Installing Components

This chapter explains the procedures you must follow to correctly install Broadband Provisioning Registrar (BPR) components in a Solaris operating system environment.

This chapter contains the following topics:

- Installing components using the GUI
- Installing components using the CLI
- Uninstalling BPR

Installing Components Using the GUI

This section explains the procedures that you follow to install one or more of components of BPR using the GUI.

You can choose to install one or all of these components:

- Regional distribution unit
- Network Registrar extensions
- Application programming interface (API)

For more information about each component see the "Broadband Provisioning Registrar Components" section on page 2-1.

Before you begin any of these procedures, you must complete the initial installation procedure. For more information, see the "Initial Installation Steps" section on page 2-5.

Installing the Regional Distribution Unit

Install the RDU server on a Solaris 8 server that meets the requirements described in the "Hardware Requirements" section on page 1-2.

To install the RDU server, complete the steps described in the "Initial Installation Steps" section on page 2-5, then follow these steps:

Step 1   On the Install Components screen (Figure 2-3), select the Regional distribution unit (RDU) option and click **Next** to continue.

The BPR License Key(s) screen appears (Figure 3-1).

Figure 3-1   BPR License Key(s) Screen

Step 2   Enter your license key and click **Add License Key**. The installation program adds the key that you enter to the list of valid keys. If your BPR deployment supports multiple technologies, you need to add a key for each technology.

Step 3   Click **Next**. The Home Directory Destination screen appears (Figure 3-2).

The default directory is /opt/CSCObpr.

Figure 3-2   Home Directory Destination Screen
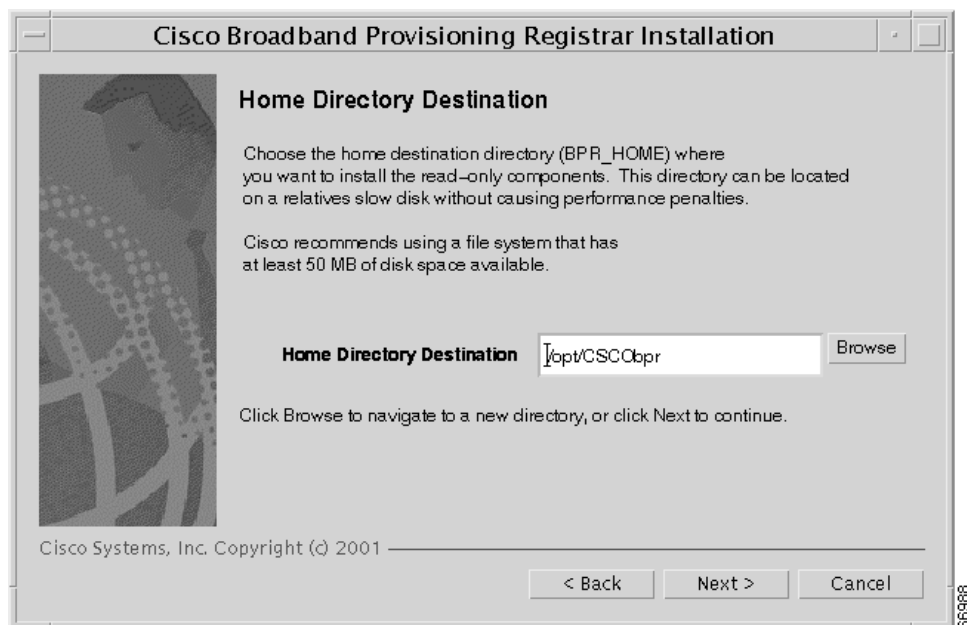
Step 4 Accept the default directory or enter a new directory. You can use the **Browse** button to select a new directory.

Step 5 Click **Next**. The installation program displays the Create Directory dialog box. Click **Yes** to continue.

The Data Directory Destination screen appears (Figure 3-3). The default directory is /var/CSCObpr.

Figure 3-3   Data Directory Destination Screen
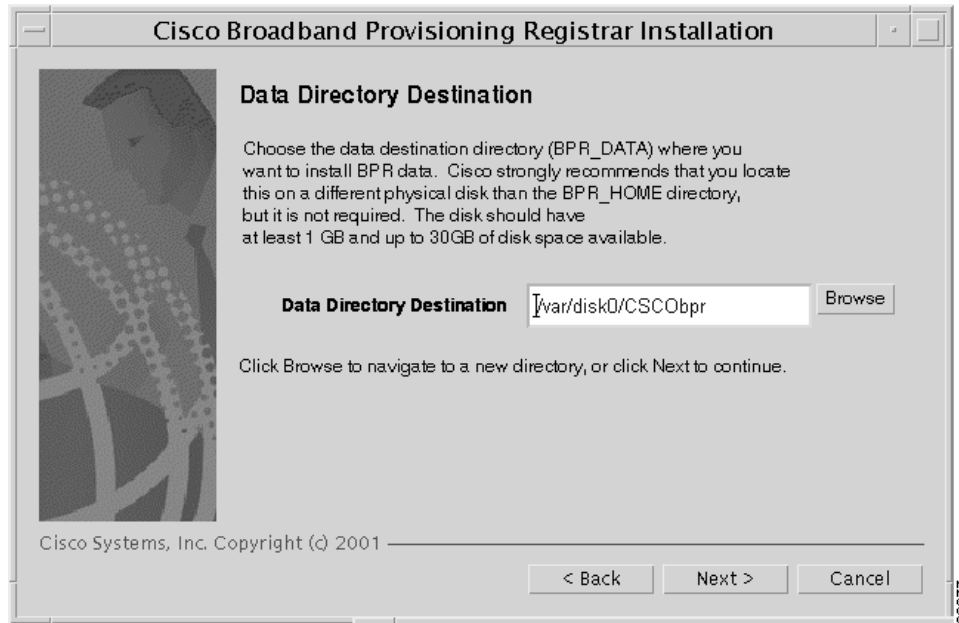
Step 6 Accept the default directory or enter a new directory. You can use the **Browse** button to select a new directory.

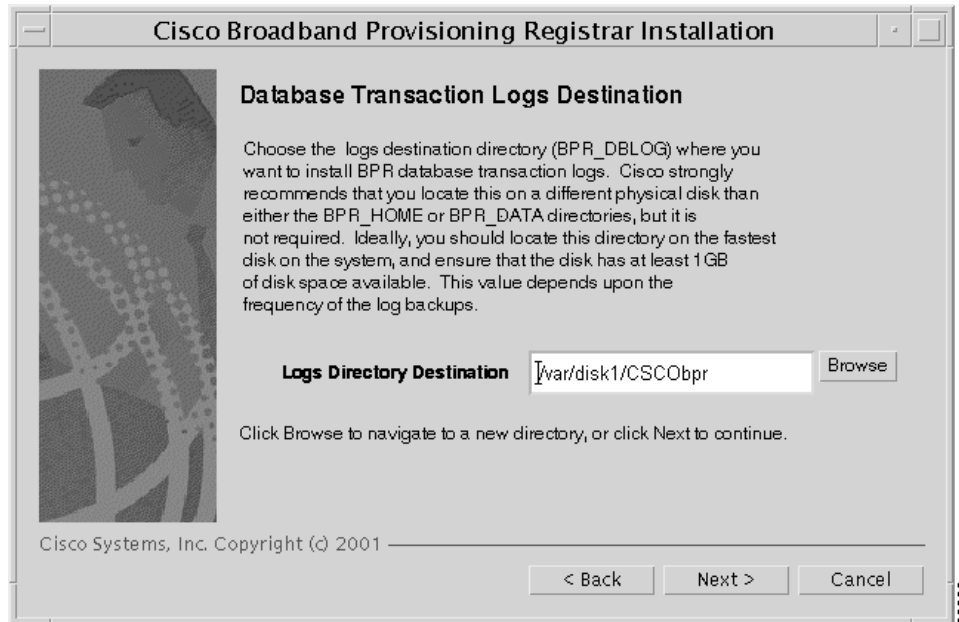**Note** By default, the installation program installs the data directory (BPR_DATA) on a different directory than the home directory (BPR_HOME). Cisco Systems recommends that the data directory be on a different physical disk than the home directory; for example /var/disk0/CSCObpr. However, you can install the data directory on the same disk as the home directory.

The directory specified becomes the top-level directory under which the installation program creates a number of subdirectories; for example, /var/disk0/CSCObpr/rdu/db.

Step 7 Click **Next**. The installation program displays the Create Directory dialog box. Click **Yes** to continue.

The Database Transaction Logs screen appears (Figure 3-4).

Figure 3-4   Database Transaction Logs Screen

Step 8   Enter the pathname for the directory in which you want the transaction logs (BPR_DBLOG) installed. The default directory is /var/CSCObpr.

> **Note**   By default, the installation program installs the database transaction logs directory (BPR_DBLOG) in the same directory as the data directory (BPR_DATA). Cisco Systems recommends that you locate the database transaction logs directory on the fastest disk on the system; for example, /var/disk1/CSCObpr. You also should ensure that the disk has 1 GB of space available.
>
> The directory specified becomes the top-level directory under which the installation program creates a number of subdirectories.

Step 9   Accept the default directory or enter a new directory. You can use the **Browse** button to select a new directory.

Step 10   Click **Next**. The installation program displays the Create Directory dialog box. Click **Yes** to continue.

The Regional Distribution Unit Host/Port screen appears (Figure 3-5).

Figure 3-5   Regional Distribution Unit Host/Port Screen

Step 11   Accept the default listening port number or enter a new port number. The default port is 49187.

Note   The installation program obtains the IP address of the RDU automatically. You do not need to enter this value.

Caution   If you change the default listening port value, ensure that the new value does not conflict with any existing port assignments. Also, ensure that you configure all DPEs and Network Registrar servers with the correct RDU port number. See the *Broadband Provisioning Registrar Administrator's Guide* for information about configuring the DPE.

Step 12   Click **Next**. The Shared Secret Password screen appears (Figure 3-6).

Figure 3-6   Shared Secret Password Screen

Step 13   Enter and confirm the shared secret password. This password is a token that a BPR server uses to authenticate communication with other BPR servers.

> ✎
> **Note**   You must use the same shared secret password for all BPR servers on your network.

Step 14   Click **Next**. The Installation Parameters screen appears (Figure 3-7). This screen identifies the values that you have entered in the previous screens. To modify any of the values entered:

a.   Click **Back** until the desired screen appears.

b.   Make the necessary changes.

c.   Click **Next** repeatedly until you return to this screen.

Figure 3-7   Installation Parameters Screen

Step 15   Click **Next**. When the installation is complete, the Installed Components Summary screen appears
(Figure 3-8).

Figure 3-8   Installed Components Summary Screen
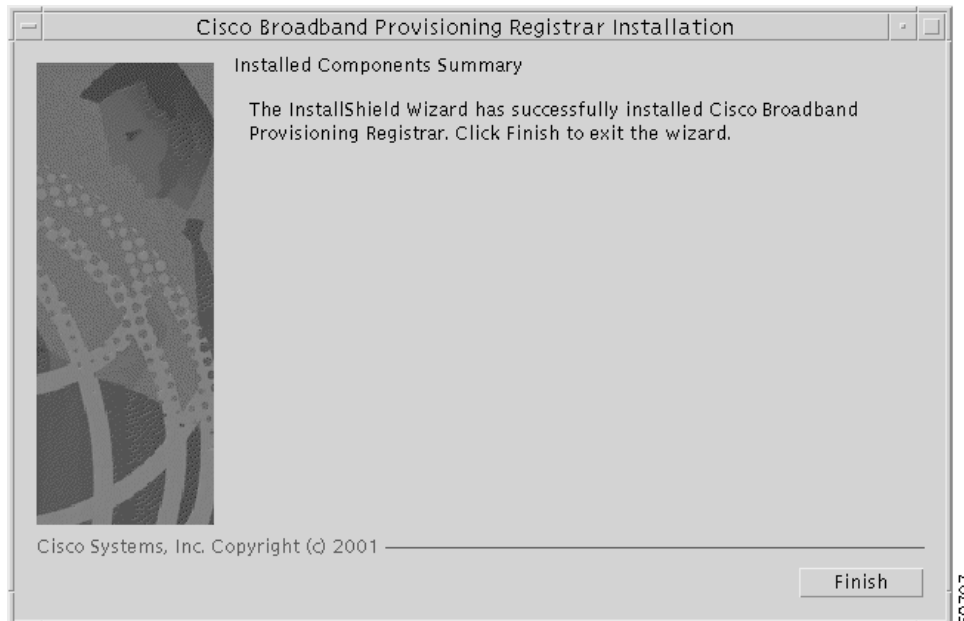
To exit the installation program, click **Finish**.

Installing Extensions on a Network Registrar Server

You install BPR extensions on a Network Registrar server. If you are deploying BPR in a failover environment, you also must install the extensions on the failover servers. After you install extensions, you need to configure them.

The remainder of this section explains how to install and configure the extensions.

Installing Extensions

Before you install the Network Registrar extensions, complete the steps described in the "Initial Installation Steps" section on page 2-5. To install the extensions, follow these steps:

Step 1 On the Install Components screen (Figure 2-3), select the Cisco Network Registrar extension points option and click **Next** to continue; the Home Directory Destination screen appears (Figure 3-9).
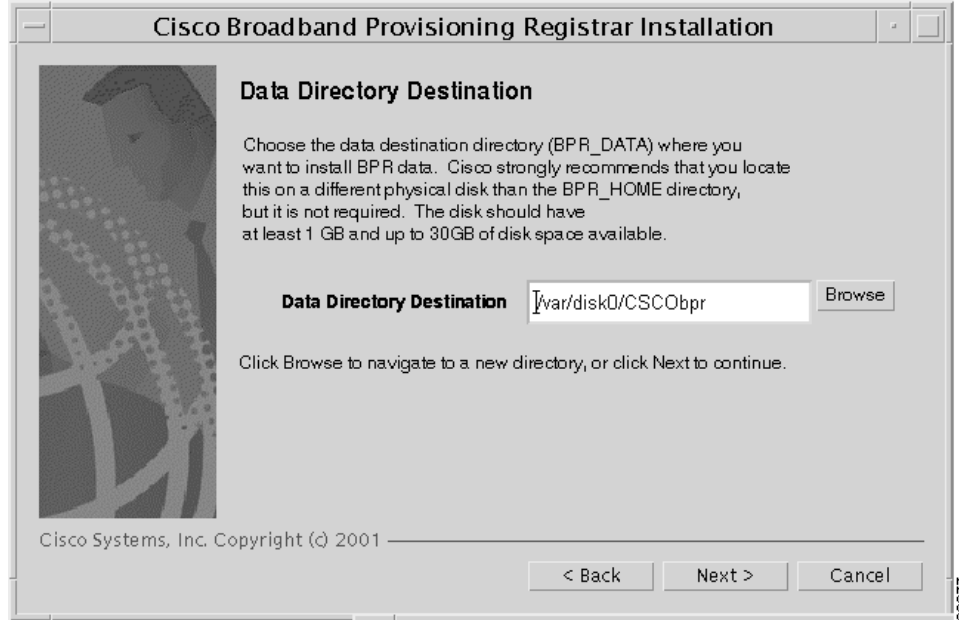
Figure 3-9   Home Directory Destination Screen
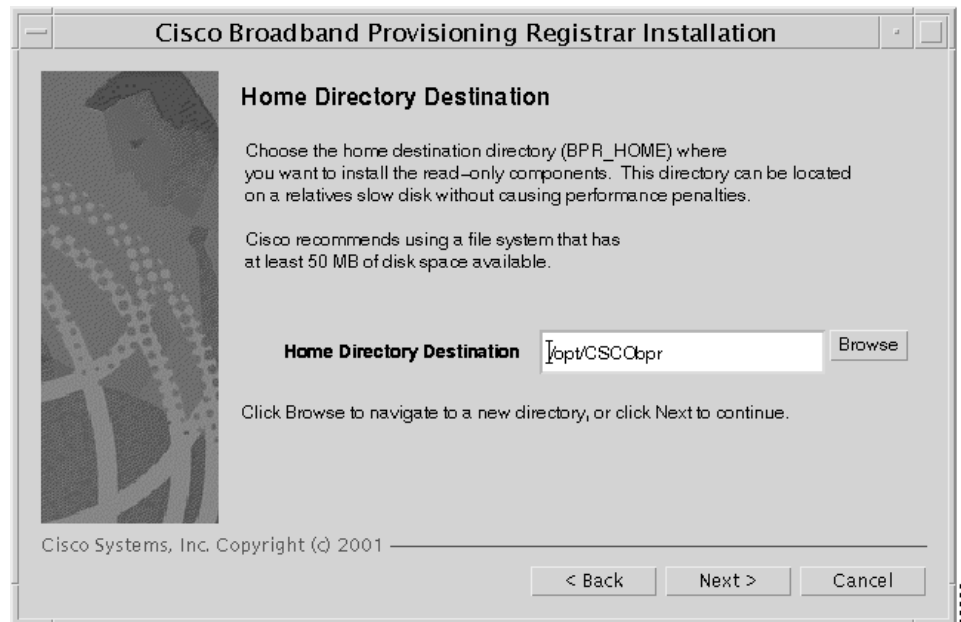
Step 2 Enter the pathname for the home directory, or click the **Browse** button to locate the directory.

Step 3 Click **Next**. The installation program performs some validation and then the Data Directory Destination screen appears (Figure 3-10).

Figure 3-10   Data Directory Destination Screen

Step 4   Accept the default directory or enter a new directory. You can use the **Browse** button to select a new directory.

Note   By default, the installation program installs the data directory (BPR_DATA) on a different directory than the home directory (BPR_HOME). Cisco Systems recommends that the data directory be on a different physical disk than the home directory; for example, /var/disk0/CSCObpr. However, you can install the data directory on the same disk as the home directory.

The directory specified becomes the top-level directory under which the installation program creates a number of subdirectories; for example, /var/disk0/CSCObpr/rdu/db.

Step 5   Click **Next**. The Regional Distribution Unit Host/Port screen appears (Figure 3-11).

Figure 3-11   Regional Distribution Unit Host/Port Screen

Step 6   Enter the IP address (or hostname) and the listening port of the host where the RDU software is installed. By default, the name of the local host appears in the RDU IP Address field.

Step 7   Click **Next**. The Cisco Network Registrar Extension Point Provisioning Group screen appears (Figure 3-12).

Figure 3-12   Cisco Network Registrar Extension Point Provisioning Group Screen

Step 8   Enter the name of the extension point provisioning group.

Step 9   Click **Next**. The Shared Secret Password screen appears (Figure 3-13).

Figure 3-13   Shared Secret Password Screen

Step 10   Enter and confirm the shared secret password. This password is a token that a BPR server uses to authenticate communication with other BPR servers.

> ✎
> **Note**   Use the shared secret password specified during the RDU installation.

Step 11   Click **Next**. The Installation Parameters screen appears (Figure 3-14). This screen identifies the values that you have entered in the previous screens. To modify any of the values entered click **Back** until the desired screen appears.

Figure 3-14 Installation Parameters Screen

Step 12   Click **Next**. When the installation is complete, the Installed Components Summary screen appears (Figure 3-15).

Figure 3-15 Installed Components Summary Screen
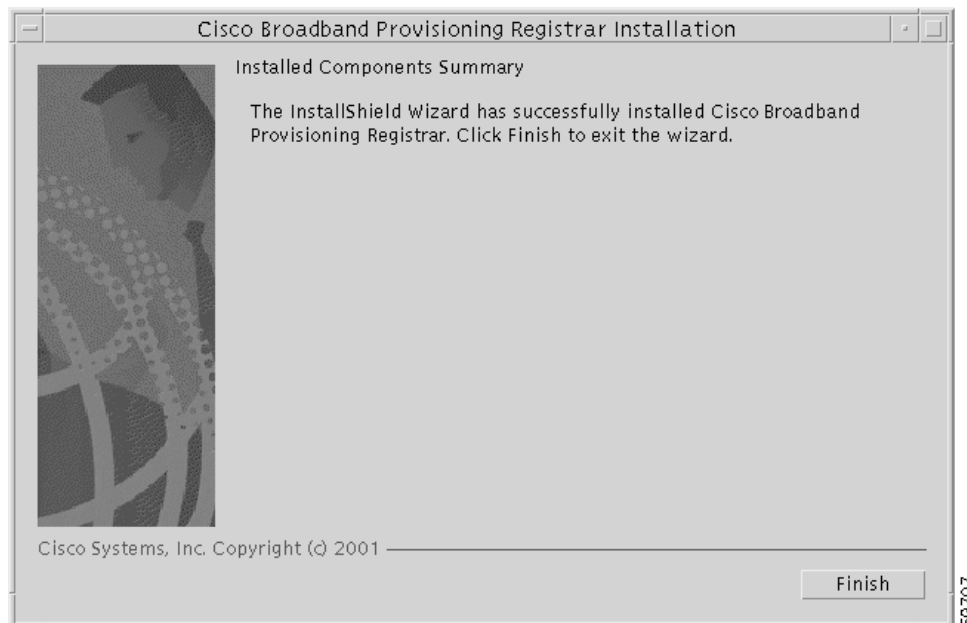
Step 13   To exit the installation program, click **Finish**.

Configuring Extensions

After you install the BPR extensions to Network Registrarr, you must configure the extensions. The procedure described in this section makes these assumptions:

- The BPR component is installed in /opt/CSCObpr
- Network Registrar is installed in /opt/nwreg2
- The Network Registrar username is **admin** and the password is **changeme**.

To configure extensions, follow these steps:

Step 1 Log in as *root* to the Network Registrar server.

Step 2 At the command line, enter the following commands:

```
/opt/nwreg2/usrbin/nrcmd -N admin -P changeme -b <
/opt/CSCObpr/cnr_ep/bin/bpr_cnr_enable_extpts.nrcmd
```

Step 3 Reload the Network Registrar server by entering the following commands:

```
/etc/init.d/aicservagt stop
/etc/init.d/aicservagt start
```

Alternatively, you can enter this command to reload the server:

```
/opt/nwreg2/usrbin/nrcmd -N admin -P changeme "dhcp reload"
```

⚠️

Caution   Be aware that you also must configure client-classes, scope selection tags, policies, and scopes before you can use the Network Registrar server. See the *Network Registrar User's Guide* for information about configuring these entities.

✎

Note   BPR starts with the following default unprovisioned client-classes: unprovisioned-docisis (for DOCSIS modems), unprovisioned-computer (for computers), unprovisioned-dstb (for digital set top boxes).

Installing the Application Programming Interface

Install the API component on one or more client devices. Before you install the API, complete the steps described in the "Initial Installation Steps" section on page 2-5. To install the API, follow these steps:

Step 1   On the Install Components screen (Figure 2-3), select the Application programming interface option and click **Next** to continue. The Home Directory Destination screen appears (Figure 3-3).

*Figure 3-16   Home Directory Destination Screen*

Step 2   Enter the pathname for the home directory, or click the **Browse** button to locate the directory.

Step 3   Click **Next**. The Installation Parameters screen appears (Figure 3-17). This screen identifies the values that you have entered in the previous screens. To modify any of the values entered, click **Back** until the desired screen appears.

Figure 3-17   Installation Parameters Screen

Step 4 Click **Next**. When the installation is complete, the Installed Components Summary screen appears (Figure 3-18).

Figure 3-18   Installed Components Summary Screen
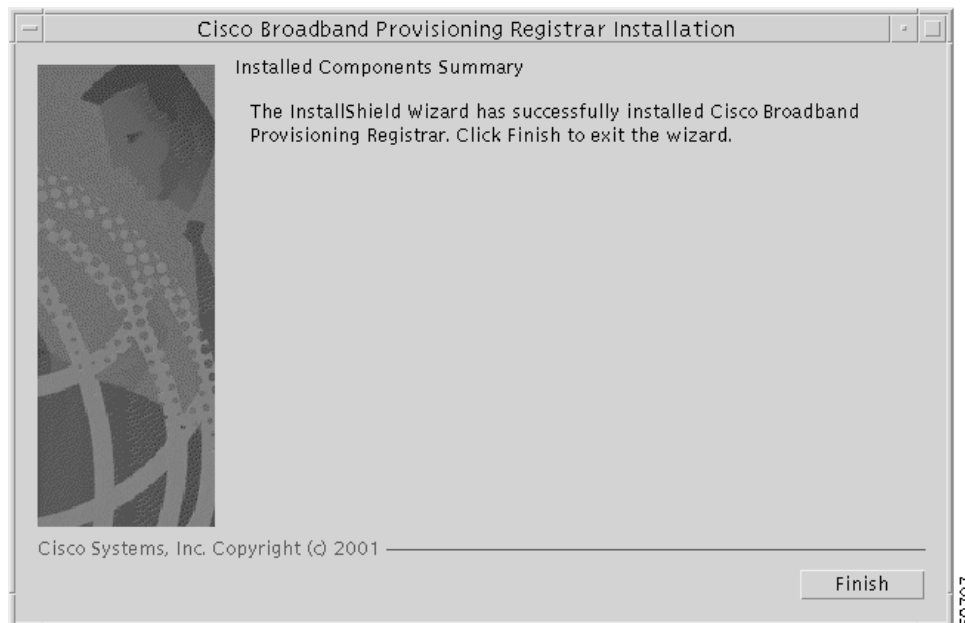
Step 5 To exit the installation program, click **Finish**.

Installing Components Using the CLI

This section explains the procedures that you follow to install one or more of components of BPR using the CLI.

You can choose to install one or all of these components:

- Regional distribution unit
- Network Registrar extensions
- Application programming interface (API)

For more information about each component see the "Broadband Provisioning Registrar Components" section on page 2-1.

Before you begin any of these procedures, you must complete the initial installation procedure. For more information, see the "Installing from the Command Line" section on page 2-7.

Installing the Regional Distribution Unit

To install an RDU, complete the steps described in the "Installing from the Command Line" section on page 2-7. Then, follow these steps:

Step 1   When the installation program prompts you to select one or more components, enter **y** and press **Enter** at Regional Distribution Unit (RDU) (y/n/?). The program then asks if you want to install Cisco Network Registrar extension points and the application programming interface.

Step 2   To skip installing the extension points and the API, press **n** and **Enter** for each option.

For example:

```
Installation Components


Select one or more components to install BPR.

   Regional distribution unit (RDU) (y/n/?) [no] y
   Cisco Network Registrar extension points (y/n/?) [no] n
   Application provisioning interface (API) client (y/n/?) [no] n
```

The program prompts you to confirm the components that you want to install.

Step 3   Press **y** and **Enter** to continue. The program prompts you to start individual component validation.

Step 4   Press **Enter** to continue. For example:

```
Starting the individual component installation parameters validation.


   Press Enter to Continue or 'q' to Quit:
Validating the individual component installation parameters - Please wait.
```

The program prompts you to enter your BPR license key.

Step 5   Enter your license key. The program confirms the license key and then prompts you to enter another
license key. For example:

```
BPR License Key(s)


Enter the license key information to validate your license.

    Enter Key [] ASf-tU-A$R$R-hyw9-sRRRR---N9D6MPXwM



========== Confirmation ==========
Do you want to enter another License Key

    Is this correct (y/n/q/?)  [yes] yes
```

Step 6   To add another license key, press **y** and **Enter**; to proceed to the next step, press **n** and **Enter**. The
program prompts you to enter the home directory destination.

Step 7   To accept the default directory, /opt/CSCObpr, press **Enter**; or enter another directory. For example:

```
Home Directory Destination

    Home Directory Destination [/opt/CSCObpr]
```

The program asks you to confirm the directory.

Step 8   Press **y** and **Enter** to continue. The program prompts you to enter the data directory destination.

Step 9   To accept the default directory, /var/CSCObpr, press **Enter**; or enter another directory. For example:

```
Data Directory Destination

    Data Directory Destination [/var/CSCObpr]/var/disk0/CSCObpr
```

The program then asks you to confirm the directory.

> ✎
>
> **Note**   By default, the installation program installs the data directory (BPR_DATA) on a different
> directory than the home directory (BPR_HOME). Cisco Systems recommends that the data
> directory be on a different physical disk than the home directory; for example,
> /var/disko/CSCObpr. However, you can install the data directory on the same disk as the
> home directory.
>
> The directory specified becomes the top-level directory under which the installation program
> creates a number of subdirectories; for example, /var/disk0/CSCObpr/rdu/db.

Step 10   Press **y** and **Enter** to continue. The program prompts you to enter the database transaction logs
destination.

Step 11   To accept the default directory, /var/CSCObpr, press **Enter**; or enter another directory. For example:

```
Database Transaction Logs Destination


Logs Directory Destination

    Logs Directory Destination [/var/CSCObpr] /var/disk1/CSCObpr
```

The program then asks you to confirm the directory.

> ✎
>
> **Note**   By default, the installation program installs the database transaction logs directory
> (BPR_DBLOG) in the same directory as the data directory (BPR_DATA). Cisco Systems
> recommends that you locate the database transaction logs directory on the fastest disk on the
> system and that you ensure that the disk has 1 GB of space available.
>
> The directory specified becomes the top-level directory under which the installation program
> creates a number of subdirectories.

Step 12   Press **y** and **Enter** to continue. The program prompts you to enter the listening port for the RDU.

Step 13   To accept the default value, 49187, press **Enter**; or enter another port number. For example:

```
Regional Distribution Unit Host/Port


Enter the IP address and the listening port of the regional distribution unit
(RDU)
associated with this installation.


Enter  the Host/IP address and address of the listening port for the RDU and

   RDU Listening Port [49187]
```

> ✎
>
> **Note**   The installation program obtains the IP address of the RDU automatically. You do not need
> to enter this value.

The program then prompts you to confirm the listening port number.

Step 14   Press **y** and **Enter** to continue. The program prompts you to enter the shared secret password. This
password is token that a BPR server uses to authenticate communication with other BPR servers.

> ✎
>
> **Note**   You must use the same shared secret password for all BPR servers on your network. The
> default password is **secret**.

Step 15   Enter the password that you want to use for authentication among BPR servers. For example:

```
Shared Secret Password


Enter the password to be used for authentication
among the BPR servers.


If you are performing a lab installation, then the password will be used for
all the servers.  If this is a component installation, then the password you
enter must be the same as the components previously installed.

   Enter the Shared Secret Password [secret] secret
```

The program prompts you to confirm the password.

Step 16   Enter the password again and press **y** to continue. The program displays the installation parameters you
have selected. For example:

```
The Component Installation will use the following parameters
to install the RDU component:
```

```
Home directory:/opt/CSCObpr
Data directory:/var/disk0/CSCObpr
Logs directory:/var/disk1/CSCObpr
RDU Port:49187
```

Step 17   Press **y** to install the RDU component. The program displays a message when the installation is complete.

Installing Network Registrar Extensions

Before you install Network Registrar extensions, complete the steps described in the "Installing from the Command Line" section on page 2-7. To install the extensions, follow these steps:

Step 1   When the installation program prompts you to select one or more components, press **y** and **Enter** at Cisco Network Registrar extension points (y/n/?).

To skip installing an RDU and the API, press **n** and **Enter** for these options.

For example:

```
Installation Components


Select one or more components to install BPR.

   Regional distribution unit (RDU) (y/n/?) [no] n
   Cisco Network Registrar extension points (y/n/?) [no] y
   Application provisioning interface (API) client (y/n/?) [no] n
```

The program prompts you to confirm the components that you want to install.

Step 2   Press **y** and **Enter** to continue. The program displays a message that it is starting individual component validation.

Step 3   Press **Enter** to continue. For example:

```
Starting the individual component installation parameters validation.


   Press Enter to Continue or 'q' to Quit:
Validating the individual component installation parameters - Please wait.
```

The program prompts you to enter the home directory destination,

Step 4   To accept the default home directory destination, /opt/CSCObpr/, press **Enter**; or enter another directory. For example:

```
Home Directory Destination

   Home Directory Destination [/opt/CSCObpr]
```

The program then asks you to confirm the directory.

Step 5   Press **y** and **Enter** to continue. The program prompts you to enter the data directory destination

Step 6   To accept the default directory, /var/CSCObpr, press **Enter**; or enter another directory. For example:

```
Data Directory Destination

   Data Directory Destination [/var/CSCObpr] /var/disk0/CSCObpr
```

✎

Note   By default, the installation program installs the data directory (BPR_DATA) on a different directory than the home directory (BPR_HOME). Cisco Systems recommends that the data directory be on a different physical disk than the home directory; for example /var/disk0/CSCObpr. However, you can install the data directory on the same disk as the home directory.

The directory specified becomes the top-level directory under which the installation program creates a number of subdirectories; for example, /var/disk0/CSCObpr/rdu/db.

Step 7   Press **y** and **Enter** to continue. The program prompts you to enter the host IP address and the listening port of the RDU.

Step 8   Enter the IP address (or hostname) and listening port of the host where the RDU software is installed. The program prompts you to confirm this information. For example:

```
Regional Distribution Unit Host/Port


Enter the IP address and the listening port of the regional distribution unit
(RDU)
associated with this installation.


Enter the Host/IP address and address of the listening port for the RDU.

   RDU IP Address [doc-u5.cisco.com] 10.10.10.2
   RDU Listening Port [49187]



========== Confirmation ==========
RDU Host:10.10.10.2
RDU Port:49187


   Is this correct (y/n/q/?)  [yes] y
```

Step 9   Press **y** and **Enter** to continue. The program prompts you to enter the name of the extension point provisioning group.

Step 10   Enter the name of the Network Registrar extension point group. For example:

```
Cisco Network Registrar Extension Point Provisioning Group


Enter the Cisco Network Registrar extension point provisioning group.


This a required field.  The value you specify must contain only  alphanumeric
characters without spaces and not exceed 10 characters in length.  You can use
the BPR command-line tool to change this value after you complete this
installation.

   Extension Point Provisioning Group [] group1
```

Step 11   Press **y** and **Enter** to continue. The program prompts you to enter the shared secret password. This password is token that a BPR server uses to authenticate communication with other BPR servers.

✎

Note   You must use the same shared secret password for all BPR servers on your network.

Step 12   Enter the password that you want to use for authentication among BPR servers. For example:

```
Shared Secret Password


Enter the password to be used for authentication
among the BPR servers.


If you are performing a lab installation, then the password will be used for
all the servers.  If this is a component installation, then the password you
enter must be the same as the components previously installed.

   Enter the Shared Secret Password [secret] changeme
```

The program prompts you to confirm the password.

Step 13   Enter the password again.

Step 14   Press **y** and **Enter** to continue. The program then displays the installation parameters you have selected. For example:

```
Installation Parameters


This screen shows the installation parameters that you have chosen:



========== Confirmation ==========
The Component Installation will use the following parameters
to install the NR Extension Points component:

Home directory:/opt/CSCObpr
Data directory:/var/disk0/CSCObpr
NR extension point provisioning group:group1
```

Step 15   Press **y** and **Enter** to install the Network Registrar extensions. The program displays a message when the installation is complete.

Step 16   Configure the extensions by following the procedure described in the "Configuring Extensions" section on page 3-13.

Installing the Application Programming Interface

Before you install the application programming interface (API), complete the steps described in the "Installing from the Command Line" section on page 2-7. To install the API, follow these steps:

Step 1 When the installation program prompts you to select one or more components, press **y** and **Enter** at Cisco Network Registrar extension points (y/n/?).

To skip installing an RDU and Network Registrar extension points, enter **n** and **Enter** for these options.

For example:

```
Installation Components


Select one or more components to install BPR.

   Regional distribution unit (RDU) (y/n/?) [no] n
   Cisco Network Registrar extension points (y/n/?) [no] n
   Application provisioning interface (API) client (y/n/?) [no] y
```

The program prompts you to confirm the components that you want to install.

Step 2 Press **y** and **Enter** to continue. The program displays a message that it is starting individual component validation.

Step 3 Press **Enter** to continue. For example:

```
Starting the individual component installation parameters validation.


   Press Enter to Continue or 'q' to Quit:
Validating the individual component installation parameters - Please wait.
```

The program prompts you to enter the home directory destination.

Step 4 To accept the default home directory destination, /opt/CSCObpr/, press **Enter**, or enter another directory. For example:

```
Home Directory Destination

   Home Directory Destination [/opt/CSCObpr]
```

The program then asks you to confirm the directory.

Step 5 Press **y** and **Enter** to continue. The program displays the installation parameters that you selected. For example:

```
Installation Parameters


This screen shows the installation parameters that you have chosen:



========== Confirmation ==========
The Component Installation will use the following parameters
to install the  component:

Home directory:/opt/CSCObpr
```

Step 6   Press **y** and **Enter** to install the API. The program displays a message when the installation is complete.

Configuring the Syslog to Receive Alerts from BPR

This section describes how to configure the syslog on a Network Registrar server to receive alerts and debugging information from BPR.

Step 1   Log in as *root* on the Network Registrar server.

Step 2   At the command line, create the log file. For example:

```
touch /var/log/bpr.log
```

Step 3   Open the /etc/syslog.conf file with a text editor.

Step 4   Adding the following line to the /etc/syslog.conf file:

```
local6.info          /var/log/bpr.log
```

✎

Note   You must insert one or more tabs between local6:info and /var/log/bpr.log

Step 5   Save and close the /etc/syslog.conf file.

Step 6   To force syslog to take the new configuration, at the command line enter these commands:

```
ps -ef  | grep syslogd
    root   217    1  0   Nov 26 ?          0:00 /usr/sbin/syslogd

kill -HUP 217
```

Network Registrar is now ready to receive alerts from BPR.

Uninstalling Broadband Provisioning Registrar

The program described in this section uninstalls the RDU, Network Registrar extensions, and the API, but it does not uninstall the Network Registrar application. Prior to removing BPR you have to manually unconfigure Network Registrar.

The uninstallation program removes all files located under the installation directory (the default installation directory is /opt/CSCObpr).   If the database is found under the installation directory, as is the case in the lab installation program, the program displays a warning message that it is deleting the database. You can exit from the uninstallation program at that time, or you can choose to proceed.

The uninstallation program also shuts down and removes the following processes if they are detected: RDU Agent and JRun.

The uninstallation program does *not* remove files that were placed outside the installation directory. For example, a component installation places the database and database transaction logs directories under /var/CSCObpr. So theses files are not removed. The uninstallation program also does *not* remove any files that are located under the Network Registrar directory.

⚠

Caution   If you uninstall BPR after configuring your Network Registrar servers to use BPR extensions, your network will no longer function correctly. You must uninstall BPR client-classes and client-class extensions in Network Registrar to completely uninstall the BPR program.

To uninstall BPR, follow these instructions:

Step 1   Log in as *root*.

Step 2   Manually unconfigure the BPR extensions on the Network Registrar server. You can unconfigure Network Registrar from any server that has **nrcmd** installed and connectivity with Network Registrar. Follow these steps:

✎

Note   This procedure assumes the default installation directories for BPR and Network Registrar. It also uses the default Network Registrar username and password. If you installed these products in other directories, you should enter those directory names instead,

a.   To uninstall the BPR extensions from your Network Registrar configuration, use the following commands:

```
/opt/nwreg2/usrbin/nrcmd -N admin -P changeme -b <
/opt/CSCObpr/cnr_ep/bin/bpr_cnr_disable_extpts.nrcmd
```

b.   To reload your DHCP server, use the following commands:

```
/etc/init.d/aicservagt stop
/etc/init.d/aicservagt start
```

Alternatively, enter this command:

```
/opt/nwreg2/usrbin/nrcmd -N admin -P changeme "dhcp reload"
```

c.   To remove the BPR extensions from the Network Registrar extensions directory, use the following command:

```
rm -f /opt/nwreg2/extensions/dhcp/dex/libbprextensions.so
```
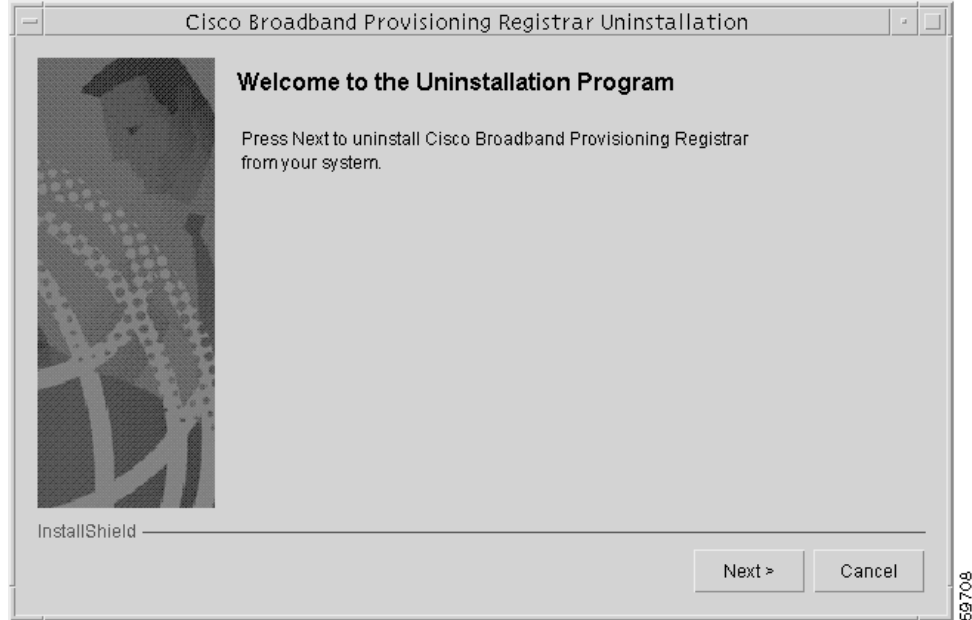
Step 3   At the CLI prompt, enter:

```
/opt/CSCObpr/_uninst/uninstall.bin
```

The uninstallation program's Welcome screen appears (Figure 3-19).
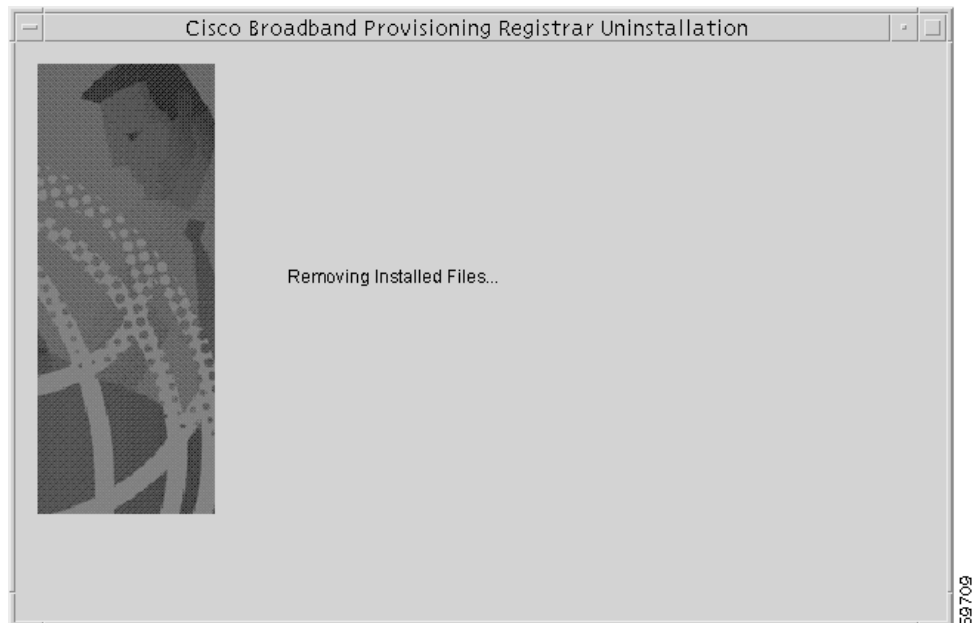
Figure 3-19   Broadband Provisioning Registrar Uninstallation Screen
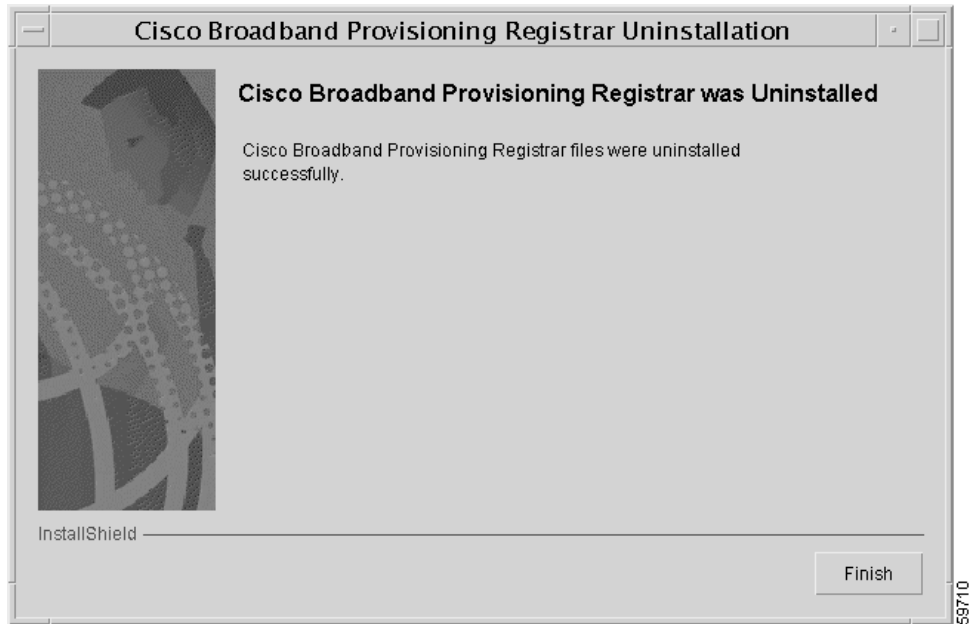

Step 4   Click **Next**. The uninstallation program begins removing BPR files (Figure 3-20).

Figure 3-20   Uninstall Screen

When the uninstallation is complete, the Cisco Broadband Provisioning Registrar was Uninstalled screen appears (Figure 3-21).

Figure 3-21   Cisco Broadband Provisioning Registrar Was Uninstalled Screen

Step 5   To exit the uninstallation program, click **Finish**.