Chapter 3

Starting an Installation

One of two procedures is used to invoke Inst for an installation session, depending on whether you plan a miniroot installation or a live installation. This chapter explains how to determine what type of installation is required and provides instructions for invoking Inst for each installation method. It also explains what you must do to prepare for the session before invoking Inst.

This chapter contains these sections:

- “Determining the Installation Method”
- “Preparations Checklist”
- “About Miniroot Installations”
- “Starting a Miniroot Installation”
- “Starting a Live Installation”

Determining the Installation Method

If the software product that you plan to install contains subsystems that require a miniroot installation, you must shut down the target system and install them from the miniroot; you cannot install these products by a live installation (see “Software Installation Methods” on page 10). To determine whether the software that you plan to install requires a miniroot installation, read the product release notes. Release notes list all subsystems in the product that require miniroot installation.

A miniroot installation is also required under these conditions:

- when the target is being upgraded from a pre-6.2 version of IRIX to IRIX 6.2 or later
- when the target has software problems that prevent successful live installations
- when the target’s system disk is new or empty
- when recovering from severe system crashes (system recovery)

Preparations Checklist

Complete these preparations before starting any installation session:

1. Determine the appropriate installation method for your product.

   "Determining the Installation Method," above, explains how to make this determination.

2. Back up the target system.

   Backing up essential files on the target system is not normally required but it is strongly recommended as protection against unforeseen problems. See "Backing Up the Target Systems" on page 21 for details.

3. Plan the software installation order.

   Inst manages the order automatically when you install from a single CD or distribution directory. But if you are installing from more than one CD or distribution directory, be sure you have planned the order of installation. For instructions, see "Planning the Order of Installation" on page 22.

4. If the software distribution is located on a remote server, make these preparations:

   - Verify that the guest account or an alternate account is available to Inst on the remote distribution server. See "Configuring an Installation Account" on page 19 for details.
   - Jot down the host name and pathname of the distribution directory on the remote server. If you plan to do a miniroot installation, also jot down the network address of the remote server. See "Getting the Server's Name and Address" on page 24 for instructions.

5. If you plan a miniroot installation, make these additional preparations:

   - Enable BOOTP forwarding on any routers that operate between the installation server and the target system. See "Enabling BOOTP Forwarding on Routers" on page 16 for instructions.
   - Enable TFTP access to the remote distribution server. See "Enabling TFTP Access on an Installation Server" on page 17 for instructions.
   - If your distribution source is a locally mounted CD, be prepared to specify the controller and unit number of the CD-ROM drive. See "Getting CD-ROM Device Numbers" on page 23 for instructions.
   - Be prepared to compare the IP address of the target with the address setting in the target's PROM. See "Getting the Target's Name and Address" on page 24

for instructions on determining IP addresses. Instructions for checking the PROM address are given in “Preliminary PROM Monitor Procedure” on page 30.

About Miniroot Installations

For installations where fundamental IRIX services, such as filesystem management, are either unavailable or unreliable, a special installation method is required. This method, known as a *miniroot installation*, relies on services in the target’s programmable read-only memory (PROM) to transfer special installation tools, including Inst, from the distribution source. This transfer is referred to as *loading the miniroot*.

During a miniroot load, the miniroot is transferred to the swap partition on the target by a program called the *sash*, or standalone shell. The *sash* is a a component of the installation tools that accompany some products (see Figure 1-1).

Caution: The miniroot is copied from the distribution source to partition 1 of your system disk, which is normally the swap partition. If you have customized your system in such a way that partition 1 contains valid data, be sure to back up the data in partition 1 prior to the miniroot installation to avoid losing it.

The miniroot contains an IRIX kernel, Inst, and other tools and files. By default, the miniroot restricts the target to installation operations, and the target operates like an ASCII terminal, even on graphics systems. These restrictions preserve the integrity of the operating system while it is being updated.

You access the installation tools on a distribution source from the *PROM monitor*, the user interface to the programmable read-only memory (PROM) of the target system. The commands that you enter using the PROM monitor load the miniroot and automatically invoke Inst. The PROM monitor features menus and prompts and a command line interpreter, the *command monitor*, which supports a small set of commands for performing simple functions.

Starting a Miniroot Installation

To start a miniroot installation, you invoke the PROM monitor on the target system and load the miniroot from the distribution source. The procedure that you use to load the miniroot differs for local and remote distribution sources. Use two of the three procedures in this section to start a miniroot installation:

- Perform "Preliminary PROM Monitor Procedure," which follows, for all miniroot installations.
- Then perform "Loading From a Local CD" on page 32 or "Loading From a Remote Distribution Source" on page 34, depending on the location of your distribution source.

Preliminary PROM Monitor Procedure

The user interface to the PROM monitor varies slightly on different target models and hardware configurations. For example, on graphics systems, some PROM monitor menus contain icons that you click to make selections. If you are using an ASCII console on a graphics system, all prompts and menus appear as text. Regardless of differences in the user interface, the tasks that you perform from the PROM monitor are the same for all computer models.

This procedure explains how to invoke the PROM monitor and reset the network address (*netaddr*) if you determine that it is necessary:

1. Shut down the target system.

   You can shut down the target system by selecting System Shutdown from the System tool. Or you can shut it down from an IRIX shell:

   ```
   % su -
   Password:
   # shutdown
   ```

   After the shutdown, you see this prompt:

   ```
   Okay to power off the system now.
        Press any key to restart.
   ```

2. Begin the restart sequence.

   Press any key (such as **<Enter>**) to begin the system restart, but do not allow the restart to complete; go immediately to step 3.

Note: If the system restarts before you are able to complete step 3, repeat steps 1 and 2 of this procedure.

3. Go to the System Maintenance menu.

   Type **`<Esc>`** to go to the System Maintenance menu when you see this message:

```
Starting up the system...
To perform system maintenance instead, press <Esc>.
```

4. Stop the system.

   When you see the *Stop for Maintenance* button, click the *Stop* button or press **`<Esc>`** to go to the System Maintenance menu. The System Maintenance menu is shown in Figure 3-1.

Figure 3-1 The System Maintenance Menu

If you are using an ASCII console, the menu appears in text, as shown in Figure 3-2.

```
System Maintenance Menu

1)  Start System
2)  Install System Software
3)  Run Diagnostics
4)  Recover System
5)  Enter Command Monitor

Option? 5
```

Figure 3-2 System Maintenance Menu on an ASCII Screen

5. Start the command monitor from the System Maintenance menu.

   Click the *Enter Command Monitor* icon to start the command monitor. Or, if you are using an ASCII console, type the number of the *Enter Command Monitor* selection (in Figure 3-2, the number is 5).

After your entry, the command monitor prompt is displayed. It looks similar to the one shown here:

```
Command Monitor. Type "exit" to return to the menu.
>>
```

6. Use the *printenv* command to display PROM variable settings.

   `>>` **`printenv`**

   The output of *printenv* shows the PROM setting for the network address as the value of *netaddr*, as shown in this example:

   ```
   netaddr=123.45.6.78
   ```

7. Reset the *netddr* variable, if needed.

   If the value of *netaddr* is different from the target address that you obtained from the *ping* command (see "Getting the Target's Name and Address" on page 24), reset the PROM address to the address that you obtained from *ping*. Use this command to set the address:

   `>>` **`setenv netaddr`** *ping_address*

Loading From a Local CD

The procedure below explains how to load the miniroot from a distribution CD that is mounted locally on the target. (If you plan to install from a remote distribution, see "Loading From a Remote Distribution Source" on page 34.) This procedure also explains the informational messages that you should check when Inst is invoked from the miniroot load.

Use this procedure to load the miniroot from a local CD:

1. Exit the command monitor.

   `>>` **`exit`**

   The System Maintenance menu is displayed after your entry.

2. Choose *Install System Software* from the System Maintenance menu.

   On most screens, the System Maintenance menu is similar to the one shown in Figure 3-1 (page 31). Click the *Install System Software* icon on this menu to display a selection of distribution sources.

If you are using an ASCII console, the menu appears in text (see Figure 3-2, page 31). Type the number of the *Install System Software* selection to display a list of distribution choices (in Figure 3-2, the number is 2).

3. Specify the location of the installable software.

   Select the local CD-ROM icon to specify the location of the software distribution. Or, if you are using an ASCII console, enter the number of the Local CD-ROM selection.

4. Insert the first CD.

   Be sure to insert the CD containing the installation tools into the caddy with the label side up. Then insert the caddy into the CD-ROM drive.

5. Load the miniroot and run Inst.

   Click the *Continue* button or press **`<Ent>`** to start the miniroot load and run Inst. These messages appear after your entry:

   ```
   Obtaining installation tools
   Copying installation tools to disk
   ```

6. Wait for the miniroot to be copied.

   Copying the miniroot to the swap partition of the target takes several minutes. During that time, a message bar appears to indicate the status of the copy (rows of dots appear on ASCII console screens). When the copy is completed, some informational messages are posted and the Inst Main menu is displayed. The informational messages are similar to these:

   ```
   IRIX Release version cpu Version longversion System V
   Copyright 1987-1994 Silicon Graphics, Inc.
   All Rights Reserved.
   ```

   ```
   ipg0: missing
   enp0: missing
   fxp0: missing
   ```

   These messages are normal and do not indicate a problem; one line is posted for each type of device that is supported by the kernel and not detected on the target. After the device messages, startup messages are displayed:

   ```
   Creating miniroot devices, please wait...
   ```

   ```
   Current system date is date
   ```

```
Mounting file systems:

    /dev/miniroot          on  /
    /dev/dsk/dks0d1s0      on  /root
    /root/dev/usr          on  /root/usr

Invoking software installation.
```

7. Reset the system date, if needed.

   Notice that the startup messages include a posting of the system date. If the date is off by more than a few minutes, reset it with this command (see "Changing the Network Timeout Value" on page 115 if you need more information):

   `Inst>` **`admin date`** *mmddhhmmyy*

   To recheck the date, display it again with this command:

   `Inst>` **`admin date`**

8. Check the distribution source that is specified for the installation.

   The local CD distribution directory, */CDROM/dist*, should be posted as the distribution specification in a message above the Inst Main menu (look ahead to Figure 5-1 for an illustration of the Main menu):

   `Default distribution to install from:` *source*
   `For help on inst commands, type "help overview".`

The miniroot is successfully loaded on the target system and Inst is invoked. Go on to the procedures in Chapter 5, "Using Supplementary Menus" to install software.

Loading From a Remote Distribution Source

The procedure below explains how to load the miniroot from a CD or directory located on a remote server (if you plan to install from a local CD, see "Loading From a Local CD" on page 32). This procedure also explains the informational messages that you should check when Inst is invoked from the miniroot load.

Use this procedure to load the miniroot from a remote distribution source:

1. Exit the command monitor.

   `>>` **`exit`**

   The System Maintenance menu is displayed.

2. Choose "Install System Software" from the System Maintenance menu.

   On most systems, the System Maintenance menu is similar to the one shown in Figure 3-3. Click the *Install System Software* icon on this menu to display a list of distribution choices.

Figure 3-3 System Maintenance Menu

   If you are using an ASCII console, the menu appears in text, as shown in Figure 3-4. Type the number of the *Install System Software* selection to display a list of distribution choices (in Figure 3-4, the number is 2).

```
System Maintenance Menu

1)  Start System
2)  Install System Software
3)  Run Diagnostics
4)  Recover System
5)  Enter Command Monitor

Option? 2
```

Figure 3-4 System Maintenance Menu on an ASCII Screen

3. Specify the location of the installable software.

   Click the *Remote Directory* icon to specify the location of the remote distribution. If you are using an ASCII console, enter *2*.

4. Specify the hostname of the installation server.

   After you select *Remote Directory*, you are prompted to enter the name of the remote host that contains the distribution. Specify the hostname of the installation server, as shown in this example:

   `Enter the name of the remote host:`*installation_server*

5. Specify the pathname of the distribution source.

   After you enter the name of the installation server, you are prompted to enter the name of the remote distribution directory. If your distribution source is a remote CD, your entry resembles the example shown below. In your entry, substitute the mount directory of the CD-ROM drive for *CDdir*:

   `Enter the remote directory:`*CDdir*__`/dist`__

   If your distribution source is a remote directory, your entry resembles the example shown below. Substitute the pathname of the distribution directory for *distdir*:

   `Enter the remote directory:`*distdir*

   After your entry, you see a message like the examples below:

   `Remote directory` *CDdir*`/dist from server` *installation_server*`.`
   `Remote directory` *distdir* `from server` *installation_server*`.`

6. Click the *Install* button or press **<Enter>** to start the miniroot load.

   After your entry, the installation tools and miniroot are copied to the target. These messages appear while the copy is in progress:

   `Obtaining installation tools from` *server:CDdir*`/dist`
   `Copying installation tools to disk`

7. Wait for the miniroot to be copied.

   Copying the miniroot to the swap partition of the target takes several minutes. During that time, a message bar appears to indicate the status of the copy (rows of dots appear on ASCII console screens). When the copy is completed, some informational messages are posted and the Inst Main menu is displayed. The informational messages are similar to these:

   `IRIX Release` *version cpu* `Version` *longversion* `System V`
   `Copyright 1987-1994 Silicon Graphics, Inc.`
   `All Rights Reserved.`

   ```
   ipg0: missing
   enp0: missing
   fxp0: missing
   ```

   These messages are normal and do not indicate a problem; one line is posted for each type of device that is supported by the kernel and not detected on the target.

After the device messages, startup messages are displayed:

```
Creating miniroot devices, please wait...
```

`Current system date is` *date*

```
Mounting file systems:

    /dev/miniroot          on   /
    /dev/dsk/dks0d1s0      on   /root
    /root/dev/usr          on   /root/usr

Invoking software installation.
```

8. Reset the system date, if needed.

   Notice that the startup messages included a posting of the system date. If the date is off by more than a few minutes, reset it with this command (see "Changing the Network Timeout Value" on page 115 if you need more information):

   `Inst>` **`admin date`** *mmddhhmmyy*

   You can display the date again with this command:

   `Inst>` **`admin date`**

9. Check the distribution source that will be used for the installation.

   The location of the distribution source that you specified in the miniroot load procedure is posted in a message above the Inst Main menu (look ahead to Figure 4-2 for an illustration of the Main menu):

   `Default distribution to install from:` *source*
   `For help on inst commands, type "help overview".`

The miniroot is successfully loaded on the target system and Inst is started. Go on to the procedures in Chapter 5, "Using Supplementary Menus" to install software.

Starting a Live Installation

It is not necessary to shut down the target system to perform a live installation. However, it is always advisable to warn other users to shut down applications that will be affected by the installation. During a live installation, Inst creates copies of some files that are held open by the operating system or by applications. For this reason, live installations usually require extra disk space temporarily.

To install software, you must start Inst as the superuser. If you start Inst as a regular user, you are assigned read-only permissions, which prevents you from making any changes to the installed software.

Use this command to start Inst from the command line of an IRIX shell:

```
% su
Password:
# inst
```

After your entry, the default location of the distribution is posted and the Inst Main menu is displayed (see Figure 4-2).

Note: When starting a live installation, you can use arguments to the *inst* command to modify the way that Inst operates. Some of these arguments are described in Chapter 6, "Inst for Experts." A complete list of *inst* arguments is given in the inst reference page.