software has been uninstalled, the Setup Complete page is displayed.

5. **Click Finish to exit the uninstaller.**

▼ How to Uninstall With the Command-Line Uninstaller on Oracle Solaris 10 and Linux

1. **Become superuser (root) by typing:**

   ```
   % su
   Password: root-password
   ```

2. **Go to the installation directory, for example, `/opt/solarisstudio12.4`.**

3. **Start the command-line uninstaller by typing:**

   ```
   # ./uninstall.sh --non-interactive
   ```

   The uninstaller runs silently and returns your prompt when the software is uninstalled.

Uninstalling Oracle Solaris Studio 12.4 on Oracle Solaris 11 Platforms

To uninstall the entire Oracle Solaris Studio 12.4 software on an Oracle Solaris 11 platform, type:

```
% sudo pkg uninstall 'developer/solarisstudio-124/*'
```

Note - When you install Oracle Solaris Studio 12.4, some Oracle Solaris 11 packages are installed along with the Oracle Solaris Studio packages to satisfy dependencies. Uninstalling Oracle Solaris Studio 12.4 does not uninstall these Solaris 11 packages.

To uninstall individual components, type the following where *package-name* is one of the packages listed in Table B-2:.

```
% sudo pkg uninstall 'developer/solarisstudio-124/package-name'
```

Note that some packages cannot be uninstalled by themselves because other packages have dependencies on them.

Uninstalling the Tar Installation of Oracle Solaris Studio 12.4

If you installed the using the tar file, you can uninstall the software by deleting the */install-dir/solarisstudio12.4* directory.

♦ ♦ ♦ CHAPTER 7

Troubleshooting Installation and Uninstallation

This chapter describes how to fix problems that can occur during Oracle Solaris Studio 12.4 installation and uninstallation.

The chapter includes information about the following:

Graphical Installer Fails If Temporary Directory is Not World-Writable

If your `TMPDIR` environment variable is pointing to a directory that is not world-writable, then the graphical installer will fail to complete installation. To ensure that this situation does not occur, unset your `TMPDIR` environment variable or set it to a world-writable directory before starting the installer.

This problem also occurs if you specify a directory that is not world-writable with the installer's `--tempdir` command line option, so you should be sure to specify a world-writable directory.

Installation Fails on Oracle Linux if Temporary Directory is in /usr/local

If you use the command line option `--tempdir /usr/local/tmp` with the `solarisstudio.sh` installer script on Oracle Enterprise Linux 6, the installation fails silently. This also happens if your `TMPDIR` environment variable specifies a directory in `/usr/local`.

The workaround is to specify a directory that is not in the `/usr/local` directory.

GNOME Errors Might Occur When Starting Graphical Installer

On some systems, GNOME errors might occur when you start the graphical installer. If such errors prevent the graphical installer from starting, use the command-line installer.

Installer Lock File Might Prevent Installer From Starting

If the installer is interrupted or quits without completing the installation, a lock file might prevent you from restarting the installer. If you receive a message that an instance of the installer is already running when you try to start the installer, you might need to remove a lock file from the `/.nbi` directory.

Fixing a Failed Installation or Uninstallation

On Oracle Solaris 10 platforms, the installer stores information about the Oracle Solaris Studio 12.4 packages it has installed in two places:

- The `productregistry` file, the Oracle Solaris Product Registry database
- The `.nbi` directory in the system root directory (`/`)

On Linux platforms, the installer stores information on which Oracle Solaris Studio 12.4 packages it has installed in two places:

- The database of installed packages
- The `.nbi` directory in the system root directory (`/`)

If some packages were not properly installed, you will have problems using the Oracle Solaris Studio software, and you might have problems installing additional components or uninstalling the software.

For example, if the installer quit before installation was complete, the uninstaller (`uninstall.sh`) might not be present in your installation directory. Or if you used the `pkgadd` command to install any of the packages, the `productregistry` file or the `product-cache` directory in the `/.nbi` directory might be corrupted. In such cases, the uninstaller cannot uninstall the packages and you need to remove them in the Oracle Solaris product registry. See "Fixing a Failed Installation or Uninstallation on Oracle Solaris 10 Platforms" on page 55 for instructions on how to remove the Oracle Solaris Studio packages.

If the uninstaller quits before all the product files are deleted, rerunning the uninstaller will not delete the remaining files and you need to remove them in the correct way to complete the uninstallation of the product.

Do not uninstall the product by removing the installation directory. Packages will still be registered in the `productregistry` database and the `/.nbi` directory, and the installer will not run.

Fixing a Failed Uninstallation Using the Uninstaller

In some cases, the Oracle Solaris Studio packages might be correctly installed and the uninstaller is present in the installation directory, but the uninstaller fails because the `/.nbi` is corrupted. In this situation, you can force the uninstaller to remove the Oracle Solaris Studio packages and the installation directory by specifying the `--force-uninstall` when you start the uninstaller.

When you run the uninstaller with this option, it does not delete the package entries from the `/.nbi` directory, which has the following consequences:

- When you run the installer to reinstall the Oracle Solaris Studio release you uninstalled, it does not allow you to specify which components to install, and installs all of the packages that were previously installed.
- When you run the installer for any Oracle Solaris Studio release, it warns you that the `/.nbi` directory is corrupted, and gives you the option of proceeding with the installation or canceling it.

▼ Fixing a Failed Installation or Uninstallation on Oracle Solaris 10 Platforms

1. **Become superuser by typing:**

```
su
Password: root-password
```

2. **Open the Oracle Solaris Product Registry tool by typing:**

   ```
   /usr/bin/prodreg &
   ```

3. **In the left pane of the tool, expand the Unclassified Software node.**

4. **Select all of the package names containing Oracle Solaris Studio 12.4 and click Uninstall. Follow the instructions to remove the packages.**

5. **Click Exit to exit the tool.**

6. **Remove the `/.nbi` directory by typing:**

   ```
   rm -r /.nbi
   ```

▼ Fixing a Failed Installation or Uninstallation on Linux Platforms

1. **Become superuser by typing:**

   ```
   su
   Password: root-password
   ```

2. **Find all of the Oracle Solaris Studio packages by typing:**

   ```
   rpm -q -a | grep solarisstudio12.4
   ```

3. **Remove each Oracle Solaris Studio 12.4 rpm package by typing:**

   `rpm -e` *package-name*

   Oracle Solaris Studio 12.4 rpm packages have the suffix `12.4`, for example, `solarisstudio12.4-cc-12.4-1`. Be careful not to remove packages from Sun Studio releases, which have different suffixes.

4. **Remove the `/.nbi` directory by typing:**

   ```
   rm -r /.nbi
   ```

Installation Will Fail on an NFS-Mounted Filesystem If Write Permission is Not Set

If installation fails on an NFS-mounted filesystem, ensure that you have write permission on that filesystem. You can check for write permission by following these instructions. For

information about installing on an NFS-mounted filesystem, see “Installing to an NFS-Mounted File System” on page 13.

1. Check for write permission by typing:

   touch /net/*remote-system***/opt/testfile**

   If you receive an error message, then you do not have write permission. For example:

   ```
   touch /net/harker/opt/testfile
   touch: /net/harker/opt/testfile cannot create
   ```

2. Choose another installation directory on which you have write permission, or contact your system administrator to change the filesystem permissions.

Viewing the Installation Log File

When you install the Oracle Solaris Studio 12.4 software, a log file that contains a record of the installation session is automatically generated. Log files are stored in the `/.nbi/log` directory.

♦ ♦ ♦ APPENDIX A

Command-Line Options for the Installer, Uninstaller, and `install_patches` Utility for Oracle Solaris 10 and Linux Platforms

This appendix describes all the options for the package installer and uninstaller..

Command-Line Options for the Graphical Installer

The following command-line options are valid when you are starting the graphical installer.

`--current-zone-only`	Install only in the current zone. When you run the installer in the global zone, this option makes the installed product available only in that zone.
`--help`	Display information on the options.
`--ignore-arch`	Disable system architecture checking (Oracle Solaris based systems only)
`--javahome` *directory*	Use the JDK in directory when running the installer. This option is needed when the installer cannot locate a JDK in a standard location on your system, and you need to point it to one.
`--libraries-only`	Perform runtime libraries only installation.
`--locale` *locale*	Override the default locale for the installer with the specified locale. Valid locales are `en` (English), `ja` (Japanese), and `zh` (Simplified Chinese).
`--nfs-server`	Use NFS server installation mode, in which the installer does not check the server for the required Oracle Solaris patches or create symbolic links in the `/usr/bin` directory.
`--output` *output_file*	Write all installer output to the specified file.
`--record` *state_file*`.xml`	Record an installer session in the graphical installer so that you can use repeat the installation on another system with the command-line installer. This option is especially useful when you want to install a subset of the product components on multiple systems.

`--tempdir` *directory*	By default, the installer extracts temporary data into the `/tmp` directory. If there is not sufficient space in the `/tmp` directory on your system, you can specify another directory for the installer to use.
`--verbose`	Write verbose output to the console.

Command-Line Options for the Command-Line Installer

The following command-line options are valid when you are starting the `solarisstudio.sh` command-line installer.

`--create-symlinks`	Create symbolic links in the `/usr/bin` and `/usr/share/man` directories to the Oracle Solaris Studio 12.4 software and man pages.
`--current-zone-only`	Install only in the current zone. When you run the installer in the global zone, this option makes the installed product visible only in that zone.
`--extract-installation-data` *directory*	Extract installation data, do not perform installation.
`--generate-desktop-distr`	Generate a zip file containing a distribution of the IDE (and the Code Analyzer, if you are installing it) configured for a desktop operating system. The zip file called `-desktop-distribution.zip` is located in the `lib` directory of your Oracle Solaris Studio installation.
`--help`	Display information on the options.
`--ignore-arch`	Disable system architecture checking (Oracle Solaris based systems only)
`--install-components` *component_name,component_name,...*	Install only the specified components. The valid *component_name*s are: `c-and-cpp-compilers`, `code-analyzer-tool`, `dbx-debugger`, `dbxtool`, `dlight-observability-tool`, `dmake`, `fortran-compiler`, `oic`, `performance-and-thread-analysis-tools`, `performance-library`, and `studio-ide`.
`--installation-location` *directory*	Install Oracle Solaris Studio software in the specified directory instead of in the default installation directory `/opt`.
`--javahome` *directory*	Use the JDK in directory when running the installer. This option is needed when the installer cannot locate a JDK in a standard location on your system, and you need to point it to one.
`--libraries-only`	Perform runtime libraries only installation.
`--locale` *locale*	Override the default locale for the installer with the specified locale. Valid locales are `en` (English), `ja` (Japanese), and `zh` (Simplified Chinese).
`--nfs-server`	Use NFS server installation mode, in which the installer does not check the server for the required Oracle

	Solaris patches or create symbolic links in the `/usr/bin` directory.
`--non-interactive`	Start the installer in command-line mode.
`--print-components-description`	Lists the component names you can use with the `-install-components` option
`--silent-logs-dir` *directory*	Write the installer log file to the specified directory.
`--state` *state_file* `.xml`	Play back the state file recorded by the graphical installer to silently repeat an installation session. This option lets you install a subset of the product components in command-line mode.
`--tempdir` *directory*	By default, the installer extracts temporary data into the `/tmp` directory. If there is not sufficient space in the `/tmp` directory on your system, you can specify another directory for the installer to use.
`--use-alternative-root` *directory*	Install in the specified root directory instead of the default root directory `/`. Specify the full path of the directory to use as the alternate root. This option is valid only on systems running Oracle Solaris 10.
`--verbose`	Write verbose output to the console.

Command-Line Options for the Uninstaller

The following options are valid when starting the `uninstall.sh` uninstaller.

`--force-uninstall`	Remove the Oracle Solaris Studio 12.4 packages and the installation directory without removing the `/.nbi` directory.
`--javahome` *directory*	Use the JDK in directory when running the uninstaller. This option is needed when the uninstaller cannot locate a JDK in a standard location on your system, and you need to point it to one.
`--locale` *locale*	Override the default locale for the uninstaller with the specified locale. Valid locales are `en` (English), `ja` (Japanese), and `zh` (Simplified Chinese). This option is valid only for the graphical uninstaller.
`--non-interactive`	Run the uninstaller in command-line mode and uninstall installed components of the software.
`--output` *output_file*	Write all uninstaller output to the specified file. This option is valid only for the graphical uninstaller.
`--tempdir` *directory*	By default, the uninstaller extracts temporary data into the `/tmp` directory. If there is not sufficient space in the `/tmp` directory on your system, you can specify another directory for the uninstaller to use.
`--use-alternative-root` *directory*	Uninstall from the specified root directory instead of the default root directory `/`. This option is valid only for the

	command-line uninstaller and only on systems running Oracle Solaris.
`--verbose`	Write verbose output to the console.

Command-Line Options for the `install_patches.sh` Utility

The following options are valid when starting the `install_patches.sh` utility.

`-G`	Add patches to packages in the current zone only. When you run the utility in the global zone, this option makes the patches available in that zone only.
`-p`	Install Oracle Solaris Studio product patches if available. If you specify this option and no product patches are available, the utility displays a message telling you so.
`-l` *locale*	Override the default locale for the utility with the specified locale. Valid locales are `en` (English), `ja` (Japanese), and `zh` (Simplified Chinese).
`-R` *directory*	Install patches in the specified root directory instead of the default root directory `/`. Specify the full path of the directory to use as the alternate root.
`-h`	Display information on the options.

♦ ♦ ♦ APPENDIX B

Components and Package Names in Oracle Solaris Studio

This appendix lists the components and packages that comprise the Oracle Solaris Studio 12.4 software for each platform.

- Table B-1 lists the software package configuration and component information for Oracle Solaris 10.
- Table B-2 lists the software package configuration and component information for Oracle Solaris 11.
- Table B-3 lists the Oracle Solaris Studio 12.4 RPM package and component information for Oracle Linux.

TABLE B-1 Oracle Solaris Studio 12.4 Package Names for Oracle Solaris 11

Component	Package Name
C++ Compiler	`SPRO-cc++`
C++ libraries	`SPRO-c++-libs`
C Compiler	`SPRO-cc`
C and C++ Runtime libraries	`SPRO-studio-gccrt`
Fortran Compiler	`SPRO-fortran`
Fortran libraries	`SPRO-f90-libs`
Code Analyzer	`SPRO-code-analyzer`
dbx Debugger	`SPRO-dbx`
dbxtool Graphical Debugger	`SPRO-dbxtool`
Distributed Make	`SPRO-dmake`
IDE	`SPRO-studio-ide`
Performance Analyzer and Thread Analyzer	`SPRO-performance-analyzer`
Math Libraries	`SPRO-math-libs`
Performance Library	`SPRO-perflib`
Oracle Instant Client	`SPRO-oic`
	`SPRO-oic-libs`
Support files	`SPRO-backend`

Component	Package Name
	SPRO-studio-common
	SPRO-studio-bin-links
Localization packages	SPRO-studio-ja
	SPRO-studio-zhCN
Legal files	SPRO-studio-legal

TABLE B-2 Oracle Solaris Studio 12.4 Package Names for Oracle Solaris 11

Component	Package Name
C++ Compiler	c++@12.4-1.0.0.0
C++ libraries	library/c++-libs@12.4-1.0.0.0
C Compiler	cc@12.4-1.0.0.0
C and C++ Runtime libraries	library/studio-gccrt@12.4-1.0.0.0
Fortran Compiler	fortran@12.4-1.0.0.0
Fortran libraries	library/f90-libs@12.4-1.0.0.0
Code Analyzer	code-analyzer@12.4-1.0.0.0
dbx Debugger	dbx@12.4-1.0.0.0
dbxtool Graphical Debugger	dbxtool@12.4-1.0.0.0
Distributed Make	dmake@12.4-1.0.0.0
IDE	studio-ide@12.4-1.0.0.0
Performance Analyzer and Thread Analyzer	performance-analyzer@12.4-1.0.0.0
Math Libraries	library/math-libs@12.4-1.0.0.0
Performance Library	library/perflib@12.4-1.0.0.0
Oracle Instant Client	oic@12.4-1.0.0.0
Oracle Instant Client libraries	library/oic-libs@12.4-1.0.0.0
Support files	backend@12.4-1.0.0.0
	studio-common@12.4-1.0.0.0
Localization packages	studio-ja@12.4-1.0.0.0
	studio-zhCH@12.4-1.0.0.0
Legal files	studio-legal@12.4-1.0.0.0

TABLE B-3 Oracle Solaris Studio 12.4 RPM Package Names for Oracle Linux and Red Hat Linux

Component	Package Name
C++ Compiler	solstudio-c++-12.4-1.x86_64.rpm
C Compiler	solstudio-cc-12.4-1.x86_64.rpm
C and C++ Libraries	solstudio-c++-libs-12.4-1.x86_64.rpm
	solstudio-compiler-oslibs-12.4-1.x86_64.rpm

Component	Package Name
	solstudio-studio-gccrt-12.4-1.x86_64.rpm
Fortran Compiler	solstudio-fortran-12.4-1.x86_64.rpm
Fortran libraries	solstudio-f90-libs-12.4-1.x86_64.rpm
Code Analyzer	solstudio-code-analyzer-12.4-1.x86_64.rpm
dbx Debugger	solstudio-dbx-12.4-1.x86_64.rpm
dbxtool Graphical Debugger	solstudio-dbxtool-12.4-1.x86_64.rpm
Distributed Make	solstudio-dmake-12.4-1.x86_64.rpm
IDE	solstudio-studio-ide-12.4-1.x86_64.rpm
	solstudio-dbxtool-12.4-1.x86_64.rpm
Performance Analyzer and Thread Analyzer	solstudio-performance-analyzer-12.4-1.x86_64.rpm
Performance Library	solstudio-perflib-12.4-1.x86_64.rpm
Oracle Instant Client	solstudio-oic-12.4-1.x86_64.rpm
	solstudio-oic-libs-12.4-1.x86_64.rpm
Support files	solstudio-backend-12.4-1.x86_64.rpm
	solstudio-studio-common-12.4-1.x86_64.rpm
Localization packages	solstudio-ja-12.4-1.x86_64.rpm
	solstudio-zhCN-12.4-1.x86_64.rpm
Legal files	solstudio-studio-legal-12.4-1.x86_64.rpm

♦ ♦ ♦ APPENDIX C

Patch Identification Numbers and Descriptions for Oracle Solaris 10 Platforms

Operating system patches for Oracle Solaris 10 are provided for the Oracle Solaris Studio 12.4 software. These patches are required for the proper operation of the compilers and tools in this release. This appendix lists Oracle Solaris 10 patches that are included with this release.

If these patches are not already installed on your system, you can install them using the `install_patches.sh` script that is included in the directory that contains the installer. See "Installing the Required Oracle Solaris 10 Patches" on page 19 for more information.

To determine which version of a patch is installed on your system type the following command where *patch-id* is the patch number without the version number:

```
% showrev -p | grep patch-id
```

For example, the following command shows that you need to update patch 118683 because it is version 07 and version 13 is required:

```
% showrev -p | grep 118683
Patch: 118683-07 Obsoletes:  Requires:  Incompatibles:  Packages: SUNWsprot
```

Table C-1 lists the patch identification numbers and descriptions of the required patches for Oracle Solaris 10 on SPARC based systems.

Table C-2 lists the patch identification numbers and descriptions of the required patches for Oracle Solaris 10 on x86 based systems.

TABLE C-1 Required Patches for Oracle Solaris 10 on SPARC Based Systems

Patch Identification Number	Patch Description
118683-13	Assembler and `libxprof` patch (required for `-xprofile` option)
120753-14	`libmtsk` patch
119963-31	Shared library patch for C++
147436-01	Linker patch (Oracle Solaris 10 8/11 only)

TABLE C-2 Required Patches for Oracle Solaris 10 on x86 Based Systems

Patch Identification Number	Patch Description
119961-13	Assembler and `libxprof` patch (required for `-xprofile` option)
120754-14	`libmtsk` patch
119964-31	Shared library patch for C++
147437-02	Linker patch (Oracle Solaris 10 8/11 only)

♦ ♦ ♦ APPENDIX D

Version Numbers of the Oracle Solaris Studio12.4 Components

This appendix provides the version numbers of the components of the Oracle Solaris Studio12.4 software.

TABLE D-1 Version Numbers of the Oracle Solaris Studio12.4 Components

Component	Version Number
C compiler	5.13
C++ compiler	5.13
C++ Standard Library	default (libCstd)
GCC C++ 11 Runtime Libraries and Headers	4.8.2
Code Analyzer	12.4
dbx debugger	8.0
dbxtool	12.4
dmake	8.2
Fortran 95 compiler	8.7
IDE	12.4
Locklint	2.6
OpenMP Support	4.0
Performance Analyzer	12.4
STLport	4.5.3
Oracle Solaris Studio Performance Library	2014/10/02
Thread Analyzer	12.4

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