Cisco Prime Fulfillment Installation Guide 6.2

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CONTENTS

About This Guide

This preface includes the following sections:

Objective

This guide lists the hardware and software recommendations for running this product, and it describes how to install, set up, and log into Cisco Prime Fulfillment.

Note With this release, Prime Fulfillment can be used as a standalone product or as part of the Cisco Prime for IP Next Generation Network (IP NGN) Suite. When installed as part of the suite, you can launch Prime Fulfillment from the Prime Central portal. For more information about Prime Central, see the documentation for Cisco Prime Central 1.0.

Related Documentation

The entire documentation set for Prime Fulfillment, can be accessed at:

http://www.cisco.com/en/US/products/ps11664/tsd_products_support_series_home.html

or at:

http://www.cisco.com/go/fulfillment

Tip To copy and paste a two-line URL into the address field of your browser, you must copy and paste each line separately to get the entire URL without a break.

The following documents comprise the Prime Fulfillment documentation set:

General Documentation (in suggested reading order)

- *Cisco Prime Fulfillment Getting Started and Documentation Guide 6.2*

  http://www.cisco.com/en/US/docs/net_mgmt/prime/fulfillment/6.2/roadmap/docguide.html
- *Release Notes for Cisco Prime Fulfillment 6.2*

  http://www.cisco.com/en/US/docs/net_mgmt/prime/fulfillment/6.2/release/notes/relnotes.html
- *Cisco Prime Fulfillment Installation Guide 6.2*

  http://www.cisco.com/en/US/docs/net_mgmt/prime/fulfillment/6.2/installation/guide/installation.html
- *Supported Devices Table for Prime Fulfillment 6.2*.

  http://www.cisco.com/en/US/docs/net_mgmt/prime/fulfillment/6.2/supported/devices/supported_devices_table.xls
- *Cisco Prime Fulfillment User Guide 6.2*

  http://www.cisco.com/en/US/docs/net_mgmt/prime/fulfillment/6.2/user/guide/prime_fulfill.html
- *Cisco Prime Fulfillment Theory of Operations Guide 6.2*

  http://www.cisco.com/en/US/docs/net_mgmt/prime/fulfillment/6.2/theory/operations/guide/theory.html
- *Cisco Prime Fulfillment Third Party and Open Source Copyrights 6.2*

  http://www.cisco.com/en/US/docs/net_mgmt/prime/fulfillment/6.2/third_party/open_source/copyright/Prime_Fulfillment_Third_Party_and_Open_Source_Copyrights62.pdf

API Documentation

- *Cisco Prime Fulfillment API Programmer Guide 6.2*

  http://www.cisco.com/en/US/docs/net_mgmt/prime/fulfillment/6.2/developer/guide/apipg.html
- *Cisco Prime Fulfillment API Programmer Reference 6.2*

  http://www.cisco.com/en/US/docs/net_mgmt/prime/fulfillment/6.2/developer/reference/xmlapi.zip

Note All documentation *might* be upgraded over time. All upgraded documentation will be available at the same URLs specified in this document.

Other Cisco Prime Product Documentation

See also the documentation for the following Cisco Prime products:

- *Cisco Prime Central 1.0*

  http://www.cisco.com/en/US/products/ps11754/tsd_products_support_series_home.html
- *Cisco Prime Network 3.8*

  http://www.cisco.com/en/US/products/ps11879/tsd_products_support_series_home.html
- *Cisco Prime Optical 9.3.1*

  http://www.cisco.com/en/US/products/ps11670/tsd_products_support_series_home.html
- *Cisco Prime Performance Manager 1.0*

  http://www.cisco.com/en/US/products/ps11715/tsd_products_support_series_home.html

Audience

This guide is intended primarily for the following audiences:

- System administrators who are familiar with Solaris and are responsible for installing software on Linux servers such as Cisco UCS or Sparc Solaris servers.
- System administrators who are familiar with Cisco devices and their company's network topology.

How This Book is Organized

This guide contains the following chapters:

- Chapter 1, "System Recommendations," describes the hardware and software recommendations and requirements to run Prime Fulfillment.
- Chapter 2, "Installing and Logging Into Cisco Prime Fulfillment," explains what is packaged with Prime Fulfillment, prerequisites for installing Prime Fulfillment, how to install Prime Fulfillment, configuring HTTPS, logging in for the first time, how to install license keys, repository migration and upgrading, launching the Topology Tool, and uninstalling Prime Fulfillment.
- Appendix A, "Setting Up Oracle for Prime Fulfillment," describes how to set up an Oracle Database 11g, Enterprise Edition Release 11.2.0.1.0 - 64 bit Production server that works with Prime Fulfillment.
- Appendix B, "Setting up Cisco Configuration Engine with Prime Fulfillment," describes how to set up a Cisco Configuration Engine, configure a TIBCO Rendezvous Routing Daemon (rvrd), and check router configurations for Cisco Configuration Engine software with Prime Fulfillment.
- Appendix C, "Solaris Virtualization Support," describes how Prime Fulfillment Solaris Virtualization zones provide an artificial environment that hide details such as physical devices, IP addresses, etc.
- Appendix D, "Backup and Restore of Prime Fulfillment Repository and Standby System," describes the objectives of backup and restore and a standby system and how to set them up for Sybase and for Oracle.
- Appendix E, "Prime Fulfillment Runtime Configuration Information," specifies the default ports and command-line interfaces (CLIs) used by Prime Fulfillment.
- Appendix F, "Troubleshooting," describes the major areas in the Cisco IP Solution Center installation in which troubleshooting might be necessary.
- Index

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.

CHAPTER 1

System Recommendations

This chapter describes the system recommendations and requirements for Cisco Prime Fulfillment. Prime Fulfillment is a web-based application you install on a Sun Solaris server, along with a web server and other supporting packages. You access Prime Fulfillment using a web browser.

The recommendation is to thoroughly review this list before even planning your installation, to be sure you have all the hardware and software you must successfully install.

This chapter includes the following sections:

Prime Fulfillment Server Hardware

You must have a CD-ROM drive to install the Prime Fulfillment 1.0 product.

For the Sun™ Solaris server, the minimum recommendations are as shown in Table 1-1 and for the Linux server, the minimum recommendations are as shown in Table 1-2

Table 1-1 Minimum Linux Server Recommendations for Prime Fulfillment Applications

Class	Applications	Minimum Linux Server	RAM	Swap Space	Disk Space
Entry	Cisco Prime Diagnostics or L2VPN and L3 MPLS with a total of up to 1500 attachment circuits Note: Not recommended for API use.	C200 with 1 CPU (recommending X5550) Standard RAID card (0 and 1)	8 GB (see note below)	8 GB	73 GB hard drive (see note below)

Table 1-1 Minimum Linux Server Recommendations for Prime Fulfillment Applications

Mid-range	L2VPN and L3 MPLS with a total of up to 10,000 attachment circuits	C200 with 2 CPUs (recommending 2 x X5550 for cost perspective) Standard RAID card (0 and 1)	16 GB	16 GB	73 GB hard drive (see note below)
High End	L2VPN and L3 MPLS with a total of more than 10,000 attachment circuits	C210 with 2 CPUs (recommending 2 x X5670) PCI RAID card (0, 1, 5, 6...)	24 GB	32 GB	146 GB hard drive 4 disk drives (RAID5) for virtual machines.

Notes:

The recommended servers in this table are examples for typical installations. Relative performance can be impacted by many factors. Please contact your Cisco account representative if you need assistance in selecting the correct server.

The default Oracle and Sybase database layouts are sufficient for Prime Fulfillment. Further optimization is your preference.

The two disk drives are required (one for OS/ISC and one for swap space). If disk mirroring for better availability is required then four disk drives is two mirrored pairs.

The minimum memory resources required for a mid-level VmWare image running Prime Fulfillment are 4 GB RAM and 8 GB swap space. To determine whether all of the CPU core resources are needed for running Prime Fulfillment, it is recommended that you perform benchmark testing of your server under typical load.

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Table 1-2 Minimum Sun Solaris Server Recommendations for Prime Fulfillment Applications

Class	Applications	Minimum Sun Solaris Server	RAM	Swap Space	Disk Space
Entry	Cisco Prime Diagnostics or L2VPN and L3 MPLS with a total of up to 1500 attachment circuits Note: Not recommended for API use.	Sun™ SPARC T5210, Quad-core CPU, 1.2 GHz	8 GB (see note below)	8 GB	73 GB hard drive

Table 1-2 Minimum Sun Solaris Server Recommendations for Prime Fulfillment Applications (continued)

Mid-range	Traffic Engineering Management (TEM) of up to 5000 TE tunnels or L2VPN and L3 MPLS with a total of up to 10,000 attachment circuits	Sun™ SPARC T5220, Quad-core CPU, 1.2 GHz	8 GB	8 GB	73 GB hard drive
High End	Traffic Engineering Management (TEM) of more than 5000 TE tunnels or L2VPN and L3 MPLS with a total of more than 10,000 attachment circuits	Sun™ SPARC M4000, 2 CPUs, 2.15 GHz	16 GB	32 GB	146 GB hard drive

Notes:

The recommended servers in this table are examples for typical installations. Relative performance can be impacted by many factors. Please contact your Cisco account representative if you need assistance in selecting the correct server.

The default Oracle and Sybase database layouts are sufficient for Prime Fulfillment. Further optimization is your preference.

For server vitualization, minimum recommendations are a Sun™ SPARC T5210 with 8 GB of memory (minimum orderable).

The minimum resources required for an entry-level LDOM running Prime Fulfillment are two 1.2 GHz cores and 4 GB RAM and 8 GB swap space.

The minimum memory resources required for a mid-level LDOM running Prime Fulfillment are 4 GB RAM and 8 GB swap space. To determine whether all of the CPU core resources are needed for running Prime Fulfillment, it is recommended that you perform benchmark testing of your server under typical load.

In addition to Solaris platforms, Prime Fulfillment supports Linux/UCS/VMware platforms. Specific platforms supported include:

- Red Hat Enterprise Linux, version 5.3 and 5.5 (64-bit Edition)
- VMware virtualization, including running the embedded database.
- Linux UCS B-series blade servers.
- Linux UCS C-series chassis.

Prime Fulfillment Server Solaris Configuration

Solaris 10 is supported in this release. Solaris 10 with recommended patches of at least 118822-30 for the kernel level of the patch cluster and JDK 1.6.0_07 patches are found at: http://sunsolve.sun.com. As a minimum, you must get your system up to the 118822-30 Kernel patch level. For installation instructions, see the README file which is at the same location as the patch bundle.

Before installing Prime Fulfillment, configure the server to be able to perform hostname to IP address translations. Ensure that Domain Naming System (DNS) or an alternative is configured.

Table 1-3, "Solaris Software Requirements," explains the Solaris requirements.

Table 1-3 Solaris Software Requirements

Requirements	Description
Solaris 10	Install Solaris 10 on the Sun Sparc server. Choose either the Developer System Support or the Entire Distribution software groups. Do *not* choose the End User System software group. Then follow these guidelines: Full Distribution—The full distribution includes the following required packages. If you did not install the full distribution, before proceeding with the installation, ensure that at a minimum the following packages are installed: —**SUNWbtool**—Software development utilities —**SUNWbzip**—The **bzip** compression utility —**SUNWlldap**—LDAP libraries —**SUNWscpu**—Utilities for user interface and source build compatibility with SunOS 4.x —**SUNWsprot**—Solaris Bundled tools —**SUNWxcu4**—Utilities providing conformance with XCU4 specifications To check if your installation includes these packages, enter: **pkginfo** *package* where: *package* is one of the packages listed above.

Caution Make sure that the file descriptor limit is *not* set in the Prime Fulfillment workstation login shell file (which can be the **.login** file, the **.cshrc** file, the .**profile** file, or the **.kshrc** file). If the login shell file contains a line with the **ulimit -n** command (for example, "`ulimit -n <number>`"), comment out this command line in the file. Log out and then log back in to ensure that the ulimit is no longer set.

Prime Fulfillment cannot override the file descriptor limitation setting in the login shell file. If the value is set incorrectly, Prime Fulfillment might experience operational problems.

Prime Fulfillment provides support for Solaris Virtualization. This is described in Appendix C, "Solaris Virtualization Support."

Prime Fulfillment Client

The following is needed for the Prime Fulfillment client:

- A web browser is needed for the client machine on which to run Prime Fulfillment. Microsoft Internet Explorer 8.0 for Windows and Mozilla Firefox 3.6.x for Windows are supported.
- The screen resolutions that are recommended are 1024x768 pixels and 1280x1024 pixels. To view the fonts and colors correctly, the system display must be set to use a color quality of (at least) 32-bits.

Note Adobe Flash player (version 10.3.183.7) and its plug-in must be installed to support the web browser and to enable the main bar and charts in the Prime Fulfillment GUI.

Note In Internet Explorer, we recommend disabling the script debugging feature. To do this, navigate to **Tools > Internet Options** and click the **Advanced** tab. Select the check box **Disable script debugging** and click **OK**.

Note When using Mozilla Firefox and launching Prime Fulfillment in a second window, you *might* lose the information in the first Prime Fulfillment window. To avoid this, stay in Prime Fulfillment and launch a new Prime Fulfillment from a tab or a hyperlink within Prime Fulfillment.

If launching a new Firefox window is necessary, do so with a different Firefox profile.

- Java Runtime Environment (JRE) and Java Web Start must be installed on the client machine to run Inventory Manager. Java 6.0 Update 7 is supported.

Note When using more than one Prime Fulfillment login, ensure each login is using a different HTTP session. To do so, run each session in a separate browser launched from the command line or by clicking on the browser icon on the desktop or **Start** menu. Do not run parallel Prime Fulfillment logins in tabs within the same browser window or in browser windows launched from existing browser windows.

For operations that last longer than the amount of time predefined by the browser, you may get a warning message that says

"Warning: Unresponsive script. A script on this page may be busy, or may have stopped...."

Examples of tasks during which this warning message occurs are:

- editing a customer device with many interfaces,
- editing user details when there are many users.

Workaround- Increase the browser timeout value.

- For Mozilla Firefox, see http://kb.mozillazine.org/Unresponsive_Script_Error
- For Internet Explorer 8, see http://support.microsoft.com/kb/175500#LetMeFixItMyselfAlways

IOS XR Device Setup

The following are the minimum patches for IOS XR, PIEs:

- **mini.pie** - Always required
- **mpls.pie** - Always required for Prime Fulfillment
- **mcast.pie** - Required for Prime Fulfillment layer 3 multicast functionality
- **mgbl.pie** - Required for Prime Fulfillment layer 2 and layer 3 deployment to work (because they use the XML agent); not required for TEM
- **k9sec.pie** - Required only if using Secure Shell (SSH)

Supported Cisco Network Devices and Software Versions

The following hardware and software are recommended and required as specified:

- Prime Fulfillment 6.2 testing on an Oracle database has been on Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64 bit Production. If you would like to use another version of Oracle, see Oracle's compatibility information.
- CEs are supported with Cisco IOS 12.1 or later if the CE is a router, and if connecting using Ethernet then it must have a VLAN ethernet interface. The Management Customer Edge router (MCE) can be any CE.
- The Network-facing Provider Edge (NPE) and User-facing Provider Edge (UPE) can be any of the PE devices in the following tables.

The devices and related software supported are listed in the Supported Devices Table for Prime Fulfillment 6.2.

CHAPTER 2

Installing and Logging Into Cisco Prime Fulfillment

Use the information described in this chapter in the following order:

Note See Chapter 1, "System Recommendations," before installing Cisco Prime Fulfillment.

Note If you are planning to use an Oracle Database with Prime Fulfillment instead of the default embedded database, see Appendix A, "Setting Up Oracle for Prime Fulfillment" before continuing with the installation.

Initial Configuration—Creating the Prime Fulfillment Owner

Note If you are planning to use an Oracle Database with Prime Fulfillment instead of the default embedded database, see Appendix A, "Setting Up Oracle for Prime Fulfillment" before continuing with the installation.

The first time you install Prime Fulfillment, create a UNIX user to own the software. This user is the default username when you log into Prime Fulfillment. Create the user and group using Solaris commands or the Solaris Admintool. This user must have a valid group ID and read and write permissions to the install directory.

To add a user to your server using the standard Solaris commands, follow these steps:

Step 1 At the Solaris prompt, log in as **root**.

Step 2 To create the user, enter:

```
useradd -d /users/<username> -m -s /bin/<shell_type> <username>
passwd <username>
```

where:

-m creates the directory specified in **-d**

<shell_type> is **sh** for the Bourne shell. The Bourne shell is the only supported shell.

iscadm is recommended as the *<username>*.

Step 3 At the prompt, enter a password.

Installing Prime Fulfillment

Before installing Prime Fulfillment, configure the server to be able to perform hostname to IP address translations. Ensure that Domain Naming System (DNS) or an alternative is configured.

Prime Fulfillment accesses its database using a connection based on the hostname of the server. Ensure that you can reach the host via its hostname. For example, if the hostname is 'pollux', set up hostname resolution such that you do not get an error response when entering 'ping pollux'.

Note When Prime Fulfillment is integrated with Cisco Prime IP-NGN (suite mode) by a non-root user, then the <PRIME_F_HOME>/bin/host_edit.pl script file has to be executed manually by the root user in order to enable the SSL functionality.
To execute the host_edit.pl script file:
1) Login as root user using the CLI in Prime Fulfillment server.
2) Execute the host_ediptl.pl script as shown below by providing the Prime Central hostname and IP address.
<PRIME_F_HOME>/bin/host_edit.pl <IPADDRESS> <HOSTNAME>
This updates the /etc/hosts file on the Prime Fulfillment server and enables the SSL functionality.

To add Prime Fulfillment to your system, either as a new Prime Fulfillment customer or a customer upgrading from an existing Prime Fulfillment release, you can choose one of the following two ways to install:

- Installing Prime Fulfillment Using the Graphical User Interface, page 2-3
- Installing Prime Fulfillment Using the Command Line Installer, page 2-13

Note After installing Prime Fulfillment, the installation log can be found in <*PRIMEF_HOME*>**/tmp**, where <*PRIMEF_HOME*> is the directory specified for Prime Fulfillment to be installed to. Then, for example, if you installed in **/opt/PrimeFulfillment**, look for the installation log in **/opt/PrimeFulfillment/tmp/PrimeInstallationLog.txt**.

Note It is not possible to install Prime Fulfillment for use with an Oracle database using the Command Line Installer. Therefore, if you will be using Oracle, be sure to use the GUI installation method, explained in the "Installing Prime Fulfillment Using the Graphical User Interface" section on page 2-3.

We recommend that you install Prime Fulfillment using the Graphical User Interface (GUI) installer. This enables more configuration options than the CLI installer.

The installer checks for two kinds of disk space:

- In the intended install location, you need 1.2 GB free for the binaries plus an extra 250 MB for log file growth and the installation of the Cisco Configuration Engine software.
- In the database directory, you need 1 GB free. For large systems, you should have 4 to 5 GB of space. If the directory has less than 1.2 GB free, you can still install Prime Fulfillment, but you might run out of space.

See Chapter 1, "System Recommendations" for more information about disk space and planning.

The complete installation for the Prime Fulfillment software requires 1.2 GB of free disk.

Installing Prime Fulfillment Using the Graphical User Interface

This section describes both a general installation procedure that applies to all upgrade path and specific details regarding individual upgrade paths.

After reviewing the information in the "Installing Prime Fulfillment" section on page 2-2, you can follow these steps to install the Prime Fulfillment software using the Graphical User Interface (GUI):

Step 1 If an existing Prime Fulfillment installation is running, enter the **./prime.sh stop** command.
If an existing ISC installation is running, enter the **Stop All** command.
See the *Cisco Prime Fulfillment User Guide 6.2* for information about WatchDog commands.

Step 2 Insert the Prime Fulfillment installation CD-ROM.

Caution When you insert the CD-ROM, the File Manager is invoked automatically. Do *not* use the File Manager to install the Prime Fulfillment product. Run the installation script from a terminal window.

Note You can install as **root** or as the user you will designate as the Prime Fulfillment owner. If you want Prime Fulfillment to automatically restart when you reboot a server, it is recommended to install as **root**. If you choose not to do this, then you must restart Prime Fulfillment manually when rebooting a server.

Step 3 Open a terminal window and log in as the identified UNIX user.

Step 4 Change to the CD ROM directory:

```
$ cd /cdrom/cdrom0
```

Step 5 If you have an existing Prime Fulfillment installation with a database, you *must* back up your current database. See the instructions to back up and restore an Prime Fulfillment repository or create a standby system, as explained in Appendix D, "Backup and Restore of Prime Fulfillment Repository and Standby System".

Step 6 Change to the path in the cdrom where the Solaris and Linux installation files are available, as follows:

```
cdrom> cd <path name>
```

where:

<path name> Specify the location of the directory where the Solaris and Linux installation files are available.

Path for the Solaris installation files in cdrom is: **/prime_fulfillment_6_2_FCS/Solaris**

Path for the Linux installation files in cdrom is: **/prime_fulfillment_6_2_FCS/Linux**

Step 7 Execute the Prime Fulfillment product installation script as follows:

```
./install.sh
```

The Prime Fulfillment Graphical User Interface is initiated.

The Prime Fulfillment software is installed by default in the **/opt/PrimeFulfillment** directory.

Step 8 If you are upgrading an existing Prime Fulfillment installation, ensure that the existing Prime Fulfillment application is completely shut down, and use *one* of the following methods to specify the target directory:

a. Install this version of Prime Fulfillment into the same directory as the existing Prime Fulfillment product.

For example, if you are upgrading from Prime Fulfillment 6.1 to Prime Fulfillment 6.2 and the existing Prime Fulfillment 6.1 installation is under the directory /opt/isc-6.1, then install Prime Fulfillment 6.2 in the same directory using the following steps:

- Invoke the Prime Fulfillment GUI using the command:

  ./install.sh

- Choose the installation directory as:

  /opt/isc-6.1

- Choose the option **Upgrade Existing ISC Repository**
- Choose the **upgradeIscSchema.sh** script path
- Complete the remaining steps using the default values.

-or-

b. Install Prime Fulfillment 6.2 in the same directory with a new name.

For example, if you are upgrading from Prime Fulfillment 6.1 to Prime Fulfillment 6.2 and the existing Prime Fulfillment 6.1 installation is under the directory /opt/isc-6.1, rename this directory to **/opt/PrimeFulfillment** and then install Prime Fulfillment 6.2 in the same directory using the following steps:

- Invoke the Prime F GUI installation using the command:

  ./install.sh

- Choose the installation directory as:

  /opt/PrimeFulfillment

- Choose the option **Upgrade Existing ISC Repository**
- Choose the **upgradeIscSchema.sh** script path
- Complete the remaining steps using the default values.

-or-

c. Install Prime Fulfillment 6.2 in a new directory.

For example, if you are upgrading from Prime Fulfillment 6.1 to Prime Fulfillment 6.2 and the existing Prime Fulfillment 6.1 installation is under the directory /opt/isc-6.1, then install Prime Fulfillment 6.2 in a new directory /opt/PrimeFulfillment, using the following steps:

- Invoke the Prime Fulfillment GUI using the command:

  ./install.sh

- Choose the installation directory as:

  /opt/isc-6.1

- Choose the option **Upgrade Existing ISC Repository**
- Choose the **upgradeIscSchema.sh** script path
- Complete the remaining steps using the default values.

-or-

d. (Using the CLI) Install Prime Fulfillment in a new directory.

For example, if you are upgrading from Fulfillment 6.1 to Prime Fulfillment 6.2 and the existing Fulfillment 6.1 installation is under the directory /opt/isc-6.1, then install Prime Fulfillment 6.2 in a new directory /opt/PrimeFulfillment, with steps like the following:

- Save the ISC 6.0 installation for possible uninstall purposes, as follows:

  tar cvf isc-6.1.tar /opt/isc-6.1

- Copy the /opt/isc-6.1/Repository to /opt/PrimeFulfillment directory.

  cp –R /opt/isc-6.1/Repository /opt/PrimeFulfillment

- Go to

  <Prime Fulfillment installation directory>/upgradeTool/

- Execute the command:

  ./upgradeIscSchema.sh /opt/PrimeFulfillment

- Provide the default Prime Fulfillment admin username and password.

Step 9 Click **Next**.

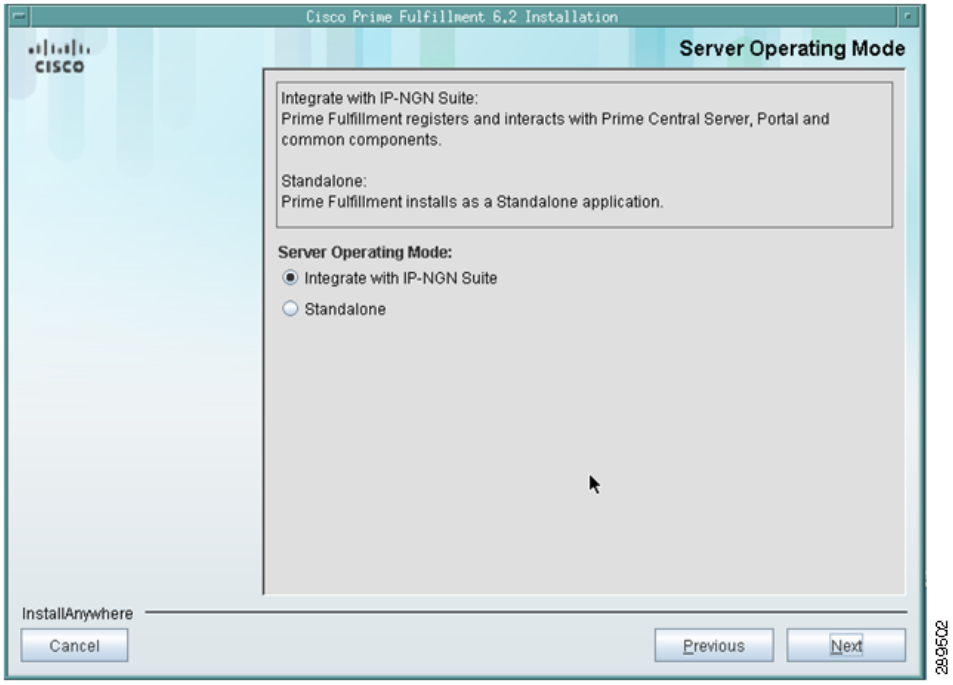
The Choose Installation Type dialog box is displayed.

Step 10 Choose one of the following types of installation and click **Next**.

- **Express**- enables standard set of options.
- **Custom**- enables you to specify various ports and locations, and change the watermark level for available disk space.

The Server Operation Mode dialog box is displayed as shown in Figure 2-1.

Figure 2-1 Server Operating Mode Dialog Box



The following steps assume that you have chosen the Standard installation type. Steps that only appear in the custome installation are marked as (Custom).

Step 11 Choose one of the following operating modes and click **Next**.

- Integrate with IP-NGN Suite- Cisco Prime Fulfillment registers and interacts with the Prime Central server, portal, and other common components. You will need to provide Prime Central server details during installation. When installed as part of the suite, you can launch Prime Fulfillment from the Prime Central portal. For more information about Prime Central, see the documentation for Cisco Prime Central 1.0.
  After you have integrated Prime Fulfillment with the IP-NGN Suite, you will not be able to modify Prime Fulfillment to work as a Standalone application. However, if you install Prime Fulfillment as a Standalone application, you can later integrate it with the IP-NGN Suite.
- Standalone- Cisco Prime Fulfillment installs as a standalone application.

The Cisco Prime Fulfillment 6.2 Owner dialog box is displayed.

Step 12 Enter the username you created in Step 2 of the "Initial Configuration—Creating the Prime Fulfillment Owner" section on page 2-2 and click **Next**.

Note If you leave the field blank the Prime Fulfillment owner will be the user you are using to run the installation. It is not recommended to make the root user the Prime Fulfillment owner.

The Choose Installation Folder dialog box is displayed.

Step 13 Specify the location of the directory where you want to install Prime Fulfillment, and click **Next**. To find an appropriate directory, click **Choose...**.

Note If you are not installing as **root**, you must have write permission for this directory.

Note In the intended install location, you need 1.2 GB free for the binaries plus an extra 250 MB for log file growth and the installation of the Cisco Configuration Engine software.

In the database directory, you need 1 GB free. For large systems, you should have 4 to 5 GB of space. If the directory has less than 1.2 GB free, you can still install Prime Fulfillment, but you might run out of space.

Step 14 If you chose **Express** installation type (in Step 10), proceed to the next step.

If you chose **Custom** installation type (in Step 10), proceed to Step 19.

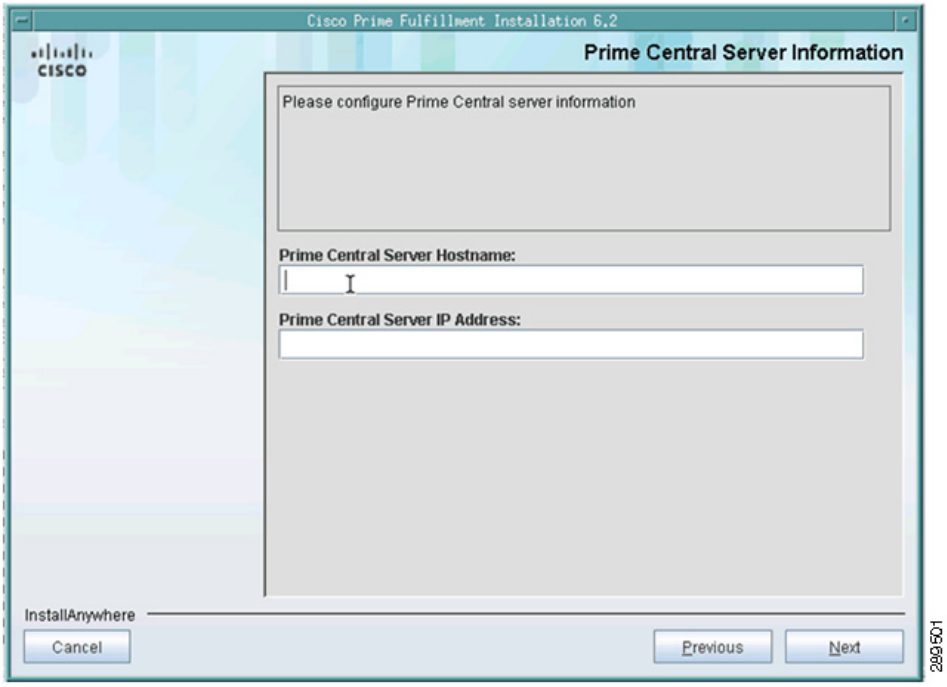
Step 15 Reset the High and Low watermarks for available disk space if required, and click **Next**.

The default values are 20% and 10% for High and Low respectively. Ensure that the percentage of High watermark is a larger than that of the Low watermark. Every time the High and Low watermarks are reached, you are notified via e-mail (notification is sent to the e-mail address that you specify in Step 30).

For Standalone installation- The E-mail Notifications dialog box is displayed.
Proceed to Step 30.

For integration with the IP-NGN Suite - The Prime Central Server Information dialog box is displayed as shown in Figure 2-2.
Proceed to the next step.

Figure 2-2 Prime Central Server Information Dialog Box.



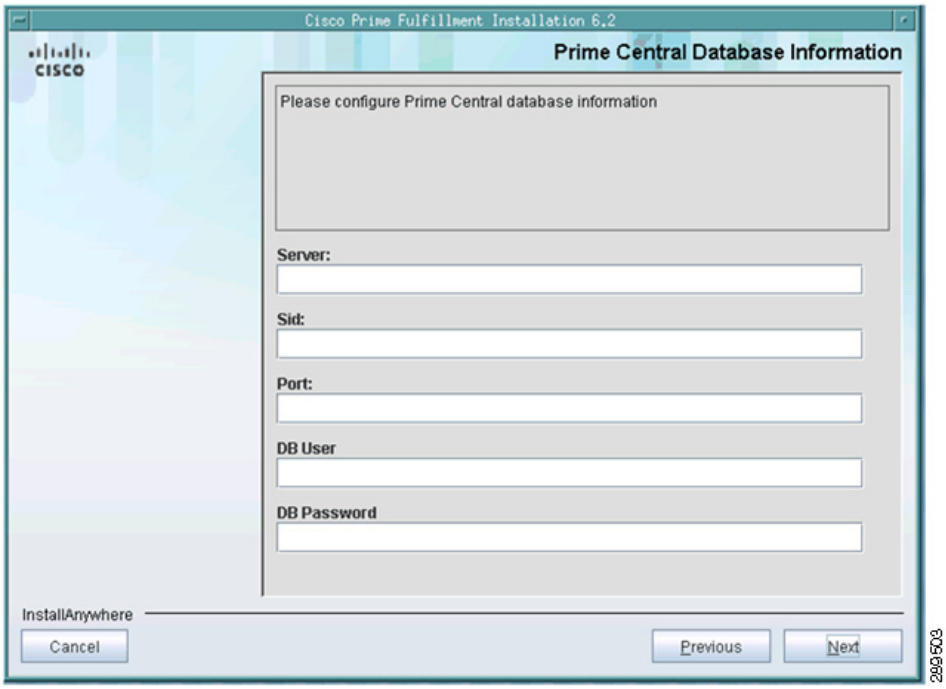
Step 16 (For integration with IP-NGN Suite) This step applies only if you selected **Integrate with IP-NGN Suite** as the operating mode for Prime Fulfillment (in Step 11).
Enter the Prime Central server hostname and IP address, and click **Next**.

The Prime Central server hostname that you enter in this field must match with the certificate generated on Prime Central. To ensure this, use the following steps to obtain the Prime Central server hostname that you can use to generating the right certificate.

- Login to Prime Central and accept all certificates
- If you are using Mozilla Firefox:
  1. Click the icon that looks like a lock and is displayed on the bottom right corner of your browser. A dialog box displays the certificate details.
  2. Click **View Certificate**. A dialog box displays further details about the certificate.
  3. Note down the value specified in the **Common Name (CN)** filed.
  4.Using this value as the Prime Central hostname, follow the steps outlined in the procedure in Integrating Prime Fulfillment (Standalone) with Prime Central (IP-NGN Suite), page 2-17 to re-register Prime Fulfillment with the Prime Central server
- If you are using IE:
  1. Go to **View > Security Report**.
  2. Click **View Certificates**.
  3. Note down the value specified in the **Issued to** field.
  4.Using this value as the Prime Central hostname, follow the steps outlined in the procedure in Integrating Prime Fulfillment (Standalone) with Prime Central (IP-NGN Suite), page 2-17 to re-register Prime Fulfillment with the Prime Central server

The Prime Central Database Information dialog box is displayed as shown in Figure 2-3.

Figure 2-3 Prime Central Database Information Dialog Box.



Step 17 (For integration with IP-NGN Suite) Enter the following details about the Prime Central database and click **Next**:

- Server IP Address- IP Address of the Prime Central server
- SID- Server instance identifier of the Prime Central server
- Port- Port number of the Prime Central server
- DB User- Database username of the Prime Central server
- DB Password- Database password associated with the above username.

Step 18 Proceed to Step 30 to specify the hostname (SMTP host) and e-mail addresses that Prime Fulfillment can use to send you notifications.

Step 19 (Installation type- Custom) In the Choose a Temporary Folder dialog box, enter the location where you want temporary files stored and click **Next**.

The Choose a Repository Folder dialog box is displayed.

Note In the intended install location, you need 1.2 GB free for the binaries plus an extra 250 MB for log file growth and the installation of the Cisco Configuration Engine software.

In the database directory, you need 1 GB free. For large systems, you should have 4 to 5 GB of space. If the directory has less than 1.2 GB free, you can still install Prime Fulfillment, but you might run out of space.

Step 20 Enter the location where you want database files to be stored and click **Next**.

The **Select Database** dialog box is displayed.

Step 21 Choose one of the following database types and click **Next**.

- **Embedded Sybase**- You will need to specify the Sybase database server and port.

- **External Oracle**- You will need to specify the Oracle database server, port, SID, DB version (required during integration with IP-NGN Suite), and username and password for this database.

a. If you chose Embedded Sybase (Sybase ASA, 11.0.1 is embedded):

   – 1. Enter the Database server hostname and port number.

   – 2. Click **Next**.

     The Configuring Naming Port dialog box is displayed.

   – 3. Proceed to Step 23.

b. If you chose External Oracle:

   – 1. Enter the database server hostname, database port number (default value is automatically displayed), SID (Server Instance Identifier), and DB version (required for integration with the IP-NGN Suite).
   Your input for the DB Version in this step is only used to display the DB version in Prime Central. There is no validation performed to compare your input with the correct DB version.
   To obtain the DB version:
   1) Login to the server where Oracle is installed.
   2) From the SQL prompt, execute the command:
   select * from v$version where banner like 'Oracle%';
   3) The output displayed is the DB version. For example,
   "Oracle Database 10g Enterprise Edition Release 10.2.0.1.0 - 64bi". You can use this output in the DB version field.

   – 2. Click **Next**.

   – 3. Set the Oracle database User and Password values.

   – 4. Click **Next**.

     The Configuring Naming Port dialog box is displayed.

Testing of Prime Fulfillment 6.2 has been done with Oracle Database 11g, Enterprise Edition Release 11.2.0.1.0 - 64 bit Production.) If you would like to use another version of Oracle 10g, see Oracle's compatibility information.

Note The embedded Sybase database is used for service-level agreement (SLA), independent of whether you are using Oracle as your database.

Note If you want to use the same Sybase repository from an original server on this new server you are now installing, see the "Restoring Your Sybase Repository to a New Server" section on page 2-20

Note If you are upgrading from a version of ISC before Prime Fulfillment 6.0, make sure your Prime Fulfillment Repository has been imported to the Oracle Database 11g, Enterprise Edition Release 11.2.0.1.0 - 64 bit Production, as indicated in the "Initial Configuration—Creating the Prime Fulfillment Owner" section on page 2-2.

Step 22 Specify the port used by the Naming Server and click **Next**.

The Configure Http Port dialog box is displayed.

If you change the default port value (1030) of the naming server, ensure that you specify the same port for all servers in your system.

Note We do not reommend to use ports under 1024. Ports under 1024 are accessed only by the root user, and we do not recommend that the root user be the Prime Fulfillment owner.

Step 23 Specify the port used by the HTTP server and click **Next**.

The Configure Https Port dialog box is displayed.

Step 24 (For Stanadalone installation only) Specify the port used by the HTTP Over Secure Socket Layer (SSL) (HTTPS) server and click **Next**.

The Configure RVA Ports dialog box is displayed.

Note To configure the web access to Prime Fulfillment, you must set up the HTTPS port as explained in Step 37 and the "Configuring HTTPS" section on page 2-21.

Step 25 Specify the port used by the Rendezvous™ Agent (RVA) and click **Next**.

You must specify the RVA HTTP Port server, a TIBCO™ bus port used by Prime Fulfillment processes to communicate with each other. You must also specify the RVA Client Port.

The Configure Tibco Port dialog box is displayed.

Note If you enter an RVA HTTP Port or RVA Client Port value less than 1024, the owner of the installation must be **root**. The owner of the installation is the user identified in Step 2.

Step 26 Specify the port used by TIBCO and click **Next**.

The Hi/Low Watermark dialog box is displayed.

When you click **Next**, the system checks whether any of the ports entered are duplicate port numbers. If duplicate port numbers are found, an error message indicates the two ports that have duplicate entries.

Step 27 Reset the High and Low watermarks for available disk space if required, and click **Next**.

The default values are 20% and 10% for High and Low respectively. Ensure that the percentage of High watermark is a larger than that of the Low watermark. Every time the High and Low watermarks are reached, you are notified via e-mail (notification is sent to the e-mail address you specify in Step 30).

Step 28 (For integration with IP-NGN Suite) This step applies only if you selected **Integrate with IP-NGN Suite** as the operating mode for Prime Fulfillment (in Step 11).
Enter the Prime Central server hostname and IP address, and click **Next**.

The Prime Central server hostname that you enter in this field must match with the certificate generated on Prime Central. To ensure this, use the following steps to obtain the Prime Central server hostname that you can use to generating the right certificate.

- Login to Prime Central and accept all certificates
- If you are using Mozilla Firefox:
  1. Click the icon that looks like a lock and is displayed on the bottom right corner of your browser. A dialog box displays the certificate details.
  2. Click **View Certificate**. A dialog box displays further details about the certificate.
  3. Note down the value specified in the **Common Name (CN)** filed.
  4.Using this value as the Prime Central hostname, follow the steps outlined in the procedure in Integrating Prime Fulfillment (Standalone) with Prime Central (IP-NGN Suite), page 2-17 to re-register Prime Fulfillment with the Prime Central server

– If you are using IE:
1. Go to **View > Security Report**.
2. Click **View Certificates**.
3. Note down the value specified in the **Issued to** field.
4.Using this value as the Prime Central hostname, follow the steps outlined in the procedure in Integrating Prime Fulfillment (Standalone) with Prime Central (IP-NGN Suite), page 2-17 to re-register Prime Fulfillment with the Prime Central server

The Prime Central Database Information dialog box is displayed.

Step 29 (For integration with IP-NGN Suite) Enter the following details about the Prime Central database and click **Next**:

- Server IP Address- IP Address of the Prime Central server
- SID- Server instance identifier of the Prime Central server
- Port- Port number of the Prime Central server
- DB User- Database username of the Prime Central server
- DB Password- Database password associated with the above username.

The E-mail Notifications dialog box is displayed.

Step 30 Enter the following information to receive e-mail notifications from Prime Fulfillment every time the server restarts, and hi/low disk usage watermarks are reached.

- Hostname of the Simple Mail Transfer Protocol (SMTP) host.
- Username to display in the "From" field of the e-mail.
- E-mail address to be notified when High and Low watermarks are reached (indicates that the specified disk space availability has been reached).
- E-mail address to be notified when the Prime Fulfillment server restarts.

Step 31 Click **Next**.

The Pre-Installation Summary dialog box displays the product name, installation folder, and the required/available disk space infomation.

Step 32 Click **Install**.

The Installing Cisco Prime Fulfillment 6.2 dialog box displays the sequence of processes that are run and the status of installation.

Cisco Prime Fulfillment 6.2 is installed in the folder you specified in Step 13.

Step 33 If the installation failed, you receive a failed message.

To review the log message, click **Back**.

Step 34 If the installation was successful, you receive an Install Complete message. Even if you have a successful install, click **Back** to review the log to be sure there were no exceptions or failures.

Step 35 The Prime Fulfillment server is started automatically after the installation is successful.

Step 36 Verify that Prime Fulfillment is properly installed, as follows:

a. Before logging in, repeat the following command until the servers are in the **started** mode. If any server is reported as **disabled**, Prime Fulfillment is not installed or configured correctly:

./prime.sh status

For more information about WatchDog commands, see the *Cisco Prime Fulfillment User Guide 6.2.*

Step 37 If you want to set up secure web access by using HTTPS, see the "Configuring HTTPS" section on page 2-21.

Step 38 If you are logging in for the first time, proceed to the "Logging In for the First Time" section on page 2-22."

Step 39 Before you can use any of the licensed services, proceed to the "Installing License Keys" section on page 2-22.

Step 40 If you have an Prime Fulfillment repository, you *must* upgrade your repository to have access to it, as explained in the "Upgrading an Existing Installation to Prime Fulfillment 6.2" section on page 2-18.

Note If you have an existing repository prior to ISC 6.0, see the references to the upgrade instructions for your version at Installing Prime Fulfillment, page 2-2.

Step 41 If you want to eventually use the Inventory Manager or the Topology Tool, your client machine *must* be set up properly. Proceed to the "Launching Topology Tool" section on page 2-23. This section explains what occurs and leads you to the launching explanations in the *Cisco Prime Fulfillment User Guide 6.2*.

Note To determine if servers are installed correctly, use the WatchDog commands explained in the *Cisco Prime Fulfillment User Guide 6.2*.

Installing Prime Fulfillment Using the Command Line Installer

Note It is not possible to install Prime Fulfillment for use with an Oracle database using the Command Line Installer. Therefore, if you will be using Oracle, be sure to use the GUI installation method, explained in the "Installing Prime Fulfillment Using the Graphical User Interface" section on page 2-3.

After reviewing the information in the "Installing Prime Fulfillment" section on page 2-2, you can follow these steps to install the Prime Fulfillment software using the Command Line Installer:

Note The command line installer only allows you to configure the installation directory and Prime Fulfillment owner. All other configuration options use default values. For more configuration options, use the GUI installer, explained in the "Installing Prime Fulfillment Using the Graphical User Interface" section on page 2-3.

Step 1 Insert the Prime Fulfillment product CD-ROM.

Note When you insert the CD-ROM, the File Manager is automatically invoked. Do *not* use the File Manager to install the Prime Fulfillment product. Run the installation script from a terminal window.

Step 2 Open a terminal window and log in as the identified UNIX user.

Step 3 Change to the CD-ROM directory, as follows:

$ cd /cdrom/cdrom0

Step 4 If you are upgrading Prime Fulfillment from an existing version, use the **./prime.sh stop** command to be sure the existing Prime Fulfillment is shut down completely. See the *Cisco Prime Fulfillment User Guide 6.2* for information about all WatchDog commands.

Step 5 If you have an existing Prime Fulfillment installation with a database, you *must* back up your current database. See the instructions to back up and restore an Prime Fulfillment repository or create a standby system, as explained in Appendix D, "Backup and Restore of Prime Fulfillment Repository and Standby System."

Caution If you use the command line installer to install Prime Fulfillment in a directory containing an existing installation of Prime Fulfillment, the installer replaces the existing repository with a new empty repository. You are not asked to confirm this operation and no alternative option is given. The directory containing the existing repository is renamed to **Repository.save.**<*timestamp*>.

Step 6 Change to the path in the cdrom where the Solaris and Linux installation files are available, as follows:

```
cdrom> cd <path name>
```

where:

<*path name*> Specify the location of the directory where the Solaris and Linux installation files are available.

```
Path for the Solaris installation files in cdrom is: /prime_fulfillment_6_2_FCS/Solaris
```

Path for the Linux installation files in cdrom is:
/prime_fulfillment_6_2_FCS/Linux

Step 7 Execute the Prime Fulfillment product installation script as follows

./install.sh <*directory*> <*user*>

where:

<*directory*> Specify the location of the directory where you want to install Prime Fulfillment. If you are upgrading an existing Prime Fulfillment installation, see the options in this step.

<*user*> Enter the username you created in Step 2 of the "Initial Configuration—Creating the Prime Fulfillment Owner" section on page 2-2.

For example, ./install.sh /opt/PrimeFulfillment-6-2-cli pkarkera

You are asked to choose one of the following:

- **Integrate Prime Fulfillment with the IP-NGN Suite**- Prime Fulfillment registers and interacts with the Prime Central server, portal, and other common components.

  You will need to provide Prime Central server details during installation.

- **Install Prime Fulfillment as a Standalone application**- Prime Fulfillment installs as a standalone application.

Step 8 If you are upgrading an existing Prime Fulfillment installation, use *one* of the following options to specify the target directory:

a. (Using GUI) Install this version of Prime Fulfillment into the same directory as the existing Prime Fulfillment product.

For example, if you are upgrading from Prime Fulfillment 6.1 to Prime Fulfillment 6.2 and the existing Prime Fulfillment 6.1 installation is under the directory /opt/isc-6.1, then install Prime Fulfillment 6.2 in the same directory using the following steps:

- Invoke the Prime Fulfillment GUI using the command:

  ./install.sh

- Choose the installation directory as:

  /opt/isc-6.1

- Choose the option **Upgrade Existing ISC Repository**
- Choose the **upgradeIscSchema.sh** script path
- Complete the remaining steps using the default values.

-or-

b. (Using GUI) Install Prime Fulfillment 6.2 in the same directory with a new name.

For example, if you are upgrading from Prime Fulfillment 6.1 to Prime Fulfillment 6.2 and the existing Prime Fulfillment 6.1 installation is under the directory /opt/isc-6.1, rename this directory to **/opt/PrimeFulfillment** and then install Prime Fulfillment 6.2 in the same directory using the following steps:

- Invoke the Prime F GUI installation using the command:

  ./install.sh

- Choose the installation directory as:

  /opt/PrimeFulfillment

- Choose the option **Upgrade Existing ISC Repository**
- Choose the **upgradeIscSchema.sh** script path
- Complete the remaining steps using the default values.

-or-

c. (Using GUI) Install Prime Fulfillment 6.2 in a new directory.

For example, if you are upgrading from Prime Fulfillment 6.1 to Prime Fulfillment 6.2 and the existing Prime Fulfillment 6.1 installation is under the directory /opt/isc-6.1, then install Prime Fulfillment 6.2 in a new directory /opt/PrimeFulfillment, using the following steps:

- Invoke the Prime Fulfillment GUI using the command:

  ./install.sh

- Choose the installation directory as:

  /opt/isc-6.1

- Choose the option **Upgrade Existing ISC Repository**
- Choose the **upgradeIscSchema.sh** script path
- Complete the remaining steps using the default values.

-or-

d. (Using the CLI) Install Prime Fulfillment in a new directory.

For example, if you are upgrading from Fulfillment 6.1 to Prime Fulfillment 6.2 and the existing Fulfillment 6.1 installation is under the directory /opt/isc-6.1, then install Prime Fulfillment 6.2 in a new directory /opt/PrimeFulfillment, with steps like the following:

- Save the Prime Fulfillment 6.1 installation for possible uninstall purposes, as follows:

  tar cvf isc-6.1.tar /opt/isc-6.1

- Copy the /opt/isc-6.1/Repository to /opt/PrimeFulfillment directory.

  cp –R /opt/isc-6.1/Repository /opt/PrimeFulfillment
- Go to

  <Prime Fulfillment installation directory>/upgradeTool/
- Execute the command:

  ./upgradeIscSchema.sh /opt/PrimeFulfillment
- Provide the default Prime Fulfillment admin username and password.

Step 9 To integrate with the IP-NGN Suite, enter **yes** and press **Enter**.

To install Prime Fulfillment as a standalone application, enter **no** and press **Enter**.

The Prime Fulfillment installation process is initiated

Step 10 (For integration with IP-NGN Suite) Enter each of the following information and press **Enter**:

- Prime Portal Hostname- Hostname of the Prime Central server
- Prime Portal IP Address- IP Address of the Prime Central server
- Prime Suite DB Server IP Address- IP Address of the database server for Prime Central
- Database Username- Database username of the Prime Central server
- Database Password- Database password associated with the above username.
- SID- Server instance identifier of the Prime Central server

Port- Port number of the Prime Central server

The Prime Central server hostname that you enter in this field must match with the certificate generated on Prime Central. To ensure this, use the following steps to obtain the Prime Central server hostname that you can use to generating the right certificate.

- Login to Prime Central and accept all certificates
- If you are using Mozilla Firefox:
  1. Click the icon that looks like a lock and is displayed on the bottom right corner of your browser. A dialog box displays the certificate details.
  2. Click **View Certificate**. A dialog box displays further details about the certificate.
  3. Note down the value specified in the **Common Name (CN)** filed.
  4.Using this value as the Prime Central hostname, follow the steps outlined in the procedure in Integrating Prime Fulfillment (Standalone) with Prime Central (IP-NGN Suite), page 2-17 to re-register Prime Fulfillment with the Prime Central server
- If you are using IE:
  1. Go to **View > Security Report**.
  2. Click **View Certificates**.
  3. Note down the value specified in the **Issued to** field.
  4.Using this value as the Prime Central hostname, follow the steps outlined in the procedure in Integrating Prime Fulfillment (Standalone) with Prime Central (IP-NGN Suite), page 2-17 to re-register Prime Fulfillment with the Prime Central server

Step 11 If you upgraded from an existing Prime Fulfillment installation and want to retain the database from that installation, manually copy the database directory to the new installation before running the upgrade tool.

a. The directory in which you installed this release contains a directory named Repository that contains an empty repository. Temporarily rename this directory before copying the old repository. For example, you might wish to rename this directory to **Repository.empty**, as follows:

mv $PRIMEF_HOME/Repository $PRIMEF_HOME/Repository.empty

b. If you installed Prime Fulfillment in a directory that contains an existing version of Prime Fulfillment by following either option a. or b. in Step 7, then the existing repository has been renamed to **$PRIMEF_HOME/Repository.save.**<*timestamp*>. To restore the original database, enter the following:

mv $PRIMEF_HOME/Repository.save.**<*timestamp*> **$PRIMEF_HOME.Repository

c. If you installed Prime Fulfillment in a new directory, as explained in option c. of Step 7, copy the Repository directory and its contents from the old Prime Fulfillment installation directory to the new Prime Fulfillment installation directory. For example, if you are upgrading from Prime Fulfillment 6.1 to Prime Fulfillment 6.2, where the old installation directory is **/opt/isc-6.1** and the new installation directory is **opt/PrimeFulfillment**, enter the following:

cp -R /opt/isc-6.1/Repository /opt/PrimeFulfillment/Repository

Step 12 If you have upgraded a previous Prime Fulfillment installation and want to retain the database from this installation, you *must* run the upgrade tool. Run the upgrade tool as explained in the "Upgrading an Existing Installation to Prime Fulfillment 6.2" section on page 2-18.

Integrating Prime Fulfillment (Standalone) with Prime Central (IP-NGN Suite)

To integrate Prime Fulfillment (standalone installation) with Prime Central (IP-NGN Suite):

Step 1 Stop Prime Fulfillment.
./prime.sh stop

Step 2 Copy the DMIntegrator.sh and DMIntegrator.tar files from **/cdrom/cdrom0/** to the **<Prime Fulfillment installation directory>/prime_integrator** folder on the server.
Please ensure that you have executable permissions.

Step 3 (Optional) If you are logged in as the installation owner, to ensure that the script has executable permissions, you can execute the following commands:

- chmod +x DMIntegrator.sh
- chmod 755 DMIntegrator.tar

Step 4 Update the **runtime.properties** file with the following values:

- suite_mode=1
- portal_hostname=isc-ucs-rhel5-vm01 (use the Prime Central Portal server hostname to which the current Prime Fulfillment installation is being connected.
- portal_ipaddress=10.81.81.101 (use the Prime Central Portal server IP Address to which the current Prime Fulfillment installation is being connected).

To locate the Prime Central server hostname (portal_hostname) required in this step:

- If you are using Mozilla Firefox:
  1. Click the icon that looks like a lock and is displayed on the bottom right corner of your browser. A dialog box displays the certificate details.
  2. Click **View Certificate**. A dialog box displays further details about the certificate.
  3. Note down the value specified in the **Common Name (CN)** filed.
  4.Using this value in the **portal_hostname** field required in this step.
- If you are using IE:
  1. Go to **View > Security Report**.
  2. Click **View Certificates**.
  3. Note down the value specified in the **Issued to** field.
  4.Using this value in the **portal_hostname** field required in this step.

Step 5 Execute the **DMIntegrator.sh** script in one of the following modes:

- **For Non-Interactive Mode**
  /DMIntegrator.sh [-] <prop_file> <server> <sid> <dbuser> <dbpassword> <port>
- **For Interactive Mode**
  ./DMIntegrator.sh [-i] <prop_file>
  In this mode, you will be prompted for the above inputs in a sequential manner.

Table 2-1 describes the inputs required when you execute the DMIntegrator.sh script.

Table 2-1 DMIntegrator.sh Script Argument Descriptions

Argument	Definition	Sample Input
<prop_file>	Location of the DMIntegrator.prop file. On the Prime Fulfillment server this file will be present in INSTALL_DIR/prime_integrator	INSTALL_DIR/prime_integrator/DMIntetgrator.prop
<server>	Hostname of the Prime Central database server.	centralserver.mydomain.com
<sid>	System ID of the Prime Central database server.	orcl
<dbuser>	Username of the Prime Central database server.	primedba
<dbpassword>	Password of the Prime Central database server.	N/A
<dbport>	Port number of the Prime Central database server.	1521

Upgrading an Existing Installation to Prime Fulfillment 6.2

If you want to migrate from an existing installation to Prime Fulfillment 6.2, your upgrade path depends on which release you are upgrading from. This process is described in the following.

This section contains the following:

Upgrade Matrix

The various possible upgrade paths are described in Table 2-2.

Table 2-2 Upgrade Path to Prime Fulfillment 6.2

Procedure	Current ISC Version	Steps to Upgrade to Prime Fulfillment 6.2 (run in order stated)	Supported Oracle Database	Supported OS
—	Prior to 4.2.5	E-mail isc-mktg@cisco.com for upgrade instructions	—	—
Direct	4.2.5	<Prime Fulfillment installation directory>/upgradeTool	Enterprise Oracle 11G 11.2.0.1.0	Solaris 10 and Linux (Red Hat)
Direct	5.0.1	<Prime Fulfillment installation directory>/upgradeTool	Enterprise Oracle 11G 11.2.0.1.0	Solaris 10 and Linux (Red Hat)
Direct	5.1.1	<Prime Fulfillment installation directory>/upgradeTool	Enterprise Oracle 11G 11.2.0.1.0	Solaris 10 and Linux (Red Hat)
Direct	5.2.2	<Prime Fulfillment installation directory>/upgradeTool	Enterprise Oracle 11G 11.2.0.1.0	Solaris 10 and Linux (Red Hat)
Direct	6.0.1	<Prime Fulfillment installation directory>/upgradeTool	Enterprise Oracle 11G 11.2.0.1.0	Solaris 10 and Linux (Red Hat)
Direct	6.1.1	<Prime Fulfillment installation directory>/upgradeTool	Enterprise Oracle 11G 11.2.0.1.0	Solaris 10 and Linux (Red Hat)

If you have an existing ISC repository, you *must* upgrade it to be able to use it with Prime Fulfillment 6.2, using the upgrade tool as stated in Table 2-2.

Note Understand that the only Sybase version to which you can upgrade is the embedded Sybase ASA, 11.0.1. Also, understand that Oracle testing of Prime Fulfillment 6.2 has been done with Oracle Database 11g, Enterprise Edition Release 11.2.0.1.0 - 64 bit Production. If you would like to use another version of Oracle 11g, see Oracle's compatibility information.

Locating the Cisco Prime Fulfillment 6.2 Upgrade Tool

The location for Cisco Prime Fulfillment 6.2 upgrade tool can be accessed from the directory structure *<Prime Fulfillment installer directory>/upgradetool* after the successful installation of Prime Fulfillment 6.1 (Prime Fulfillment 6.1 Upgrade Tool used as an example):

/cdrom/cdrom0/<Prime Installation directory>/upgradeTool

Using the Repository Upgrade Tool

The upgrade procedure steps for the repository from earlier version to Prime Fulfillment 6.2 remains the same for both Sybase and Oracle repositories.

Note Before you upgrade your repository, you *must* have followed the steps in the "Installing Prime Fulfillment" section on page 2-2. You *must* have backed up your database, as explained in Step 5, and you *must* have followed all the steps and reached this section from Step 40. A repository can be upgraded only once. If there is any problem during upgrade, a new copy of the backed up repository is needed for subsequent upgrade attempts.

Note See Appendix D, "Backup and Restore of Prime Fulfillment Repository and Standby System," before upgrading your repository.

Upgrade your repository as follows (using the Prime Fulfillment 6.2 Upgrade Tool as an example):

Step 1 Get the upgrade package **<Prime Installation directory>/upgradeTool** from your CD-ROM: **/cdrom/cdrom0/<Prime Installation directory>/upgradeTool** and place it on the Prime Fulfillment Master machine in a directory where you can access the Prime Fulfillment environment.

Step 2 Stop Prime Fulfillment.
./prime.sh stop

Step 3 Run the upgrade script.
cd upgradeTool
./upgradeISCSchema.sh <*Prime Fulfillment home*>
where: <*Prime Fulfillment home*> is the full pathname of the Prime Fulfillment home directory.

Step 4 Check for a success or error message.

Note After upgrading between Prime Fulfillment versions, you should ensure that the cache of the Prime Fulfillment client browser has been cleared or that your browser does not use the cache. This will ensure the latest Prime Fulfillment images and pages are returned.

Step 5 Proceed to Step 41 in the "Installing Prime Fulfillment Using the Graphical User Interface" section.

Restoring Your Sybase Repository to a New Server

If you are restoring your Sybase repository from your original server to a new server, you must first do the following:

Step 1 Run the Prime Fulfillment command **./prime.sh stop**

Step 2 **cd /var/tmp** and remove (or save, if needed) all the files under these directories.

Step 3 Back up the **$PRIMEF_HOME/Repository** on the new server, using the command: **mv Repository Repository.bkp**

Step 4 Run the Prime Fulfillment command **./prime.sh stop**.

Step 5 **cd $PRIMEF_HOME/Repository**

Step 6 Copy the Repository directory from the original server onto the Prime Fulfillment repository on the new server. You can tar up the full Repository directory and untar in the same location on the new server.

Step 7 On the new server, run the Prime Fulfillment command **./prime.sh startdb** as the Prime Fulfillment installation owner.

Step 8 Run the Prime Fulfillment command **./prime.sh initdb.sh** as the Prime Fulfillment installation owner.

Step 9 Run the Prime Fulfillment command **./prime.sh startwd** as the Prime Fulfillment installation owner.

Configuring HTTPS

To configure the secure web access to Prime Fulfillment, set up the Hypertext Transfer Protocol (HTTP) Over Secure Socket Layer (SSL) (HTTPS) port, as follows:

Note If you configure HTTPS, it does not disable HTTP. If you want to only allow HTTPS, then you need to block HTTP (default port: 8030) by a firewall.

Step 1 Run the command: **configSecurePort.sh** <*PRIMEF_home*> <*https_port*> <*hostname*>

where:

<*PRIMEF_home*> is the home directory for Prime Fulfillment, for example: **/opt/PrimeFulfillment**

<*https_port*> is the secure HTTPS port you want to use, for example: **8443**.

<*hostname*> is the name of the machine that Prime Fulfillment is installed on, for example: **machinename.cisco.com**

Step 2 If this is the first time you are logging into Prime Fulfillment, you will need to accept the self-signed, untrusted security certificates.

Step 3 If you are using Internet Explorer, accepting the security certificates is not sufficient. You need to place them in the Trusted Certificate store to ensure that the security notifications do not pop up during every login.

Step 4 To place certificates in the Trusted Certificate store:

a. Enter the Prime Fulfillment URL in your browser. A security warning is displayed with the message "There is a problem with this website's security certificate, choose Continue to this website (not recommended)."

b. Click **Continue**. This redirects you to the Prime Fulfillment Login page

c. Click **Certificate Error** displayed next to the address bar.

d. Click **View certificates**.

e. Click **Install Certificate**.

f. Click **Next** in the Certificate Import Wizard.

g. Select **Place all certificates in the following store**.

h. Click **Browse** and then click **Trusted Root Certification Authorities**, and click **OK**.

i. Click **Next** in this wizard until you reach the last screen.

j. Click **Finish**.

k. If you get another Security Warning message box, click **Yes**.

l. Click OK.

Note If you specify an IP address instead of a hostname, you must then use this IP address for all HTTPS sessions. If you attempt to use the hostname after configuring with an IP address, you will receive hostname mismatch warnings and might see unexpected behavior while using Prime Fulfillment.

Logging In for the First Time

To log into Prime Fulfillment for the first time, follow these steps:

Step 1 In the browser, enter the following URL:

`http://`*`server:port`***`/isc/`**

Note If you are using HTTP, the default for *server:port* is <*HOSTNAME*>**:8030**.

If you are using secure HTTPS access, as explained in the "Configuring HTTPS" section on page 2-21, enter **`https://`***`server:port`***`/isc/`** instead. The default for *server:port* in this case is <*HOSTNAME*>**:8443**.

In both of the above cases: <*HOSTNAME*> is the UNIX workstation name (or IP address) of the server to which you installed Prime Fulfillment.

See the "Installing Prime Fulfillment" section on page 2-2 for information about the installation log.

Step 2 Enter the default administrative login name, **admin**, and password, **cisco**, then click **Login**.

This default user provides administrative access to Prime Fulfillment. You cannot delete this user.

Step 3 We highly recommend you change the password for **admin** from **cisco** to something secure for you. To do this, click the **Administration** tab, then click **Security**, then click **Users**. Select the **admin** check box and then click **Edit**.

The window appears which allows you to change the password and other details.

Step 4 Enter the **Security** and **Personal Information**, then click **Save**.

Installing License Keys

To install license keys, do the following:

Note For detailed instructions, see the Licensing section in the *Cisco Prime Fulfillment User Guide 6.2*.

Step 1 From the **Home** page of the installed Prime Fulfillment product, navigate as follows: **Administration** > **Control Center** > **Licensing**.

Step 2 From the **Installed Licenses** table, click **Install**.

Step 3 In the resulting window, enter a **License Key** that you received on your *Right to Use* paperwork with your product.

Step 4 Click **Save**. Your newly installed license appears in an updated version of the Installed Licenses table.

Step 5 Repeat Step 2, Step 3, and Step 4 for each of the *Right to Use* documents shipped with your product.

Launching Topology Tool

Prime Fulfillment provides a downloadable version of Version 1.6.0_07 of Java Runtime Environment (JRE) for various operating systems when you launch the Topology Tool. Ensure that your client machine is configured to use this version of the JRE for launching Java applications and Applets. This can be done via Java's Control Panel.

Specific instructions to launch the Topology Tool are explained in the *Cisco Prime Fulfillment User Guide 6.2*.

Uninstalling Prime Fulfillment

Note It is advised to uninstall using the same user who performed the installation of Prime Fulfillment.

If you attempt to uninstall Prime Fulfillment as **root**, but **root** is not the Prime Fulfillment owner, if you attempt to use the **./prime.sh stop** command to halt all Prime Fulfillment processes, the processes will remain running. If you did not install as **root,** use the **./prime.sh stop** command before following the next steps, but be sure to execute **./prime.sh stop** *only* as the Prime Fulfillment owner.

If you installed as **root**, files were created to automatically restart Prime Fulfillment when rebooting the server. To remove these files, uninstall Prime Fulfillment as **root**.

Next, uninstall the server, as follows:

Step 1 Log into the server.

Step 2 At the Solaris prompt, log in as the identified UNIX user.

Step 3 Go to the Prime Fulfillment installation directory.

Step 4 Remove Prime Fulfillment by entering the following command from a location outside the *<PRIMEF_HOME directory>*:

```
<PRIMEF_HOME directory>/bin/uninstall.sh
```

This command removes all files from the installation directory. This command also removes the database and its contents. Database backups are not removed if they reside in a different directory from the installation directory.

APPENDIX A

Setting Up Oracle for Prime Fulfillment

This appendix describes how to set up an Oracle Database 11g, Enterprise Edition Release 11.2.0.1.0 - 64 bit Production server that works with Cisco Prime Fulfillment. This appendix is written for database administrators who are familiar with Oracle.

Note Prime Fulfillment 6.2 was tested with Oracle Database 11g, Enterprise Edition Release 11.2.0.1.0 - 64 bit Production. If you would like to use another version of Oracle, see Oracle's compatibility information.

This chapter does not cover all the details about installing and setting up this Oracle server. For the complete information, see the Oracle Installation Guide. Prime Fulfillment provides schema files to be loaded on an Oracle server. The Prime Fulfillment customer must decide on the Oracle server configuration.

This appendix contains the following sections that should be addressed in order:

This appendix also contains a "Troubleshooting" section on page A-8.

Prerequisites

Prime Fulfillment support for an Oracle database is for Oracle Database 11g, Enterprise Edition Release 11.2.0.1.0 - 64 bit Production. This is the version of Oracle with which Prime Fulfillment 6.2 was tested. If you would like to use another version, see Oracle's compatibility information.

The remaining prerequisites are as specified in the following steps:

Step 1 When the Oracle server is set up, the following initialization parameters should be in the database **init** file:

- db_block_size = 8192 or larger
- compatible = “11.2.0.1.0”
- open_cursors = 512 or larger
- processes = 150 or larger

Step 2 Record the following information about the server setup. This information is needed during the Prime Fulfillment installation:

- Oracle server name
- Oracle server instance identifier (SID)

Note This is specified in Step 21.

- database port number for client connections (default: 1521)
- Oracle user ID and password created for Prime Fulfillment

Note Create an Oracle database userid and password. This is needed during Prime Fulfillment installation. Do not use the **system** or **sys** account for Prime Fulfillment data. Use a separate table space other than the system table space.

Step 3 Before loading the Prime Fulfillment database schema, make sure the Oracle database has been successfully started and the database user has proper privileges. See the Oracle Administration Guide for detailed instructions about how to set up the database and manage user accounts.

Step 4 Proceed to the section “Installing Oracle.”

Installing Oracle

The following information about an Oracle installation is just one example.

You must install Oracle before you install the Cisco PRIME Fulfillment (Prime Fulfillment) software (or at least know your Oracle home directory, host machine, and Oracle Server ID), and your database and its listener must be running when you launch the Prime Fulfillment servers.

If you intend to use the same Oracle installation with more than one installation of the Prime Fulfillment servers, you must create a unique Oracle SID and Oracle tablespace for each Prime Fulfillment installation.

init*ORACLE_SID*.ora

This file should already exist in the `/dbs` subdirectory of your Oracle installation. (The filename contains your database's SID in place of *`ORACLE_SID`*. For example, if you named your database Prime Fulfillment, this file is named `initISC.ora`.)

oratab

The `oratab` file should be located in the `/var/opt/oracle` directory on the machine on which the database is installed. It is used by Oracle's **dbstart** utility to identify your database.

The `oratab` file must contain the following line:

database_name:*location_of_your_Oracle_executables*:Y

If your Oracle home directory is `/oracle/10.2.0` and your database SID is Prime Fulfillment, the oratab entry would be as follows:

Prime Fulfillment:/oracle/10.2.0:Y

This file identifies the name and location of your database for the Oracle utility **dbstart** (and its companion **dbshut**). The **dbstart** utility starts Oracle; the "Y" at the end of the `oratab` entry tells the **dbstart** utility to open the database named Prime Fulfillment. (Substitute your database name for Prime Fulfillment in the sample. List the path to your Oracle installation as an absolute path, not a relative path.)

To make this happen automatically following a reboot (after a power interruption, for example), execute the **dbstart** utility from a script in the `/etc/init.d` directory on the Oracle host machine.

Verifying and Launching Oracle

Your Oracle database must be open before you can install or use the Prime Fulfillment software.

First, verify the Oracle processes, as described in the following section. If the processes are running, you can skip the succeeding section.

Verifying Oracle Processes

Log into the Oracle host machine and enter the following on the command line to see if the Oracle processes are running:

ps -ef | grep ora_

ps -ef | grep tnslsnr

If there is no output displayed from the **ps** command, Oracle is not running.

If Oracle is running and the listener process is running, you should see something similar to the following:

```
oracle   328   1   0   14:25:18     0:00 ora_pmon_ISC
oracle   328   1   0   14:25:18     0:00 ora_dbwr_ISC
oracle   328   1   0   14:25:18     0:00 ora_lgwr_ISC
oracle   328   1   0   14:25:18     0:00 ora_ckpt_ISC
oracle   328   1   0   14:25:18     0:00 ora_smon_ISC
```

```
oracle   328   1   0   14:25:18     0:00 ora_reco_ISC
oracle   328   1   0   14:25:18     0:00 ora_wmon_ISC
oracle   328   1   0   14:25:18     0:00 tnslsnr LISTENER -inherit
```

These are the Oracle processes currently running (your output might not match this list exactly, depending on which Oracle components are installed).

Launching Oracle and Opening Your Database

Your Oracle database must be open before you can install or use the Prime Fulfillment software.

If Oracle is not currently running, you must use the startup utilities located in the `/bin` subdirectory of your Oracle installation.

To open your database, you must be logged into the Oracle host workstation under the Oracle administrator (DBA) user ID; you then locate your `$ORACLE_HOME/bin` subdirectory.

On the command line, enter the following:

dbstart

The `dbstart` script starts the database identified in the `oratab` file. If the database starts successfully, you should see several lines of output, including the following:

```
SQL>   Connected to an idle instance.
SQL>   ORACLE instance started.
```

...and ending with the following:

```
Server Manager Complete.
Database "Prime Fulfillment" warm started.
```

If the listener process is not running, you must also start that process. On the command line, enter the following:

lsnrctl start

You should see several lines of output as the process is invoked, then you should see output similar to the following:

```
Services Summary...
   Prime Fulfillment    has 1 Service handler(s)
```

The command completed successfully.

Setting Up Your Oracle Files

To configure your database to work with the Prime Fulfillment software, you must create a tablespace and configure several files.

You must be logged into the Oracle host using the user ID (such as `oracle`) created during the Oracle installation procedure.

Oracle Tablespace Requirements

You must create an Oracle tablespace for your Prime Fulfillment tables.

To create the tablespace, Oracle must be running and your database must be open.

Log into the Oracle host using the `oracle` user ID. Identify (or create) the directory where your Prime Fulfillment data should be stored, and grant write permission to the `oracle` user ID. Be sure your `ORACLE_SID` and `ORACLE_HOME` environment variables are set correctly, then launch the Oracle utility `sqlplus`, which is located in the `$ORACLE_HOME/bin` directory.

At the SQL prompt, enter the following on the command line:

connect / as sysdba;

CREATE TABLESPACE ISC_DAT

DATAFILE '/*your_data_directory*/ISC_DAT_01.dbf' size 500M

autoextend on

next 50M

maxsize unlimited;

The data directory you specify must already exist. The `TABLESPACE` and `DATAFILE` names are arbitrary. You can use any names that help you keep track of which files are associated with which database. The only requirement is that the name given to the tablespace at the time of its creation (`ISC_DAT` in the example) must be the same as the default tablespace listed when you create the `prime` user account.

The autoextend option allows ORACLE to automatically extend your data file. The maximum size of the data file is limited only by the available space on the file's disk.

prime Oracle User Account

While `sqlplus` is still running, create an `prime` user account using your `ISC_DAT` tablespace as follows:

CREATE USER prime IDENTIFIED BY cisco

DEFAULT TABLESPACE ISC_DAT;

GRANT CONNECT TO prime;

GRANT RESOURCE TO prime;

You should use this user and password when entering Oracle information in the script `prime.configure`.

Testing Your Oracle Database Connection for Oracle User prime

When you have configured your database and listener file, enter the following (for the Oracle user `prime` and for the database named Prime Fulfillment) on the command line:

sqlplus <*username*>/<*password*>

<*username*> is a database username (in our previous example, we used **prime**).

<*password*> is a database password (in our previous example, we used **cisco**).

If your system is set up properly (and your Oracle database is running), you should see a message advising you that you are connected to Oracle. Enter `quit` on the command line to exit the database.

Prime Fulfillment Software Installation

Note The Prime Fulfillment database schema files are loaded during the installation.

Perform the following:

Step 1 Follow the **custom** install instructions in Chapter 2, "Installing and Logging Into Cisco Prime Fulfillment," section Installing Prime Fulfillment, page 2-2, and log in, as explained in the section Logging In for the First Time, page 2-22.

Step 2 Proceed to the section "Verify Prime Fulfillment Installation with Oracle".

Verify Prime Fulfillment Installation with Oracle

To verify the Prime Fulfillment installation with Oracle, do the following:

Step 1 Run **sqlplus** <*oracle_id*>/<*oracle_password*> on the Oracle server.

Step 2 From the **SQL>** prompt, run **select host_name** from **vpnsc_host;**

This command returns the installed Prime Fulfillment hostname.

Step 3 Log into the Prime Fulfillment server.

Step 4 Check the file /opt/PrimeFulfillment/etc/vpnsc.properties and make sure that the **<oracle server>** and <*ORACLE_SID*> are correct in the following entry in the file:

repository.persistence.url=jdbc:oracle:thin:@<*oracle server*>:<*ORACLE_SID*>

Step 5 Execute the schema verification script to verify the repository schema version, as follows:

cd $PRIMEF_HOME

cd /bin

./checkSchemaVer.sh <*oracle_id*>/<*oracle_password*>

where: <*oracle_id*> is the Prime Fulfillment userid in the Oracle database and <*oracle_password*> is its password.

Step 6 The output from the script should be "Current schema version = 6.0". If that is not the output from the script, Prime Fulfillment might not have been installed properly or the Prime Fulfillment repository might not have been upgraded successfully.

Importing an Oracle Repository Dump

To import the Oracle repository dump in Prime Fulfillment, do the following:

Step 1 Log into the Oracle Webapp.

Step 2 Create the User and Tablespace.

Step 3 Log into the Oracle Server and source the enviornment:

```
rlogin <Oracle Server Name>
```

where:

<*Oracle Server Name*> Specify the Oracle Server Name that is being used.

Step 4 Enter: **su - <user name>**

Step 5 Enter: **cd $ORACLE_HOME/bin**

Step 6 Enter: **source coraenv**

Step 7 Enter: **setenv ORACLE_HOME to $ORACLE_HOME/bin**

Step 8 Enter: **setenv ORACLE_SID to orcl**

Step 9 Copy the .dmp file to a directory on the Oracle Server.

Step 10 Enter: **cd $ORACLE_HOME/bin**

Step 11 Run the command: **imp**

When you run this script, you are asked to enter the values for the following prompts:

a. Import file: <specify the full path to .dmp file>
b. Enter insert buffer size: **30720** (accept the default value)
c. List contents of import file only: **no** (accept the default value)
d. Ignore create error due to object existence: **no** (accept the default value)
e. Import grants: **no** (accept the default value)
f. Improt table data: **yes**
g. Import entire export file: **yes**

Configuring Oracle RAC

In addition to having already installed Prime Fulfillment and followed the steps required to configure an Oracle server, you must follow these steps when using Oracle Real Application Clusters (RAC). Prime Fulfillment does not support client load balancing with Oracle RAC.

Note A limitation of Oracle RAC is that any uncommitted transactions made during an instance or node failure and recovery period are lost. The recovery of these transactions is not supported. For this reason, the behavior of tasks that are running at the time as an instance or node fail over is undetermined. These tasks should be redeployed.

In case of a failure, for more information see the Oracle RAC documentation for database instance recovery time details.

Step 1 Verify that the new Oracle RAC servers are available and have an Prime Fulfillment tablespace with user configured. If you need help setting this up, see the "Verify Prime Fulfillment Installation with Oracle" section on page 6.

Step 2 Modify $PRIMEF_HOME/runtime.properties to have the correct values for the following parameters:

- **db_server**
- **db_url—**A sample URL is jdbc:oracle:thin:@//Virtual IP:<*port*>/globalSID, where <*port*> is the port number, which defaults to **1521**.
- **db_driver**
- **db_usr**
- **db_pwd**

Step 3 Prepopulate the database user name and password into the database **./pime.sh execjava.sh com.cisco.vpnsc.common.BootStrapHelper put repository** <*oracle username*> <*oracle password*>

Step 4 If running, use the **./prime.sh stop** command to stop Prime Fulfillment.

Step 5 Verify that the value for the DCPL property watchdog/server/dbpoller/connectionextend is still set to the default: 5. See Appendix C, "DCPL Properties," in the *Cisco Prime Fulfillment User Guide 6.2*.

Step 6 To update the database with the changes, enter:

./prime.sh startdb

./prime.sh initdb.sh

Step 7 Use **./prime.sh stop** to stop the database.

Step 8 Then enter **./prime.sh start** to start Prime Fulfillment.

Backup of Oracle Database

See Appendix D, "Backup and Restore of Prime Fulfillment Repository and Standby System."

Troubleshooting

This section lists Oracle database-related trouble shooting tips based on the following error messages:

- **ORA-01631: max # extents (4096) reached in table xyz**

  If you receive this message, it is typically an Oracle server storage configuration issue. This problem occurs when the tablespace for Prime Fulfillment exceeds the limit set by the database configuration. To prevent this, plan proper storage before Prime Fulfillment is set up. If this problem occurs, increase the initial or next extent, increase the growth percentage (such as, PCT_INCREASE), or reset the number of max extents (can be unlimited). The Prime Fulfillment data must be exported and imported to the tablespace with the new tablespace parameters.

- **Unable to contact Rbac Manager**

  If you receive this message on Prime Fulfillment and are unable to log in, this might be because Prime Fulfillment cannot connect to the Oracle database. To avoid this situation, increase the number of Oracle server processes.

- **Cannot log into Inventory Manager or Topology Manager**

  If you cannot log into the Inventory Manager or Topology Manager, verify that the Oracle hostname is accessible from a client machine, either by DNS or a host file.

- **Resynchronize Prime Fulfillment with new or updated Oracle ID and password**

  If the Oracle ID and password change after the Prime Fulfillment installation, you must execute the following:

  a. execjava.sh com.cisco.vpnsc.common.BootStrapHelper put repository <*oracle_id*> <*oracle_password*>

  b. update etc/spe/cns.properties and modify these two properties:

     DataAccess.principal.1 `<oracle_id>`

     DataAccess.credentials.1 `<oracle_password>`

APPENDIX B

Setting up Cisco Configuration Engine with Prime Fulfillment

Overview

This appendix gives information about downloading to a server using Cisco Configuration Engine with Prime Fulfillment.

For versions 2.0, 3.0, and 3.5 of the Cisco Configuration Engine software, the server is a server. For version 1.3.x, 1.4, and 1.5 of the Cisco Configuration Engine software, the server is the Cisco CNS Intelligence Engine 2100 (IE2100) appliance.

Prime Fulfillment supports the Device Access Protocol (DAP) of CNS for communication with any Cisco IOS device. The DAP includes:

- uploading a configuration file from a device
- downloading a configlet to a device
- executing a command on a device and obtaining the result (all communications).

Prime Fulfillment supports CNS Plug-and-Play.

CNS is not a supported transport protocol for Cisco Prime Diagnostics.

In addition to this Overview section, this appendix contains the following sections:

- Set Up Steps, page B-1
- Checking Router Configurations Overview, page B-9

Set Up Steps

To enable a server running the Cisco Configuration Engine functionality on Prime Fulfillment, set up in the following order:

1. Set up the servers for Cisco Configuration Engine, as shown in "Set Up to Download to a Server Using Cisco Configuration Engine."
2. Configure a TIBCO Rendezvous Routing Daemon (**rvrd**), as shown in "Configure a TIBCO Rendezvous Routing Daemon."

Set Up to Download to a Server Using Cisco Configuration Engine

Prime Fulfillment supports the integration with servers running the Cisco Configuration Engine 1.3.x, 1.4, 1.5, 2.0, 3.0, and 3.5 software.

For the Cisco Configuration Engine 1.3.x, 1.4, 1.5, 2.0, 3.0, and 3.5 software installation and setup, see the Cisco Configuration Engine 1.3.x documentation set at:

http://www.cisco.com/en/US/products/sw/netmgtsw/ps4617/tsd_products_support_series_home.html

On a freshly set up Cisco Configuration Engine server, remove Pluto protection, as follows.

Step 1 Log in as **root**.

Step 2 Enter:

plutosetup.

Step 3 A warning appears:

"plutosetup will open some class files to public access. It is a security risk."

Continue (y/n):

Answer **y** for yes to the above warning.

Note Because the Cisco Configuration Engine server and the Prime Fulfillment Master server are behind a secure barrier, we can safely answer **y** for yes to the security risk warning message above. This removal of Pluto protection exposes some files in the Cisco Configuration Engine server that allow Prime Fulfillment to create, delete, and edit servers in the Cisco Configuration Engine repository. This is needed for proper Prime Fulfillment to Cisco Configuration Engine 1.3.x, 1.4, 1.5, 2.0, 3.0, and 3.5 integration. Removal of Pluto protection only needs to occur when a particular Cisco Configuration Engine server is first used and every time the file **/opt/CSCOcnsie/bin/pluto** is deleted for any reason.

Configure a TIBCO Rendezvous Routing Daemon

In this section, do the following:

1. Configuring the rvrd Daemon on the Prime Fulfillment Master Machine, page B-2.
2. Configuring the rvrd Daemon on a Cisco Configuration Engine Server, page B-4.
3. Testing rv Connectivity Between Prime Fulfillment and Cisco Configuration Engine, page B-7.

Configuring the rvrd Daemon on the Prime Fulfillment Master Machine

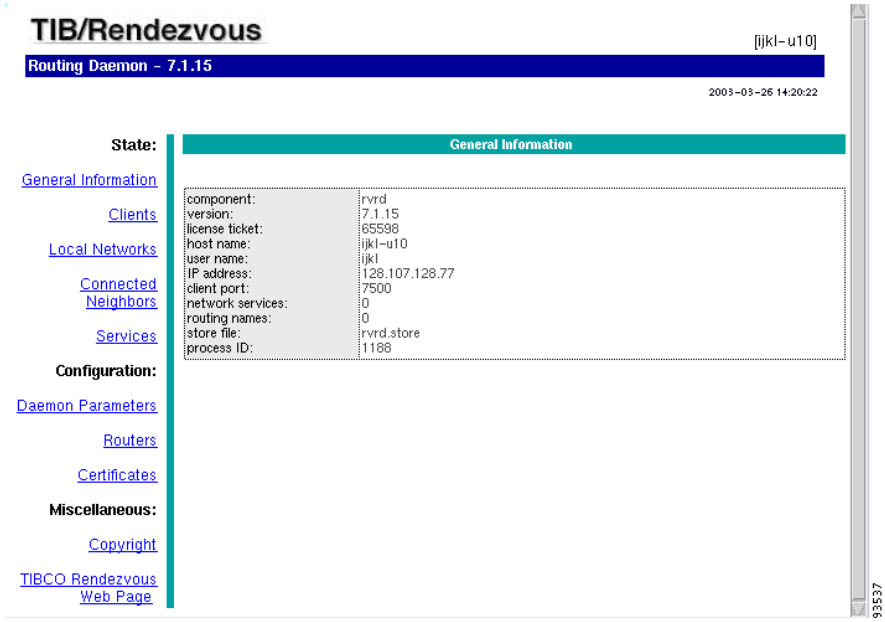
To configure an **rvrd** daemon on an Prime Fulfillment Master server, do the following:

Step 1 The TIBCO Rendezvous Routing Daemon (**rvrd**) is the default daemon on the Prime Fulfillment Master server

To configure an **rvrd** daemon on an Prime Fulfillment Master server, start an Prime Fulfillment-supported browser and go to the following URL: **http://**<*prime_hostname*>**:7580** or **http://**<*prime_ip_address*>**:7580**

Step 2 Look at the **component** field under the **General Information** link to verify that **rvrd** is running. It should say **rvrd**, as shown in Figure B-1.

Figure B-1 Prime Fulfillment rvrd Verification



Step 3 Click on the **Routers** link in the left column.

Step 4 A security alert window appears, asking you if you want to proceed. Answer **Yes** or **Next**, depending on your browser, to continue.

Step 5 Verify that Prime Fulfillment automatically created the **Router Name** <*prime_hostname*> for the Prime Fulfillment Master server.

Step 6 In the **Local Network** column, click the current entry in the field (this number indicates the number of local networks currently defined). Verify that Prime Fulfillment automatically created the **prime** network with the following values:

a. The **Local Network Name**: **prime**.

b. The **Service**, the TIBCO port number for the Prime Fulfillment installation (default: 7530).

c. The **Network Specification** field is optional.

d. No change in the value of the **Cost** field.

Step 7 Click on the **prime** entry created in the **Local Network Name** column.

Step 8 Verify that Prime Fulfillment automatically added **Subjects cisco.cns.>** and **cisco.mgmt.cns.>** to both the **Import Subjects** and **Export Subjects** columns.

Step 9 Again, click on the **Routers** link in the left column.

Step 10 In the **Neighbor** column, click the current entry in the field (this number indicates the number of neighbors currently defined).

Step 11 In the **Local Endpoint** section, if you choose a port number other than the default, be sure the **Port** for **Local Endpoint** defined on the Prime Fulfillment Master server equals the **Port** for **Remote Endpoint** defined on the Cisco Configuration Engine server (defined in Step 22c. of the section "Configuring the rvrd Daemon on a Cisco Configuration Engine Server").

Step 12 Add the following in the **Remote Endpoint** section:

a. In the **Host** field, add the IP address or hostname of the Cisco Configuration Engine server.

b. If you choose a port number other than the default, the **Port** for **Remote Endpoint** defined on the Prime Fulfillment Master server must equal the **Port** for **Local Endpoint** defined on the Cisco Configuration Engine server (defined in Step 22d. of the section "Configuring the rvrd Daemon on a Cisco Configuration Engine Server").

c. In the **Router Name** field, enter the name of the Cisco Configuration Engine server.

Note It is very important that the **Neighbor Name** is the same as the **router** name configured on the Cisco Configuration Engine server.

d. Click **Add Neighbor Interface**. The entered values appear in the corresponding columns in the upper section of the page.

Note If you encountered *any* error, check the check box for the row of information you want to remove, then click **Remove Selected Neighbor Interface(s)**.

Configuring the rvrd Daemon on a Cisco Configuration Engine Server

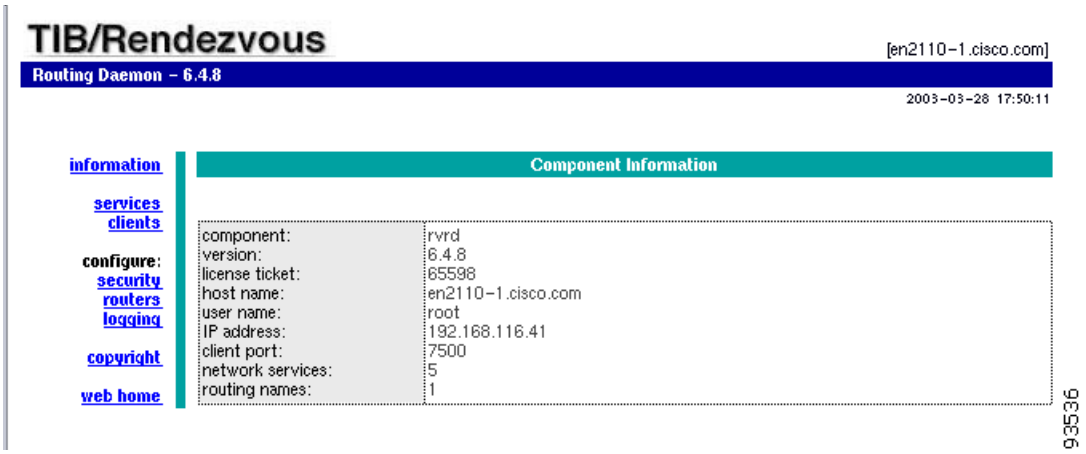
To configure an **rvrd** daemon on a Cisco Configuration Engine server, do the following:

Step 1 The TIBCO Rendezvous Routing Daemon (**rvrd**) is the default daemon on the Cisco Configuration Engine server.

To configure an **rvrd** daemon on a Cisco Configuration Engine server, start an Prime Fulfillment-supported browser and go to the following URL: **http://**<*ciscoconfigurationengine_hostname*>**:7580** or **http://**<*ciscoconfigurationengine_ip_address*>**:7580**.

Step 2 Look at the **component** field under the **information** link to verify that **rvrd** is running. It should say **rvrd**, as shown in Figure B-2.

Figure B-2 Cisco Configuration Engine rvrd Verification



Step 3 Click on the **routers** link in the left column.

Step 4 In the **Add Router Name** field in the upper part of the window, enter the name of the Cisco Configuration Engine server.

Step 5 Click **Add** to create an entry with the new router name.

The chosen name appears in the **Router Name** column in the lower part of the window.

Step 6 In the **Local Networks** column, click the current entry in the field (this number indicates the number of local networks currently defined).

Step 7 Specify the local Cisco Configuration Engine server network with the following values:

a. In the **Local Network Name** field, enter the unique name entered in Step 6a. of the section "Configuring the rvrd Daemon on the Prime Fulfillment Master Machine". In the example, this is **prime**.

b. In the **Service** field, add the TIBCO port number for the Prime Fulfillment installation (default: 7530).

c. The **Network Specification** field is optional. You can enter a description.

Step 8 Click **Add Local Network**. The entered values appear in the corresponding columns in the lower section of the page.

Step 9 Click on the entry just created. In this example, it is **prime**.

Step 10 In the **Add Subject** field, enter **cisco.cns.>**.

Step 11 Click **Add for Import and Export**. The entered values appear in the **Imported Subjects** and **Exported Subjects** columns in the lower part of the window.

Step 12 If you are using Cisco Configuration Engine 1.3.2, 1.4, 1.5, 2.0, 3.0, or 3.5 in the **Subject** field in the lower part of the window, enter **cisco.mgmt.cns.>**, repeat Step 11, and then proceed to Step 13. If you are using Cisco Configuration Engine 1.3 or 1.3.1, then proceed to Step 13.

Step 13 Click the **routers** link in the left column.

Step 14 In the **Local Networks** column, click the current entry in the field (this is at least **1** now, because you already added one local network).

Step 15 Specify the local Cisco Configuration Engine network with the following values:

a. In the **Local Network Name** field, add a unique name. For example: **ciscoconfigurationengine-eventBus**.

b. In the **Service** field, add the **CNS Event Bus Service Parameter** value defined in the setup of Cisco Configuration Engine server (default: 7500).

c. In the **Network Specification** field, leave it blank or enter the name of the Cisco Configuration Engine server.

Note If you encountered *any* error, check the check box for the row of information you want to remove, then click **Remove Marked Items**.

Step 16 Click on the entry just created in the **Local Network Name** column.

Step 17 In the **Add Subject** field in the upper part of the window, enter **cisco.cns.>**.

Step 18 Click **Add for Import and Export**. The entered values appear in the **Imported Subjects** and **Exported Subjects** columns in the upper part of the window.

Step 19 If you are using Cisco Configuration Engine 1.3.2, 1.4, 1.5, 2.0, 3.0, or 3.5 in the **Subject** field in the lower part of the window, enter **cisco.mgmt.cns.>**, repeat Step 18, and then proceed to Step 20. If you are using Cisco Configuration Engine 1.3 or 1.3.1, just proceed to Step 20.

Step 20 Click the **routers** link in the left column.

Step 21 In the **Neighbors** column, click the current entry in the field (this number indicates the number of neighbors currently defined).

Step 22 Add the following in the **Neighbors Configuration** window:

a. In the **Neighbor Name** column, add the router name as automatically configured on the Prime Fulfillment Master server, and verified in Step 5 of the section "Configuring the rvrd Daemon on the Prime Fulfillment Master Machine." This router name is <*isc_hostname*>.

Note It is very important that the **Neighbor Name** is the same as the **router** name configured on the Prime Fulfillment Master server.

b. In the **Hostname or IP addr** column, add the hostname or IP address of the Prime Fulfillment Master server.

c. In the **Remote** column, add the **Port** number for the **Local Endpoint** defined on the Prime Fulfillment Master server in Step 11 of the section "Configuring the rvrd Daemon on the Prime Fulfillment Master Machine."

d. In the **Local** column, add the **Port** number for **Remote Endpoint** defined on the Prime Fulfillment Master server, in Step 12b. of the section "Configuring the rvrd Daemon on the Prime Fulfillment Master Machine."

Step 23 Click **Add Active [all]**.

A good indication that the connection is established is when the new name in the **Neighbor Name** column appears as a hyperlink in the bottom of the window. It takes a few seconds for this to occur. Also, it is recommended to click **Refresh** a few times to see the hyperlink.

Note If you encountered *any* error, check the check box for the row of information you want to remove, then click **Remove Marked Items**.

Testing rv Connectivity Between Prime Fulfillment and Cisco Configuration Engine

Test that the **rvrd** setup has been successful, by testing the following:

- Connectivity from Prime Fulfillment Master Server to Cisco Configuration Engine
- Connectivity from Cisco Configuration Engine.

Connectivity from Prime Fulfillment Master Server to Cisco Configuration Engine

Test the successful setup of connectivity from an Prime Fulfillment Master server to Cisco Configuration Engine:

Step 1 Telnet to the Cisco Configuration Engine server.

Step 2 Go to the following directory:

cd /opt/CSCOcnsie/tools

Step 3 Set up a TIBCO Listener to the TIBCO port the Prime Fulfillment installation is running and as configured above (default: 7530):

./cns-listen -service <*tibco_port_number*> **“cisco.cns.>”**

Leave the Listener running in this window.

Step 4 In a separate window, navigate to the following directory:

cd /<*Prime Fulfillment installation directory*>**/thirdparty/rv/bin**

Step 5 Send a TIBCO message to the Cisco Configuration Engine server on the configured TIBCO port number (default: 7530):

/tibrvsend -service <*tibco_port_number*> **“cisco.cns.config-changed” “**<*variable_message*>**”**

Step 6 If the message is seen in the Listener window on the Cisco Configuration Engine server, connectivity is established correctly from the Prime Fulfillment Master server to the Cisco Configuration Engine server for the TIBCO subject **“cisco.cns.>”**.

Step 7 If you are using Cisco Configuration Engine Release 1.3.2, 1.4, 1.5, 2.0, 3.0, or 3.5, proceed with Step 8 to Step 12. Otherwise, proceed to the “Connectivity from Cisco Configuration Engine” section on page B-8.”

Step 8 Telnet to the Cisco Configuration Engine server.

Step 9 Go to the following directory:

cd /opt/CSCOcnsie/tools

Step 10 Set up a TIBCO Listener to the TIBCO port the Prime Fulfillment installation is running and as configured above (default: 7530):

./cns-listen -service <*tibco_port_number*> **“cisco.mgmt.cns.>”**

Leave the Listener running in this window.

Step 11 In the window created in Step 4, send a TIBCO message to the Cisco Configuration Engine server on the configured TIBCO port number (default: 7530):

/tibrvsend -service <*tibco_port_number*> **“cisco.mgmt.cns.config-changed” “**<*variable_message*>**”**

Step 12 If the message is seen in the Listener window on Cisco Configuration Engine, connectivity is established correctly from the Prime Fulfillment Master server to Cisco Configuration Engine for the TIBCO subject **"cisco.mgmt.cns.>"**.

Connectivity from Cisco Configuration Engine

Test the successful setup of connectivity from Cisco Configuration Engine to an Prime Fulfillment Master Server, as follows:

Step 1 On the Prime Fulfillment server, go to the following directory:

cd /<*Prime Fulfillment Installation directory*>**/thirdparty/rv/bin**

Step 2 Set up a TIBCO Listener to the TIBCO port that **prime** installation is running and as configured above (default: 7530):

./tibrvlisten -service <*tibco_port_number*> **"cisco.cns.>"**

Leave the Listener running in this window.

Step 3 In a separate window, telnet to the Cisco Configuration Engine server.

Step 4 Go to the following directory:

cd /opt/CSCOcnsie/tools

Step 5 Send a TIBCO message to the Prime Fulfillment Master server on the configured Prime Fulfillment installation port (default: 7530):

./cns-send -service <*tibco_port_number*> **"cisco.cns.config-changed" "<***variable_message***>"**

Step 6 If the message is seen in the Listener window on the Prime Fulfillment Master server, connectivity is established correctly from the Cisco Configuration Engine server to the Prime Fulfillment Master server for the TIBCO subject **"cisco.cns.>"**.

Step 7 If you are using Cisco Configuration Engine Release 1.3.2, 1.4, 1.5, 2.0, 3.0, or 3.5, proceed with Step 8. Otherwise, proceed to the "Checking Router Configurations Overview" section on page B-9."

Step 8 In the window created in **Step 1**, set up a TIBCO Listener to the TIBCO port that **prime** installation is running and as configured above (default: 7530):

./tibrvlisten -service <*tibco_port_number*> **"cisco.mgmt.cns.>"**

Leave the Listener running in this window.

Step 9 In a separate window, telnet to the Cisco Configuration Engine server.

Step 10 Go to the following directory:

cd /opt/CSCOcnsie/tools

Step 11 Send a TIBCO message to the Prime Fulfillment Master server on the configured Prime Fulfillment installation port (default: 7530):

./cns-send -service <*tibco_port_number*> **"cisco.mgmt.cns.config-changed" "<***variable_message***>"**

Step 12 If the message is seen in the Listener window on the Prime Fulfillment Master server, connectivity is established correctly from the Cisco Configuration Engine server to the Prime Fulfillment Master server for the TIBCO subject **"cisco.mgmt.cns.>"**.

Checking Router Configurations Overview

The Cisco IOS image is needed for the routers used with the Cisco Configuration Engine functionality (that is, the CNS transport mechanism and/or the CNS Plug-and-Play feature). For Cisco Configuration Engine Release 1.3, the recommended Cisco IOS release is 12.2(8)T or later; for Cisco Configuration Engine Release 1.3.1, 1.3.2, 1.4, 1.5, 2.0, 3.0, or 3.5, the recommended Cisco IOS release is 12.2(11)T or later. Cisco IOS releases 12.3(1)T or later are supported only by Cisco Configuration Engine Releases 1.3.2, 1.4, 1.5, 2.0, 3.0, and 3.5.

Additionally, the router running a configuration must contain the following CNS commands:

1. **cns config partial** <*cisco configuration engine server IP address*> **80**
2. **cns event** <*cisco configuration engine server IP address*> **11011**

   or

   cns event <*cisco configuration engine server IP address*> **11011 keepalive** <*num. of seconds*> <*num. of trials*>

Note The **keepalive** option makes sure the TCP connection between Cisco Configuration Engine and the router is alive at all times. It sends keepalive messages at <*num. of seconds*> intervals with <*num. of trials*> retries.

3. For IOS versions 12.3(1)T or later (12.0(27)S2 or later for Cisco 12000 (GSR) Series): **cns exec 80**

Also, the router startup configuration must contain the following two CNS commands:

1. **cns config initial** <*cisco configuration engine server IP address*> **event**

   The **cns config initial** command should be configured in the startup configuration of the Cisco IOS device or router. It triggers the router to pick up and apply any initial configuration that might be waiting for it on the Cisco Configuration Engine server. After the **cns config initial** command is executed, this command is automatically removed. The recommendation is to include the **cns config partial** command in the initial configuration that is waiting on Cisco Configuration Engine. If a **no persist** option is used, the router does not perform a **write-mem**, thus keeping the startup configuration from being overwritten.

2. **cns event** <*cisco configuration engine server IP address*> **11011**

   or

   cns event <*cisco configuration engine server IP address*> **11011 keepalive** <*num. of seconds*> <*num. of trials*>

Note The **keepalive** option makes sure the TCP connection between Cisco Configuration Engine and the router is alive at all times. It sends keepalive messages at <*num. of seconds*> intervals with <*num. of trials*> retries.

Different IOS versions can support additional CNS commands or different formats of the same CNS command. See the Cisco Configuration Engine software documentation for more details on the other possible CNS commands and their options.

APPENDIX C

Solaris Virtualization Support

In the Prime Fulfillment Solaris Virtualization, zones provide an artificial environment that hide details such as physical devices, the system's primary Internet Protocol (IP) address, and hostname from the application. Since the same environment can be maintained on different physical machines, this can be useful in supporting rapid deployment and redeployment of applications.

Virtualization is supported on Solaris using containers (zones) and logical domains.

You need to perform any necessary hardware, OS and virtualization-related configuration steps.

Solaris Zones

Solaris Containers (“containers”) establish boundaries for consuming resources such as memory, CPU time, and network bandwidth. As processing requirements change in line with business needs, one or more of the boundaries of a container can be expanded to accommodate a spike in resource demand. The terms “containers” and “zones” are used interchangeably.

The following installation scenarios are supported in Prime Fulfillment:

- Prime Fulfillment and Sybase in the same zone
- Prime Fulfillment and Oracle in different zones

Other combinations have not been tested and their functionality and performance cannot be guaranteed.

Logical Domains

Logical domains exploit the Chip Multi Threading (CMT) nature of the UltraSPARC T1 and T2 processors. A single chip contains up to 8 CPU cores, and each core has either four hardware (for the T1) or eight hardware threads (for the T2) that act as virtual CPUs. All CPU cores execute instructions concurrently, and each core switches between threads—typically when a thread stalls on a cache miss or goes idle—within a single clock cycle. This lets the processor gain throughput that is lost during cache misses in conventional CPU designs.

Each processor can support as many as one domain per hardware thread—up to 32 domains for the UltraSPARC T1, 64 domains for the UltraSPARC T2, and 128 domains for UltraSPARC T2+ servers with two physical processors.

Alternatively, and in usual practice, a given domain can be assigned multiple CPU threads for additional capacity within a single OS instance. CPU threads and virtual I/O devices can be added to or removed from a domain by an administrator command in the control domain. This change takes effect immediately without needing to reboot the affected domain, which can immediately make use of added CPU threads or continue operating with reduced CPU threads.

In Prime Fulfillment, the following two installation scenarios are supported:

- Prime Fulfillment and Sybase in same LDom
- Prime Fulfillment and Oracle in different LDoms

Other combinations have not been tested and their functionality and performance cannot be guaranteed.

APPENDIX D

Backup and Restore of Prime Fulfillment Repository and Standby System

This chapter explains how to back up and restore your Sybase and Oracle databases and how to set up a standby system.

This appendix includes the following sections:

Backup and Restore of Prime Fulfillment Repository

The Cisco.com location of scripts for these procedures is:

http://www.cisco.com/cgi-bin/tablebuild.pl/prime

Note When upgrading from a earlier release of Prime Fulfillment, the existing backup script will no longer work. Make sure to download and install the new backup script.

The subsections are:

Data Items Included in Backup and Recovery

Most of the Prime Fulfillment-related data items are stored in a repository held on a relational database and the rest are stored in an operating system level file system. For Prime Fulfillment to function flawlessly on restart, following a crash, it is necessary that the proposed backup and recovery feature include various Prime Fulfillment-related data items as a whole. The underlying tasks involved in

backup and recovery procedures differ depending on the nature of persistence of these data items. However, these procedures shall work commonly for all the data items in a seamless and transparent manner.

The following data elements are included in Prime Fulfillment's backup and recovery plan:

1. **Main repository**: This repository consists of data items such as Customers/Organizations, VPNs, Policies, Devices, and Interfaces. This data is held on an RDBMS, either the embedded Sybase ASA database or the customer's Oracle database.
2. **SLA repository:** This repository consists of data items pertaining to Service Level Agreements (SLA) and Probes. This repository is held on a Sybase ASA database.
3. **Others:** There are a few data items that are stored in the OS level file system under various Prime Fulfillment install directories, which would be part of the proposed backup and recovery plan.

Guidelines

This section explains how to use the supported backup methods in Prime Fulfillment.

For the backup and recovery plan to function efficiently, customers are requested to follow these guidelines:

Step 1 Support exists for the following types of supported backups:

a. **Full backup** is a complete backup of the Prime Fulfillment repository, Prime Fulfillment repository transaction logs, and other Prime Fulfillment data files held in the file system. It is recommended to have a full backup on a default weekly basis, which could be reconfigured as desired by the customer.

b. **Incremental backup** is a backup of all the data from the time of the last full or incremental backup until this incremental backup. It is recommended that the full backup be interspersed with several incremental backups, by default, daily.

c. **Archive backup** is a complete backup of all Prime Fulfillment data in respective archive files, typically on a tape drive. Use this backup if you are backing up directly to a tape.

d. **Live backup** creates redundant copies of transaction logs to restore the Prime Fulfillment repositories held on a Relational Database Management System (RDBMS) and creates redundant copies of other Prime Fulfillment data held on the file system on the Main server machine. These redundant copies are typically set up on a secondary machine to restart Prime Fulfillment if the primary server machine becomes unusable.

Step 2 The plan default schedule requires **Weekly FULL ONLINE** (while system is running) backups interspersed with **DAILY ONLINE** incremental backups of all Prime Fulfillment data items. An **ARCHIVE full** backup, preferably on a tape, is recommended on a MONTHLY basis. This archive tape backup should be stored in different premises to prevent any loss of backups in case of acts of physical disasters at the main server location.

Step 3 It is important to keep more than one full backup to prevent accidental loss of backup copies.

Step 4 Create archive backup copies on a tape device.

Step 5 External factors such as available hardware, the size of database files, recovery medium, disk space, and unexpected errors can affect customers' recovery time. When implementing the plan, the customer shall allow additional recovery time for miscellaneous tasks that must be performed, such as entering recovery commands or retrieving, loading, and organizing tapes.

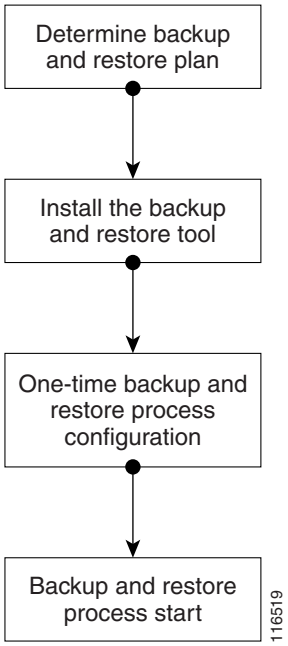
Sybase Backup and Restore Process Overview

This section describes how to backup and restore Sybase ASA for an Prime Fulfillment installation. This section contains the following sections:

Overview of the Backup and Restore Process

Figure D-1 shows an overview of the Sybase ASA backup and restore process.

Figure D-1 Overview - Sybase ASA Backup and Restore



Planning your Backup and Restore Process

Before backing up and restoring your Sybase installation, you must first prepare a plan. To prepare your plan, follow these steps:

Step 1 Determine the frequency for full backups.

Step 2 Determine the frequency for incremental backups.

Step 3 Determine the location for storing the backups.

Note The file system must be accessible by the primary Prime Fulfillment production machine and the secondary system (if you want to run the restore process from the secondary system or you want to perform a live backup).

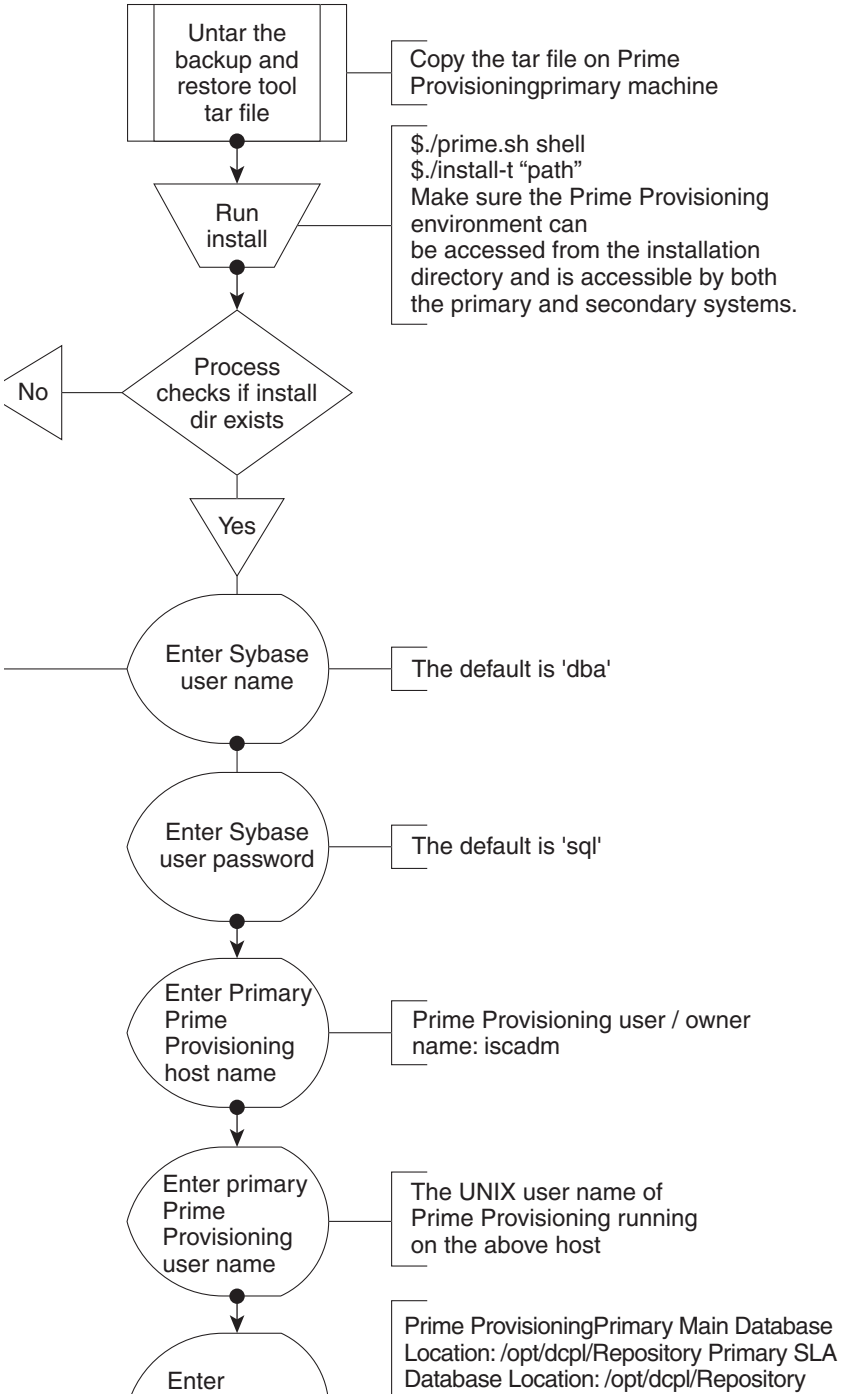
Step 4 Document the information for Step 1 to Step 3.

Step 5 Set up the proper bookkeeping for your backup and restore procedure.

Installing the Backup and Restore Tool

Figure D-2 shows the process flow for installing the backup and restore tool.

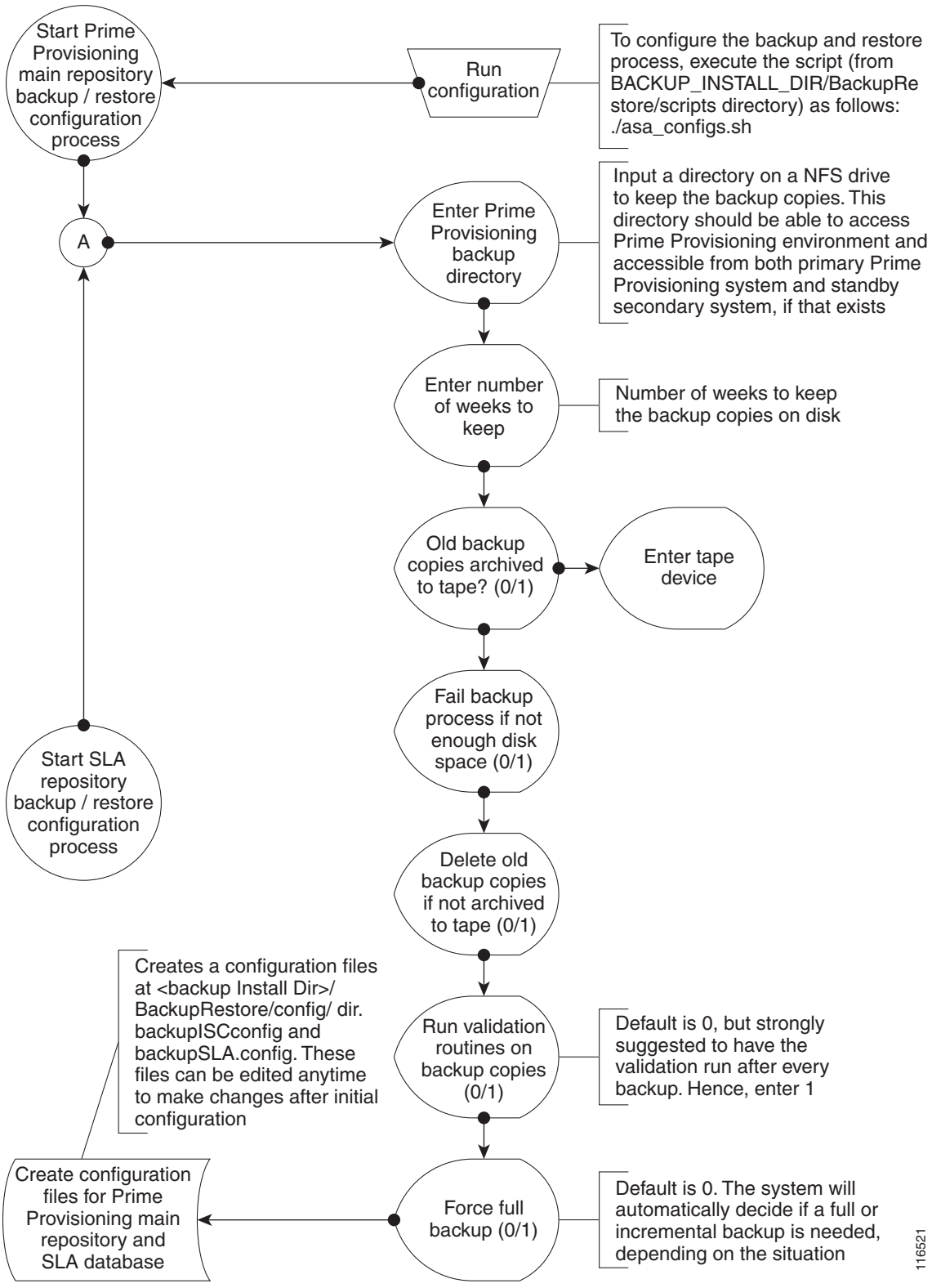
Figure D-2 Installing the Backup and Restore Tool



Configuring the Backup and Restore Process

Figure D-3 shows the one-time configuration process for the backup and restore.

Figure D-3 One-Time Configuration Process Flow



Understanding the Backup Process Flow

This section contains the following sections:

Preconditions

Before backing up your Sybase installation, you must observe the following preconditions:

1. The backup task must be carried out while the Prime Fulfillment database server is running.
2. The backup directory path that you specify during the configuration must be on a Network File System (NFS) drive.
3. The backup and restore tool must be installed and accessible by both the primary and secondary systems.
4. The backup and restore tasks must be carried out from the Prime Fulfillment primary machine. However, the live backup and restore is done from the secondary system.
5. You must not modify, rename, or move the backup directory structure after you configure it.

Functions

1. The backup follows a weekly scheme.
2. The backup week begins every Sunday.
3. A full backup occurs automatically the first time a backup is run for the backup week.
4. After the full backup, only incremental backups occur for the remainder of the week.
5. You can force a full backup during the week by changing the configuration setting to fullBackup=1 before running the backup script.
6. A new subdirectory is created for every backup week under the backup directory specified during the configuration. The name has the format mm-dd-yyyy, where the date is Sunday of the current backup week.
7. A new subdirectory is created for each full backup created during the backup week. All the associated incremental backup copies are also kept under this directory. If a full backup is forced during the same backup week, a new subdirectory is created for the full backup and after associated incremental backups.

Note Do not modify, rename, delete, or move the directory structure created by the backup tool.

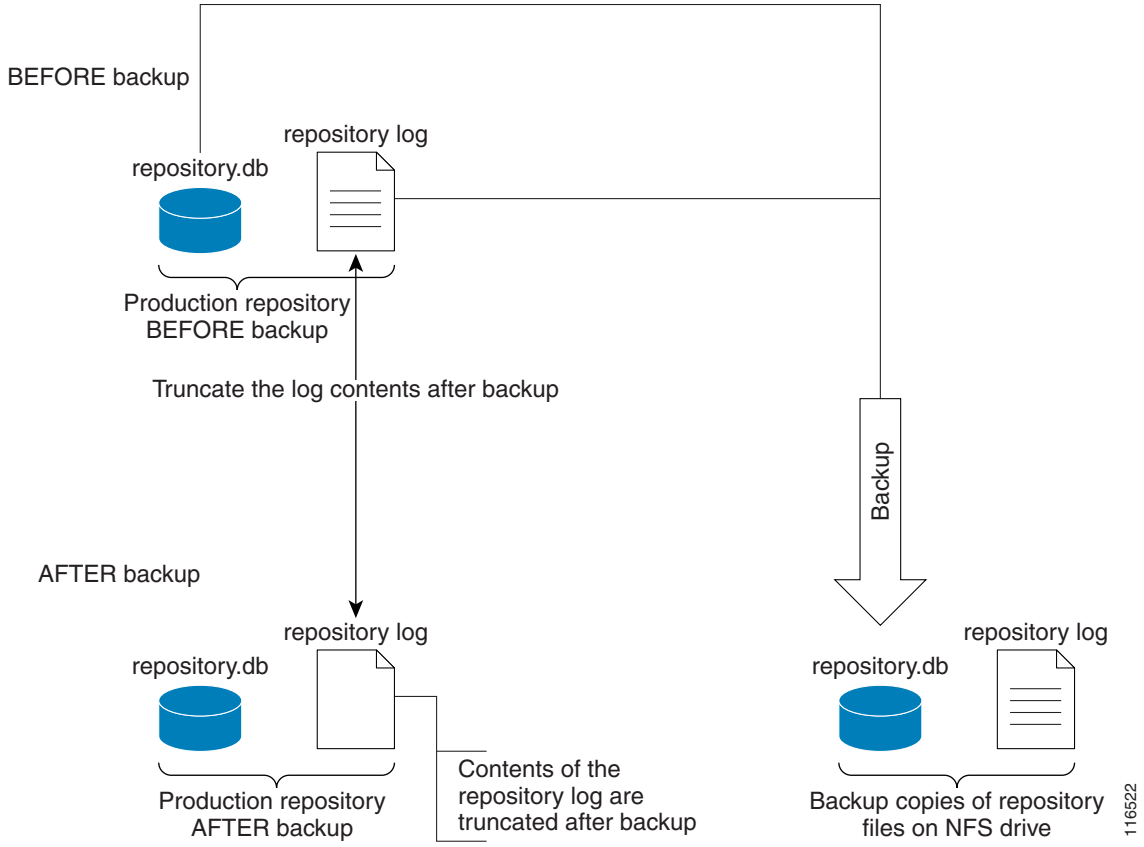
8. Both the database and the transaction log are backed up in a full backup.
9. Only the transaction log is backed up in an incremental backup.

10. The transaction log is truncated after each backup, either full or incremental. In other words, the transaction log is started fresh after each backup.
11. The name of the log file after backup will be of the form yymmddnn.log, where yy is the year, mm is the month, and dd is the day on which the backup is taken and nn is the serial number of this backup on a given day.

Full Backup Scheme

Figure D-4 shows a full backup scheme.

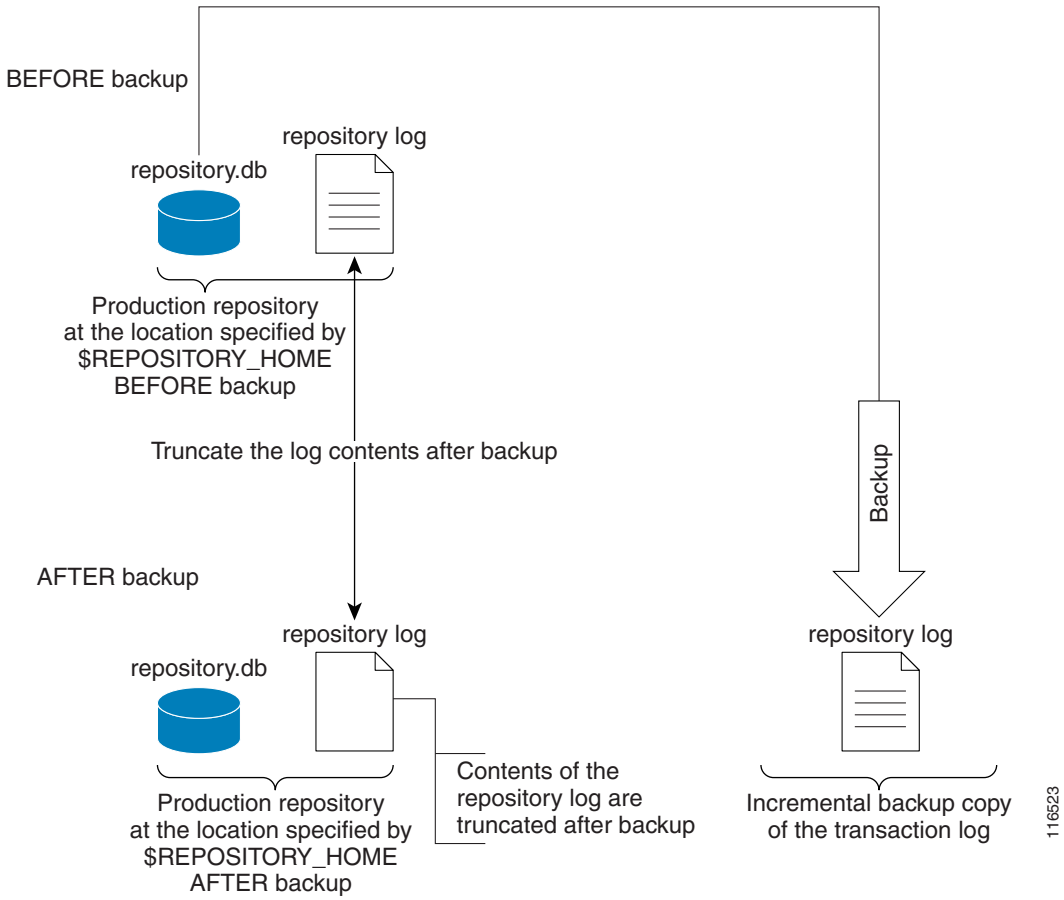
Figure D-4 Full Backup Scheme



Incremental Backup Scheme

Figure D-5 shows an incremental backup scheme.

Figure D-5 Incremental Backup Scheme



Typical Backup Directory Structure

To create a backup directory structure on an NFS drive, you can use the following procedure.

Assume the Backup Week is 03/14/2010 through 03/20/2010 and the Backup Dir as specified during configuration is /auto/PrimeFulfillmentBackups (NFS drive). The system creates two subdirectories under user specified backup dir, ISCMain and SLA.

1. First backup run on 03/15/2010 Monday, default full backup. Creates a sub dir /03-14-2010/full_01.dir under ISCMain and SLA directories.
2. Second backup run on the same date 03/15/2010, default incremental backup.
3. Third backup run on 03/17/2010, default incremental backup.
4. Fourth backup, Forced FULL backup (after changing configuration file setting, fullBackup to 1) on 03/18/2010. Creates a new sub dir /03-14-2010/full_02.dir under ISCMain and SLA directories.

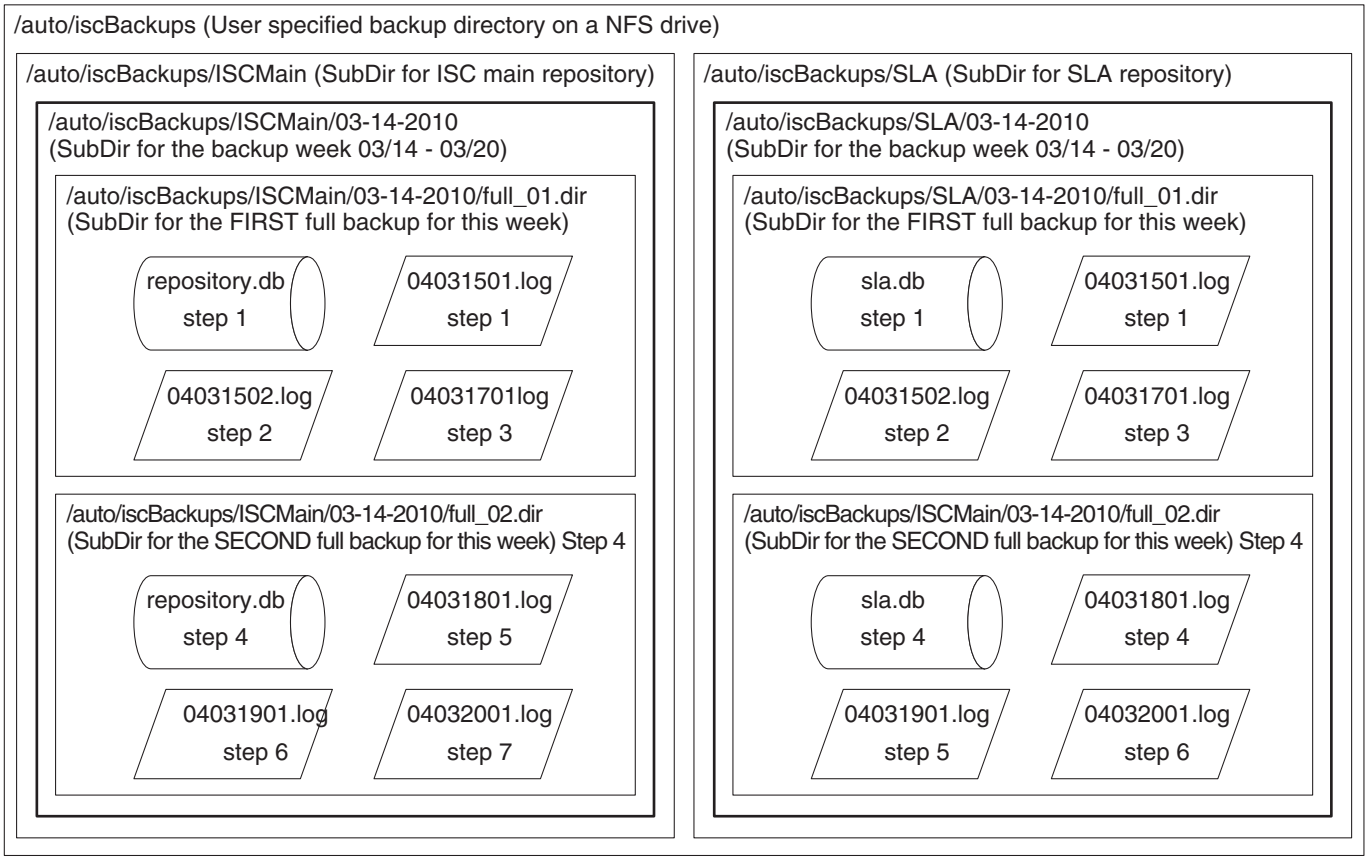
Note Configuration setting, full backup reset to 0.

5. Fifth backup, run on 03/19/2010, default incremental backup.
6. Sixth backup, run on 03/20/2010, default incremental backup.

Note Backup Week ended on 03/20/2010.

Figure D-6 shows a typical backup directory structure on an NFS drive.

Figure D-6 Typical Backup Directory Structure



Understanding the Restore Process Flow

This section contains the following sections:

- Preconditions, page D-10
- Functions, page D-11
- Restore from Media Failure, page D-11
- Restore to a Desired Point-in-Time, page D-13

Preconditions

Before restoring your Sybase installation, you must observe the following preconditions:

1. The Prime Fulfillment database server should be stopped while running the Restore task.

2. The backup directory path that you specify during the configuration must be on a Network File System (NFS) drive.
3. The backup and restore tool must be installed and accessible by both the primary and secondary systems.
4. The backup and restore tasks must be carried out from the Prime Fulfillment primary machine. However, the live backup and restore is done from the secondary system.
5. The user running the restore script needs write permissions on the $REPOSITORY_HOME directory.
6. The repository files shall have write permission for the user running the restore.
7. Do not modify, rename, or move the backup directory structure after configured.
8. Do not rename, move, or delete the backup copies of the repository files.
9. Do not move, rename, or delete the production repository files under $REPOSITORY_HOME.

Functions

1. Restores the repository from existing full and incremental backup copies.
2. At least one full backup copy should be available to restore the repository.
3. The repository can be restored to a desired point in time using the available backup copies.
4. The restore process can recover the repository if there is a media failure on the database file, repository.db and/or sla.db.
5. The restore process cannot recover the repository if there is a media failure on the transaction log file. In this case, one of the following should be done to recover the database until the most recent checkpoint (partial recovery only):
   a. Using the available backup copies, the repository can be restored to a desired point in time. Use the Prime Fulfillment restore script to do this.
   b. Make an extra backup copy of the database file immediately. When the transaction log is gone, the only record of the changes between the last backup and the most recent checkpoint is in the database file. Delete or rename the transaction log file. Restart the database with the -f switch.

      For example, $SYBASE_HOME/bin/dbsrv8 $REPOSITORY_HOME/repository.db -f

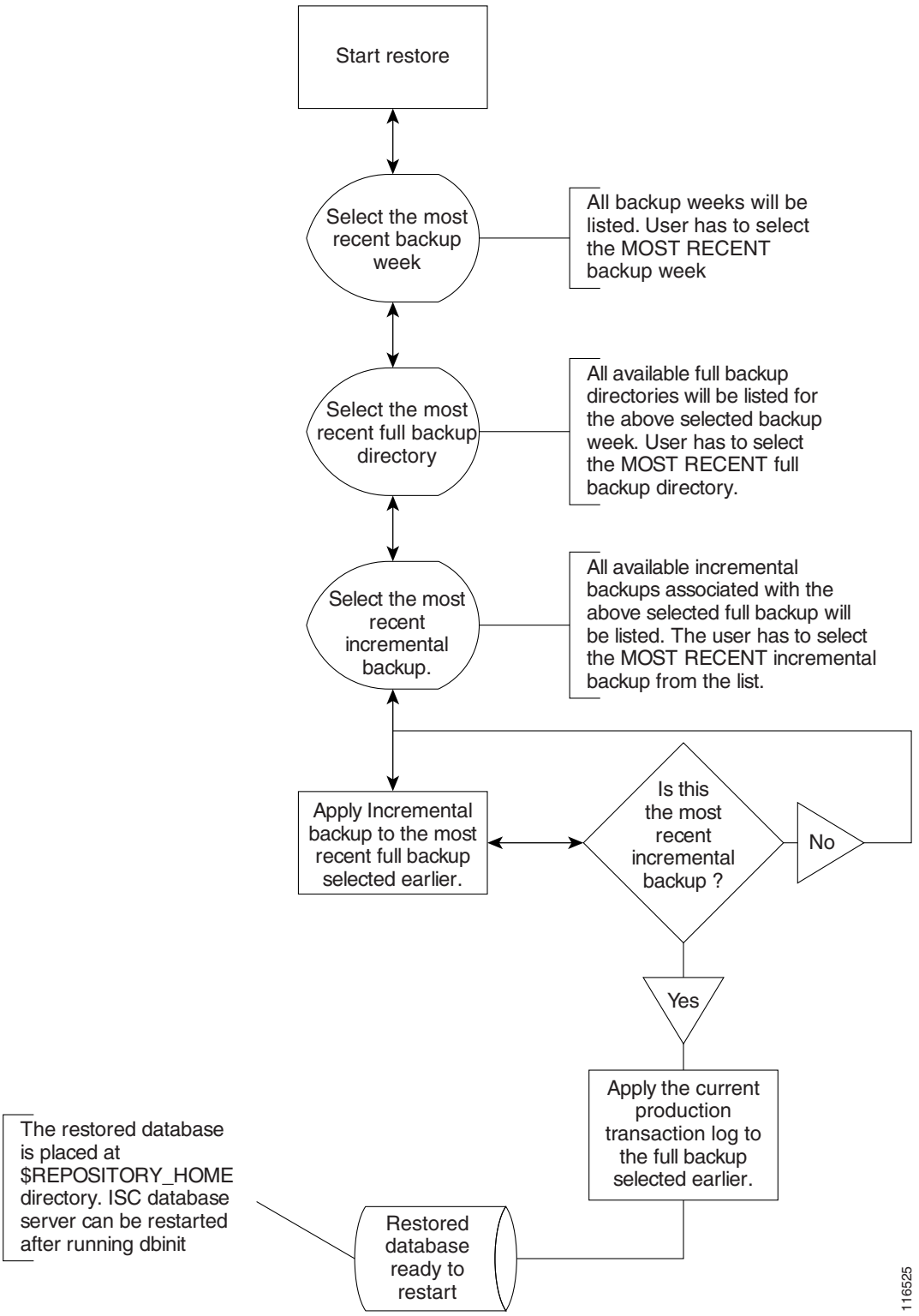
Note Please see Sybase ASA documentation for more information.

Note This option should be done by an authorized database administrator only.

Restore from Media Failure

Figure D-7 shows the process flow for how to restore from a media failure on the database file (.db).

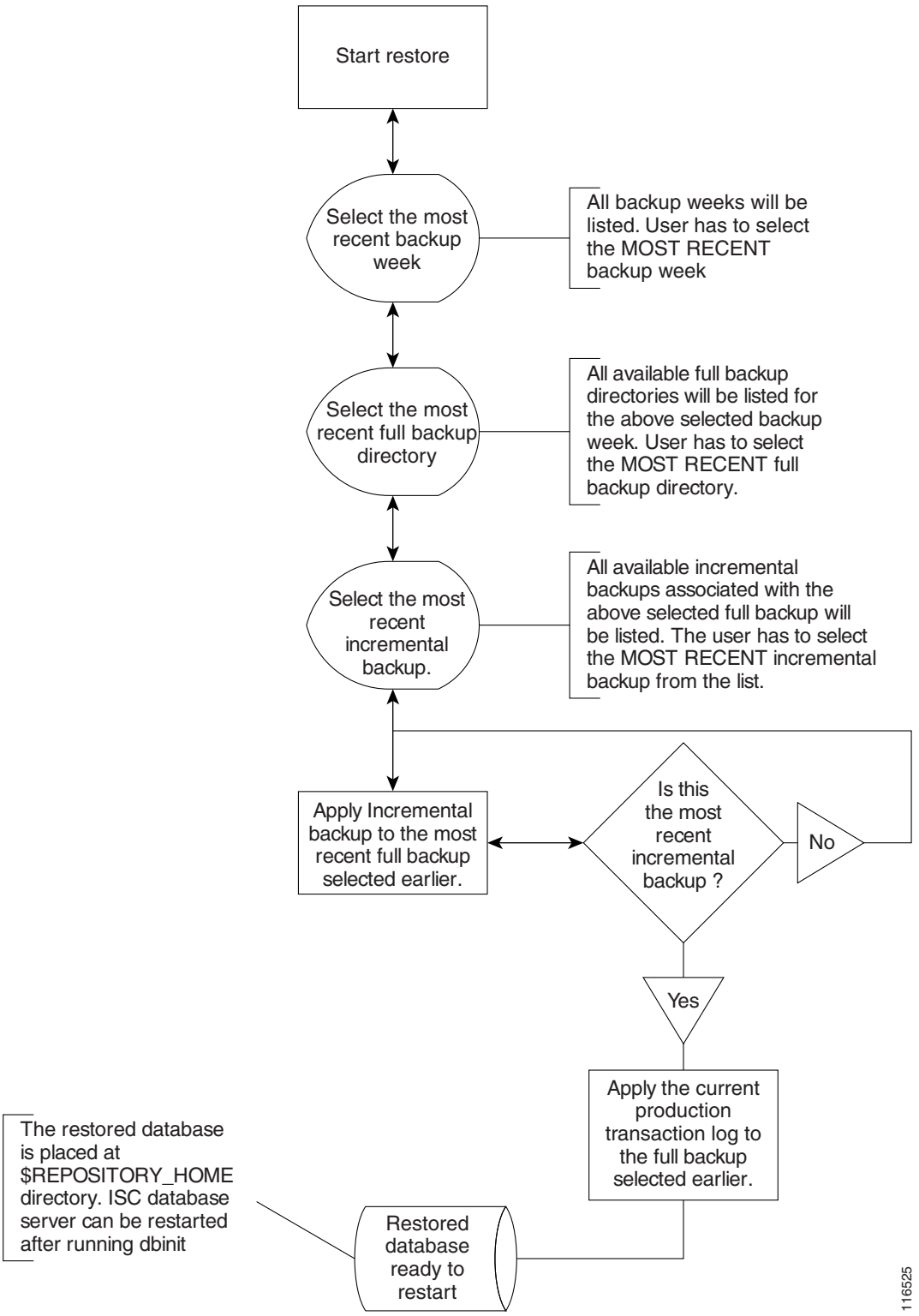
Figure D-7 Restore from Media Failure on the Database File (.db)



Restore to a Desired Point-in-Time

Figure D-8 shows the process flow for how to restore from a desired point-in-time.

Figure D-8 Restore the Database to a Desired Point-in-Time



Sybase Database Backup and Restore

It is important to protect all Prime Fulfillment-related data by a well-defined backup and recovery plan. Data loss could occur due to the following reasons. The objective of Prime Fulfillment's backup and recovery plan is to greatly minimize the risk of data loss due to any of these reasons:

- Media failure
  - The disk drive holding database files and other data files becomes unusable.
  - The database files and other data files become corrupted due to hardware or software problems.
- System failure
  - A computer or operating system goes down while there are partially completed transactions.

The Sybase Backup and Restore tool provides a suite of scripts with several options to back up and restore your embedded Sybase database.

The backup script automatically detects whether a full backup is needed for this current backup week. If a full backup already exists for this current backup week, this script automatically takes an incremental backup. However, the user can force a full backup overriding this default behavior by changing the configuration setting.

Installing the Sybase Backup and Restore Tool

Step 1 From here download the tar file
iscBRToolASA_LINUX.tar.gz (for Linux Backup and Restore Tool)
or **iscBRToolASA_SOLARIS.tar.gz** (for Solaris Backup and Restore Tool)

Step 2 Untar this file as follows:

mkdir -p $PRIMEF_HOME/backup/Sybase

gzip -d < iscBRToolASA_LINUX.tar.gz | tar xf -

Step 3 **chmod +x install**

Run install from where the tar file is unpacked. The install script takes command line arguments. Because **install** is also a system command, to differentiate between the system command and this installation script, run the script as follows:

```
./install -t <BACKUP_INSTALL_DIR>
```

where: *<BACKUP_INSTALL_DIR>* must be NFS accessible by both the primary and secondary systems.

For help in the install script, use **-h(elp)** as a command line argument.

Sample Install Prompts and User Responses

The following is a sample install session:

```
#./install -t /users/yourname/iscBRToolInstall
```

When the install script is invoked as above, if the specified target install directory already exists, the user is prompted as follows:

```
Looks like the installation already exists
Do you want to continue installation - it might remove the existing contents [y,n,?]
removing the previous installation
Enter the Sybase User Name: dba (user input)
```

```
Enter the Sybase User Password: sql (user input)
Enter the Primary Prime Fulfillment hostname: yourname-u10 (user input, the hostname of
the machine running Prime Fulfillment)
Enter Primary Prime Fulfillment user/owner name: yourname (user input, the user/owner name
of Prime Fulfillment on the above host)
```

Post Install Status

The installation creates an env.sh script under the <*BACKUP_INSTALL_DIR*>**/BackupRestore/config** directory.

Editing the env.sh script is NOT RECOMMENDED. This env.sh script sets the necessary environment variables needed to run Prime Fulfillment backup and restore scripts.

Adding PATH Statement

After installing the Prime Fulfillment Backup and Restore tool and before configuring it, the PATH statement:

PATH=$PATH:/BackupRestore/scripts:/BackupRestore/config:/BackupRestore/bin export PATH

should be added to the login .profile file of the user iscadm.

Without this permanent addition, later runs of the backup and restore may fail.

Configuring the Sybase Backup and Restore Tool

A one-time configuration is needed before the first backup is carried out.

Step 1 Invoke the asa_configs.sh script to configure the backup and restore process. Execute this script from the directory <*BACKUP_INSTALL_DIR*>**/BackupRestore/scripts** as follows:

```
# ./asa_configs.sh
```

A sample configuration session is as follows, with the configuration prompt on the LHS and sample user response on the RHS of the prompt.

```
Starting backup Configuration for Main Prime Fulfillment database
DB server Name...yourname_yourname-u10

Prime FulfillmentPrime Fulfillment Backup script invoked with the following parameters:
------------------------------------------------------------------------
Backup directory: /users/yourname/iscBRToolInstall/BackupRestore/Backups
Number of weeks to keep: 2
Backups archived to tape (0=no, 1=yes): 0
Tape device: /dev/rmt/0
Fail backup if there is not enough space for a full backup (0=no, 1=yes): 1
Delete old backups if not archived to tape (0=no, 1=yes): 0
Run validation routines on backup files (0=no, 1=yes): 0
Force full backup (0=no, 1=yes): 0
------------------------------------------------------------------------
The Prime Fulfillment backup configuration file is nonexistent ... creating new file
Modifying Prime Fulfillment backup configuration settings ...
Enter new Prime Fulfillment backup directory path (a subdirectory Prime Fulfillment will
be added
automatically) [/users/yourname/iscBRToolInstall/BackupRestore/Backups] [?]
/users/yourname/iscBackup
```

```
Backup directory for Prime Fulfillment specified is "/users/yourname/iscBackup/ISCMain".
Is this correct? [y]  [y,n,?] y
Enter the number of weeks to keep [2] [?] 3
Number of weeks specified is "3".
Is this correct? [y]  [y,n,?] y
Old backups archived to tape (0=no, 1=yes) [0] [?]
Archive to tape option specified is "0".
Is this correct? [y]  [y,n,?] y
Enter tape device [/dev/rmt/0] [?]
Tape device specified is "/dev/rmt/0".
Is this correct? [y]  [y,n,?] y
Fail backup if there is not enough space for a full backup (0=no,1=yes) [1] [?]
Fail backup if not enough space specified is "1".
Is this correct? [y]  [y,n,?] y
Delete old backups if not archived to tape (0=no, 1=yes) [0] [?]
Delete old backups specified is "0".
Is this correct? [y]  [y,n,?] y
Run validation routines on backup files (0=no, 1=yes) [0] [?] 1
Run validation routines specified is "1".
Is this correct? [y]  [y,n,?]
Force full backup (0=no, 1=yes) [0] [?] 0
Force full backup specified is "0".
Is this correct? [y]  [y,n,?] y
Prime Fulfillment Backup configuration settings have been modified ...
If you wish to verify the values or modify them again then re-run the script
asa_configs.sh again
The Prime Fulfillment backup engine is now exiting without backing up the database.You
must run the asa_backup.sh script for the backup to take place.
Prime Fulfillment Backup Configuration Successfully completed
Prime Fulfillment Backup Configuration script ending.
Starting backup Configuration for SLA database
DB server Name...rpokalor_rpokalor-u10
SLA Backup script invoked with the following parameters:
--------------------------------------------------------------------------------
Backup directory: /users/yourname/iscBRToolInstall/BackupRestore/Backups
Number of weeks to keep: 2
Backups archived to tape (0=no, 1=yes): 0
Tape device: /dev/rmt/0
Fail backup if there is not enough space for a full backup (0=no, 1=yes): 1
Delete old backups if not archived to tape (0=no, 1=yes): 0
Run validation routines on backup files (0=no, 1=yes): 0
Force full backup (0=no, 1=yes): 0
--------------------------------------------------------------------------------
The SLA backup configuration file is nonexistent ... creating new file
Modifying SLA backup configuration settings ...
Enter new SLA backup directory path (a subdirectory SLA will be added
automatically) [/users/yourname/iscBRToolInstall/BackupRestore/Backups] [?]
/users/yourname/iscBackup
Backup directory for SLA specified is "/users/yourname/iscBackup/SLA".
Is this correct? [y]  [y,n,?] y
Enter the number of weeks to keep [2] [?] 3
Number of weeks specified is "3".
s this correct? [y]  [y,n,?] y
Old backups archived to tape (0=no, 1=yes) [0] [?]
Archive to tape option specified is "0".
Is this correct? [y]  [y,n,?] y
Enter tape device [/dev/rmt/0] [?]
Tape device specified is "/dev/rmt/0".
s this correct? [y]  [y,n,?] y
Fail backup if there is not enough space for a full backup (0=no,1=yes) [1] [?]
Fail backup if not enough space specified is "1".
Is this correct? [y]  [y,n,?] y
Delete old backups if not archived to tape (0=no, 1=yes) [0] [?]
Delete old backups specified is "0".
```

```
Is this correct? [y]  [y,n,?] y
Run validation routines on backup files (0=no, 1=yes) [0] [?]
Run validation routines specified is "0".
Is this correct? [y]  [y,n,?]
Force full backup (0=no, 1=yes) [0] [?]
Force full backup specified is "0".
Is this correct? [y]  [y,n,?]
LA Backup configuration settings have been modified ...
If you wish to verify the values or modify them again then re-run the script
asa_configs.sh again
The SLA backup engine is now exiting without backing up the database. You must run the
asa_backup.sh script for the backup to take place.
SLA Backup Configuration Successfully completed
SLA Backup Configuration script ending.
```

Post Configuration Status

```
--------------------------------------------------------------------------
The configuration creates backupISC.config and backupSLA.config files under
<BACKUP_INSTALL_DIR>/BackupRestore/config directory.

To modify the initial configuration settings, users can either re-run the asa_configs.sh
script or simply modify the contents of these .config files. For example, if the user
wants to suppress the validation of the database after each backup, the config file
setting validateDB property to 0 instead of 1. Similarly, if the user wants to force full
backup, set the property fullBackup=1.
```

How to Use the Backup Script

The backup script is used as follows:

Step 1 Run the *<BACKUP_INSTALL_DIR>***/BackupRestore/script/asa_backup.sh** script to initiate the backup task.

- **a.** The backup should be made while the Prime Fulfillment database server is running. There is no need to stop Prime Fulfillment to back up the database.
- **b.** The backup directory path specified during the configuration process *must* be on an NFS device.

  It is important to keep the backup copies on an external storage device to protect the backup copies if the main Prime Fulfillment system crashes.
- **c.** Install the Backup and Restore tool and implement the periodic backup tasks from the primary Prime Fulfillment host machine. However, the backup task can be carried out from a secondary system, provided the following conditions are met:
  - The main Prime Fulfillment and SLA repository files should be placed on an NFS device accessible from the primary Prime Fulfillment host system and the secondary Prime Fulfillment host system.
  - The hardware and software configuration of the secondary system should be the same as the Prime Fulfillment primary host system.
  - The same version of Prime Fulfillment should be installed on both the primary and secondary systems.
  - The Backup and Restore tool should be installed on the secondary Prime Fulfillment system.

Step 2 Rerun the config script to make changes to the initial configuration settings, if needed.

Behavior of the Backup Process

Step 1 The backup scripts follow a weekly backup scheme; the backup week begins on Sunday.

Step 2 A full backup (both .db and .log files) is taken the first time the backup script is run during the backup week. Only incremental (only .log file) backups are taken for the remainder of the current backup week.

Step 3 You can force a full backup instead of an automatic incremental backup by setting the fullBackup property to 1 in the backupISC.config and backupSLA.config file, before running the asa_backup.sh script.

Step 4 A new subdirectory (under the user-specified backup directory) is created for each backup week. This directory is named as MM-DD-YYYY, where MM is the month and DD is the date of the Sunday of this backup week and YYYY is the year.

Step 5 A subdirectory is created for each full backup and all the associated incremental backups under the above weekly directory. Each time a forced full backup is made for the current backup week, there is a new subdirectory created to contain this full backup and its associated incremental backups.The full backup directory for the current backup week is named full_0*n*.dir, where *n* is 1,2...9.

How to Restore the Database from the Backup

The **asa_restore.sh** script supports the following types of database restore:

1. A restore of a previous Full or incremental backup.
2. A recovery from a media failure on the database file.

Note The main Prime Fulfillment repository consists of repository.db and repository.log files and the SLA consists of sla.db and sla.log files. Prime Fulfillment does not support placing the .db and.log files in different locations. Thus, if there is a media failure on the .db file, then the associated .log file also becomes unusable and thus this option might not be useful.

Step 1 Run <*BACKUP_INSTALL_DIR*>**/BackupRestore/script/asa_restore.sh** script to initiate the restore task after being sure to follow these pre-conditions:

a. The database server of Prime Fulfillment should not be running. Failing to stop the database server results in an inconsistent database after the restore.

b. Follow the instructions and prompts carefully while running the scripts.

c. Do not copy, move, or delete the repository files under **$REPOSITORY_HOME**.

Oracle Database Backup and Restore

From the location http://www.cisco.com/cgi-bin/tablebuild.pl/isc, download the tar file iscBRToolORA.tar.gz and untar this file as follows:

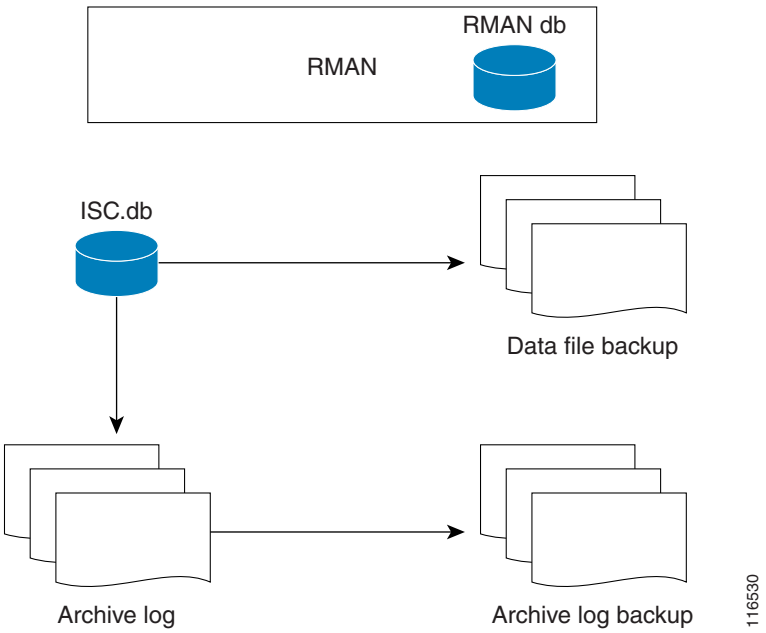
mkdir -p $PRIMEF_HOME/backup/Oracle

gzip -d < iscBRToolORA.tar.gz | tar xf -

Oracle databases have a backup and restore Recovery Manager (RMAN) tool. To use this tool for online backup, the Oracle database must be in ARCHIVELOG mode, as explained in the "Create RMAN Catalog Database" section on page D-21. RMAN maintains the bookkeeping intelligence of backup and recovery files and backs up at the block level. Therefore, RMAN can significantly speed up backups and reduce the server load by using incremental backups.

Figure D-9 shows an Oracle Database Backup Diagram.

Figure D-9 Oracle Database Backup



RMAN for Oracle 10g is explained in the quick start guide and reference manual, which are available from Oracle's website.

RMAN is convenient to use. However, it only provides a command line interface. And it still demands database analyst knowledge when recovery is needed.

Be sure that the backup data and RMAN catalog are located on a different disk from where the Oracle database (data files, redo logs, and control files) are located. Both can reside on the same Prime Fulfillment database server.

Oracle Enterprise manager (GUI) can be used to set up RMAN.

Alternatively, RMAN configuration is explained in the following areas that should be implemented sequentially:

Step 1 Create RMAN Catalog Database, page D-21.

Step 2 Create RMAN User, page D-21.

Step 3 Create RMAN Catalog, page D-21.

Step 4 Register the Prime Fulfillment Database with the RMAN Catalog, page D-21.

Step 5 Add PATH Statement, page D-22

Step 6 Modify Prime Fulfillment Database Initial Parameter File, page D-22.

Step 7 Backup Database, page D-22.

Step 8 Recover Database, page D-23.

Create RMAN Catalog Database

The catalog database holds the recovery catalogs. This database typically is set up on a different server from any database being registered in it. It also works if this database is set up on the same database server as the Prime Fulfillment database.

Use the Oracle utility **dbassist** to create a catalog database. (This is the same as Prime Fulfillment database creation, except you should name the RMAN global name **rcat**, and you should name the SID **rcat**.)

Create RMAN User

Creating an RMAN user is the same as creating an Prime Fulfillment user on an **rcat** database. Name the RMAN user ID **rmanuser** and name the password **rmanpassword**. Make sure **rmanuser** has proper privileges. For example:

SQL> grant connect, resource, recovery_catalog_owner to rmanuser;

Create RMAN Catalog

Create a catalog from the RMAN command prompt:

RMAN> **connect catalog rmanuser/rmanpassword@rcat**

RMAN> create catalog;

Register the Prime Fulfillment Database with the RMAN Catalog

Set the ORACLE_SID environment variable = prime.

%rman

RMAN > connect catalog rmanuser/rmanpassword@rcat

RMAN > connect target sys/**change_on_install**

RMAN > register database

RMAN> **configure controlfile autobackup on;**

The default password for an Oracle sys account after Oracle installation is **change_on_install**. Replace this sys account password with the correct sys account password for the Prime Fulfillment database.

Add PATH Statement

After installing the Prime Fulfillment Backup and Restore tool and before configuring it, the PATH statement:

PATH=$PATH:/BackupRestore/scripts:/BackupRestore/config:/BackupRestore/bin export PATH

should be added to the login .profile file of the user iscadm.

Without this permanent addition, later runs of the backup and restore may fail.

Modify Prime Fulfillment Database Initial Parameter File

To modify the Prime Fulfillment database initial parameter file, do the following:

Step 1 To ensure the database is in archive log mode, enter the following:

SQL> **alter system set log_archive_dest_1 = 'location=**<*/var/tmp/oradata/arch*>**' SCOPE=BOTH;**

SQL> **alter system archive log start;**

where <*/var/tmp/oradata/arch*> is the location of the archive destination.

Step 2 Restart the Prime Fulfillment database server with the ARCHIVELOG mode turned on, as follows:

startup mount

alter database archivelog;

alter database open

Step 3 **Check the archive log mode, as follows:**

SQL> archive log list;

Backup Database

To back up the database, do the following:

Step 1 Download the software for backup and restore from:

http://www.cisco.com/cgi-bin/tablebuild.pl/isc

Step 2 Before you run the backup scripts, make sure you update the file **$PRIMEF_HOME/backup/Oracle/backupenv.properties**

Use a text editor to open this file and read the directions on how to update each property.

Note The file **$PRIMEF_HOME/backup/Oracle/backupenv.properties contains BACKUP_DEST, which must point to a directory that is writable by the owner of the Oracle database. To do this, specify chmod atw <***file_defined_by_BACKUP_DEST***>**

Step 3 To perform a full database backup, execute the following:

$PRIMEF_HOME/backup/Oracle/oracle_backup.sh -f

Step 4 You can perform incremental backups after a minimum of one full backup. To perform an incremental backup, execute the following:

$PRIMEF_HOME/backup/Oracle/oracle_backup.sh -i

Note These backup scripts can be run as cron jobs or scheduled by the Prime Fulfillment task manager.

Backup Non-database Files

On the Prime Fulfillment server machine, to backup non-database related files, such as task logs or Prime Fulfillment system properties, execute the script: **non_db_backup.sh**.

Recover Database

To recover a database, do the following:

Step 1 Stop the Prime Fulfillment watchdog before recovering a database, as follows:

./prime.sh stop

Step 2 To recover a database, you can execute the following from the location $PRIMEF_HOME/backup/Oracle/oracle_recover.sh

%**oracle_recover.sh** [**"**<*date_time*>**"**]

The **"**<*date_time*>**"** is optional. The format is **"**mmm dd yyyy hh**:**mm**:**ss**"**, where the first mmm is the month and must be alphabetic characters with an initial capitalization, for example:

"Mar 09 2010 15:25:00"

If you do not specify <*date_time*>, the script does a full database recovery.

Note Do not stop the Oracle Listener during restore.

Standby System for Prime Fulfillment (Secondary System)

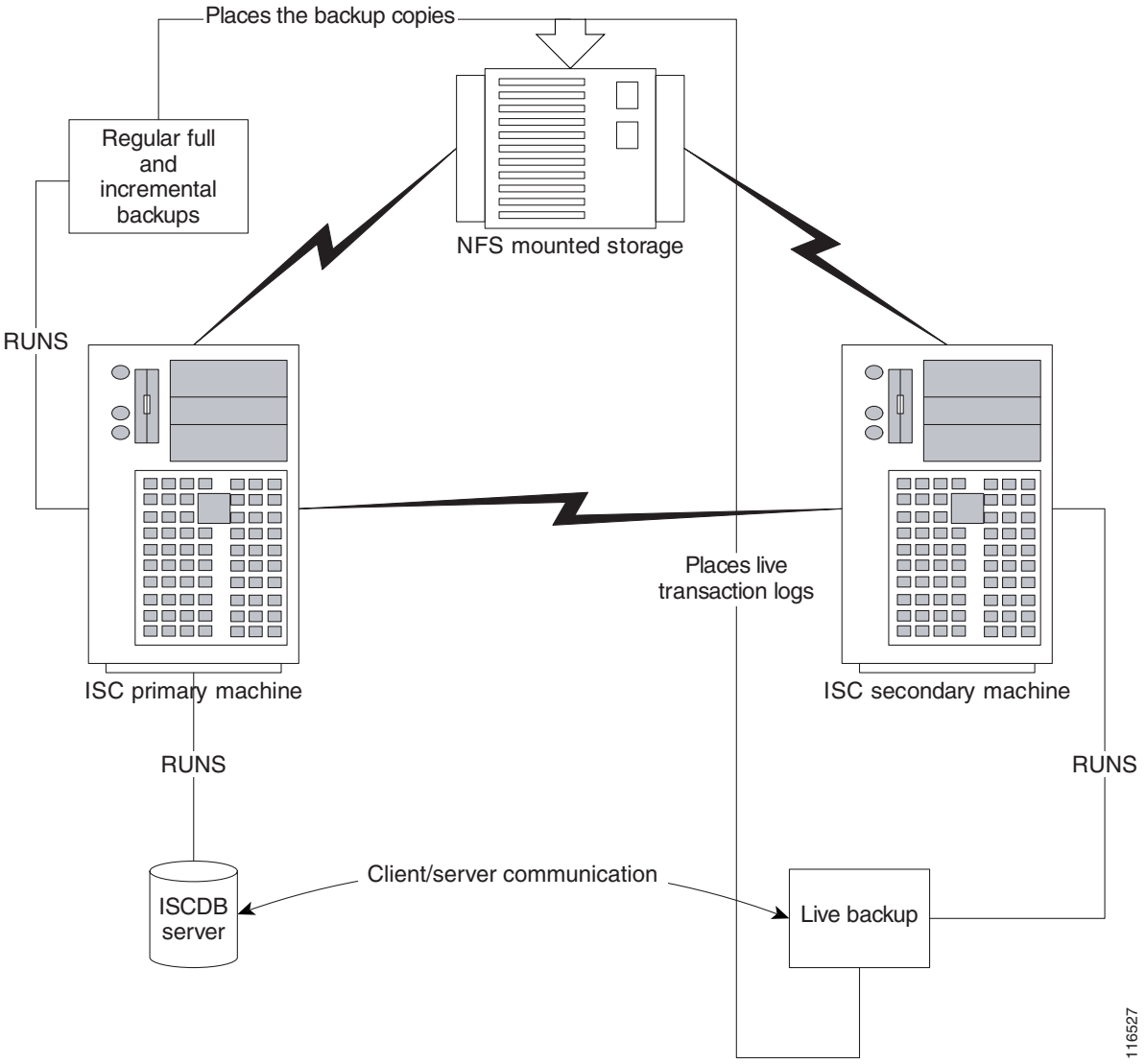
This section explains how to set up Sybase and Oracle standby systems for Prime Fulfillment.

The subsections are:

Sybase Standby System Process Overview

Figure D-10 shows a live backup scheme.

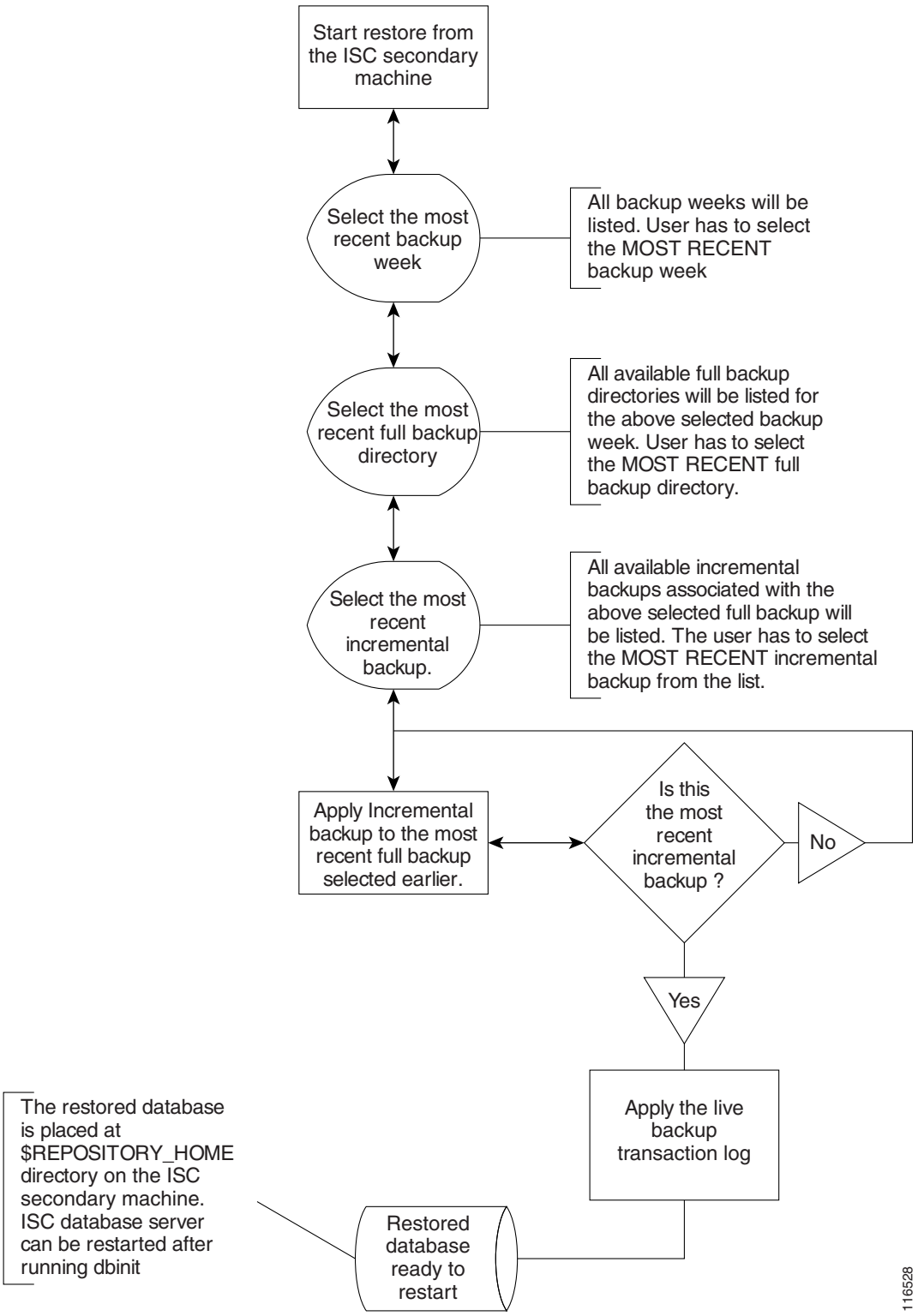
Figure D-10 Live Backup Scheme



Restore from Live Backup

Figure D-11 shows the process flow for how to restore from a live backup.

Figure D-11 Restore from Live Backup



Sybase Standby System Set Up

The explanation of setting up a Sybase standby system is explained as follows:

Running Live Backup of Prime Fulfillment Databases

Run *<BACKUP_INSTALL_DIR>***/BackupRestore/scripts/asa_liveBackup.sh** from the Prime Fulfillment secondary system to start the live backup after being sure to follow these preconditions:

Step 1 Set up a standby Prime Fulfillment system.

Step 2 The standby system should be similar to the primary Prime Fulfillment host system in hardware and software configurations.

Step 3 The Prime Fulfillment primary and standby systems should be on the same LAN.

Step 4 Prime Fulfillment software should be installed on the secondary system and the version of Prime Fulfillment on the primary and standby systems should be the same.

Step 5 The backup and restore tool should be installed on the primary and the secondary systems.

Step 6 The live backup should be started from the secondary system only, you should not run the live backup from Prime Fulfillment primary system.

Step 7 The storage device where the regular backup copies are placed should be accessible from the standby system.

Step 8 You *must* run *<BACKUP_INSTALL_DIR>***/BackupRestore/scripts/asa_liveBackupConfig.sh** to configure the live backup on the standby system before starting the live backup for the first time.

Step 9 The Prime Fulfillment database server must be running on the primary Prime Fulfillment host before starting the live backup on the standby system.

Step 10 The live backup stops when the Prime Fulfillment database server is stopped and should be restarted after restarting Prime Fulfillment.

Step 11 At least one full backup must be taken before starting the live backup.

Step 12 Regular periodic full/incremental backups should be taken even if the live backup is running on the secondary system.

Step 13 There should not be more than one live backup running simultaneously.

How to Restore the Database from the Live Backup

When the primary Prime Fulfillment host fails, the standby system restores the database from the latest available full backup, the latest incremental backup, and the live backup.

Run the *<BACKUP_INSTALL_DIR>***/BackupRestore/script/asa_restoreFromLiveBackup.sh** script on the standby system to restore the database after being sure to follow these pre-conditions:

Step 1 At least one full backup copy should be available to restore the database.

Step 2 If more than one backup copy is available, use only the latest full backup and the latest associated incremental backup.

Step 3 Run the restore from the standby machine.

Oracle Standby System Set Up

Prime Fulfillment 6.0 supports both physical standby and logical standby in Oracle 10g Data Guard. For information about the Oracle 10g standby concept and configuration, see the *Oracle Data Guard Concept and Administration 10g Release 1 (10.1)* Part No. B10823-01. The document can be found at Oracles' website.

When the standby database is activated, use the following commands to point Prime Fulfillment to the new database server:

./prime.sh stop -y

update $PRIMEF_HOME/etc/install.cfg and replace <*old_db_server*> **with** <*new_db_server*>.

execute applycfg.sh

./prime.sh initdb.sh

./prime.sh startwd

where:

<*old_db_server*> is the name of the old database server

<*new_db_server*> is the name of the new database server.

APPENDIX E

Prime Fulfillment Runtime Configuration Information

This appendix explains the following Prime Fulfillment information for runtime configuration:

Default TCP Port Values and Protocol Directions Used by Prime Fulfillment

Prime Fulfillment uses various Transmission Control Protocol (TCP) ports during its operation. Most TCP ports are configured during the installation. Table E-1 and Table E-2 specify the most vital TCP primary and optional ports, respectively, their default values, and the direction.

Table E-1 Prime Fulfillment Primary TCP Ports, Their Default Values, and Direction

TCP Primary Ports (listed alphabetically)	Default Values	Direction	Notes
HTTP	8030	Web browser to Prime Fulfillment	Used for Web GUI and NBI
Tibco RVA	7600	Prime Fulfillment to web browser	Used by some applications
Tomcat	8031	Web browser to Prime Fulfillment	HTTP port value + 1

Table E-2 Prime Fulfillment Optional TCP Ports, Their Default Values, and Direction

TCP Optional Ports (listed alphabetically)	Default Values	Direction	Notes
HTTPS	8443	Web browser to Prime Fulfillment	If HTTPS activated
Oracle	1521	Prime Fulfillment to Oracle Server	If Oracle database is used
Tibco RVA Admin	7630	Web browser to Prime Fulfillment	If RVA config required

Table E-2 Prime Fulfillment Optional TCP Ports, Their Default Values, and Direction (continued)

TCP Optional Ports (listed alphabetically)	Default Values	Direction	Notes
Tibco RVD or RVRD	7530	Bi-directional between Prime Fulfillment and Cisco Configuration Engine server	If using CNS transport mechanism for device access
Tibco RVRD Admin	7580	Web browser to Prime Fulfillment	If RVRD config required

The values selected during the installation can be retrieved from the file **$PRIMEF_HOME/etc/install.cfg**. Most of these ports only need to be allowed if you are allowing users to access Prime Fulfillment from outside your firewall.

Prime Fulfillment uses or can use the protocols specified in Table E-3 to communicate with the routers under its configuration control.

Note The selected protocol for each of the following categories must be able to pass through any firewalls between Prime Fulfillment and the devices:
1. Terminal Session Protocol - **default: Telnet**; SSH; CNS*; rsh
2. Configuration Access Protocol - **default: selected Terminal Session Protocol**; TFTP; FTP; rcp
3. SNMP - **default: SNMPv1/v2c**; SNMPv3
* CNS is a transport mechanism that uses the TIB/Rendezvous event bus to communicate with a Cisco Configuration Engine server..

Table E-3 Protocols and Directions with Prime Fulfillment

Protocols (listed alphabetically)	Directions
FTP	Devices to FTP server
NFS	Between Prime Fulfillment and TFTP or FTP server if server is on a different machine. (Can be blocked if you do not use FTP or TFTP.)
rcp	Prime Fulfillment to devices
rsh	Prime Fulfillment to devices
SSH	Prime Fulfillment to devices
SSHv2	Prime Fulfillment to devices
SNMP	Prime Fulfillment to devices
SNMPv3	Prime Fulfillment to devices
Telnet	Prime Fulfillment to devices
TFTP	Devices to TFTP server

Note Device creation is explained in the chapter Service Inventory—Inventory and Connection Manager, in the *Cisco Prime Fulfillment User Guide 6.2*.

Command-Line Interfaces Used by Prime Fulfillment

This section specifies the command-line interfaces (CLIs) used by Prime Fulfillment. This list gives commands supported in IOS and IOS XR unless otherwise indicated:

- commit (not supported in IOS)
- configure exclusive (not supported in IOS)
- config term
- copy (many variations)
- enable (not supported in IOS XR)
- end
- exit
- ping [vrf]
- reload
- show diag (not supported in IOS XR)
- show diags (not supported in IOS)
- show etherchannel port (not supported in IOS XR)
- show interfaces switchport (not supported in IOS XR)
- show modules (not supported in IOS XR)
- show port (not supported in IOS XR)
- show running
- show startup (not supported in IOS XR)
- show ver
- term (length, width, editing) (editing not supported in IOS XR)
- write mem (not supported in IOS XR)
- [no] logging console

Note The CLIs used by the Cisco Prime Diagnostics are listed in the *Cisco Prime Fulfillment User Guide 6.2.*

APPENDIX F

Troubleshooting

The following sections describe the major areas in the Cisco IP Solution Center installation in which troubleshooting might be necessary:

Unable to Find the Hostname

Symptom

Cannot find hostname.

Recommended Action

Step 1 If you cannot find the hostname, check the **/etc/nsswitch.conf** file to determine how the hostname is resolved.

Step 2 Check the /etc/resolv.conf file to determine whether you have a DNS Server IP Address.

Step 3 If you have a DNS Server IP Address, enter **ping** <*IP Address*> to check whether it is reachable.

Step 4 If the DNS Server is reachable, use **nslookup** <*machine name*> to check if it is resolving the name properly.

Step 5 If it is not working properly, you need a system administrator to fix the DNS entry.

Step 6 If you are not using DNS, be sure there is an entry for your machine in the **hosts** file in the **/etc** directory.

Moving a Repository or Renaming an Prime Fulfillment Server

If you want to move an existing Repository to a new server with a new Prime Fulfillment installation or rename an existing Prime Fulfillment installation, your existing configuration *must* be updated. When renaming the Prime Fulfillment installation, the local configuration file needs to be modified. When moving an existing Repository to a new server, the server from which you are moving the Repository and the server to which you are moving the Repository *must* both be at the same version and patch levels. Otherwise, your Repository needs to be upgraded, as explained in Upgrading an Existing Installation to Prime Fulfillment 6.2, page 2-18. Both when moving an existing Repository and renaming an existing Prime Fulfillment installation, the changes must be inserted into the Repository.

Use the following steps:

Step 1 Stop Prime Fulfillment, using the following command:

./prime.sh stop

Step 2 Edit the **install.cfg** file found in **$PRIMEF_HOME/etc**. In this file are references to the old host, which must be replaced with the new hostname. Then apply these changes, using the following command:

./prime.sh applycfg.sh

Step 3 Start the database, using the following command:

./prime.sh startdb

Step 4 Incorporate the changes into the Repository by initializing the database, using the following command:

./prime.sh initdb.sh

Step 5 Start Prime Fulfillment, using the following command:

./prime.sh startwd

Multiple Prime Fulfillment Instances with the Same TIBCO Rendezvous Port

Symptom

You might not see any error messages or a page might not appear, but you might see inconsistencies with events and tasks that you have just created.

Recommended Action

You might have more than one Prime Fulfillment server on the same subnet of a LAN, in which case, multiple instances of the Prime Fulfillment server will have the same TIBCO Rendezvous port. To fix this problem, you must ensure that the TIBCO port has a unique value.

To change the value for the TIBCO port, follow these steps:

Step 1 From the terminal window where the WatchDog is running, stop the WatchDog with the following command:

./prime.sh stopwd -y

Step 2 Use a text editor to open the **etc/install.cfg** file.

Step 3 Change the TIBCO_PORT variable to the desired value.

The default value for the TIBCO_PORT variable is 7530.

Step 4 To update all the dependent files with the new TIBCO port value, run **ant -f install.xml** command.

Step 5 **./prime.sh startdb**

Step 6 **./prime.sh initdb.sh**

Step 7 **./prime.sh stopdb -y**

Step 8 **ps -e | grep rvrd**

The returned result is the process id for the rvrd process.

Step 9 **kill -9** <*process id*>

where: <process id> is the returned process from Step 8.

Step 10 **rm -f $PRIMEF_HOME/tmp/rvrd.prime.store**

Step 11 **./prime.sh rvrd -store $PRIMEF_HOME/tmp/rvrd.prime.store**

Step 12 **./prime.sh startwd**

Step 13 Run the following multiple line Java command:

java -classpath $VPNSC_HOME/resources/java/classes/common:

$VPNSC_HOME/thirdparty/rv/lib/rvconfig.jar:

$VPNSC_HOME/thirdparty/rv/lib/tibrvj.jar:

**$VPNSC_HOME/thirdparty/rv/lib/tibrvjweb.jar **

com.cisco.vpnsc.install.RvrdCfg <*tibco_port*> <*server*> **prime**

where:

<*tibco_port*> is the desired port specified in Step 3.

<*server*> is the server name, for example: **server1.cisco.com**.

Memory Shortage on Large Networks

When running Discovery on a large network (250+ devices or 5000+ tunnels, for example) or an OutOfMemoryException is encountered, it is recommended that the memory setting be changed.

To do this, use the following steps:

Step 1 Choose **Administration** > **Hosts**.

Step 2 Select a host and click the **Config** button.

Step 3 Select **watchdog** > **server** > **worker** > **java** > **flags**.

Step 4 Change the first part of the property string, for example to **-Xmx1024m** instead of the default value **-Xmx512m**.

This increases the heap size of the **Discovery** task, which will clear up the OutOfMemoryException problem.

Step 5 Revert the **watchdog.server.worker.java.flags** property back to its original value to reduce the resource usage when no longer needed.

Cross-launch to Prime Fulfillment Fails.

Symptom

Cross-launching from the Prime Central Suite to Prime Fulfillment redirects you to the Prime Central login page instead of the Prime Fulfillment login page.

An error message is displayed, for example:

httpd.0 log shows,java.security.cert.CertificateException: No name matching monza-cen2 found

javax.net.ssl.SSLHandshakeException: java.security.cert.CertificateException: No name matching monza-cen2 found...

Cause

Mismatch between the value you provided as the Prime Central Hostname and the certificate generated on Prime Central.

Recommended Action

If you are using Mozilla Firefox:

Step 1 Click the icon that looks like a lock and is displayed on the bottom right corner of your browser.

A dialog box displays the certificate details.

Step 2 Click **View Certificate**.
A dialog box displays further details about the certificate.

Step 3 Note down the value specified in the **Common Name (CN)** filed.

Step 4 Using this value as the Prime Central hostname, follow the steps outlined in the procedure in Integrating Prime Fulfillment (Standalone) with Prime Central (IP-NGN Suite), page 2-17 to re-register Prime Fulfillment with the Prime Central server

---

If you are using IE:

Step 1 Go to **View > Security Report**.

Step 2 Click **View Certificates**.

Step 3 Note down the value specified in the **Issued to** field.

Step 4 Using this value as the Prime Central hostname, follow the steps outlined in the procedure in Integrating Prime Fulfillment (Standalone) with Prime Central (IP-NGN Suite), page 2-17 to re-register Prime Fulfillment with the Prime Central server

Known Installation Issues

Known issues and solutions are as follows:

Symptom 1

Out of disk space.

Recommended Action

The error looks something like the following:

```
Prime Fulfillment 6.1 will be installed in /var/PrimeFulfillment
>Copying files ...
>Copying sybase...
>tar:./shared/jre_1.3.1_solaris_sun_sparc/lib/rt.jar: HELP - extract
>write error
>Error copying Sybase
```

If you see an error like this, it is likely due to the server running out of disk space.

To verify what space is available, run the command **df -k** <*install directory*>.

See Chapter 1, "System Recommendations," for the disk space recommendations.

Symptom 2

The Installation utility GUI never displays.

Recommended Action

This problem should be accompanied with a Java stack dump.

Step 1 Run the following command to check for the $DISPLAY environment variable being set:

echo $DISPLAY.

If you use the secure shell (ssh), then this will be set up and managed for you.

If you manually change the $DISPLAY environment variable in an SSH environment, the easiest recovery method is to log off and reestablish the SSH connection.

Step 2 To set the DISPLAY environment variable, do the following:

a. For the K or Bourne shell:

export DISPLAY=<*machine name*>**:0.0**

b. For the C shell:

setenv DISPLAY=<*machine name*>**:0.0**

Symptom 3

Could not find temporary files.

Recommended Actions

If you receive an error that says the temporary file could not be created or found, it usually means the location used to write the temporary file is write-protected or out of disk space.

The two places that Prime Fulfillment uses for temporary files are **/tmp** and **/var/tmp**.

- Make sure both locations have write permission by doing a long list on the directories (**ls -la**). The directory should have wide open permissions: **drwxrwxrwx**.
- There is another temporary file problem that can arise, especially in cases where there have been previous aborted installation attempts—existing temp files might be left by previous installations. If this is the case, it is best to clean out all the files in the temp directories after aborted installation attempts.

Symptom 4

Running **./prime install.sh** fails.

Recommended Action

Running **./prime install.sh** can fail due to the following reasons:

1. You are not root.

   Although it is possible to install as non-root if you have appropriate permissions in the target directory, this will still have problems since only root can write to **/etc/init.d** where the startup scripts reside. Therefore, it is easier to install as root.

2. You do not have enough disk space in the target directory. To find out the available disk space, issue the following command:

   df –k <*target directory*>

3. You do not have enough disk space in the **/tmp** directory. Issue the command **df –k /tmp** to determine the available disk space for **/tmp**.

4. You do not have enough disk space in the **/var/tmp** directory. Issue the command **df –k /var/tmp** to determine the available disk space for **/var/tmp**.

5. The PATH and LD_LIBRARY_PATH environment variables are incorrect.

   Make sure your PATH and LD_LIBRARY_PATH environment variables are correct.

   Example:

   ```
   PATH=/usr/bin:/usr/local/bin
   LD_LIBRARY_PATH=/usr/lib:/usr/local/lib
   export PATH LD_LIBRARY_PATH
   ```

   a. Alternatively, start a clean root shell with this command:

      env – ksh

   b. Then issue a command like the following:

      ```
      ./install.sh /opt/PrimeFulfillment iscadm
      ```

Symptom 5

Prime Fulfillment does not start on reboot.

Recommended Action

Perform the following steps:

Step 1 Install Prime Fulfillment as the root user.

If you install as root, **init.d** has a script to start the Watchdog.

If you do not install as root, you do not get the startup on reboot feature.

Step 2 To become root, enter the following command:

su root

Step 3 Get the **prime.tmpl** file from the installation media.

Step 4 Edit the following fields in **prime.tmpl**:

`OWNER=_owner - replace _owner` with the username whom owns prime

`PRIMEF_HOME=_vpnsc_home - replace _vpnsc_home` with the prime directory

Step 5 Rename prime.tmpl as prime and then enter the following commands:

```
mv prime /etc/init.d
chmod 744 /etc/init.d/prime
```

Step 6 Create the following symbolic links to **prime**:

a. `cd /etc/rc1.d`

   `ln -s /etc/init.d/prime K98ISC`

b. `cd to /etc/rc2.d`

   `ln -s /etc/init.d/prime K98ISC`

c. `cd to /etc/rc3.d`

   `ln -s /etc/init.d/prime S99ISC`

Symptom 6

Unable to create or delete IOS devices in the Cisco CNS IE2100 appliance repository when using Cisco CNS Configuration Engine 1.4 software with Prime Fulfillment.

Recommended Action

Log into the Cisco CNS IE2100 appliance as **root** and modify the **web.xml** file located at **/opt/CSCOcnsie/WEB-INF** as follows.

Step 1 Locate the following entry:

```
<servlet>
<servlet-name>ServletLoadComplete</servlet-name>
<servlet-class>com.cisco.cns.cfgsrv.ServletLoadComplete</servlet-class>
<load-on-startup>105</load-on-startup>
</servlet>
```

Step 2 Immediately after the entry found in Step 1, insert the following lines:

```
<servlet>
<servlet-name>ImportDevice</servlet-name>
<servlet-class>com.cisco.cns.cfgsrv.ImportDevice</servlet-class>
<load-on-startup>100</load-on-startup>
```

```
</servlet>


<servlet>
<servlet-name>ImportTemplate</servlet-name>
<servlet-class>com.cisco.cns.cfgsrv.ImportTemplate</servlet-class>
<load-on-startup>100</load-on-startup>
</servlet>
```

```
<servlet>
<servlet-name>RemoveDevice</servlet-name>
<servlet-class>com.cisco.cns.cfgsrv.RemoveDevice</servlet-class>
<load-on-startup>100</load-on-startup>
</servlet>

<servlet>
<servlet-name>RemoveTemplate</servlet-name>
<servlet-class>com.cisco.cns.cfgsrv.RemoveTemplate</servlet-class>
<load-on-startup>100</load-on-startup>
</servlet>
```

Step 3 Locate the following entry:

```
<servlet-mapping>
<servlet-name>ServletLoadComplete</servlet-name>
<url-pattern>/ServletLoadComplete</url-pattern>
</servlet-mapping>
```

Step 4 Immediately after the entry found in Step 3, insert the following lines:

```
<servlet-mapping>
<servlet-name>ImportDevice</servlet-name>
<url-pattern>/ImportDevice</url-pattern>
</servlet-mapping>


<servlet-mapping>
<servlet-name>ImportTemplate</servlet-name>
<url-pattern>/ImportTemplate</url-pattern>
</servlet-mapping>
```

```
<servlet-mapping>
<servlet-name>RemoveDevice</servlet-name>
<url-pattern>/RemoveDevice</url-pattern>
</servlet-mapping>

<servlet-mapping>
<servlet-name>RemoveTemplate</servlet-name>
<url-pattern>/RemoveTemplate</url-pattern>
</servlet-mapping>
```

Step 5 Reboot the Cisco CNS IE2100 appliance.

Symptom 7

Not able to connect to the database.

Recommended Action

Perform the following steps:

Step 1 Check that the following values are substituted correctly in the installation window:

- Oracle database server name
- Oracle port number
- SID

Step 2 If everything is correct, check that the server is reachable by entering:

ping <*Oracle database server name*>

Step 3 Issue the following to determine whether the database is running:

netstat -an | grep <*oracle port number*>

If no responses are found, your database is not running and you must restart, as explained in detail in the section, "Launching Oracle and Opening Your Database," in Appendix A, "Setting Up Oracle for Prime Fulfillment."

Symptom 8

Unable to access Prime Fulfillment with your web browser.

Recommended Action

Check the server status with the command **./prime.sh status**.

If any server state is other than s**tarted**, attempt to restart by entering the command, **./prime.sh wdclient restart** <*server name*>. If this command does not succeed, enter the commands **./prime.sh stop** and then **./prime.sh startwd**.

Note The most common server not to start is the **httpd** server.

Symptom 9

The web browser does not display certain GUI elements such as the main bar and charts in Prime Fulfillment GUI.

Recommended Action

Install Adobe Flash player (version 10.3.183.7) and its plug-in to support the web browser and to enable the main bar and charts in the Prime Fulfillment GUI.

Symptom 10

Installation fails due to ANT related errors, such as:

Exception - BUILD FAILED

/opt/PrimeFulfillment-6.2/install.xml:57: The signjar type doesn't support the "destdir" attribute

followed by

Error running: /opt/PrimeFulfillment-6.2/thirdparty/ant/bin/ant -f /opt/PrimeFulfillment-6.2/install.xml jarsigner

Exiting installation.

Cause

Prime Fulfillment is unable to use the right version of ANT.

Recommended Action

Update the silent_install.sh file available in the untarred installation folder as follows:

- Locate the command
  ANT_HOME=${vpnsc_home}/thirdparty/ant
- Include the following text in the next line
  export ANT_HOME
- Re-intall Prime Fulfillment.

Symptom 11

Prime Fulfillment cannot unzip the upgrade tool during installation.

Error: **Cannot create upgradeTool**

Recommended Action

- For a new installation (for new installations, the symptoms of this issue are minor and can be ignored):
  - a) Copy the installation files from cd /cdrom/cdrom0 to a location to which you have Write permissions.
  - b) Initiate the installation procedure:
    /install.sh
- New installation using an existing DB, and the opting to upgrade the DB manually:
  - a) Copy the installation files from the cd /cdrom/cdrom0 to a location to which you have Write permissions.
  - b) Go to the location where you have copied the installation files:
    cd <Hand-off location>
  - c) Unzip the isc-upgrade.zip file:
    unzip isc-upgrade.zip
  - d) Initiate the installation procedure:
    /install.sh
- Upgrade installation and choosing to perform an ‘upgrade in place’:
  - a) Copy the installation files from the cd /cdrom/cdrom0 to a location to which you have Write permissions.
  - b) Go to the location where you have copied the installation files:
    cd <Hand-off location>
  - c) Unzip the isc-upgrade.zip file:
    unzip isc-upgrade.zip

– d) Initiate the installation procedure:
/install.sh

Warning: Unresponsive Script

Warning message: "**Warning: Unresponsive script. A script on this page may be busy, or may have stopped....**"

Cause: Some operations run longer than the amount of time predefined by the browser. Examples of tasks during which this error message occurs are:

- editing a customer device with many interfaces,
- editing user details when there are many users.

Recommended Action

Increase the browser timeout value.

- For Mozilla Firefox, see http://kb.mozillazine.org/Unresponsive_Script_Error
- For Internet Explorer 8, see http://support.microsoft.com/kb/175500#LetMeFixItMyselfAlways

Daylight Saving Time

If Daylight Saving Time (DST) is not working correctly, perform the following steps:

Step 1 Go to the following URL to determine which patch is needed for your time zone:

http://www.oracle.com/technetwork/java/javase/tzdata-versions-138805.html

Step 2 To download the Java Runtime Environment (JRE) patch, go to:

http://www.oracle.com/technetwork/java/javase/downloads/index-jsp-138363.html#timezone

Step 3 Go to Prime Fulfillment home directory:
cd $PRIMEF_HOME

Step 4 Enter: **./prime.sh stop**

Step 5 Follow this link to install the missing DST patch that you downloaded from Step 2:

http://www.oracle.com/technetwork/java/javase/tzupdater-readme-136440.html

Error - DBSPAWN ERROR: -84

The error: **DBSPAWN ERROR: -84** is normally seen when the existing log files are not removed before loading a new **repository.db** file. The **repository.log** and **sla.log** files in the Repository/ directory must be deleted before initiating the **./prime.sh startdb** command.

Error - No VPNSC Host Entry in the Database, When Starting Prime Fulfillment

To correct the error: **No VPNSC Host Entry in the Database**, run **./prime.sh initdb.sh** in the following order:

Step 1 **./prime.sh stop**
Ensure that no other Prime Fulfillment processes are running. To do this, you can enter: **ps -ef | grep prime**

Step 2 **./prime.sh startdb**

Step 3 **./prime.sh initdb.sh**
This step adds the host entry into the repository.

Step 4 **./prime.sh startwd**

Error - Could Not Connect to the Name Server, When Starting Prime Fulfillment

The error: **com.cisco.vpnsc.watchdog.WDRuntimeException: WD_108 :: Could not connect to the name server** is normally seen when the domain name cannot be extracted from **resolv.conf**. The result is that the nameserver does not start, because it fools the system into thinking it is not a Master server.

To correct this error, you must have root privileges. As root, add the correct domain statement to the **/etc/resolv.conf** file for your server (not **$PRIMEF_HOME/etc**); for example, **domain cisco.com**.

Error - This Is Not a Database Server

The following error could occur after you install Prime Fulfillment:
<*server name*> **./prime.sh startdb Master database server is: This is not a database server. There is no need to start the database**
Adding this host to the database ... com.cisco.cns.security.common.CannotConnectException: Cannot connect to the data store:Cannot connect to the data store. No valid connection to server type: com.cisco.cns.security.dataaccess
at com.cisco.cns.security.dataaccess.ConnectionPool.acquire (ConnectionPool.java:240)

Specifically, this could occur after issuing the command: **./install.bin** <*directory_where_PrimeFulfillment_is_to_be_installed*> **iscadm**.

The error could be Domain Naming System (DNS) related. In the **install.cfg** file, <*server name*>**.cisco.com** needs to be changed to <*server name*> only. Then run **applycfg.sh** followed by **./prime.sh initdb.sh** and **./prime.sh startwd**.

Error - Cannot Connect to the Data Store

The primary reason for the error: **Cannot Connect to the Data Store** is DNS related. As **root**, make sure **/etc/resolv.conf** (not the **$PRIMEF_HOME/etc** directory) is correct for your server.

If you need more information, set the Security Policy Engine (SPE) logging to DEBUG and attempt to execute **./prime.sh initdb.sh**. This provides more details. If an unknown host exception is created, double check the **/etc/hosts** file and the **/etc/nsswitch.conf** file. This controls the flow and sequence of the hostname lookup.

If DNS is not enabled or working, add the IP address to the following files: **cns**, **vpnsc**, and **HA properties** files, to use IP addresses instead of hostnames.

The **cns properties** files is located at **$PRIMEF_HOME/etc/spe/cns.properties**.

The **vpnsc properties** file is located at **$PRIMEF_HOME/etc/vpnsc.properties**.

The **HA properties** file is located at **$PRIMEF_HOME/etc/HA.properties.**

Echo Mode

This explanation of Echo mode is specified in the following subsections:

What is Echo Mode?

Echo mode is a setting in Prime Fulfillment that is accessible through the Prime Fulfillment configuration window. Echo mode affects service provisioning. When you set Prime Fulfillment to run in echo mode, Prime Fulfillment performs service provisioning tasks without downloading the resulting commands to the physical hardware. The resulting service provisioning is stored only in the Repository, and no attempt is made to connect to the target devices.

Who Should Use Echo Mode and When Should It Be Used?

In a production environment, echo mode can be used to perform service provisioning on devices that are either temporarily offline or not yet commissioned. The service provisioning only occurs within the Prime Fulfillment Repository. When these devices become active, you can force the deployment of the previously provisioned services and Prime Fulfillment downloads the configurations to the devices.

Echo mode is a global configuration setting that affects the Service Provisioning for *all* users. Therefore, echo mode should be used with care. To enable echo mode, set the Dynamic Component Properties Library (DCPL) **GTL/echo-mode** to **true** (**Administration > Control Center > Hosts**, as explained in Appendix C, Property Settings of the *Cisco Prime Fulfillment User Guide 6.2*). When echo mode is enabled, no attempt is made to contact any devices and no attempt is made to audit the Service Request. This affects all Service Requests during the time period when echo mode is enabled.

How Should You Use Echo Mode?

Because echo mode affects all of Prime Fulfillment's provisioning, be sure that all provisioning requests that require device access are complete before turning on echo mode.

Turn on echo mode, as explained in the "Who Should Use Echo Mode and When Should It Be Used?" section on page F-13.

Configure your Service Request as normal for the device that is not commissioned or is offline. Save and deploy the Service Request. No attempt is made to contact the device or audit the Service Request. The Service Request transitions into the Deployed state.

Now, you can disable echo mode, by changing the **GTL/echo-mode** property to **false** (see the "Who Should Use Echo Mode and When Should It Be Used?" section on page F-13). From this point forward, all provisioning requests contact the devices and all provisioning requests are audited. You can now safely resume provisioning for all users.

After the device has been commissioned or brought back online, Force deploy the provisioning request for this device (see Chapter 3 in the *Cisco Prime Fulfillment User Guide 6.2*). This forces the provisioning request to go through the provisioning cycle and deploy the configlet onto the device.

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