



Installing the Prime Network Gateway Using CLI

This chapter explains how to install the Prime Network gateway and Operations Reports using CLI commands. If you want to use the installation wizard, see [Chapter 5, “Installing the Prime Network Gateway and Units Using the Installation Wizard”](#).

The following topics are covered in this chapter:

- [Installation Overview, page 6-1](#)
- [Installing the Prime Network Gateway With an Embedded Database, page 6-2](#)
- [Installing the Prime Network Gateway With an External Database, page 6-6](#)
- [Post Installation Tasks For the Gateway, page 6-13](#)
- [Environment Variables, Aliases, and Folders Created During Installation, page 6-19](#)
- [Product Services Installed with Prime Network, page 6-21](#)

Installation Overview

The Prime Network gateway can be installed using either an embedded database or an external database. For the embedded database, Prime Network 4.3.1 uses a fully-integrated Oracle 12c database that allows Prime Network to manage and monitor data. This Oracle database version is also supported for the external database.

The Prime Network installation script (**install.pl**) automatically performs the following:

- Checks some system prerequisites, such as required disk space
- Backs up and removes older versions of Prime Network software (if any exist)
- Creates the Prime Network user *pnuser*, which is the operating system user for the Prime Network application.
- Copies all required files from the installation DVD to the server under the Prime Network user home directory (*/export/home/pnuser* by default), also called *\$NETWORKHOME*.
- Extracts and creates the required directories. For information on folders created after installation, see [Environment Variables, Aliases, and Folders Created During Installation, page 6-19](#).
- Installs the Prime Network software
- Configures the Prime Network registry
- Sets the Prime Network environment variables and aliases (.cshrc file)

Installing the Prime Network Gateway With an Embedded Database

Before You Begin

- Verify that all preinstallation tasks have been completed. See [Gateway Preinstallation Tasks—Embedded Database, page 3-1](#).

To install the gateway with an embedded database (on the same or separate server):

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- Step 1** As the root user, launch a terminal on the server where you want to install the Prime Network gateway.
- Step 2** Insert **Disk 1: New Install** in the DVD drive. (See [Installation DVDs, page 1-2](#)).
- Step 3** Mount the inserted DVD using the **mount** command, and move to the mount directory.
- Step 4** In the mount directory, locate the `install.pl` script and move to its parent directory.
- Step 5** Start the installation with the `install.pl` script. (The installation procedure is automatic and requires no user input.) The **-user** flag creates the operating system user account for the Prime Network application, and the **-dir** option specifies the installation directory:

```
perl install.pl -user pnuser [-dir directory]
```



Note *pnuser* must start with a letter and contain only the characters shown in brackets: [A-Z a-z 0-9]. It cannot contain a [.] character. For example, `pn431` is permitted, but `network 4. 3.1` is not.

For example, the following command creates a *pnuser* named `pn431`, and installs Prime Network in the `/export/home/pn431` directory:

```
perl install.pl -user pn431 -dir /export/home/pn431
```



Note The installation might take a while. You will be notified when the installation has completed successfully.

- Step 6** After the installation is complete, you will be prompted to configure Prime Network. Enter **yes** to continue with the configuration and proceed to [Step 8](#), or enter **no** to configure Prime Network later using the **network-conf** command.



Note If you choose to configure Prime Network at a later stage (not during the initial installation process), you must manually enable the network discovery functionality, as described in [Enabling Network Discovery, page 12-3](#).

- Step 7** Copy the following Oracle installation .zip files from **Prime Network 4.3.1, Disk 6: Database Binaries** to the `embedded_oracle` directory (`$NETWORKHOME/local/scripts/embedded_oracle`):
- `linuxamd64_12c_database_1of2.zip`
 - `linuxamd64_12c_database_2of2.zip`
- Step 8** Select **Set machine as Prime Network gateway**, then press **Enter**. The Prime Network configuration utility configures the system by running a number of procedures, including generation of SSH keys.



Note If you are notified that NTP is stopped or not configured, restart or configure NTP and then proceed with the rest of the configuration. See [Configuring the Network Timing Protocol, page 3-6](#).

Step 9 Enter a password for all built-in users (root, bosenable, bosconfig, bosusermng, web monitoring user). This password will be used to access the various Prime Network system components, and will also be used as the database schema password.

The password must:

- Contain at a minimum 9 characters.
- Contain both upper and lower case letters.
- Start with a letter.
- Contain at least one number.
- Contain at least one of the allowed special characters: ~!#%^ (no other special characters to be used)
- Not contain the username or the username in reverse.
- Not contain cisco, cisco in reverse, or any variation.
- Not repeat the same character three or more times.

Step 10 When asked if Prime Network should install the database for you, select **Yes**. This is the embedded database option.

Step 11 During the configuration, you will be requested to provide some information. Enter the required information at the prompts. The following table lists the prompts that appear at various stages of the configuration and their required settings.

Table 6-1 Gateway Installation Prompts and Input Using Embedded Database

Prompt for...	Enter...	Notes
Database installation on a remote server.	yes/no	<p>This guide assumes that the database will be installed locally on the gateway server.</p> <p>If you want to install the embedded database on a remote server, enter yes. The next few prompts will ask you to enter the remote server details (IP address, username and password to connect to the remote server, and OS root user password (if not provided earlier)).</p> <p>Note If the IP address you enter is not the default one, the database installation software updates the hostname in the database listener's files. Verify that /etc/hosts is updated with the correct IP address and hostname. If more than one hostname is attached to the selected IP address, the first hostname is used.</p>
Selecting a single interface for the database services. Note This prompt appears only if more than one interface is detected during the network-conf process.	NIC to use for database connection	Because Prime Network 4.3.1 supports dual NICs, the installation may detect that the server is configured with multiple NICs. Specify the NIC to use for the database connection.
OS root user password	Unix root password	Prime Network uses the root password to set machine-level settings and to execute scripts.
OS username	—	The username of the Unix database user. The default is oracle.
OS user home directory	Path to the Oracle user home directory	OS user home directory by default is /export/home/oracle. The directory must have a minimum of 6 GB of disk space for oracle binaries, and should not reside under Prime Network user home directory.
Removing previous installation of Oracle.	yes	<p>Default is yes. If you already have Oracle installed with the same user and home directory, enter yes to remove it before installing the new database.</p> <p>If you enter no, the installation will quit.</p>
Selecting Prime Network database profile.	The number corresponding to the estimated profile.	<p>Select from 1-7 based on the actionable events per second.</p> <p>For more information on database profiles, see Creating an External Oracle Database, page 4-2.</p>
Database's datafiles location	Path to the directory containing the datafiles.	Location of the database datafiles (/export/home/oracle/oradata/anadb by default).
Redo logs location	Path to the directory containing the redo files.	<p>Location of the redo logs. They should not be on the same disk as the data files. Example: /export/home/oracle/redo.</p> <p>Note Use ext3 partition mounted with the default mount options.</p>

Table 6-1 Gateway Installation Prompts and Input Using Embedded Database (continued)

Prompt for..	Enter..	Notes
Prime Network to run automatic database backups?	yes	The default is yes . If you entered no at this prompt, you can enable automatic backups later with the embdctl --enable_backup command. See the Cisco Prime Network 4.3.1 Administrator Guide for information on the embdctl utility.
Destination for archive logs	Path to the directory containing the archive logs.	Location of the archive logs. They should not reside on the same disk as the data files.
Destination for backup files	Path to the directory containing the backup files.	Location of the backup files. They should not reside on the same disk as the data files.
SMTP server IP/hostname	Company e-mail server IP address or host name.	Port 25 must be available. You must have SMTP server access from the gateway in order to receive e-mail notifications. If you enter an invalid server, you can change the SMTP server later using embdctl -set_smtp_server as described in the Cisco Prime Network 4.3.1 Administrator Guide . Note Prime Network validates the SMTP server only on installations where the gateway and embedded database reside on the same server.
Selecting a single interface for Prime Network backend services. Note This prompt appears only if more than one interface is detected during the network-conf process.	The number corresponding with the IP address of the back-end interface to be used for gateway-to-unit communication.	Because Prime Network 4.3.1 supports dual NICs, the installation may detect that the server is configured with multiple NICs. Specify the NIC to use for back-end services (such as transport, http, and so on) for gateway-to-unit communication. Dual NICs let you isolate the northbound interface from the back-end interface.
Installing Prime Network as part of a Prime suite of products.	no	Default is no . If you enter yes , additional prompts on suite installation appears, as shown in Prime Suite Prompts , page 6-6. Note If you use Prime Network in suite mode, you must additionally install the Prime Network Integration Layer (PN-IL). Integration of Prime Network should have been done before installing the operations report. See Installing the Prime Network Integration Layer , page 9-1. Refer to the Cisco Prime Central Quick Start Guide to see how to integrate and configure the PN-IL in suite mode. Once the PN is integrated to PC, the PN and the PN-IL status should be up in the PC portal.
E-mail ID for receiving alerts	username@company-name.com	E-mail address to receive notification when database errors occur. You can enter a single email address or a comma separated list of email addresses.
Starting the Prime Network gateway at the end of the installation.	yes	Default is yes . If you enter no , you can start Prime Network later using the procedure in Starting the Prime Network Gateway , page 6-13.

Table 6-1 Gateway Installation Prompts and Input Using Embedded Database (continued)

Prompt for...	Enter...	Notes
Prime Suite Prompts		
Prime Central database server IP address	IP Address	After providing these inputs, Prime Network will be launched in <i>suite mode</i> . To integrate Prime Network with Prime Central, see Cisco Prime Central Quick Start Guide .
Prime Central database SID	primedb	
Prime Central database username	username	
Prime Central database password	password	
Prime Central database port	port number	

After the installation is complete, the following logs are available:

- Installation logs are available at `/var/adm/cisco/prime-network/logs`.
- Configuration logs are available at `$NETWORKHOME/Main/logs`.
- Network Discovery logs are available at `$NETWORKHOME/XMP_Platform/logs/existenceDiscovery.log`

Installing the Prime Network Gateway With an External Database

This procedure describes installation of Prime Network gateway using an external database. Before installing the gateway make sure the external Oracle database is set up as described in [Preparing the Oracle External Database, page 4-1](#).



Note

Change and Configuration Management (CCM) does not support encrypted databases. CCM can be installed on a Prime Network gateway that uses an encrypted connection to the database, but the connection used by CCM will not be encrypted.

Before You Begin

Verify that all preinstallation tasks have been completed. See [Gateway Preinstallation Tasks—External Database, page 3-3](#).

To install the gateway with an external database:

- Step 1** (Optional) Obtain the Prime Network ISO image files from Download Software page on Cisco.com, and burn the ISO image files to DVDs.



Note

Perform this step only if you are downloading the Prime Network ISO image files from Cisco.com.

- Step 2** As the root user, launch a terminal on the server where you want to install Prime Network gateway.

- Step 3** Insert **Disk 1: New Install** in the DVD drive. (See [Installation DVDs, page 1-2](#)).
- Step 4** Mount the inserted DVD using the **mount** command, and move to the mount directory.
- Step 5** In the mount directory, locate the `install.pl` script and move to its parent directory.
- Step 6** Start the installation with the `install.pl` script. (The installation procedure is automatic and requires no user input.) The **-user** flag creates the operating system user account for the Prime Network application, and the **-dir** option specifies the installation directory:

```
perl install.pl -user pnuser [-dir directory]
```



Note *pnuser* must start with a letter and contain only the characters shown in brackets: [A-Z a-z 0-9]. It cannot contain a [.] character. For example, pn431 is permitted, but network 4.3.1 is not.

For example, the following command creates a *pnuser* named pn431, and installs Prime Network in the `/opt/primenetwork431` directory:

```
perl install.pl -user pn431 -dir /opt/primenetwork431
```



Note The installation might take a while. For information on the Cisco Prime Network environment created during installation, see [Table 6-5](#).

- Step 7** After the installation is complete, you will be asked if you want to proceed directly to the configuration of Prime Network. Enter **yes** to continue with the configuration or enter **no** to configure Prime Network later using the **network-conf** command (as *pnuser*).



Note If you choose to configure Prime Network at a later stage (not during the initial installation process), you must manually enable the network discovery functionality, as described in [Enabling Network Discovery, page 12-3](#)

- Step 8** Select **Set machine as Prime Network gateway**, then press **Enter**. The Prime Network configuration utility configures the system by running a number of procedures, including generation of SSH keys.
- Step 9** Enter the required information at the prompts. [Table 6-2](#) lists the prompts that appear at various stages of the configuration and their required settings.

Table 6-2 Gateway with External Database Installation Prompts and Input

Prompt for...	Enter...	Notes
Password for all built-in users (root, bosenable, bosconfig, bosusermgr, web monitoring user)	The password that will be used to access the various Prime Network system components.	<p>The three login levels defined to connect to the Prime Network shell. This password will also be used as the database schemas password.</p> <p>You can change the password for each of these users at a later stage. See the Cisco Prime Network 4.3.1 Administrator Guide for changing the passwords.</p> <p>The password must:</p> <ul style="list-style-type: none"> • Contain at a minimum 9 characters. • Contain both upper and lower case letters. • Start with a letter. • Contain at least one number. • Contain at least one of the allowed special characters: ~!#%^ (no other special characters to be used) • Not contain the username or the username in reverse. • Not contain cisco, cisco in reverse, or any variation. • Not repeat the same character three or more times.
Prime Network to install the database?	no	After you enter no , the setup will configure the Prime Network default schema. You can manually create the database schemas, as described in Manually Creating Prime Network Database Schemas , page 6-11.
Oracle server IP address/host name	IP address/hostname	
Oracle admin username	<i>username</i>	Default is system.

Table 6-2 Gateway with External Database Installation Prompts and Input (continued)

Prompt for..	Enter..	Notes
Oracle admin password	password	Password for the database administrator.
Allowing Prime Network to auto-configure the database	yes	<p>If you enter yes, the <i>pnuser</i> database is configured automatically with the following default values:</p> <ul style="list-style-type: none"> • Port 1521 • SID: mcdb • No encryption • Prime Network-created users <p>The <i>pnuser_ep</i> (Event Archive) schema uses the same settings.</p> <p>If you enter no, alternative database server is used to install EP schema. You need to provide the Port number, SID and whether you require an encrypted connection to the database server. If you select encrypted connection, enter the values as shown in Table 6-4. If you have manually created the database schemas, as described in Manually Creating Prime Network Database Schemas, page 6-11, you need to provide these schemas details.</p>

Step 10 The installer then installs the Change and Configuration Management application as a part of the installation.



Note The installation of Change and Configuration Management will abort if your Oracle account is locked during the installation process. You must unlock the account and then run the `setup_xmp_nccm.cmd` command to install the Change and Configuration Management components.

Step 11 Enter the input for the remaining prompts as shown in the [Table 6-3](#).

Table 6-3 Gateway Installation Prompts and Input Using External Database

Prompt for...	Enter...	Notes
Selecting a single interface for the database services. Note This prompt appears only if more than one interface is detected during the network-conf process.	NIC to use for database connection	Because Prime Network 4.3.1 supports dual NICs, the installation may detect that the server is configured with multiple NICs. Specify the NIC to use for the database connection.
Installing Prime Network as part of a Prime suite of products.	no	Default is no . If you enter yes , additional prompts on suite installation appear, as shown in Prime Suite Prompts, page 6-6 . Note If you use Prime Network in suite mode, you must install the Prime Network Integration Layer (PN-IL). See Installing the Prime Network Integration Layer, page 9-1 . Refer to the Cisco Prime Central Quick Start Guide to see how to integrate and configure the PN-IL in suite mode.
Starting Prime Network at the end of the installation.	yes	Default is yes . If your enter no , you can start Prime Network later using the procedure in Starting the Prime Network Gateway, page 6-13 .

Prime Suite Prompts

Prime Central database server IP address	IP address	These prompts appears if you decided to install Prime Network as part of the suite.
Prime Central database SID	primedb	
Prime Central database username	username	
Prime Central database password	password	
Prime Central database port	port number	

Table 6-4 shows the parameters displayed for a remote database installation that uses an encrypted connection.

Table 6-4 Parameters For An Encrypted Connection

Prompt for..	Enter..	Notes
Oracle's listener port	<i>port-number</i>	Default is 1521
Oracle's SID	SID	Prime Central Database SID
Encrypted connection for database	yes	Default is yes .
Type of encryption method	Enter option (1-3)	Number corresponding to the encryption method you would like to use.
Type of encryption algorithm	Enter option (1-9)	Number corresponding to the encryption algorithm you would like to use.

After the installation is completed following logs are available:

- Installation logs are available at `/var/adm/cisco/prime-network/logs`.
- Configuration logs are available at `$NETWORKHOME/Main/logs`.
- Network Discovery logs are available at `$NETWORKHOME/XMP_Platform/logs/existenceDiscovery.log`

Manually Creating Prime Network Database Schemas



Note

This topic applies only if you are using Prime Network with external database.

Use the procedure in this section if you want to create database schemas manually. You can choose any name for the schema. By default, Prime Network uses *pnuser* to name the schemas. In the following table, *pnuser* is

Schema Name	Description	Example
<i>pnuser</i>	Fault Database—Active and archived network and non-network events and tickets (<i>archived events and tickets</i> are events and tickets that were moved to an archive partition in the Fault Database)	pn431
<i>pnuser_ep</i>	Event Archive—Raw traps and syslogs received from devices	pn431_ep
<i>pnuser_rep</i>	Used by reports mechanism	pn431_rep
<i>pnuser_ep_rep</i>		pn431_ep_rep

Schema Name	Description	Example
<i>pnuser_xmp</i>	Change and Configuration Management (CCM), Compliance Manager, Compliance Audit, Command Manager, Transaction Manager	pn431_xmp
<i>pnuser_admin</i>	Database administrator for maintenance tasks—such as gathering statistics—on the other Prime Network database schemas	pn431_admin

To manually create database schemas:

Step 1 Log into the database as the system user.

Step 2 Enter the following commands to create the database schemas. You can choose any name for the usernames and filenames. The password must be identical for the schemas.

- For *pnuser*, *pnuser_dwe*, *pnuser_ep*, *pnuser_xmp*, execute the following command:

```
create tablespace user datafile 'file-location/user.dbf' size 1024M autoextend on next
256M;
create temporary tablespace user_temp tempfile 'file-location/user_temp.dbf' size 100m
autoextend on next 5m maxsize 5000m;
create user user identified by "default-password" default tablespace user
temporary tablespace user_temp;
grant connect to user;
grant resource to user;
grant SELECT_CATALOG_ROLE to user;
```

- For *pnuser_rep* and *pnuser_ep_rep*, execute the following command:

```
create user user identified by "default-password" default tablespace pnuser temporary
tablespace pnuser_temp;
grant connect to user;
grant resource to user;
grant SELECT_CATALOG_ROLE to user;
grant CREATE SYNONYM to user;
```

- For *pnuser_admin*

```
create tablespace user datafile 'file-location/user.dbf' size 100M autoextend on next
100M maxsize 500m;
create user user identified by "default-password" default tablespace user temporary
tablespace pnuser_temp profile default;
GRANT RESOURCE TO user;
GRANT DBA TO user;
GRANT CONNECT TO user;
GRANT SELECT ANY DICTIONARY TO user;
GRANT ANALYZE ANY TO user;
GRANT SELECT ANY TABLE TO user;
GRANT EXECUTE ON DBMS_LOCK TO user WITH GRANT OPTION;
GRANT ALTER SYSTEM TO user;
ALTER USER user QUOTA UNLIMITED ON user;
```

Enabling the *pnuser_admin* user to run maintenance tasks on other schemas

To enable the *pnuser_admin* user to run maintenance tasks, such as gathering statistics, on the other Prime Network database schemas, complete the following steps:

-
- Step 1** As the Oracle UNIX user, use SQL*Plus to log into user sys as sysdba.
- Step 2** Enter one of the following commands:
- If the *pnuser_admin* user does not exist, enter:

```
SQL> grant execute on dbms_lock to system with grant option;
```
 - If the *pnuser_admin* user already exists, enter:

```
SQL> grant execute on dbms_lock to pnuser_admin with grant option;
```
- Step 3** Verify that your database contains the temporary TEMP tablespace, which is required by the new Prime Network admin database user. If this tablespace does not exist, create the TEMP tablespace.

Post Installation Tasks For the Gateway

After installing the gateway, perform these post-installation tasks.

- [Starting the Prime Network Gateway, page 6-13](#)
- [Verifying Connectivity, page 6-15](#)
- [Configuring Prime Network Post-Installation, page 6-16](#)
- [Verifying the Redirected Ports, page 6-16](#)
- [Verifying the Drools Rules Configuration, page 6-16](#)
- [service iptables save, page 6-16](#)
- [Verifying the Monitoring \(Graphs\) Configuration, page 6-17](#)
- [Verifying the Installation of Registry Directories, page 6-17](#)
- [Adding Oracle Database Files, page 6-17](#)
- [Updating the Database Host in the Registry for NAT, page 6-18](#)

Starting the Prime Network Gateway

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- Step 1** As a Prime Network user, if you did not start the gateway at the end of the installation process, start it by entering the following command:

```
networkctl start
```

The gateway may require a few minutes to load.



Note

Prime Network 4.3.1 will automatically restart whenever the gateway server is restarted. If you want to disable this behavior (so that Prime Network has to be manually started after a gateway restart), see the [Cisco Prime Network 4.3.1 Administrator Guide](#).

-
- Step 2** As a Prime Network user, check the status of all processes and daemons by entering the following command:

```
status
```

The output lists all processes. For each AVM process that is checked, the **status** command displays, in brackets, the number of exceptions found in the total number of log file lines for that process. For example, the information for AVM 0 is [OK 0/39]; that is, 0 exceptions in the 39 log file lines that were checked.

The **status** command shows the version of the Prime Network installed and also verifies that the gateway processes are up and running. The processes are listed in the following table.

AVM Number	Process
AVM 0	High Availability/Switch
AVM 11	Gateway
AVM 19	Auto-Add
AVM 25	Fault Agent
AVM 35	Service Discovery
AVM 41	Compliance Manager
AVM 44	Operations Reports
AVM 76	Job scheduler AVM.
AVM 77	Change and Configuration Management (CCM)
AVM 78	VNE topology
AVM 83	TFTP Server (CCM)
AVM 84	Reports AVM
AVM 99	Management AVM
AVM 100	Event Collector
—	webserver daemon (client connection)
—	secured connectivity daemon



Note Check the log files for each AVM if there are any problems. The log files are located under `$NETWORKHOME/Main/logs`.

Verifying Connectivity

Verify the connectivity between the components as follows:

- Gateway and units— The gateway must have connectivity to all units. The gateway communicates frequently with the units to exchange information. Some unit-to-unit (VNE-to-VNE) communication may pass through the gateway. The units, managed devices, and gateway may not be located on separate networks.
- Gateway and clients— IP connectivity is required between the clients and the gateway. The Events and Vision GUIs also require IP connectivity to the database. The Events GUI is the only client application that communicates directly with the database.
Clients support automatic client updates from the gateway and, depending on the upgrade, the data can be up to 30 MB.
- Units and NEs—Unit host VNEs and therefore require SNMP/Telnet connectivity to the network elements.
- Gateway to Oracle database and unit to Oracle database—Required if you are installing an external database. See [Verifying the Connectivity to the Database, page 6-15](#).
- Gateway and units to Infobright database server—Required if you are installing Operations Reports.

Verifying the Connectivity to the Database



Note

This section is applicable only if you are using Prime Network with external database.

To confirm that your database is configured correctly:

Step 1 As *pnuser*, connect to SQLPLUS by entering the following command:

```
sqlplus username/'password'@'(DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCP)(HOST = host)(PORT = port)))(CONNECT_DATA =(SID = sid)))'
```

The password is the same as the root built-in password, *host* is the server where Oracle is installed, *port* is the listener's port (default is 1521) and *sid* is the database's name (default is mcdb).

Step 2 Confirm that the SQL client can connect to the database. If you see the a prompt similar to the following, the connection was successful:

```
SQL*Plus: Release 12.1.0.1.0 Production on Fri Sep 26 13:58:48 2014
```

```
Copyright (c) 1982, 2013, Oracle. All rights reserved.
```

```
Last Successful login time: Fri Sep 26 2014 13:58:28 +03:00
```

```
Connected to:
```

```
Oracle Database 12c Enterprise Edition Release 12.1.0.1.0 - 64bit Production  
With the Partitioning, OLAP, Advanced Analytics and Real Application Testing options
```

If the test fails, contact your local database administrator and repeat the test.

Configuring Prime Network Post-Installation

The standard Prime Network installation process includes the configuration phase. However, you can choose to configure Prime Network at a later stage.



Note

Do *not* rerun the **network-conf** script after AVMs or units are added. Rerunning the **network-conf** script could cause problems with the Prime Network registry.

To access the Prime Network configuration:

-
- Step 1** Make sure the database and listener are up, and as *pnuser*, enter the following command:
- ```
network-conf
```
- Step 2** The first time you log in, you are prompted to change the default password. It is recommended that you do so. To change the default user password, enter:
- ```
passwd pnuser
```
- Step 3** Provide the necessary information at the prompts, as described in [Installing the Prime Network Gateway With an Embedded Database, page 6-2](#) and [Installing the Prime Network Gateway With an External Database, page 6-6](#).
-

Verifying the Redirected Ports

Prime Network redirects some ports (161, 162, 514, 69) during the installation for receiving the traps and messages. Verify that these ports were redirected by entering the following as the root user:

```
iptables -L -t nat
```

The result should contain the following rows:

```
REDIRECT udp -- anywhere anywhere udp dpt:snmptrap redir ports 1161
REDIRECT udp -- anywhere anywhereudp dpt:snmptrap redir ports 1162
REDIRECT udp -- anywhere anywhereudp dpt:syslog redir ports 1514
REDIRECT udp -- anywhere anywhereudp dpt:tftp redir ports 1069
```

If not, enter the following:

```
iptables -t nat -A PREROUTING -p udp --dport 161 -j REDIRECT --to-port 1161
iptables -t nat -A PREROUTING -p udp --dport 162 -j REDIRECT --to-port 1162
iptables -t nat -A PREROUTING -p udp --dport 514 -j REDIRECT --to-port 1514
iptables -t nat -A PREROUTING -p udp --dport 69 -j REDIRECT --to-port 1069
service iptables save
```

Verifying the Drools Rules Configuration

To confirm that the Drools rules file was created correctly, check the `$NETWORKHOME /Main/data` directory and verify that the `post.drl` file exists. If it does not exist, rerun the installation.

Verifying the Monitoring (Graphs) Configuration

To confirm that the Monitoring (graphs) tool is working correctly:

-
- Step 1** Open a web browser on a client that is connected to the gateway.
- Step 2** Enter the following URL to connect to the Cisco Prime Network graph:
- https://gateway-IP-address:1311/graphs/**



Note The username and password for the graphs were configured during installation. For changing the password for monitoring (graphs) tool, see [Cisco Prime Network 4.3.1 Administrator Guide](#).

- Step 3** If you cannot log in, the tool may not be enabled. You can enable and disable the tool by logging in as *pnuser* and running **webcontrol start** or **webcontrol stop**.
-

Verifying the Installation of Registry Directories

To confirm that the registry directories are installed on the gateway:

-
- Step 1** On the server, browse to the directory `~/Main/registry/ConfigurationFiles`.
- Step 2** Verify that the directory contains the following subdirectories:
- 127.0.0.1
 - 0.0.0.0
- Step 3** Verify that the webserver daemon is up and running by executing **networkctl status**.
-

Adding Oracle Database Files



Note This topic is applicable only if you are using Prime Network with embedded database.

Use the **add_emdb_storage.pl** script (or **add_emdb_storage.pl -ha** for deployments with gateway high availability) to add database files according to the database size you estimate you will need. For usage of **add_emdb_storage.pl -ha** script, see [Cisco Prime Network 4.3.1 High Availability Guide](#).

When using this script, you are prompted to provide the database profile, the estimated database capacity and the history size for events and workflows. This enables the script to calculate the maximum size of the database, and to create the data files, temp files, and redo logs. See [Prime Network Gateway and Database Requirements, page 2-2](#) for information on database sizing.

Before You Begin

If you need assistance estimating the database size, contact your Cisco account representative.

-
- Step 1** Log into the gateway as *pnuser*.
- Step 2** Change directories to `$NETWORKHOME/Main/scripts/embedded_db` and enter the following command:
- ```
./add_emdb_storage.pl
```
- Step 3** Enter the number corresponding to the estimated database profile that meets your requirement.
- Step 4** Enter the event and workflow archiving size in days.




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**Note** If you enter incorrect values—such as the wrong database profile estimate—you can rerun the script with different inputs.

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If you encounter any errors, messages similar to the following examples are displayed.

- If there is not enough disk space to create the additional database files or redo logs, enter another location.
- If the files or redo logs cannot be created for any reason, you will see an error message and the following prompt:

```
- How would you like to continue?

1) Retry
2) Skip (move to the next in list)
3) Abort
(1 - 3) [default 1]
```

For example, if the correct permissions were not set, you would see the following.

```
Failed to add datafile for pn431:
-1119: ORA-01119: error in creating database file '/2del/pn431_DATA11.dbf'
ORA-27040: file create error, unable to create file
Linux-x86_64 Error: 13: Permission denied
```

The menu choices provide with you with an opportunity to fix the permissions and retry creating the file or log.

The log file is located in `$NETWORKHOME/Main/logs/emdb/add-storage-time-stamp.log`.

## Updating the Database Host in the Registry for NAT

If you are using NAT with the Events client, update the database host in the registry so it contains the hostname instead of the IP address. Complete the following steps after the gateway installation is complete and the system is up and running.




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**Note** If you already use a hostname instead of an IP address, you do not have to repeat this procedure.

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**Step 1** Verify that the Windows client workstations have the correct Domain Name System (DNS) mapping.

**Step 2** From ~/Main, enter the following commands:

```
./runRegTool.sh -gs 127.0.0.1 set 0.0.0.0 site/persistence/nodes/main/Host database-server-hostname
./runRegTool.sh -gs 127.0.0.1 set 0.0.0.0 site/persistence/nodes/ep/Host database-server-hostname
```

**Step 3** Enter the following command to restart the Prime Network system:

```
networkctl restart
```

## Environment Variables, Aliases, and Folders Created During Installation

The Prime Network installation script creates environment variables, folders, aliases, and services on the Prime Network gateway.

Table 6-5 defines the *pn-user* environment variables defined by the installation script.

**Table 6-5** *pn-user Environment Variables Defined by the Installation Script*

| Variable Name                                                                                                                                                                            | Default                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| NETWORKHOME                                                                                                                                                                              | /export/home/pnuser        |
| <b>Note</b> At the command line, enter \$PRIME_NETWORK_HOME for this variable. For compatibility with previous Cisco Active Network Abstraction releases, this variable was not changed. |                            |
| JAVA_HOME                                                                                                                                                                                | NETWORKHOME/java           |
| NCCM_HOME                                                                                                                                                                                | NETWORKHOME/NCCMComponents |
| XMP_HOME                                                                                                                                                                                 | NETWORKHOME/XMP_Platform.  |



### Caution

Do not change permissions on the *NETWORKHOME* directory. If the permissions are too lax, SSH communication problems can occur and the gateway might not start.

Table 6-6 lists the aliases defined by the installation script.

**Table 6-6** *Aliases Defined by the Installation Script*

| Table Alias | Content                                              |
|-------------|------------------------------------------------------|
| reg         | Changes the directory to \$NETWORKHOME/Main/registry |
| main        | Changes the directory to \$NETWORKHOME/Main          |
| logs        | Changes the directory to \$NETWORKHOME/Main/logs     |

Table 6-7 lists the folders created in Prime Network 4.3.1.

**Table 6-7 Folders Created in Prime Network**

| Folder                           | Contents                                                                                                       |
|----------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Folders in NETWORKHOME.</b>   |                                                                                                                |
| Main/bosconfig                   | Prime Network configuration files (syntax of the commands, supported errors, and the connection configuration) |
| Main/bosconfig/bos_shell_scripts | User-created scripts                                                                                           |
| Main/data                        | Drools configuration files and user-defined scripts.                                                           |
| Main/logs                        | Log output files ( <i>AVM-ID.out</i> ; for example, 0.out or 11.out)                                           |
| Main/registry                    | Local copy of registry files                                                                                   |
| Main/registry/ConfigurationFiles | <i>Golden source</i> (master registry) configuration files in the Prime Network gateway                        |
| Main/registry/templates          | Registry file templates used by the Prime Network gateway for global system changes                            |
| local/scripts                    | Scripts on the gateway and units                                                                               |
| Main/scripts                     | Scripts on the gateway and units                                                                               |
| Third_Party                      | Third-party files                                                                                              |
| Main/unix                        | UNIX maintenance scripts and utilities                                                                         |
| Main/reportfw/rptdocument        | Reports                                                                                                        |
| Main/drivers                     | VNE driver files                                                                                               |
| prime_integrator                 | Integrating Prime Network into Prime Central                                                                   |
| NCCMComponents                   | Configuration and Change Management (CCM)                                                                      |
| XMP_Platform                     | Contains XMP platform components used by CCM                                                                   |
| pentaho                          | Operations Reports                                                                                             |

# Product Services Installed with Prime Network

Table 6-8 lists the product services that are installed with the Prime Network system.

**Table 6-8** Product Services Installed with Prime Network

| Name                                | Function                                                                                  | Configuration Information            | TCP or UDP Port Number                                                                            | Dynamic TCP or UDP Port Ranges   | Interdependencies with Other Features, Services, and Applications | Traffic Classification |
|-------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------|------------------------|
| avm[1-999]                          | Main application                                                                          | Main/registry/Av<br>m[NUM].xml       | 8000+AVM<br>number for<br>secured XML<br>RPC<br><br>2000+AVM<br>number for<br>local<br>management | 2000-3000,<br>8000-9000<br>(TCP) | Java, Perl, Tcsh                                                  | Inner protocol         |
| sheer_secured<br>daemon             | Secured<br>connectivity<br>between<br>gateway and<br>unit                                 | local/sheer_secured/<br>sheer_config | 1101 (TCP)                                                                                        | —                                | —                                                                 | SSH                    |
| webservice<br>daemon                | Serves the<br>client Web<br>Start and the<br>diagnostics<br>tool with<br>graphs           | utils/apache/conf/<br>/sheer.conf    | 1311 (TCP)                                                                                        | —                                | —                                                                 | HTTP                   |
| Machine<br>interface                | BQL machine-<br>to-machine<br>interface                                                   | —                                    | 9002 (TCP)                                                                                        | —                                | Java                                                              | —                      |
| Secure<br>machine<br>interface      | Secured (SSL)<br>BQL<br>machine-to-<br>machine<br>interface                               | —                                    | 9003 (TCP)                                                                                        | —                                | Java                                                              | —                      |
| Transport<br>switch                 | Gateway/unit<br>internal<br>message bus.                                                  | —                                    | 9390 (TCP)                                                                                        | —                                | Java                                                              | —                      |
| Client<br>Applications<br>Transport | Client/gatewa<br>y message<br>bus.<br><br>This PTP<br>connection is<br>secured by<br>SSL. | —                                    | 9771 (TCP)                                                                                        | —                                | Java                                                              | —                      |

