Cisco Prime Optical 9.3.1 Installation Guide

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Preface

This guide explains how to install Cisco Prime Optical 9.3.1 and how to upgrade from previous releases.

New and Changed Information

The following table describes information that has been added or changed since the Cisco Prime Optical 9.3.1 Installation Guide was last published online.

<table>
<thead>
<tr>
<th>Date Released</th>
<th>Revision</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 12, 2011</td>
<td>Initial Version.</td>
<td>—</td>
</tr>
<tr>
<td>April 10, 2012</td>
<td>You can configure the Prime Optical client to route all of its outbound network (TCP) connections to a SOCKS proxy server.</td>
<td>Setting Up Client-Server Encrypted Connections Through SSH Tunneling and SOCKS Proxy Forwarding, page G-1</td>
</tr>
<tr>
<td>April 10, 2012</td>
<td>Sun Microsystems JDK version updated from 1.5 1.6.</td>
<td>7.1 Installing the Prime Optical Client, page 1</td>
</tr>
<tr>
<td>April 10, 2012</td>
<td>Removed the sentence that indicated that Java Runtime Environment (JRE) is bundled with the Prime Optical client.</td>
<td>Table 2-2</td>
</tr>
</tbody>
</table>

Audience

The primary audience for this guide includes network operations personnel and system administrators. This guide assumes that you are familiar with the following products and topics:

- Basic internetworking terminology and concepts
- Network topology and protocols
• Sun Microsystems Solaris or Red Hat Enterprise Linux administration
• Oracle database administration

Conventions

This document uses the conventions listed in the following table.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Document Conventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>Convention</td>
</tr>
<tr>
<td>Commands and keywords</td>
<td><strong>boldface</strong> font</td>
</tr>
<tr>
<td>Variables for which you supply values</td>
<td><strong>italic</strong> font</td>
</tr>
<tr>
<td>Displayed session and system information</td>
<td><strong>screen</strong> font</td>
</tr>
<tr>
<td>Information you enter</td>
<td><strong>boldface screen</strong> font</td>
</tr>
<tr>
<td>Variables you enter</td>
<td><strong>italic-screen</strong> font</td>
</tr>
<tr>
<td>Selecting a menu item</td>
<td><strong>Option &gt; Network Preferences</strong></td>
</tr>
<tr>
<td>Required alternative keywords are grouped in braces and separated by vertical bars</td>
<td>`{x</td>
</tr>
</tbody>
</table>

**Note**  
Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the publication.

**Caution**  
Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

**Tip**  
Means the following information will help you solve a problem.

**Timesaver**  
Means *the described action saves time*. You can save time by performing the action described in the paragraph.

Related Documentation

**Note**  
You can access the most current Prime Optical documentation online at http://www.cisco.com/en/US/products/ps11670/tsd_products_support_series_home.html.
The Prime Optical documentation set comprises the following guides:

- **Release Notes for Cisco Prime Optical 9.3.1**—Describes the caveats for Prime Optical.
- **Cisco Prime Optical 9.3.1 Installation Guide**—This guide.
- **Cisco Prime Optical 9.3.1 User Guide**—Describes how to use the Prime Optical software, which consists of user applications and tools for network discovery, network configuration, connection management, fault management, system administration, and security management.
- **Cisco Prime Optical 9.3.1 Gateway/CORBA User Guide and Programmer Manual**—Describes the Gateway/CORBA northbound interface product that is available for Prime Optical. This document serves as a reference for developers of OSS applications that work with the Gateway/CORBA interface.
- **Cisco Prime Optical 9.3.1 Database Schema**—Describes the database schema that Prime Optical uses to store information in a Structured Query Language (SQL) database such as the Oracle database. The document is designed for users who need to create their own reports without using Prime Optical.
- **Cisco Prime Optical 9.3.1 High Availability Installation Guide**—Explains how to install Prime Optical in a high availability (HA) environment.

**Note** To obtain the **Cisco Prime Optical 9.3.1 High Availability Installation Guide**, contact your Cisco account representative.

- **Cisco Prime Optical 9.3.1 ML Provisioning Methodology**—Describes the methodology that Prime Optical uses to provision ML-series cards.
- **Cisco Prime Optical 9.3.1 Basic External Authentication**—Describes how Prime Optical supports basic external authentication.
- **Migration Matrix for Cisco Prime Optical Service Pack Releases**—Describes the migration matrix for Prime Optical service pack releases.

### 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:


Subscribe to the *What’s New in Cisco Product Documentation* as an RSS feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service. Cisco currently supports RSS Version 2.0.
Getting Started

Introduction

Cisco Prime Optical is a carrier-class, multitechnology management system that integrates the end-to-end management of traditional transport networks and new carrier packet transport networks. It helps to maintain the integrity of existing services as well as deliver interactive, content-based services and high-bandwidth applications.

Prime Optical manages the entire Cisco optical portfolio, including:
- Metro core
- Metro dense wavelength-division multiplexing (DWDM)
- Metro edge and access products
- New Carrier Packet Transport (CPT) System products

Prime Optical also serves as a foundation for integration into a larger overall Operations Support System (OSS) environment by providing northbound gateway interfaces to higher-layer management systems.

Before updating the software image on an NE, check the Release Notes to verify whether the NE software version is supported in this release. See the Release Notes for Cisco Prime Optical 9.3.1 for the NE software versions that are supported.

1.1 Installation and Upgrade Overview

The following steps describe the typical Prime Optical installation and upgrade workflow.

- **Step 1** Check your system requirements before you install Prime Optical or upgrade from an earlier release. See Chapter 2, “System Requirements.”
- **Step 2** Follow the steps for your installation or upgrade scenario outlined in 1.1.1 Installation and Upgrade Scenarios, page 1-2.
- **Step 3** (Optional) Install Prime Optical GateWay/CORBA, see Chapter 6, “Installing Cisco Prime Optical 9.3.1 GateWay/CORBA.” The Prime Optical GateWay/CORBA option is a CORBA-based interface that provides higher-layer management systems with information for all supported NEs.

**Note** You must purchase a separate license for Prime Optical 9.3.1 GateWay/CORBA.
Step 4  Install the Prime Optical client, see Chapter 7, “Installing the Prime Optical Client.”

You can install Prime Optical 9.3.1 as a standalone product or as part of Cisco Prime Central 1.0. After you install Prime Optical in suite mode, it cannot be reverted to standalone mode. Some functionality is disabled when Prime Optical is integrated with Prime Central.


1.1.1 Installation and Upgrade Scenarios

The following tables provide a summary of the different installation and upgrade scenarios for Prime Optical 9.3.1. Follow the workflow outlined for each scenario.

- New Installation Scenarios
  - For detailed information on new installations, see Chapter 3, “Installing Cisco Prime Optical 9.3.1 and Oracle 11g.”

- Upgrade Scenarios

Table 1-1  New Installation Scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>For More Information, See (in this order)...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installing Prime Optical and an external database on the same workstation</td>
<td>1. 2.1 Prime Optical Server Requirements, page 2-1</td>
</tr>
<tr>
<td></td>
<td>2. 3.1.1 Setting the Environment for Installation, page 3-2</td>
</tr>
<tr>
<td></td>
<td>3. A.1 Oracle Prerequisites, page A-1</td>
</tr>
<tr>
<td></td>
<td>4. A.2 Installing the Oracle 11g Software with the Response File (*.rsp) Provided by Cisco, page A-2</td>
</tr>
<tr>
<td></td>
<td>5. A.3 Downloading and Installing the Required Oracle 11g Patches for 64-Bit Solaris or Linux Platforms, page A-4</td>
</tr>
<tr>
<td></td>
<td>6. 3.1.2 Installing the Prime Optical Server and Database, page 3-3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scenario</th>
<th>For More Information, See (in this order)...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installing Prime Optical and an embedded database on the same workstation</td>
<td>1. 2.1 Prime Optical Server Requirements, page 2-1</td>
</tr>
<tr>
<td></td>
<td>2. 3.1.1 Setting the Environment for Installation, page 3-2</td>
</tr>
<tr>
<td></td>
<td>3. 3.1.2 Installing the Prime Optical Server and Database, page 3-3</td>
</tr>
</tbody>
</table>
### Table 1-1  New Installation Scenarios (continued)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>For More Information, See (in this order)...</th>
</tr>
</thead>
</table>
| Installing Prime Optical and an external database on separate workstations | 1. 2.1 Prime Optical Server Requirements, page 2-1  
2. 3.2.1 Enabling SSH on the Prime Optical Server and Database Workstations, page 3-9  
3. 3.2.2 Setting the Environment for the Prime Optical Server Installation, page 3-10  
4. A.1 Oracle Prerequisites, page A-1  
5. A.4 Installing the Oracle Client on the Prime Optical Server Workstation, page A-4  
6. 3.2.3 Installing the Prime Optical Server on the Prime Optical Server Workstation, page 3-11  
7. 2.1 Prime Optical Server Requirements, page 2-1  
8. 3.2.4 Setting the Environment for the Prime Optical Database Installation, page 3-14  
9. A.1 Oracle Prerequisites, page A-1  
10. A.2 Installing the Oracle 11g Software with the Response File (*.rsp) Provided by Cisco, page A-2  
11. A.3 Downloading and Installing the Required Oracle 11g Patches for 64-Bit Solaris or Linux Platforms, page A-4  
12. 3.2.5 Installing the Prime Optical Database, page 3-15  
13. 3.2.6 Updating the Prime Optical Database Parameters for a Dual-Server Installation with a Dedicated Connection Between Servers, page 3-17 |

| Installing Prime Optical and an embedded database on separate workstations | 1. 2.1 Prime Optical Server Requirements, page 2-1  
2. 3.2.1 Enabling SSH on the Prime Optical Server and Database Workstations, page 3-9  
3. 3.2.2 Setting the Environment for the Prime Optical Server Installation, page 3-10  
4. 3.2.3 Installing the Prime Optical Server on the Prime Optical Server Workstation, page 3-11  
5. 3.2.4 Setting the Environment for the Prime Optical Database Installation, page 3-14  
6. 3.1.1 Setting the Environment for Installation, page 3-2  
7. 2.1 Prime Optical Server Requirements, page 2-1  
8. 3.2.5 Installing the Prime Optical Database, page 3-15  
9. 3.2.6 Updating the Prime Optical Database Parameters for a Dual-Server Installation with a Dedicated Connection Between Servers, page 3-17 |
Table 1-2 Upgrade Scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>For More Information, See (in this order)...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migrating your existing Prime Optical 9.3 data</td>
<td>5.5 Upgrading from Prime Optical 9.3 to Prime Optical 9.3.1, page 5-15 Follow the same procedure for single- or dual-server configurations.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Migrating your existing CTM 9.2 on a single-server configuration and preserving the entire embedded database</td>
<td>1. 5.1 Backing Up the Database on Solaris 10 Before Migration, page 5-2 2. 5.2 Installing the Latest CTM or Prime Optical Service Pack, page 5-3 3. 5.3.1 Preliminary Steps to Migrate to the Prime Optical 9.3.1 Server, page 5-3 4. 5.3.4 Upgrading from CTM 9.2 to Prime Optical 9.3.1, page 5-5</td>
</tr>
<tr>
<td>Migrating your existing CTM 9.2 on a dual-server configuration and preserving the entire embedded database</td>
<td>1. 5.4.1 Preliminary Steps to Migrate to the Prime Optical 9.3.1 Server, page 5-8 2. 5.4.3 Migrating to the Prime Optical 9.3.1 Server, page 5-8 3. 5.4.4 Upgrading the Database on the Prime Optical Database Workstation, page 5-10 4. 5.4.7 Upgrading from CTM 9.2 to Prime Optical 9.3.1, page 5-12 5. 5.4.8 Verifying the Oracle Client Installation on the Prime Optical Server Workstation and Restarting the Prime Optical Server, page 5-14</td>
</tr>
<tr>
<td>Migrating your existing CTM 9.2 on a single-server configuration and preserving the entire database (not embedded)</td>
<td>1. 5.1 Backing Up the Database on Solaris 10 Before Migration, page 5-2 2. 5.2 Installing the Latest CTM or Prime Optical Service Pack, page 5-3 3. 5.3.1 Preliminary Steps to Migrate to the Prime Optical 9.3.1 Server, page 5-3 4. 5.3.2 Upgrading from Oracle 10g to Oracle 11g (Not Embedded), page 5-3 5. 5.3.3 Post Oracle 11g Migration Steps, page 5-4 6. 5.4.4 Upgrading the Database on the Prime Optical Database Workstation, page 5-10</td>
</tr>
<tr>
<td>Migrating your existing CTM 9.2 on a dual-server configuration and preserving the entire database (not embedded)</td>
<td>1. 5.4.1 Preliminary Steps to Migrate to the Prime Optical 9.3.1 Server, page 5-8 2. 5.4.2 Upgrading the Previous Oracle Client to Oracle 11g Client (Not Embedded), page 5-8 3. 5.4.3 Migrating to the Prime Optical 9.3.1 Server, page 5-8 4. 5.4.4 Upgrading the Database on the Prime Optical Database Workstation, page 5-10 5. 5.4.5 Upgrading from Oracle 10g to Oracle 11g (Not Embedded), page 5-11 6. 5.4.6 Post Oracle 11g Migration Steps, page 5-12 7. 5.4.7 Upgrading from CTM 9.2 to Prime Optical 9.3.1, page 5-12 8. 5.4.8 Verifying the Oracle Client Installation on the Prime Optical Server Workstation and Restarting the Prime Optical Server, page 5-14</td>
</tr>
<tr>
<td>Migrating your existing CTM installation with a release earlier than CTM 9.2 and preserving the entire database on single-and dual-server configurations</td>
<td>Note You must first upgrade to CTM 9.2. 1. Cisco Transport Manager Release 9.2 Installation Guide (for the exact installation procedure following a single- or dual configuration) 2. See the CTM 9.2 upgrade scenarios mentioned in this table.</td>
</tr>
<tr>
<td>Migrating selected optical data from your existing CTM 8.5, 9.0, 9.1, 9.2, or Prime Optical 9.3 server</td>
<td>Chapter 4, “Using the Cisco Prime Optical 9.3.1 Data Migrator Wizard.” With the wizard, you can migrate a subset of an existing database to a newly installed Prime Optical server. You cannot migrate the entire database with this approach.</td>
</tr>
</tbody>
</table>
System Requirements

This chapter describes what is required to install Cisco Prime Optical 9.3.1. It contains the following sections:

- 2.1 Prime Optical Server Requirements, page 2-1
- 2.2 Prime Optical Client Requirements, page 2-10
- 2.3 Oracle Licensing for Prime Optical, page 2-14
- 2.4 Overview of Sudo Commands, page 2-17

Note
Although Cisco makes every attempt to ensure the availability of third-party hardware and software platforms specified for Prime Optical, Cisco reserves the right to change or modify system requirements due to third-party vendor product availability or changes that are beyond Cisco’s control.

2.1 Prime Optical Server Requirements

The Prime Optical server runs on any of the platforms listed in Table 2-1.

Note
The Prime Optical server must run on a dedicated workstation. Any application that is not explicitly listed in this chapter as being required or supported by Prime Optical, cannot be installed on the dedicated Prime Optical server workstation.

Table 2-1  Supported Platforms and Operating Systems

<table>
<thead>
<tr>
<th>Platform</th>
<th>Operating System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun UltraSPARC-based server¹</td>
<td>Sun Solaris 10, release 10/09 or later</td>
</tr>
<tr>
<td>Sun UltraSPARC T2</td>
<td></td>
</tr>
<tr>
<td>Sun UltraSPARC T2 Plus</td>
<td></td>
</tr>
<tr>
<td>Sun UltraSPARC T3</td>
<td></td>
</tr>
<tr>
<td>Cisco UCS B series</td>
<td>Red Hat Enterprise Linux (RHEL) 5.5, 64-bit or later (with or without VMware ESX version 4, update 1)</td>
</tr>
<tr>
<td>Cisco UCS C series</td>
<td></td>
</tr>
</tbody>
</table>

¹. Prime Optical requires the same number of processors regardless of whether you use UltraSPARC IV or UltraSPARC IV+. If you are using the next generation of UltraSPARC processors (UltraSPARC V, VI, or VII), contact your Oracle account representative for the equivalent number of processors.
Note

- Prime Optical is not validated against required file systems (/oracle, /db01, /db02, /db03, /db04, /db05) of the Network File System (NFS) type.
- Prime Optical does not support local Solaris zones.
- If you are installing Prime Optical as part of the Prime Central suite, Domain Name System (DNS) must be enabled on the Prime Optical server.

Table 2-2 lists the items required to install the Prime Optical server.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime Optical installation DVDs</td>
<td>—</td>
</tr>
<tr>
<td>One of the following:</td>
<td></td>
</tr>
<tr>
<td>- Solaris Operating System 10 Media Kit, 64-bit</td>
<td></td>
</tr>
<tr>
<td>- Red Hat Enterprise Linux (RHEL) 5.5, 64-bit</td>
<td></td>
</tr>
<tr>
<td>Prime Optical 9.3.1 is compliant with the Solaris patch cluster released on January 8, 2010</td>
<td></td>
</tr>
<tr>
<td>Sun Microsystems Java Development Kit (JDK) Standard Edition version 1.6.0_24</td>
<td></td>
</tr>
</tbody>
</table>

- Product is available on CD or DVD.
- During the Solaris 10 installation, you are prompted to select software to install. (The default is End User System Support—769 MB.) Choose **Entire Distribution plus OEM support—5641 MB**.
- Make sure that your file systems are configured to allow large files. If this configuration is not applied, no single file can be larger than 2 GB, which can be problematic for large database installations of the Prime Optical server. Choose **Include Solaris 64-bit support**.

When Solaris 10 is installed, its Windows manager, Java Desktop System (JDS), is also installed.

The first time you start Solaris 10, you are prompted with a message to choose Common Desktop Environment (the legacy desktop system) or JDS.

- Install the most recent Solaris patch cluster available. Visit the Oracle website for the most up-to-date patch information.
- While installing Solaris patches, you might receive a message saying, “This patch is obsoleted by patch number, which has already been applied to this system.” This message indicates that an updated version of the patch is already installed, and no action is required.
- Enter the `showrev -p | grep patch-number` command to verify that the Solaris patches are installed.
- Always install Solaris patches in single-user mode.
- The setup program generates a warning if the following OS packages are missing:
  - SUNWi1cs
  - SUNWi15cs
- JDK is installed automatically for the Prime Optical server and Prime Optical GateWay/CORBA.
Chapter 2  System Requirements

Prime Optical Server Requirements

Table 2-2  Items Required to Install the Prime Optical Server (continued)

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Notes</th>
</tr>
</thead>
</table>
| Oracle 11g software, plus the following patches: | • The Oracle product is available on CD or in .cpio file format.  
| • January 2011 Patch Set Update (PSU)            | • Oracle patches are available in .zip file format.  
| • For Solaris: 6880880, 6904068, 9952216, 10126094 | • See A.3 Downloading and Installing the Required Oracle 11g Patches for 64-Bit Solaris or Linux Platforms, page A-4.  
| • For Linux: 6880880, 6904068, 10126094, 10248516 |                                                                                                                                                                                                     |
| Oracle 11g licenses                              | Oracle licenses can be purchased either for the server processor or for named users. For more information on Oracle named users, see 2.3 Oracle Licensing for Prime Optical, page 2-14.                                  |
| GNU tar                                          | Prime Optical uses GNU tar to extract files from archives. GNU must be installed on the Prime Optical server workstation. The Prime Optical server supports the latest version of GNU tar.                                      |
| DVD-ROM drive                                    | —                                                                                                                                                                                                     |

2.1.1 Server Specifications

The following tables show recommended hardware specifications for installing the Prime Optical server, and the resulting maximum number of NEs the server manages for each configuration.

If the Prime Optical server and Oracle database are installed on separate workstations, both workstations must meet the hardware requirements shown in the following tables.

Note

It is possible to use and configure disk arrays for database storage with any type of RAID layout. You can do so only if the disk throughput is equal to or higher than the throughput calculated for internal disks.

Table 2-3  Minimum Processor Requirements

<table>
<thead>
<tr>
<th>Network Size</th>
<th>UltraSPARC T2</th>
<th>UltraSPARC T2 Plus or T3</th>
<th>UCS B or C Series¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>1 x 4 cores</td>
<td>1 x 4 cores per socket</td>
<td>2 x Intel Xeon 5620</td>
</tr>
<tr>
<td>Medium</td>
<td>1 x 4 cores</td>
<td>1 x 4 cores per socket</td>
<td>2 x Intel Xeon 5620</td>
</tr>
<tr>
<td>Large</td>
<td>1 x 4 cores</td>
<td>1 x 4 cores per socket</td>
<td>2 x Intel Xeon 5620</td>
</tr>
<tr>
<td>High end</td>
<td>1 x 8 cores</td>
<td>1 x 8 cores per socket</td>
<td>2 x Intel Xeon 5640</td>
</tr>
</tbody>
</table>

¹. Prime Optical has been tested on a UCS C210 M2 system.

Table 2-4  Legacy Processor Requirements

<table>
<thead>
<tr>
<th>Network Size</th>
<th>UltraSPARC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>2 x UltraSPARC III or 2 x UltraSPARC IIIi</td>
</tr>
<tr>
<td>Medium</td>
<td>4 x UltraSPARC III or 2 x UltraSPARC IV</td>
</tr>
<tr>
<td>Large</td>
<td>8 x UltraSPARC III or 4 x UltraSPARC IV</td>
</tr>
<tr>
<td>High end</td>
<td>8 x UltraSPARC IV with fiber-channel disk array</td>
</tr>
</tbody>
</table>
Cisco tests the simulated network configurations listed in Table 2-5. Your setup and performance might vary depending on the size of your network and the usage pattern of management tasks.

**Table 2-5  Recommended Specifications for the Prime Optical Server Installation**

<table>
<thead>
<tr>
<th>Network Size</th>
<th>Oracle Database Type</th>
<th>RAM—Solaris (Sun Workstation)</th>
<th>RAM—Linux (UCS System)</th>
<th>RAM—Linux (VM)</th>
<th>No. of Network Partitions¹</th>
<th>Maximum No. of NEs²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>Enterprise Edition</td>
<td>8 GB</td>
<td>24 GB</td>
<td>8 GB</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>Medium</td>
<td>Enterprise Edition</td>
<td>16 GB</td>
<td>24 GB</td>
<td>16 GB</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>Large</td>
<td>Enterprise Edition</td>
<td>32 GB</td>
<td>48 GB</td>
<td>32 GB</td>
<td>4</td>
<td>2000</td>
</tr>
<tr>
<td>High end</td>
<td>Enterprise Edition</td>
<td>64 GB</td>
<td>96 GB</td>
<td>64 GB</td>
<td>8</td>
<td>5000</td>
</tr>
</tbody>
</table>

¹ In Prime Optical 9.3.1, a single NE service (or a single network partition) can support up to 750 nodes.

² These numbers assume you are using fully equipped ONS 15454 MSPP nodes (for example, 12 OC-48, 2 TCC, and 1 XC10G with up to 2 links and 48 SONET cross-connections per node). Note that these numbers should be used as a guideline, and vary depending on the software and hardware configuration of your NEs.

The following list describes the server configuration parameters and the effect of changes in each parameter on the maximum number of NEs the server can manage:

- **Network Size**—If the network size increases, more resources are reserved for the higher number of NEs to be managed.
- **RAM**—The server can manage more NEs as the RAM increases. The server can manage fewer NEs as the RAM decreases.
- **Number of Network Partitions**—For each network partition, the server reserves resources for the higher number of NEs to be managed. The server can manage more NEs as the number of network partitions increases. The server can manage fewer NEs as the number of network partitions decreases.

### 2.1.2 Disk Space and Partition Specifications

The following tables show disk space and partition requirements for optical NEs based on network size and PM data collection status.

- The minimum disk space is the total space required for /, swap, /cisco, /oracle, /db01, /db02, /db03, /db04, and /db05. (The minimum disk space does not include /ctm_backup or the optional partitions /db01_rd and /db02_rd.)
- The maximum disk space is the total space required for /, swap, /cisco, /oracle, /db01, /db02, /db03, /db04, /db05, /db01_rd, /db02_rd, and /ctm_backup.
Note

- It is recommended that you use the partition sizes described in this section. Prime Optical performance degrades if you do not use the recommended partition sizes.

- To improve database performance and maximize data input/output, configure a dedicated disk array with the following setup:
  - Dynamic multipathing (DMP) to parallelize the file system access.
  - Raid 0 (striping) to optimize the disk input data.

- Prime Optical is a high-transaction application, which causes high I/O throughput for Oracle redo logs. It is recommended that you reserve dedicated system controllers for file systems—including the optional /db01_rd and /db02_rd file systems—that manage redo logs.

Caution

For large and high-end networks, if you do not follow the preceding disk striping recommendations, the I/O might create a critical bottleneck and cause an unexpected Prime Optical shutdown.

Table 2-6 Disk Space and Partition Requirements for Installing the Prime Optical Server and Oracle on the Same Workstation—PM Collection Enabled

<table>
<thead>
<tr>
<th>Network Size</th>
<th>Disk Space</th>
<th>/</th>
<th>swap¹</th>
<th>/cisco</th>
<th>/oracle</th>
<th>/db01</th>
<th>/db02</th>
<th>/db03</th>
<th>/db04</th>
<th>/db05</th>
<th>/db01_rd (optional)</th>
<th>/db02_rd (optional)</th>
<th>/ctm_backup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>133 GB (min)</td>
<td>12 GB</td>
<td>12 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>5 GB</td>
<td>6 GB</td>
<td>40 GB</td>
<td>30 GB</td>
<td>8 GB</td>
<td>1 GB</td>
<td>1 GB</td>
<td>101 GB</td>
</tr>
<tr>
<td></td>
<td>236 GB (max)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>250 GB (min)</td>
<td>12 GB</td>
<td>24 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>8 GB</td>
<td>16 GB</td>
<td>90 GB</td>
<td>70 GB</td>
<td>10 GB</td>
<td>2 GB</td>
<td>2 GB</td>
<td>208 GB</td>
</tr>
<tr>
<td></td>
<td>462 GB (max)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>458 GB (min)</td>
<td>12 GB</td>
<td>48 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>26 GB</td>
<td>190 GB</td>
<td>140 GB</td>
<td>12 GB</td>
<td>3 GB</td>
<td>3 GB</td>
<td>394 GB</td>
</tr>
<tr>
<td></td>
<td>858 GB (max)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High end</td>
<td>868 GB (min)</td>
<td>12 GB</td>
<td>96 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>12 GB</td>
<td>50 GB</td>
<td>360 GB</td>
<td>300 GB</td>
<td>18 GB</td>
<td>4 GB</td>
<td>4 GB</td>
<td>758 GB</td>
</tr>
<tr>
<td></td>
<td>1634 GB (max)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Use swap when creating the partition. Do not use /swap.
## Chapter 2  System Requirements

### Prime Optical Server Requirements

#### Table 2-7  Disk Space and Partition Requirements for Installing the Prime Optical Server and Oracle on the Same Workstation—PM Collection Disabled

<table>
<thead>
<tr>
<th>Network Size</th>
<th>Disk Space</th>
<th>/</th>
<th>swap¹</th>
<th>/cisco</th>
<th>/oracle</th>
<th>/db01</th>
<th>/db02</th>
<th>/db03</th>
<th>/db04</th>
<th>/db05</th>
<th>/db01_rd (optional)</th>
<th>/db02_rd (optional)</th>
<th>ctm_backup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>72 GB (min)</td>
<td>12 GB</td>
<td>12 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>5 GB</td>
<td>6 GB</td>
<td>5 GB</td>
<td>4 GB</td>
<td>8 GB</td>
<td>1 GB</td>
<td>1 GB</td>
<td>40 GB</td>
</tr>
<tr>
<td></td>
<td>114 GB (max)</td>
<td>12 GB</td>
<td>12 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>5 GB</td>
<td>6 GB</td>
<td>5 GB</td>
<td>4 GB</td>
<td>8 GB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>104 GB (min)</td>
<td>12 GB</td>
<td>24 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>8 GB</td>
<td>16 GB</td>
<td>8 GB</td>
<td>6 GB</td>
<td>10 GB</td>
<td>2 GB</td>
<td>2 GB</td>
<td>62 GB</td>
</tr>
<tr>
<td></td>
<td>170 GB (max)</td>
<td>12 GB</td>
<td>24 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>8 GB</td>
<td>16 GB</td>
<td>8 GB</td>
<td>6 GB</td>
<td>10 GB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>154 GB (min)</td>
<td>12 GB</td>
<td>48 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>26 GB</td>
<td>14 GB</td>
<td>12 GB</td>
<td>12 GB</td>
<td>3 GB</td>
<td>3 GB</td>
<td>90 GB</td>
</tr>
<tr>
<td></td>
<td>250 GB (max)</td>
<td>12 GB</td>
<td>48 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>26 GB</td>
<td>14 GB</td>
<td>12 GB</td>
<td>12 GB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High end</td>
<td>246 GB (min)</td>
<td>12 GB</td>
<td>96 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>12 GB</td>
<td>50 GB</td>
<td>20 GB</td>
<td>18 GB</td>
<td>18 GB</td>
<td>4 GB</td>
<td>4 GB</td>
<td>136 GB</td>
</tr>
<tr>
<td></td>
<td>390 GB (max)</td>
<td>12 GB</td>
<td>96 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>12 GB</td>
<td>50 GB</td>
<td>20 GB</td>
<td>18 GB</td>
<td>18 GB</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Use swap when creating the partition. Do not use /swap.

#### Table 2-8  Disk Space and Partition Requirements for the Prime Optical Server when Installing the Prime Optical Server and Oracle on Separate Workstations

<table>
<thead>
<tr>
<th>Network Size</th>
<th>Total Disk Space</th>
<th>/</th>
<th>swap¹</th>
<th>/cisco</th>
<th>/oracle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>44 GB</td>
<td>12 GB</td>
<td>12 GB</td>
<td>10 GB</td>
<td>10 GB</td>
</tr>
<tr>
<td>Medium</td>
<td>56 GB</td>
<td>12 GB</td>
<td>24 GB</td>
<td>10 GB</td>
<td>10 GB</td>
</tr>
<tr>
<td>Large</td>
<td>80 GB</td>
<td>12 GB</td>
<td>48 GB</td>
<td>10 GB</td>
<td>10 GB</td>
</tr>
<tr>
<td>High end</td>
<td>128 GB</td>
<td>12 GB</td>
<td>96 GB</td>
<td>10 GB</td>
<td>10 GB</td>
</tr>
</tbody>
</table>

1. Use swap when creating the partition. Do not use /swap.

#### Table 2-9  Disk Space and Partition Requirements for the Oracle Database Server when Installing the Prime Optical Server and Oracle on Separate Workstations—PM Collection Enabled

<table>
<thead>
<tr>
<th>Network Size</th>
<th>Disk Space</th>
<th>/</th>
<th>swap¹</th>
<th>/cisco</th>
<th>/oracle</th>
<th>/db01</th>
<th>/db02</th>
<th>/db03</th>
<th>/db04</th>
<th>/db05</th>
<th>/db01_rd (optional)</th>
<th>/db02_rd (optional)</th>
<th>ctm_backup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>133 GB (min)</td>
<td>12 GB</td>
<td>12 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>5 GB</td>
<td>6 GB</td>
<td>40 GB</td>
<td>30 GB</td>
<td>8 GB</td>
<td>1 GB</td>
<td>1 GB</td>
<td>101 GB</td>
</tr>
<tr>
<td></td>
<td>236 GB (max)</td>
<td>12 GB</td>
<td>12 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>5 GB</td>
<td>6 GB</td>
<td>40 GB</td>
<td>30 GB</td>
<td>8 GB</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 2-9  Disk Space and Partition Requirements for the Oracle Database Server when Installing the Prime Optical Server and Oracle on Separate Workstations—PM Collection Enabled (continued)

<table>
<thead>
<tr>
<th>Network Size</th>
<th>Disk Space</th>
<th>/</th>
<th>swap¹</th>
<th>/cisco</th>
<th>/oracle</th>
<th>/db01</th>
<th>/db02</th>
<th>/db03</th>
<th>/db04</th>
<th>/db05</th>
<th>/db01_rd (optional)</th>
<th>/db02_rd (optional)</th>
<th>/ctm_backup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>250 GB (min)</td>
<td>12 GB</td>
<td>24 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>8 GB</td>
<td>16 GB</td>
<td>90 GB</td>
<td>70 GB</td>
<td>10 GB</td>
<td>2 GB</td>
<td>2 GB</td>
<td>208 GB</td>
</tr>
<tr>
<td></td>
<td>462 GB (max)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>458 GB (min)</td>
<td>12 GB</td>
<td>48 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>26 GB</td>
<td>190 GB</td>
<td>140 GB</td>
<td>12 GB</td>
<td>3 GB</td>
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<td>394 GB</td>
</tr>
<tr>
<td></td>
<td>858 GB (max)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High end</td>
<td>868 GB (min)</td>
<td>12 GB</td>
<td>96 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>12 GB</td>
<td>50 GB</td>
<td>360 GB</td>
<td>300 GB</td>
<td>18 GB</td>
<td>4 GB</td>
<td>4 GB</td>
<td>758 GB</td>
</tr>
<tr>
<td></td>
<td>1634 GB (max)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹. Use swap when creating the partition. Do not use /swap.

### Table 2-10  Disk Space and Partition Requirements for the Oracle Database Server when Installing the Prime Optical Server and Oracle on Separate Workstations—PM Collection Disabled

<table>
<thead>
<tr>
<th>Network Size</th>
<th>Disk Space</th>
<th>/</th>
<th>swap¹</th>
<th>/cisco</th>
<th>/oracle</th>
<th>/db01</th>
<th>/db02</th>
<th>/db03</th>
<th>/db04</th>
<th>/db05</th>
<th>/db01_rd (optional)</th>
<th>/db02_rd (optional)</th>
<th>/ctm_backup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>72 GB (min)</td>
<td>12 GB</td>
<td>12 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>5 GB</td>
<td>6 GB</td>
<td>5 GB</td>
<td>4 GB</td>
<td>8 GB</td>
<td>1 GB</td>
<td>1 GB</td>
<td>40 GB</td>
</tr>
<tr>
<td></td>
<td>114 GB (max)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>104 GB (min)</td>
<td>12 GB</td>
<td>24 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>8 GB</td>
<td>16 GB</td>
<td>8 GB</td>
<td>6 GB</td>
<td>10 GB</td>
<td>2 GB</td>
<td>2 GB</td>
<td>62 GB</td>
</tr>
<tr>
<td></td>
<td>170 GB (max)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>154 GB (min)</td>
<td>12 GB</td>
<td>48 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>26 GB</td>
<td>14 GB</td>
<td>12 GB</td>
<td>12 GB</td>
<td>3 GB</td>
<td>3 GB</td>
<td>90 GB</td>
</tr>
<tr>
<td></td>
<td>250 GB (max)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High end</td>
<td>246 GB (min)</td>
<td>12 GB</td>
<td>96 GB</td>
<td>10 GB</td>
<td>10 GB</td>
<td>12 GB</td>
<td>50 GB</td>
<td>20 GB</td>
<td>18 GB</td>
<td>18 GB</td>
<td>4 GB</td>
<td>4 GB</td>
<td>136 GB</td>
</tr>
<tr>
<td></td>
<td>390 GB (max)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹. Use swap when creating the partition. Do not use /swap.
Note the following PM assumptions for optical NEs:

- In a small network, PM data collection assumes 30 days of storage for PM data collected across 200 NEs, assuming an average of 200 interfaces per NE, up to a maximum of 40,000 interfaces (includes logical and physical interfaces).
- In a medium network, PM data collection assumes 30 days of storage for PM data collected across 400 NEs, assuming an average of 100 interfaces per NE, up to a maximum of 40,000 interfaces (includes logical and physical interfaces).
- In a large network, PM data collection assumes 30 days of storage for PM data collected across 2000 NEs, assuming an average of 100 interfaces per NE, up to a maximum of 200,000 interfaces (includes logical and physical interfaces).
- In a high-end network, PM data collection assumes 30 days of storage for PM data collected across 5000 NEs, assuming an average of 100 interfaces per NE, up to a maximum of 500,000 interfaces (includes logical and physical interfaces).

2.1.2.1 Understanding the ctm_backup Directory

The ctm_backup directory is a repository used by the oracle user to back up the following main categories of information:

- Prime Optical database backup and export dump
- Configuration files
- Database ARCHIVELOG files

The oracle user must have read/write permissions or the database backup will fail. The database should be blocked if the ARCHIVELOG files cannot be moved to the /ctm_backup directory.

It is recommended that the /ctm_backup size be equivalent to the sum of the single database partitions (that is, the sum of /oracle, /db01, /db02, /db03, /db04, /db05, and—if configured—/db01_rd and /db02_rd).

Note

- The final /ctm_backup size is also related to the ARCHIVELOG files.
- The /ctm_backup directory can be a symbolic link to a user-defined directory and must have read/write permissions.

2.1.3 VMware Support

Prime Optical 9.3.1 can run on a virtual machine (VM) on VMware vSphere version 4.1 or later. VM RAM, disk and partitioning requirements must comply with the same requirements for a non-virtualized setup based on system size. Do the following:

**Step 1** Assign RAM as listed in Table 2-5, “Recommended Specifications for the Prime Optical Server Installation.”

**Step 2** Follow disk space and partition requirements as listed in 2.1.2 Disk Space and Partition Specifications, page 2-4.

**Step 3** Configure VM vCPU settings. Refer to VMware VSphere performance guidelines for information on vCPU settings.
As a general guideline, it is suggested to configure 2vCPU for every 500 nodes. This is based on a UCS C210 M2 machine, with a dual-socket, multicore 2.93GHz processor in a medium network Prime Optical setup during Cisco internal validation.

**Step 4**
Confirm that the /etc/hosts file exists inside the guest OS of the VM and that the hostname (with and without a domain) is associated to the proper IP address and not to the loopback IP 127.0.0.0

Example of a correct entry in the /etc/hosts file:

```
127.0.0.1 localhost.localdomain localhost
::1 localhost6.localdomain6 localhost6
10.58.65.195 vm-rh-01 vm-rh-01.cisco.com
```

Example of an incorrect entry in the /etc/hosts file:

```
127.0.0.1 vm-rh-01 localhost.localdomain localhost
::1 localhost6.localdomain6 localhost6
```

where the hostname vm-rh-01 is associated to the loopback address 127.0.0.1.

*Note* The file can be wrong if the VM OS was installed without network connectivity.

---

### 2.1.4 Oracle Database Package Requirements for Linux

The following packages (minimum versions listed) for Linux x86-64, RHEL 5, must be installed:

- binutils-2.17.50.0.6
- compat-libstdc++-33-3.2.3
- compat-libstdc++-33-3.2.3 (32 bit)
- elfutils-libelf-0.125
- elfutils-libelf-devel-0.125
- gcc-4.1.2
- gcc-c++-4.1.2
- glibc-2.5-24
- glibc-2.5-24 (32 bit)
- glibc-common-2.5
- glibc-devel-2.5
- glibc-devel-2.5 (32 bit)
- glibc-headers-2.5
- ksh-20060214
- libaio-0.3.106
- libaio-0.3.106 (32 bit)
- libaio-devel-0.3.106
- libaio-devel-0.3.106 (32 bit)
2.1 Prime Optical Client Requirements

To install the Prime Optical client, you must have a Linux or Solaris workstation or Windows PC. Memory, CPU, and disk requirements are reported in Table 2-11.

The delta RAM and delta CPU must be counted for each additional launched client.

Table 2-11  Minimum Requirements for the Prime Optical Client

<table>
<thead>
<tr>
<th>Platform</th>
<th>Delta RAM(^1, 2)</th>
<th>Delta CPU Speed</th>
<th>Disk Space Without CEC(^3)</th>
<th>Disk Space with CEC</th>
<th>Other(^4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun workstation</td>
<td>512 MB</td>
<td>240 MHz</td>
<td>640 MB</td>
<td>710 MB</td>
<td>• Sun Solaris 10 release 10/09 or higher with CDE, with graphics support for 16-bit color or higher, or Java Desktop System (JDS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Mozilla Firefox 3.6</td>
</tr>
<tr>
<td>Linux workstation</td>
<td>512 MB</td>
<td>240 MHz</td>
<td>730 MB</td>
<td>760 MB</td>
<td>• Microsoft Windows 7 (32- and 64-bit), Windows Vista, Windows 2000 Professional with Service Pack 4, Windows XP Professional with Service Pack 2, or Windows Server 2003 Enterprise Edition with Terminal Services, each with graphics support for 16-bit color or higher</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Microsoft Internet Explorer 8.0 or Mozilla Firefox 3.6, with JavaScript enabled</td>
</tr>
<tr>
<td>Pentium 4 class PC</td>
<td>512 MB</td>
<td>240 MHz</td>
<td>630 MB</td>
<td>700 MB</td>
<td>• Microsoft Windows XP and Windows 2003 patch number KB928388 for the 2007 Daylight Saving Time</td>
</tr>
</tbody>
</table>

1. If you plan to run multiple Prime Optical client sessions on a single client workstation, add 512 MB of RAM and 240 MHz CPU for each additional Prime Optical client.
2. Memory requirements are for Prime Optical client software only. For cross-launched applications such as Cisco Transport Controller (CTC) or Cisco Edge Craft (CEC), see the CTC or CEC documentation.
3. Disk space requirements are for Prime Optical and CEC client software only.
4. If you are installing Prime Optical as part of the Prime Central suite, DNS must be enabled on the machine where Prime Optical is installed. If the machine cannot resolve hostnames into IP addresses through DNS, Prime Optical registration will fail.
It is strongly recommended that you install the Prime Optical client on a workstation separate from the Prime Optical server. Installing the Prime Optical client and server on the same workstation consumes server resources and could degrade performance.

Table 2-12 shows the maximum number of simultaneous Prime Optical client sessions.

<table>
<thead>
<tr>
<th>Network Size</th>
<th>Max. No. of Prime Optical Client Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>30</td>
</tr>
<tr>
<td>Medium</td>
<td>60</td>
</tr>
<tr>
<td>Large</td>
<td>100</td>
</tr>
<tr>
<td>High end</td>
<td>100</td>
</tr>
</tbody>
</table>

### 2.2.1 Using Remote Application Software with the Prime Optical Client

Client launch and operation are supported by the following remote application software:

- Windows Server 2003 Enterprise Edition with Terminal Services
- Citrix Presentation Server 4.0
- Secure Global Desktop Enterprise Edition 4.0 (previously known as Tarantella Enterprise)

**Note**

If you are using Secure Global Desktop, enable full-duplex autodetection on the GUI server interface to prevent performance slowdown.

The hardware requirements for the remote application depend on the number of clients that the system must export, calculated with the following formula:

\[
\text{Target RAM} = \text{base RAM} + (\text{delta RAM} \times \text{number of clients})
\]

\[
\text{Target CPU} = \text{base CPU} + (\text{delta CPU} \times \text{number of clients})
\]

where:

- base RAM—Amount of RAM required by the remote application software.
- base CPU—Amount of CPU required by the remote application software.
- delta RAM—Amount of RAM required for each additional client.
- delta CPU—Amount of CPU required for each additional client.

### 2.2.1.1 Citrix and Windows Server 2003 Terminal Services

The following figure shows the environment for a remote Citrix Presentation Server or Windows Server 2003 Terminal Server. In this example, the GUI application server and the presentation server reside on the same workstation.
Figure 2-1  Remote Citrix or Windows Server 2003 Terminal Server Environment

![Diagram of remote Citrix or Windows Server 2003 Terminal Server Environment]

Table 2-13  Requirements for Remote Windows Server 2003 Enterprise Edition and Citrix Presentation Server

<table>
<thead>
<tr>
<th>Remote Application Software</th>
<th>Delta RAM</th>
<th>Delta CPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows Server 2003 Enterprise Edition with Terminal Services</td>
<td>512 MB</td>
<td>240 MHz</td>
</tr>
<tr>
<td>Citrix Presentation Server 4.0</td>
<td>512 MB</td>
<td>240 MHz</td>
</tr>
</tbody>
</table>

In this example, the hardware requirements for 10 clients are:
- CPU = base CPU + (240 MHz x 10)
- RAM = base RAM + (512 MB x 10)

Note: For the base RAM and base CPU requirements, refer to the documentation for:
- Windows Server 2003 Enterprise Edition with Terminal Services
- Citrix Presentation Server 4.0

2.2.1.2 Secure Global Desktop Enterprise Edition 4.0

The following figure shows the environment for a remote client via the Secure Global Desktop server. In this example, the GUI application server and the Secure Global Desktop server reside on different workstations. The application server is where Prime Optical clients run.
Chapter 2  System Requirements

Prime Optical Client Requirements

Figure 2-2  Remote Secure Global Desktop Environment

The following example shows requirements for a remote Secure Global Desktop server on a Solaris workstation and a GUI application server on a Windows PC.

Table 2-14  Requirements for Secure Global Desktop Server and GUI Application Server on Separate Solaris and Windows Workstations

<table>
<thead>
<tr>
<th>Server and Platform</th>
<th>Delta RAM</th>
<th>Delta CPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>GUI application server on Windows Server 2003 Enterprise Edition with Terminal Services</td>
<td>512 MB</td>
<td>240 MHz</td>
</tr>
</tbody>
</table>

In this example, the hardware requirements for 10 clients are:

- Application server CPU = base CPU + (240 MHz x 10)
- Application server RAM = base RAM + (512 MB x 10)

Note

- For the Secure Global Desktop server CPU and RAM requirements, refer to the Secure Global Desktop documentation.
- For the application server base RAM and base CPU requirements, refer to the documentation for Windows Server 2003 Enterprise Edition with Terminal Services.

The following example shows requirements for a remote Secure Global Desktop server on a Solaris workstation and a GUI application server on another Solaris workstation.

Table 2-15  Requirements for Secure Global Desktop Server and GUI Application Server on Separate Solaris Workstations

<table>
<thead>
<tr>
<th>Server and Platform</th>
<th>Delta RAM</th>
<th>Delta CPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>GUI application server on Solaris</td>
<td>512 MB</td>
<td>240 MHz</td>
</tr>
</tbody>
</table>
In this example, the hardware requirements for 10 clients are:

- Application server CPU = base CPU + (240 MHz x 10)
- Application server RAM = base RAM + (512 MB x 10)

**Note**
- For the Secure Global Desktop server CPU and RAM requirements, refer to the Secure Global Desktop documentation.
- For the application server base RAM and base CPU requirements, refer to the documentation for Windows Server 2003 Enterprise Edition with Terminal Services.

### Using the Prime Optical Client in a Sun Ray Environment

The Prime Optical client is supported in an Oracle Sun Ray 2 environment. The setup uses thin terminal devices and Oracle Sun Ray 2 virtual display clients that are network-connected to a server running Sun Ray server software.

A virtual desktop runs on the Sun Ray server, while the related display is exported remotely to the associated Sun Ray 2 virtual display client.

- For Prime Optical client requirements, see Table 2-11.
- For Oracle Sun Ray 2 virtual display client requirements and network and software configurations, see:

### 2.2.2 Java Heap Sizes

The Prime Optical client startup script provides memory allocation and identifies the maximum heap allocation for the client Java Virtual Machine (JVM) process. The Prime Optical client launches with a maximum heap size of 512 MB.

### 2.3 Oracle Licensing for Prime Optical

**Note**
Prime Optical comes with an embedded database. If the database is accessed only by Prime Optical, there is no need for licensing. However, if other applications need to access the Oracle database used by Prime Optical, then the database needs to be licensed.

This section explains how to calculate the total number of Oracle Named User Plus licenses required for your Prime Optical server and client installations. This section describes with examples the Oracle Enterprise Edition database edition.

**Note**
See the Oracle website for detailed information about Oracle licensing definitions and requirements.
Oracle’s technology products, including the Oracle database required for use with Prime Optical, are licensed using one of two possible metrics. Which metric to use normally depends on which will result in a lower price for the database. If for some reason the number of database users cannot be counted, the Processor metric must be used. However, in a Prime Optical environment, database users normally can be counted:

- **Processor**—This metric is defined as the number of processors on the server on which the Oracle database is installed or running. This option must be used in environments in which software users cannot easily be identified or counted (not normally the case in a Prime Optical environment).

  **Note** For the purpose of counting the number of processors, a multicore chip with \( n \) cores is determined by multiplying \( n \) cores by a core processor licensing factor of 0.75. All cores on all multicore chips for each licensed program for each core processor licensing factor listed above are aggregated, before multiplying by the appropriate core processor licensing factor. All fractions of a number are rounded up to the next whole number.

- **Named User Plus**—This metric is used in environments in which users can be identified and counted. Named User Plus includes both human-operated and automated devices. All human-operated and automated devices that access the program must be licensed. A Named User Plus license may access the program on any instances on which it is deployed, provided that the minimum license requirement on each server is met.

In the context of a Prime Optical environment, **human-operated device** means any device operated by a user who has direct or indirect access to Prime Optical. Direct access is gained through a user account on Prime Optical that allows access through the Prime Optical client GUI. Indirect access is possible through a user account on a higher-layer OSS, which in turn communicates with Prime Optical through Prime Optical GateWay/CORBA. Automated users include the NEs managed by Prime Optical and the Prime Optical server itself.

Oracle Enterprise Edition requires a minimum of 25 Named User Plus licenses per processor or the total number of actual users, whichever number is higher.
The following figure shows an example Prime Optical environment to illustrate identifying the human and automated database users that must be counted.

**Figure 2-3  Example Prime Optical Environment**

In the example shown in Figure 2-3 there are two independent Prime Optical servers and Oracle database instances. There are four NEs, one of which is managed by both Prime Optical servers. There is one direct Prime Optical user and one indirect user. So in this example the total number of Oracle named users is as follows:

- Prime Optical servers: 2*
- NEs: 4**
- Prime Optical users: 1**
- Higher-layer OSS users: 1

Total Named User Plus: $8 = 2 + 4 + 1 + 1$

*Because of the self-monitor feature of Prime Optical, a Prime Optical server itself is considered an automated user of the database and is therefore counted.

**A Named User Plus license entitles the user to access Oracle on any instances where it is deployed. So if a user has access to multiple Prime Optical servers, only a single license is needed per user. Also, if an NE is managed by multiple Prime Optical servers, only a single license is needed per NE.

This example explains how to count the named users, but the number of named users required is the larger of either 1) the actual count or 2) the required minimum.
2.3.1 Oracle Enterprise Edition

Oracle Database Enterprise Edition (EE) provides improved scalability performance. The two major features in this release are:

- The Oracle partitioning option
- An increased maximum number of supported CPUs

Note
Oracle EE requires a separate license.

2.3.1.1 Prime Optical with Oracle EE (Example A)

A service provider has 800 NEs and a data center with 10 Prime Optical client workstations. 100 employees in the data center are authorized to use the Prime Optical client. Some of the employees in the data center share the same Prime Optical account (username/password). Prime Optical is running on a Sun V880 with 8 processors, with only one core and 32 GB of RAM.

- Named User Plus: 1) Minimum = 8 processors x 25 users/processor = 200 or 2) Count = 800 licenses for NEs + 100 licenses for data center personnel + 1 Prime Optical server = 901

Result: 901 Named User Plus licenses are required

- Processor: 8 processor licenses

If the processors are UltraSPARC IV and IV+ (dual core), the calculation for processor licensing is:

- Processor: (8 x 2) x 0.75 = 12 processor licenses

2.3.1.2 Prime Optical with Oracle EE (Example B)

The same service provider as in the previous example decides to enable Prime Optical GateWay/CORBA and connect to a higher-layer OSS that handles inventory management. There are 20 employees in the data center authorized to access the inventory system; 5 of them are also Prime Optical users (that is, they are a subset of the 100 Prime Optical users identified in the previous example). In this case, the total number of human users is:

95 Prime Optical-only users + 15 inventory system-only users + 5 Prime Optical/inventory system users, or 115 human named users.

As a result of adding the OSS and related users, the total number of named users required has increased from 901 to 916.

2.4 Overview of Sudo Commands

Sudo software (freeware) version 1.6.6 is bundled with the Prime Optical software. The sudo software enables nonroot UNIX users to run the following UNIX commands:

- opticalctl start
- opticalctl stop
- opticalctl abort
- opticalctl status
- opticalctl kill service
Overview of Sudo Commands

- getinfo.sh
- prune_auditlog.sh
- prune_errlog.sh
- prune_audittrail.sh
- prune_fm.sh
- prune_pm.sh
- prune_ne.sh
- prune_server_monitor.sh
- prune_admin_job_table.sh
- prune_ne_ipaddress.sh

Note

You can still use the following legacy commands in Prime Optical 9.3.1:
- ctms-start
- ctms-abort
- ctms-stop
- ctms-stop-service
- showcmt

During the Prime Optical server installation, the setup program prompts you to specify the name of the UNIX group to which you want to assign administrator privileges. By default, this group is set to the root group. If you specify a group other than root, the setup program verifies that the UNIX group exists on the system and adds entries to the /etc/sudoers file. Entries in this file reflect the commands that the specified UNIX group can run by using the `sudo` command.

The following entries in the /etc/sudoers file reflect the commands that can be run as nonroot:

```
%CTM_UNIX_group hostname=(root) NOPASSWD: /usr/bin/prune_admin_job_table.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /opt/CiscoTransportManagerServer/bin/prune_admin_job_table.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /usr/bin/prune_server_monitor.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /opt/CiscoTransportManagerServer/bin/prune_server_monitor.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /usr/bin/prune_ne.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /opt/CiscoTransportManagerServer/bin/prune_ne.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /usr/bin/prune_pm.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /opt/CiscoTransportManagerServer/bin/prune_pm.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /usr/bin/prune_fm.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /opt/CiscoTransportManagerServer/bin/prune_fm.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /usr/bin/prune_audittrail.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /opt/CiscoTransportManagerServer/bin/prune_audittrail.
%CTM_UNIX_group hostname=(root) NOPASSWD: /usr/bin/prune_errlog.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /opt/CiscoTransportManagerServer/bin/prune_errlog.
%CTM_UNIX_group hostname=(root) NOPASSWD: /usr/bin/prune_auditlog.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /opt/CiscoTransportManagerServer/bin/prune_auditlog.
%CTM_UNIX_group hostname=(root) NOPASSWD: /usr/bin/getinfo.sh
%CTM_UNIX_group hostname=(root) NOPASSWD: /opt/CiscoTransportManagerServer/bin/opticalctl status
%CTM_UNIX_group hostname=(root) NOPASSWD: /opt/CiscoTransportManagerServer/bin/opticalctl status
%CTM_UNIX_group hostname=(root) NOPASSWD: /usr/bin/opticalctl kill
%CTM_UNIX_group hostname=(root) NOPASSWD: /opt/CiscoTransportManagerServer/bin/opticalctl kill
%CTM_UNIX_group hostname=(root) NOPASSWD: /usr/bin/opticalctl stop
```
2.4.1 Using the `opticalctl start` Command

A complete set of administrative command scripts is added to the application during installation. One command automatically starts the Prime Optical server processes every time the server is started. The server processes can also be started or stopped manually as necessary; the scripts are located in the `/opt/CiscoTransportManagerServer/bin` directory.

The `opticalctl start` command sets the appropriate environment variables and starts the Prime Optical server. The amount of time it takes for the Prime Optical server to start varies based on the number of NEs in the configuration and the size of the database. Use `opticalctl start` only when the Prime Optical server has stopped.

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Log into the Prime Optical server workstation as the root user.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>On the command line, enter the following command:</td>
</tr>
<tr>
<td></td>
<td><code>opticalctl start</code></td>
</tr>
<tr>
<td></td>
<td>It can take from 0 to 5 minutes for the server processes to start after the <code>opticalctl start</code> command has finished execution. This is because NE services and gateway services (if enabled) are still initializing for all of the NEs that are deployed.</td>
</tr>
<tr>
<td></td>
<td>Wait 5 minutes after entering the <code>opticalctl start</code> command; then, enter the <code>opticalctl status</code> command. The NE service corresponding to all the deployed NEs should have started.</td>
</tr>
</tbody>
</table>

2.4.2 Using the `opticalctl stop` Command

The `opticalctl stop` command stops the Prime Optical server gracefully. The stop procedure shuts down the server and cleans all memory and connections. The overall process takes approximately 5 minutes.

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Log into the Prime Optical server workstation as the root user.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>On the command line, enter the following command:</td>
</tr>
<tr>
<td></td>
<td><code>opticalctl stop</code></td>
</tr>
</tbody>
</table>
2.4.3 Using the opticalctl abort Command

The `opticalctl abort` command kills all of the running processes and stops the Prime Optical server. The overall process takes no longer than 2 to 3 minutes.

**Step 1** Log into the Prime Optical server workstation as the root user.

**Step 2** On the command line, enter the following command:

```
opticalctl abort
```

2.4.4 Using the opticalctl status Command

The `opticalctl status` command provides Prime Optical version and process information. The following options are available:

- `opticalctl status -h` — Shows help information about all options available.
- `opticalctl status -c` — Shows TCP/LISTEN and UDP open connections of application processes.
- `opticalctl status -a` — Shows all connections of application processes.
- `opticalctl status -v` — Shows all application processes.

For example:

```
opticalctl status -c -a
```

**Note**

To enable the opticalctl status options for Solaris 10, lsof-4.80 package must be installed. You can download the Solaris 10 lsof-4.80 package at www.sunfreeware.com.

**Step 1** Log into the Prime Optical server workstation as the root user.

**Step 2** On the command line, enter the following command:

```
opticalctl status
```

The following is an example of the output of the `opticalctl status` command on Solaris, where all of the attributes (except for the process names) are variable:

```
Cisco Prime Optical Server Version: 9.3.1 Build: build-number
```

<table>
<thead>
<tr>
<th>USER</th>
<th>PID</th>
<th>%CPU</th>
<th>%MEM</th>
<th>START</th>
<th>TIME</th>
<th>PROCESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>root</td>
<td>25465</td>
<td>0.9</td>
<td>1.1910216706960</td>
<td>May_11</td>
<td>11342:55</td>
<td>CTM Server</td>
</tr>
<tr>
<td>root</td>
<td>25442</td>
<td>0</td>
<td>0.0166920</td>
<td>May_11</td>
<td>0:00</td>
<td>CTM Server</td>
</tr>
<tr>
<td>root</td>
<td>26868</td>
<td>0.1</td>
<td>0.2447368127760</td>
<td>May_11</td>
<td>173:47</td>
<td>SnmpTrapService</td>
</tr>
<tr>
<td>root</td>
<td>25550</td>
<td>0.1</td>
<td>0.3229432174840</td>
<td>May_11</td>
<td>238:23</td>
<td>SMService</td>
</tr>
<tr>
<td>root</td>
<td>26850</td>
<td>0</td>
<td>0.32125680167824</td>
<td>May_11</td>
<td>62:37</td>
<td>OrchestrationService</td>
</tr>
<tr>
<td>root</td>
<td>27986</td>
<td>0.8</td>
<td>6.750662104384832</td>
<td>May_11</td>
<td>3074:57</td>
<td>CTC-based SONET NetworkService-11</td>
</tr>
<tr>
<td>root</td>
<td>27844</td>
<td>0.4</td>
<td>6.85054496429952</td>
<td>May_11</td>
<td>4167:30</td>
<td>CTC-based SONET NetworkService-8</td>
</tr>
<tr>
<td>root</td>
<td>27583</td>
<td>0.4</td>
<td>6.750682563486936</td>
<td>May_11</td>
<td>4180:07</td>
<td>CTC-based SONET NetworkService-3</td>
</tr>
<tr>
<td>root</td>
<td>27736</td>
<td>0.3</td>
<td>6.85070320445040</td>
<td>May_11</td>
<td>3264:30</td>
<td>CTC-based SONET NetworkService-6</td>
</tr>
<tr>
<td>root</td>
<td>27632</td>
<td>0.3</td>
<td>6.950674272527640</td>
<td>May_11</td>
<td>4233:57</td>
<td>CTC-based SONET NetworkService-4</td>
</tr>
<tr>
<td>root</td>
<td>27938</td>
<td>0.2</td>
<td>6.950558084472240</td>
<td>May_11</td>
<td>4112:43</td>
<td>CTC-based SONET NetworkService-10</td>
</tr>
<tr>
<td>root</td>
<td>27795</td>
<td>0.1</td>
<td>6.850792004414888</td>
<td>May_11</td>
<td>4023:46</td>
<td>CTC-based SONET NetworkService-7</td>
</tr>
<tr>
<td>root</td>
<td>27534</td>
<td>0.1</td>
<td>7.050713364553928</td>
<td>May_11</td>
<td>4381:39</td>
<td>CTC-based SONET NetworkService-2</td>
</tr>
</tbody>
</table>
The following is an example of the output of the `opticalctl status` command on Linux:

```plaintext
USER    PID   %CPU %MEM   VSZ    RSS   TTY STAT START  TIME COMMAND
root    5751  0.0   0.3 1726440 88840   ? S   May11 0:29  JBOSS JMS
root    5963  0.0   0.2 1227500 66752   ? S   May11 0:03  NameService
root    6151  0.0   0.0  126960  4232   ? Ss  May11 0:00  CTM Server
root    6166  0.0   0.0  120236  2424   ? Ss  May11 0:00  Apache
root    6179  0.0   0.0 1711156 197860  ? S   May11 0:00  CTM Server
root    6398  0.0   0.4  456656 101584  ? S   May11 0:12  SMService
root    7248  0.0   0.4  470604 122928  ? S   May11 0:11  Orchestration Service
root    7300  0.0   0.8 1235876 197860  ? S   May11 0:10  SnmpTrapService
```

### 2.4.5 Using the `opticalctl kill` Command

The `opticalctl kill` command kills the service and starts a new instance of the service automatically.

⚠️ **Caution**

Use the `opticalctl kill` command with extreme caution, because it terminates the service ungracefully. Before using this command, try to stop the service from the Control Panel window.

---

**Step 1**
Log into the Prime Optical server workstation as the root user.

**Step 2**
On the command line, enter one of the following commands to stop the Prime Optical process and automatically start a new service:

- **SM service:**
  ```
  opticalctl kill SMService
  ```

- **NE/PM services:**
  ```
  opticalctl killservice-ID-number
  ```

- **Prime Optical GateWay/CORBA service:**
  ```
  opticalctl kill -1
  ```

- **SNMP trap service:**
  ```
  opticalctl kill -2
  ```
Installing Cisco Prime Optical 9.3.1 and Oracle 11g

This chapter describes how to install Cisco Prime Optical 9.3.1 with an external Oracle 11g database. It contains the following sections:

- 3.1 Installing Prime Optical and Oracle on the Same Workstation, page 3-2
- 3.2 Installing Prime Optical and Oracle on Separate Workstations, page 3-8
- 3.3 Upgrading the Prime Optical Network Configuration Size, page 3-18
- 3.4 Upgrading the Performance of the Oracle Database, page 3-19
- 3.5 Integrating Prime Optical with Cisco Prime Central, page 3-20
- 3.6 Understanding the Advantages and Limitations of an Embedded Oracle Database, page 3-20

**Note**

- This chapter applies only to a new installation of Prime Optical 9.3.1. If you want to migrate select optical data from your existing CTM R8.5, R9.0, R9.1, or R9.2 server, see Chapter 4, “Using the Cisco Prime Optical 9.3.1 Data Migrator Wizard.”
- For an explanation of error messages that you might encounter during the server installation, see Appendix B, “Understanding Installation Error Messages.”
- If you need instructions to mount or unmount DVDs, see Appendix D, “Mounting and Unmounting DVDs.”
- You must use the Prime Optical installation DVD for the installation. If you manually copy the installer to a storage disk, the installation could fail because of missing permissions in the installation scripts.
- After the Prime Optical installation is complete, you have the option of upgrading the Prime Optical network configuration size. For more information, see 3.4 Upgrading the Performance of the Oracle Database, page 3-19.
- The license for Prime Optical GateWay/CORBA is sold separately. If you are using this feature in a production environment, you must purchase a license. You can install Prime Optical GateWay/CORBA when you install the Prime Optical server, or you can install it after installing the Prime Optical server. For more information, see Chapter 6, “Installing Cisco Prime Optical 9.3.1 GateWay/CORBA.”
3.1 Installing Prime Optical and Oracle on the Same Workstation

This section describes how to install the Prime Optical server and Oracle 11g on the same Sun Solaris or Red Hat Linux server. Refer to “1.1.1 Installation and Upgrade Scenarios” section on page 1-2, as you perform the procedures in this section.

3.1.1 Setting the Environment for Installation

Before You Begin
Before installing the Prime Optical server and the Oracle 11g database on your Solaris or Linux server, verify the following:

- The ping command is included in your path environment variable.
- You have identified nonroot users and related UNIX groups to run Prime Optical UNIX commands. See 2.4 Overview of Sudo Commands, page 2-17.
- A reliable network connection is available while performing an installation on a remote workstation.
- You have reviewed Chapter 2, “System Requirements.”

Step 1
Log in as the root user.
(For Solaris operating systems only; not applicable to Linux) The C shell (csh) is recommended. To start the C shell, enter the following command:

/bin/csh

Step 2
Enter the following command to verify that the disk directories shown in Table 3-1 exist:

ls -l /

<table>
<thead>
<tr>
<th>Table 3-1</th>
<th>Disk Directories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directory</td>
<td>Contents</td>
</tr>
<tr>
<td>/opt</td>
<td>For the Prime Optical installation, including .jar files, executable shell scripts, and so on</td>
</tr>
<tr>
<td>/db01</td>
<td>For the system tablespace used by Oracle</td>
</tr>
<tr>
<td>/db01_rd</td>
<td>Optional partition for the redo logs</td>
</tr>
<tr>
<td>/db02</td>
<td>For the basedata tablespace, alarndata tablespace, and eventdata tablespace used by Prime Optical</td>
</tr>
<tr>
<td>/db02_rd</td>
<td>Optional partition for the redo logs</td>
</tr>
<tr>
<td>/db03</td>
<td>For the data tablespace used by Prime Optical</td>
</tr>
<tr>
<td>/db04</td>
<td>For the index tablespace used by Prime Optical</td>
</tr>
<tr>
<td>/db05</td>
<td>For the archived and undo tablespace used by Prime Optical</td>
</tr>
<tr>
<td>/ctm_backup</td>
<td>For the backed-up database and configuration files</td>
</tr>
</tbody>
</table>

Note: The /ctm_backup partition is required for backups.
Installing Prime Optical and Oracle on the Same Workstation

Step 3  (For Solaris operating systems only; not applicable to Linux) Verify that the STTY command is not used in the shell configuration file; for example, in the .login, .cshrc, and .profile files.

Step 4  Depending on your configuration, insert one of the following DVDs into the DVD drive:
- Cisco Prime Optical Server installation DVD—Linux
- Cisco Prime Optical Server installation DVD—Solaris

Step 5  Enter the following command:
```
cd /DVD-mount-point/Disk1
```

Step 6  Enter the following command to list the files in the directory:
```
ls -laR
```

Note  If a list of files is returned, it indicates that you can access the DVD-ROM successfully. If no files are visible, or if an error message is returned, see the Sun Solaris or Linux documentation for mounting the DVD-ROM.

### 3.1.2 Installing the Prime Optical Server and Database

#### Step 1  
Log in as the root user.

(For Solaris operating systems only; not applicable to Linux) The C shell (csh) is recommended. To start the C shell, enter the following command:
```
/bin/csh
```

#### Step 2  
Enter the following command to set the DISPLAY variable:
```
setenv DISPLAY hostname-or-IP-address:0.0
```

#### Step 3  
Enter the following command to verify that the display is set correctly:
```
echo $DISPLAY
```
In the command output, you should see:

```
hostname-or-IP-address:0.0
```

**Step 4** If you are using an xterm window or a remote host, enter the following command to enable the xterm connection from the clients:

```
xhost +
```

The default path is one of the following:

- (Solaris) /usr/openwin/bin
- (Linux) /usr/bin

**Step 5** Depending on your configuration, insert one of the following DVDs into the DVD drive:

- Cisco Prime Optical Server installation DVD—Linux
- Cisco Prime Optical Server installation DVD—Solaris

**Step 6** Enter the following commands:

```
cd /DVD-mount-point/Disk1/setup.sh
```

---

**Note**

- The setup program searches for Sun Microsystems JDK version 1.6.0_24 on your workstation.
- The setup program searches for the installed Linux or Solaris release. For Solaris, if the installed release is earlier than 10/09, the following message appears:

```
WARNING: Current Solaris release 1/06 is older than the required one: 10/09
Do you want to continue? [y]:
```

If you enter `n`, the installation quits.

- The setup program searches for the installed Solaris package cluster. If the installed cluster is not Entire Distribution plus OEM support (which Prime Optical requires), the following message appears:

```
WARNING: the Solaris package cluster: "Entire Distribution plus OEM support" is required, but a different Solaris package cluster has been detected on this machine. Do you want to Continue? [y]:
```

If you enter `y`, the following message appears:

```
Continuing Cisco Prime Optical server installation.
```

If you enter `n`, the installation quits.

---

Wait for up to 90 seconds while the following message appears:

```
Please wait, Cisco Prime Optical Server Release 9.3.1 is being configured for your system. This may take a moment...
```

**Step 7** At the Introduction screen, click **Next**.

**Step 8** At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.

**Step 9** At the Installation Options screen, choose **New installation**; then, click **Next**.
Step 10  
At the Server Configuration screen, do the following:

a. Check one of the following radio buttons:
   - **Standalone**—To install Prime Optical without Prime Central suite integration. For more information about Prime Central, see http://www.cisco.com/en/US/products/ps11754/tsd_products_support_series_home.html.
     
     If you install Prime Optical as a standalone product, you can choose to integrate Prime Optical as part of the Prime Central suite at a later time. For more information, see 3.5 Integrating Prime Optical with Cisco Prime Central, page 3-20.
   
   - **Suite**—To install Prime Optical as part of the Prime Central suite.

     After Prime Optical is integrated with the suite, it cannot be reverted to standalone mode.

   
   Note  
   If you are installing Prime Optical as part of the Prime Central suite, DNS must be enabled on the machine where Prime Optical is being installed. If the machine cannot resolve hostnames into IP addresses through DNS, Prime Optical registration will fail.

b. Click one of the following radio buttons:
   - **Oracle Not Embedded**—To install Prime Optical with an external database.
   - **Oracle Embedded**—To install Prime Optical with an embedded database. (See 3.6 Understanding the Advantages and Limitations of an Embedded Oracle Database, page 3-20.)

c. Click Next.

   Note  
   When you choose Prime Optical Server, the Web Server check box is checked automatically and is required. The web server allows you to use an HTTP connection to download files from the Prime Optical server to the Prime Optical client. The web server is also used to launch the online help.

Step 11  
At the Main Options screen, check the following check boxes; then, click Next:

- **Create Prime Optical database**
- **Install Prime Optical server**

Step 12  
If you are installing Prime Optical with an embedded database, the setup program checks whether an Oracle installation exists on your workstation. If a previous version of Oracle is detected, the following message appears:

An Oracle installation has been detected on the machine.
It will be removed by CTM installation.
Press 'Cancel' to cancel the setup.

Click Continue to delete the previous Oracle version and continue the installation. (If you click Cancel, the installation quits.)

Step 13  
At the Oracle Pre-Installation Checks screen, the setup program checks the RAM, swap, and temp directory sizes. The screen indicates whether you have enough space to install Prime Optical and Oracle, and whether any required packages are missing. Review the preinstallation checks; then, click Next.

Step 14  
If errors are discovered during the check sizes phase of the preinstallation checks, the following message appears, and the installation quits:

An error occurred during the pre-installation check.
/temp_CTM/report_oracle_pre_install_checks.log.
The installation has been canceled.
Step 15 During the check packages phase of the preinstallation checks, the following message might appear:

A warning occurred during the preinstallation check. See /temp_CTM/report_oracle_pre_install_checks.log. To continue the installation, click Continue. To cancel the installation and fix the problem, click Cancel.

You can ignore the message and continue the installation.

Step 16 At the Checking Oracle User and Groups screen, the setup program checks for the required Oracle user and groups.

- If NIS/NIS+ configuration is not detected, the following message appears:
  User check succeeded.

- If an NIS/NIS+ configuration is detected on the workstation, the following message appears:
  NIS/NIS+ configuration has been detected.
  See the Prime Optical Installation Guide for details before to proceed with the installation.

You must cancel the current installation, unconfigure NIS/NIS+, and then relaunch the installation.

Step 17 At the Select Network Configuration screen, specify the size of your network; then, click Next.

Step 18 At the Prime Optical Group Information & Sudo Installation screen, do the following:

a. Enter the name of the UNIX group to which you want to assign administrator privileges.

b. To install sudo, check the Install Prime Optical Sudo check box. If you do not want to install sudo, uncheck the check box.

Note If you already installed and configured sudo with rules in a file different from /etc/sudoers (for example, if you created a custom sudo configuration in the /user/local/etc/sudoers file), then you must copy the rules from /etc/sudoers to /user/local/etc/sudoers at the end of the installation.

c. Click Next.

Step 19 At the FTP Information screen, do the following to configure an FTP account for software download operations:

a. Enter the following information:
   - FTP username
   - FTP user password
   - Confirm FTP user password
   - FTP directory

b. Check or uncheck the Create new FTP account check box. If checked, the FTP user will be created automatically on the Prime Optical server workstation by the install script. If unchecked, it is assumed that an FTP user already exists on the Prime Optical server workstation.

c. Click Next.

Step 20 At the Server IP Address screen, verify that the correct hostname or IP address is shown for the Prime Optical server; then, click Next.

Step 21 (For Solaris operating systems only; not applicable to Linux) If you want to enable TFTP, do the following at the Configure TFTP Server screen:

a. Check the Enable TFTP Server check box.
Step 22
At the Database Information screen, specify the IP address of the database workstation and specify whether or not you want to install the database in ARCHIVELOG mode. Click Next.

Note
If you are installing Prime Optical with an embedded database, ARCHIVELOG mode is required; therefore, the ARCHIVELOG radio button is not available.

Step 23
At the Prime Optical Database Installation Directories screen, the setup program verifies that the directories exist as recommended in Table 3-1 on page 3-2. Click Next.

Step 24
At the Destination Folder screen, specify where you want to install the Prime Optical server. The default directory is /cisco/PrimeOpticalServer. You can click Change to choose a different destination. After you specify your destination, click Next.

Note
- If the destination directory that you specified is a new directory, you will receive the message, “The specified directory does not exist. Do you want to create it?” Click Yes.
- Do not specify a mount point as the target installation directory for the Prime Optical server installation, or the installation data will be lost when the workstation restarts. You must create a dedicated Prime Optical subdirectory. For example, if /cisco is the mount point for the disk partition /dev/dsk/c0t0d0s5, you cannot specify /cisco as the Prime Optical installation directory. Instead, specify a dedicated subdirectory such as/cisco/PrimeOpticalServer.

Caution
Prime Optical checks for the /opt/CiscoTransportManagerServer directory or a symbolic link to it. If Prime Optical cannot find the /opt/CiscoTransportManagerServer directory or a symbolic link, Prime Optical creates a symbolic link automatically. Therefore, do not delete any instances of /opt/CiscoTransportManagerServer from your Prime Optical file structure.

Step 25
The Pre-Installation Summary screen shows the items that will be installed. Click Install.

It might take 60 to 90 minutes or longer to install Prime Optical and the Oracle database, depending on your system performance.

Step 26
The Web Server Installation Summary screen summarizes the results of the web server installation. Click Next.

Step 27
The Install Complete screen summarizes the results of the installation. Click Done.

Step 28
As the root user, enter the following commands to create the Database read-only user:

`setenv PYTHONPATH \
/opt/CiscoTransportManagerServer/lib/python:/opt/CiscoTransportManagerServer/bin \
/usr/bin/python -c "import manage_oracle_users; \
manage_oracle_users.create_special_user('ctmreadonly', \
'/opt/CiscoTransportManagerServer/cfg/oracle_users.cfg')"`

Step 29
As the root user, enter the following command to reboot the system. The Prime Optical server starts automatically after rebooting:

`init 6`
After the server reboot, it might take up to 20 minutes for the Prime Optical server to come up.

To verify that the Prime Optical server is running, enter the `opticalctl status` command after the server reboots.

The `opticalctl status` command displays the Prime Optical server version running as 9.3.1, followed by the build number. In the command output, you should see two instances of “Prime Optical Server,” “SnmpTrapService,” “SMService,” “Apache Web Server,” and “OrchestrationService.” This indicates that the server is running.

### 3.2 Installing Prime Optical and Oracle on Separate Workstations

This section describes how to install the Prime Optical server and Oracle 11g on separate Sun Solaris or Red Hat Linux servers. Refer to “1.1.1 Installation and Upgrade Scenarios” section on page 1-2 as you carry out the procedures in this section.

There are two scenarios for installing the Prime Optical server and Oracle on separate servers:

- Standard dual-server installation
- Dual-server installation with a dedicated connection between servers (for example, a cross-cable connection)

The installation procedure for installing the Prime Optical server and Oracle on separate Solaris or Linux servers is similar for both scenarios. This chapter highlights any differences in the two installation scenarios wherever they occur.

The following figure illustrates the standard dual-server installation. Server 1 is the Prime Optical database server and Server 2 is the database server.

> **Note**

The Prime Optical server, Prime Optical client, and Prime Optical database work only with IPv4 addresses. IPv6 is not supported.
The following figure illustrates the dual-server installation with a dedicated connection between servers. Server 1 is the Prime Optical server and server 2 is the Prime Optical database server.

**Figure 3-2 Dual-Server Installation with a Dedicated Connection Between Servers**

---

### 3.2.1 Enabling SSH on the Prime Optical Server and Database Workstations

To enable you to install Prime Optical, the Prime Optical server workstation must be able to use secure shell (SSH) to run commands on the Prime Optical database workstation, and vice versa.

To verify that SSH is enabled:

**Step 1** Log into the Prime Optical server workstation as the root user.

**Step 2** Enter the following command to verify whether SSH is configured:

```
ssh -q -o "BatchMode=yes" Prime Optical-database-host "echo 2>&1 && echo "SSH configured" || echo "SSH is not configured"
```

**Step 3** If the output returns the message “SSH is not configured,” open a shell on the Prime Optical server workstation and do the following:

- **a.** As the root user, enter the following command to start the SSH service:
  - On Solaris, enter:
    ```
    svcadm enable ssh
    ```
  - On Linux, enter:
    ```
    service sshd start
    ```

- **b.** If the `.ssh/id_rsa` and `.ssh/id_rsa.pub` files do not exist, enter the following command to generate public and private keys:

  ```
  ssh-keygen -t rsa
  ```

  If the `.ssh/id_rsa` and `.ssh/id_rsa.pub` files do not exist, accept the default values at the following prompts by pressing Return without entering any values:
  
  Enter file in which to save the key (.ssh/id_rsa):
  Enter passphrase (empty for no passphrase):
  Enter same passphrase again:

- **c.** (For Solaris operating systems only; not applicable to Linux) Open a shell on the Prime Optical database workstation and edit the `.ssh/authorized_keys` file. (If the `.ssh` directory and the authorized_keys file do not exist, create them.) Add to the authorized_keys file the contents of the `.ssh/id_rsa.pub` file that was generated on the Prime Optical server workstation.
d. (For Linux operating systems only; not applicable to Solaris) Enter the following command to publish the public key to the Prime Optical database workstation:

```
ssh-copy-id -i ~/.ssh/id_rsa.pub root@Prime-Optical-database-workstation
```

e. Edit the /etc/ssh/sshd_config file on the Prime Optical database workstation and change the PermitRootLogin value to yes.

f. Enter the following command on the Prime Optical database workstation to make the changes take effect:
   - On Solaris, enter:
     ```
     svcadm restart ssh
     ```
   - On Linux, enter:
     ```
     service sshd restart
     ```

g. Enter the following command to open an SSH connection from the Prime Optical server workstation to the Prime Optical database workstation and register the SSH key:

```
ssh Prime-Optical-database
```

**Step 4** Repeat the preceding steps on the Prime Optical database workstation.

### 3.2.2 Setting the Environment for the Prime Optical Server Installation

**Step 1** (For Solaris operating systems only; not applicable to Linux) Log in as the root user on the workstation where the Prime Optical server will run. The C shell (csh) is recommended. To start the C shell, enter the following command:

```
/bin/csh
```

**Step 2** Enter the following command to verify that the disk directories shown in Table 3-2 exist:

```
ls -l
```

**Table 3-2** Disk Directories

<table>
<thead>
<tr>
<th>Directory</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>/cisco</td>
<td>For the Prime Optical installation, including .jar files, executable shell scripts, and so on</td>
</tr>
<tr>
<td>/oracle</td>
<td>For the Oracle software</td>
</tr>
<tr>
<td>/tftpboot</td>
<td>For the TFTP directory</td>
</tr>
</tbody>
</table>

**Note** Disk partitioning is not required for /tftpboot, but the directory is required.

**Step 3** Depending on your configuration, insert one of the following DVDs into the DVD drive:

- Cisco Prime Optical Server installation DVD—Linux
- Cisco Prime Optical Server installation DVD—Solaris
### 3.2.3 Installing the Prime Optical Server on the Prime Optical Server Workstation

**Step 1**  
(For Solaris operating systems only; not applicable to Linux) Log in as the root user on the workstation where the Prime Optical server will run. The C shell (csh) is recommended. To start the C shell, enter the following command:

```
/bin/csh
```

**Step 2**  
Enter the following command to set the DISPLAY variable:

```
setenv DISPLAY hostname-or-IP-address:0.0
```

**Step 3**  
Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the command output, you should see:

```
hostname-or-IP-address:0.0
```

**Step 4**  
If you are using an xterm window or a remote host, enter the following command to enable the xterm connection from the clients:

```
xhost +
```

The default path is one of the following:

- (Solaris) `/usr/openwin/bin`
- (Linux) `/usr/bin`

**Step 5**  
Depending on your configuration, insert one of the following DVDs into the DVD drive:

- Cisco Prime Optical Server installation DVD—Linux
- Cisco Prime Optical Server installation DVD—Solaris

**Step 6**  
Enter the following commands:

```
cd /
DVD-mount-point/Disk1/setup.sh
```

Wait for up to 90 seconds while the following message appears:

```
Please wait, Cisco Prime Optical Server Release 9.3.1 is being configured for your system. This may take a moment...
```

**Step 7**  
At the Introduction screen, click **Next**.

**Step 8**  
At the License Agreement screen, read the license agreement and click the **I accept the terms of the license agreement** radio button. Click **Next**.

**Step 9**  
At the Installation Options screen, choose **New installation**; then, click **Next**.

**Step 10**  
At the Server Configuration screen, do the following:

a. Check one of the following radio buttons:

Chapter 3  Installing Cisco Prime Optical 9.3.1 and Oracle 11g

Installing Prime Optical and Oracle on Separate Workstations

If you install Prime Optical as a standalone product, you can choose to integrate Prime Optical as part of the Prime Central suite at a later time.

- **Suite**—To install Prime Optical as part of the Prime Central suite.
  
  After Prime Optical is integrated with the suite, it cannot be reverted to standalone mode.

**Note**  If you are installing Prime Optical as part of the Prime Central suite, DNS must be enabled on the machine where Prime Optical is being installed. If the machine cannot resolve hostnames into IP addresses through DNS, Prime Optical registration will fail.

b. Click one of the following radio buttons:

- **Oracle Not Embedded**—To install Prime Optical with an external database.
- **Oracle Embedded**—To install Prime Optical with an embedded database. (See 3.6 Understanding the Advantages and Limitations of an Embedded Oracle Database, page 3-20.)

c. Click Next.

**Note**  When you choose Prime Optical Server, the Web Server check box is checked automatically and is required. The web server allows you to use an HTTP connection to download files from the Prime Optical server to the Prime Optical client. The web server is also used to launch the online help.

**Step 11**  At the Main Options screen, check only the **Install Prime Optical server** check box and click Next.

**Caution**  Be sure to uncheck the other check boxes on the Main Options screen.

**Step 12**  If you are installing Prime Optical with an embedded database, the setup program checks whether an Oracle client installation exists on your workstation. If a previous version of the Oracle client is detected, the following message appears:

An Oracle client installation has been detected on the machine.
It will be removed by CTM installation.
Press 'Cancel' to cancel the setup.

Click **Continue** to delete the previous Oracle client version and continue the installation. (If you click **Cancel**, the installation quits.)

**Step 13**  At the Select Network Configuration screen, specify the size of your network; then, click Next.

**Step 14**  At the Cisco Prime Optical Group Information & Sudo Installation screen, confirm the name of the UNIX group to which you want to assign administrator privileges. Check or uncheck the **Install Prime Optical Sudo** check box; then, click Next.

**Step 15**  At the FTP Information screen, do the following to configure an FTP account for software download operations:

a. Enter the following information:

- FTP username
- FTP user password
- Confirm FTP user password
- FTP directory
b. Check or uncheck the **Create new FTP account** check box. If checked, the FTP user will be created automatically on the Prime Optical server workstation by the install script. If unchecked, it is assumed that an FTP user already exists on the Prime Optical server workstation.

c. Click **Next**.

**Step 16**  
At the Server IP Address screen, accept the default value and click **Next**.

**Step 17**  
(For Solaris operating systems only; not applicable to Linux) If you want to enable TFTP, do the following at the Configure TFTP screen:

a. Check the **Enable TFTP Server** check box.

b. Enter the TFTP directory name. The default is /tftpboot.

c. Click **Next**.

**Step 18**  
At the Specify Cisco Prime Optical Database to Connect to screen, complete one of the following options, depending on the type of installation you are performing:

- **Standard dual-server**—Enter the IP address or hostname of the workstation where the Prime Optical database will run; then, click **Next**. See IPv4 address_2 in Figure 3-1 on page 3-8.
- **Dual-server with a dedicated connection**—Enter the IP address of the workstation where the Prime Optical database will run; then, click **Next**. See IP Address_4 in Figure 3-2 on page 3-9.

⚠️ **Caution**  
Be sure to enter the correct IP address or hostname. Do not simply accept the default.

💡 **Note**  
(For standard dual-server only) If you entered a hostname, the setup program automatically translates the hostname to a physical IP address and prompts you to confirm the address. Click **Yes**.

**Step 19**  
At the Destination Folder screen, specify where you want to install the Prime Optical server. The default directory is /cisco/PrimeOpticalServer. You can click **Change** to choose a different destination. After you specify your destination, click **Next**.

💡 **Note**  
If the destination directory that you specified is a new directory, you will receive the message, “The specified directory does not exist. Do you want to create it?” Click **Yes**.

⚠️ **Caution**  
Prime Optical checks for the /opt/CiscoTransportManagerServer directory or a symbolic link to it. If Prime Optical cannot find the /opt/CiscoTransportManagerServer directory or a symbolic link, it creates a symbolic link automatically. Therefore, do not delete any instances of /opt/CiscoTransportManagerServer from your Prime Optical file structure.

**Step 20**  
The Pre-Installation Summary screen shows the items that will be installed. Click **Install**.

**Step 21**  
The Web Server Installation Summary screen summarizes the results of the web server installation. Click **Next**.

**Step 22**  
The Install Complete screen summarizes the results of the installation. Click **Done**.

**Step 23**  
If you are installing Prime Optical with an embedded database, enter the following command:

```bash
chmod 755 /oracle/product/11.2.0/bin/sqlplus
```
Do not reboot the system at this time. Before rebooting, you must install the Prime Optical database, which you will do in a later section.

### 3.2.4 Setting the Environment for the Prime Optical Database Installation

**Step 1**
(For Solaris operating systems only; not applicable to Linux) Log into the Prime Optical database workstation as the root user. The C shell (csh) is recommended. To start the C shell, enter the following command:

```bash
/bin/csh
```

**Step 2**
Enter the following command to verify that the disk directories shown in Table 3-3 exist:

```bash
ls -l /
```

**Table 3-3 Disk Directories**

<table>
<thead>
<tr>
<th>Directory</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>/db01</code></td>
<td>For the system tablespace used by Oracle</td>
</tr>
<tr>
<td><code>/db01_rd</code></td>
<td>Optional partition for the redo logs</td>
</tr>
<tr>
<td><code>/db02</code></td>
<td>For the basedata tablespace, alarmdata tablespace, and eventdata tablespace used by Prime Optical</td>
</tr>
<tr>
<td><code>/db02_rd</code></td>
<td>Optional partition for the redo logs</td>
</tr>
<tr>
<td><code>/db03</code></td>
<td>For the data tablespace used by Prime Optical</td>
</tr>
<tr>
<td><code>/db04</code></td>
<td>For the index tablespace used by Prime Optical</td>
</tr>
<tr>
<td><code>/db05</code></td>
<td>For the archived and undo tablespace used by Prime Optical</td>
</tr>
<tr>
<td><code>/ctm_backup</code></td>
<td>For the backed-up database and configuration files</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong> The <code>/ctm_backup</code> partition is required for backups.</td>
</tr>
<tr>
<td><code>/oracle</code></td>
<td>For the Oracle software</td>
</tr>
<tr>
<td><code>/tftpboot</code></td>
<td>For the TFTP directory</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong> Disk partitioning is not required for <code>/tftpboot</code>, but the directory is required.</td>
</tr>
</tbody>
</table>

1. To optimize system performance, see 2.1.2 Disk Space and Partition Specifications, page 2-4.
2. The `/ctm_backup` directory can be a symbolic link to a storage device.
3. If you are installing Prime Optical with an external database, if the oracle user does not have read/write permission, backup and restore operations will fail. Verify that the `/ctm_backup` directory has oracle:dba ownership, as defined in A.2 Installing the Oracle 11g Software with the Response File (*rsp) Provided by Cisco, Step 3. If a symbolic link is on the storage device, verify that the command is implemented correctly. See 2.1.2.1 Understanding the ctm_backup Directory, page 2-8.

**Step 3**
For Solaris operating systems, verify that the `STTY` command is not used in the shell configuration file; for example, in the `.login`, `.cshrc`, and `.profile` files.
3.2.5 Installing the Prime Optical Database

Note
If you are installing Prime Optical with an external database, before you install the Prime Optical database, verify that Oracle is installed in the /oracle directory.

Step 1
(For Solaris operating systems only; not applicable to Linux) Log in as the root user on the workstation where the Prime Optical database will run. The C shell (csh) is recommended. To start the C shell, enter the following command:

/bin/csh

Step 2
Enter the following command to set the DISPLAY variable:

setenv DISPLAY hostname-or-IP-address:0.0

Step 3
Enter the following command to verify that the display is set correctly:

echo $DISPLAY

In the command output, you should see:

hostname-or-IP-address:0.0

Step 4
If you are using an xterm window or a remote host, enter the following command to enable the xterm connection from the clients:

xhost +

The default path is one of the following:

- (Solaris) /usr/openwin/bin
- (Linux) /usr/bin

Step 5
Depending on your configuration, insert one of the following DVDs into the DVD drive:

- Cisco Prime Optical Server installation DVD—Linux
- Cisco Prime Optical Server installation DVD—Solaris

Step 6
Enter the following commands:

cd /
DVD-mount-point/Disk1/setup.sh

Wait for up to 90 seconds while the following message appears:

Please wait, Cisco Prime Optical Server Release 9.3.1 is being configured for your system. This may take a moment...

Step 7
At the Introduction screen, click Next.

Step 8
At the License Agreement screen, read the license agreement and click the I accept the terms of the license agreement radio button. Click Next.

Step 9
At the Installation Options screen, choose New installation; then, click Next.

Step 10
At the Server Configuration screen, do the following:

a. Check one of the following radio buttons:
Chapter 3 Installing Cisco Prime Optical 9.3.1 and Oracle 11g

Installing Prime Optical and Oracle on Separate Workstations


  If you install Prime Optical as a standalone product, you can choose to integrate Prime Optical as part of the Prime Central suite at a later time.

- **Suite**—To install Prime Optical as part of the Prime Central suite.

  After Prime Optical is integrated with the suite, it cannot be reverted to standalone mode.

**Note**

If you are installing Prime Optical as part of the Prime Central suite, DNS must be enabled on the machine where Prime Optical is being installed. If the machine cannot resolve hostnames into IP addresses through DNS, Prime Optical registration will fail.

b. Click one of the following radio buttons:

- **Oracle Not Embedded**—To install Prime Optical with an external database.
- **Oracle Embedded**—To install Prime Optical with an embedded database. (See 3.6 Understanding the Advantages and Limitations of an Embedded Oracle Database, page 3-20.)

c. Click Next.

**Note**

When you choose Prime Optical Server, the Web Server check box is checked automatically and is required. The web server allows you to use an HTTP connection to download files from the Prime Optical server to the Prime Optical client. The web server is also used to launch the online help.

**Step 11**

At the Main Options screen, check only the **Create Prime Optical database** check box and specify the Oracle SID. The default is *CTM*. Click **Next**.

**Caution**

Be sure to uncheck the other check boxes on the Main Options screen.

**Step 12**

If you are installing Prime Optical with an embedded database, the setup program checks whether an Oracle installation exists on your workstation. If a previous version of Oracle is detected, the following message appears:

An Oracle installation has been detected on the machine.
It will be removed by CTM installation.
Press 'Cancel' to cancel the setup.

Click **Continue** to delete the previous Oracle version and continue the installation. (If you click **Cancel**, the installation quits.)

**Step 13**

At the Select Network Configuration screen, specify the size of your network; then, click **Next**.

**Step 14**

At the Database Information screen, accept the default value and specify whether or not you want to install the database in ARCHIVELOG mode. Click **Next**.

**Note**

If you are installing Prime Optical with an embedded database, ARCHIVELOG mode is required; therefore, the ARCHIVELOG radio button is not available.

**Step 15**

At the Server IP Address screen, complete one of the following options, depending on the type of installation you are performing:
Chapter 3  Installing Cisco Prime Optical 9.3.1 and Oracle 11g

Installing Prime Optical and Oracle on Separate Workstations

- Standard dual server—Enter the hostname or the IP address of the workstation where the Prime Optical server is installed; then, click Next. See IPv4 address_1 in Figure 3-1 on page 3-8.
- Dual server with a dedicated connection—Enter the IP address of the workstation where the Prime Optical server is installed; then, click Next. See IPv4 address_3 in Figure 3-2 on page 3-9.

**Note**
(For standard dual server only) If you entered a hostname, the setup program automatically translates the hostname to a physical IP address and prompts you to confirm the address. Click Yes.

**Step 16**
At the Pre-Installation Summary screen, click Install to create the Prime Optical database.

**Step 17**
The Install Complete screen summarizes the results of the installation. Click Done.

**Step 18**
Enter the following command to verify that the Oracle database and listener are running:
```bash
cd /opt/CiscoTransportManagerServer/bin
ps -ef | grep ora
```
The command output displays the tnslsnr and ora_[...].Oracle-SID processes.

**Step 19**
As the root user, enter the following commands to create the Database read-only user:
```bash
setenv PYTHONPATH \
/opt/CiscoTransportManagerServer/lib/python:/opt/CiscoTransportManagerServer/bin

/usr/bin/python -c "import manage_oracle_users; \nmanage_oracle_users.create_special_user('ctmreadonly', \n'../opt/CiscoTransportManagerServer/cfg/oracle_users.cfg')"
```

**Step 20**
As the root user, enter the following command to reboot the system:
```bash
init 6
```

---

**3.2.6 Updating the Prime Optical Database Parameters for a Dual-Server Installation with a Dedicated Connection Between Servers**

**Step 1**
Log in as the root user on the workstation where the Prime Optical server is installed.

**Step 2**
Enter the following command to verify that the Prime Optical server is running:
```bash
opticalctl status
```

**Step 3**
If the Prime Optical server is running, enter the following command to stop it before performing the upgrade:
```bash
opticalctl stop
```

**Step 4**
Enter the following command on the Prime Optical database workstation (see Server 2 in Figure 3-2 on page 3-9):
```bash
cd /opt/CiscoTransportManagerServer/bin
```

**Step 5**
Enter the following command on the Prime Optical database workstation to run the change_alt_db_host.sh script (see Server 2 on Figure 3-2 on page 3-9):
```bash
./change_alt_db_host.sh IP-address-2 IP-address-4 IP-address-3
```
3.3 Upgrading the Prime Optical Network Configuration Size

Note If the Prime Optical server and Oracle are installed on separate workstations, you can upgrade the Prime Optical network size on the workstation where Oracle is installed.

Step 1 Enter the following command to verify whether the Prime Optical server is running:
```bash
opticalctl status
```

Step 2 If the Prime Optical server is running, enter the following command to stop it:
```bash
opticalctl stop
```

Step 3 Depending on your configuration, insert one of the following DVDs into the DVD drive:
- Cisco Prime Optical Server installation DVD—Linux
- Cisco Prime Optical Server installation DVD—Solaris

Step 4 Enter the following commands:
```bash
cd /<DVD-mount-point>/Disk1/setup.sh
```

Wait for up to 90 seconds while the following message appears:

```
Please wait, Cisco Prime Optical Server Release 9.3.1 is being configured for your system. This may take a moment...
```

Step 5 At the Introduction screen, click Next.

Step 6 At the License Agreement screen, read the license agreement and click the I accept the terms of the license agreement radio button. Click Next.

Step 7 At the Installation Options screen, choose Upgrade Cisco Prime Optical network configuration size; then, click Next.

Step 8 At the Select Network Configuration screen, specify the size of your network; then, click Next.
Chapter 3  Installing Cisco Prime Optical 9.3.1 and Oracle 11g

Upgrading the Performance of the Oracle Database

### 3.4 Upgrading the Performance of the Oracle Database

In Prime Optical, redo logs are stored on a different disk to maximize I/O data transfers and speed up all database operations. This configuration is recommended on large and high-end networks that manage a large number of NEs.

Two partitions are created to support the configuration: /db01_rd and /db02_rd. The partitions are located on different physical disks and different I/O controllers. You can add the /db01_rd partition only, or you can add both /db01_rd and /db02_rd. In a dual-server scenario, the partitions are created on the Prime Optical database workstation.

#### Note

No user action is required if the /db01_rd and /db02_rd partitions are already present at the time of installation. The Prime Optical installer configures the redo logs.

To configure the Oracle redo logs:

1. **Step 1**
   Enter the following command to shut down the Prime Optical server. (In a dual-server scenario, enter the following command only on the Prime Optical server workstation.)
   ```bash
   opticalctl stop
   ```

2. **Step 2**
   Enter the following commands. (In a dual-server scenario, enter the following commands only on the Prime Optical database workstation.)
   ```bash
   chown -R oracle:dba /db01_rd
   chown -R oracle:dba /db02_rd
   ```

3. **Step 3**
   Enter the following commands to run the configuration script, where `small`, `medium`, `large`, and `highend` represent the size of the network selected during the Prime Optical installation. (In a dual-server scenario, enter the following commands only on the Prime Optical database workstation.)
   ```bash
   cd Prime Optical-installation-directory/bin
   ./rd_log_config.sh { small | medium | large | highend }
   ```

   The script shuts down the Oracle database, configures the redo logs, and restarts the Oracle database.

4. **Step 4**
   Enter the following command to start the Prime Optical server. (In a dual-server scenario, enter the following command only on the Prime Optical server workstation.)

---

You can upgrade the network configuration only if your network size is medium or large. Small and high-end configurations cannot be upgraded.
3.5 Integrating Prime Optical with Cisco Prime Central

After Prime Optical has been installed in standalone mode, you can integrate it with Cisco Prime Central. For more information about Prime Central, see http://www.cisco.com/en/US/products/ps11754/tsd_products_support_series_home.html.

Note
If you are installing Prime Optical as part of the Prime Central suite, DNS must be enabled on the machine where Prime Optical is being installed. If the machine cannot resolve hostnames into IP addresses through DNS, Prime Optical registration will fail.

There are two ways to integrate Prime Optical with the Prime Central suite after it has been installed in standalone mode:

- Run the ./DMIntegrator.sh script. Follow the procedure described in “Configuring the Prime Network, Prime Optical, and Prime Fulfillment Servers as Suite Components” in the Cisco Prime Central 1.0 Quick Start Guide.
- Run the Prime Optical installation DVD.

To use the Prime Optical installation DVD:

Step 1 Depending on your configuration, insert one of the following DVDs into the DVD drive:
  - Cisco Prime Optical Server installation DVD—Linux
  - Cisco Prime Optical Server installation DVD—Solaris

Step 2 Enter the following commands:

  cd /DVD-mount-point/Disk1/setup.sh

Step 3 At the Introduction screen, click Next.

Step 4 At the License Agreement screen, read the license agreement and click the I accept the terms of the license agreement radio button.

Step 5 Click Next.

Step 6 At the Installation Options screen, choose Register with suite; then, click Next.

3.6 Understanding the Advantages and Limitations of an Embedded Oracle Database

Installing Prime Optical with an embedded Oracle database offers the following advantages:

- The Prime Optical installer checks all prerequisites and installs Oracle automatically. The installation includes any required Oracle patches.
• Improved security: The oracle user account, SYSDBA Oracle credentials, and Prime Optical database user credentials are hidden and can be changed and used only by Cisco for troubleshooting and configuration.

• User-friendly tools let you browse the schema.

• Redo logs and archive files are reorganized to save disk space.

• You can restore the database to the most recent backup, or to a saved checkpoint.

• The database has automatic resilience, including automatic checks of problems, health checks, and automatic management of tablespace fragmentation.

With an embedded Oracle database, you cannot:

• Change the credentials of the oracle user, Oracle SYSDBA user, or Prime Optical database user.

• Use third-party tools to connect to the Prime Optical Oracle database.

• Modify the Oracle installation (for example, by patching it).

• Use the Oracle Enterprise Manager to manage the database.
This chapter describes how to use the Cisco Prime Optical 9.3.1 Data Migrator wizard to migrate selected data from CTM R8.5 or later to Prime Optical 9.3.1. With the wizard, you can migrate a subset of an existing database to a newly installed Prime Optical 9.3.1 server.

The following are the benefits and limitations of the Data Migrator wizard:

- Reduces the migration time and provides a safer, easier migration.
- Lets you migrate the following data:
  - Core tables and database pruning policy information.
  - Service states and configurations, including CORBA and SNMP gateway states and configurations.
  - Users, user profile information, and CORBA and SNMP gateway users.
  - (Optional) Managed NEs, NE logical grouping information, network partition information, security information to authenticate to nodes, Domain Explorer and Subnetwork Explorer map coordinates, basic NE service configuration, and PM service states.
  - (Optional) Manual links and Layer 1 circuits with user data.
  - (Optional) VLAN customer-related information, Layer 2 topologies, and QoS templates.
- Does not migrate alarms or PM data.

As the root user, install and run the tool on the same server where the Prime Optical database is installed. The tool prepares a newly installed Prime Optical 9.3.1 server to use the same data as the earlier server used.

In the bottom right corner of the wizard screens, the memory footprint progress bar shows the rate of available memory compared to the allocated memory; for example: “Available: x MB of y MB.” The “Request garbage collection” tool lets you free up memory when the amount of data is greater than what is expected, and the running task is taking too long to complete.

This chapter contains the following sections:

- 4.1 Overview of the Upgrade Process Using the Data Migrator Wizard, page 4-2
- 4.2 Installing the Data Migrator Wizard, page 4-2
- 4.3 Using the Data Migrator Wizard to Export the Database, page 4-3
4.1 Overview of the Upgrade Process Using the Data Migrator Wizard

Using the Data Migrator wizard to upgrade from CTM R8.5, R9.0, R9.1, or R9.2 to Prime Optical 9.3.1 involves the following process:

1. (Optional) Perform a full backup or export of your earlier database so that it can be restored if there are any upgrade issues.
2. Install the Data Migrator wizard on any server in the same network as the Prime Optical server. (See 4.2 Installing the Data Migrator Wizard, page 4-2.)
3. Use the Data Migrator wizard to export a subset of database data from the CTM R8.5, R9.0, R9.1, or R9.2 server that you want to upgrade. (See 4.3 Using the Data Migrator Wizard to Export the Database, page 4-3.)
4. Uninstall the previous CTM or Prime Optical release.
5. Install Prime Optical 9.3.1 from scratch. (See Chapter 3, “Installing Cisco Prime Optical 9.3.1 and Oracle 11g.”)

Caution Before you install the Solaris operating system from scratch, save the .zip export archive on another server.

6. Use the Data Migrator wizard to import selected database data to the new Prime Optical 9.3.1 database. (See 4.4 Using the Data Migrator Wizard to Import Your Data, page 4-4.)

4.2 Installing the Data Migrator Wizard

As the root user, do the following:

Step 1 Depending on your configuration, insert one of the following DVDs into the DVD drive:
- Cisco Prime Optical Server installation DVD—Linux
- Cisco Prime Optical Server installation DVD—Solaris

Step 2 From the DVD root, navigate to the DataMigrator/ folder and copy the DataMigrator.tar file to a local folder.

Step 3 Enter the following commands to extract the .tar archive contents:
```
cd local-folder/DataMigrator

tar xvf DataMigrator.tar
```

Step 4 Enter the following commands to run the installer:
```
cd Disk1

./install.sh
```

Step 5 At the Introduction screen, click Next.
Chapter 4  Using the Cisco Prime Optical 9.3.1 Data Migrator Wizard

Using the Data Migrator Wizard to Export the Database

Step 6  At the Choose Installation Folder screen, specify where you want to install the Data Migrator wizard. The default folder is $HOME/DataMigrator. You can click Choose to choose a different destination. After you specify your destination, click Next.

Step 7  The Preinstallation Summary screen shows the items that will be installed and the disk space required. Click Install.

Step 8  The Installing Data Migrator screen tracks the progress of the installation.

Step 9  The Installation Complete screen summarizes the results of the installation. Click Done.

After installation, the directory structure contains a folder with the DataMigrator executable script.

4.3 Using the Data Migrator Wizard to Export the Database

Step 1  Enter the following command to verify whether the Prime Optical server is running:

```
opticalctl status
```

If the Prime Optical server is running, enter the following command to stop it:

```
opticalctl stop
```

Step 2  Navigate to the installation folder (for example, /tmp/DataMigrator/bin) and run the DataMigrator executable.

Step 3  The Data Migrator wizard opens. Do the following:

a. (Optional) To view the supported versions that are available for export, click Show Migration Matrix. The Supported Migration Paths dialog box opens, listing the valid migration versions. After reviewing the supported migration paths, click Close.

b. From the Migration Mode drop-down list, choose Export.

c. Click OK.

Step 4  In the Database Connection screen, specify details of the database from which you want to export data. Do the following:

a. If the release from which you want to export data has an embedded database, check the Server uses an embedded database check box.

When the Server uses an embedded database check box is checked:

- You cannot edit any fields in the Connection Properties area.
- The hostname is set to the current machine’s name.
- The instance name is set to CTM, which is the default for an embedded database and cannot be changed.
- The port number is set to 1521, which is the default for an embedded database and cannot be changed.
- The Username and Password fields are cleared. After you click the Connect button, the Username and Password fields are filled in if the Data Migrator wizard can find those properties in the CTMServer.cfg configuration file.

b. If the release from which you want to export data does not use an embedded database, verify that the Server uses an embedded database check box is unchecked.
When the **Server uses an embedded database** check box is unchecked:
- You can edit all fields in the Connection Properties area.
- The Username and Password fields are restored to their default values.
- Enter the hostname in the Hostname field.
- Enter the port number in the Port Number field. The default port number is 1521.
- Enter values in the remaining fields, or accept the defaults.

c. Click **Connect**. The progress bar at the bottom of the screen tracks the progress of the operation. (To cancel the operation, click the **X** icon to the right of the progress bar.)

After the connection succeeds, the Connection State area shows the state as “Connected.” The version, size, and installed modules are retrieved from the database and displayed.

d. Click **Next**.

**Step 5** If you receive the following prompt, shut down the server and reconnect to the database; then, click **OK**:

> The server is still running on the selected server. The connection to the database will be closed. Before continuing, you must shut down the server and then reconnect to the database.

⚠️ **Caution**

It is important that you shut down the server and reconnect to the database before proceeding to the next step.

**Step 6** In the Categories screen, review the data categories that will be exported. Click **Next**.

**Step 7** In the Open dialog box, select the directory and the .zip archive where you want to store the exported data; then, click **Open**.

**Step 8** The File Selection screen displays the selected archive file. Click **Next**.

**Step 9** In the Export screen, click **Start**. All the data categories are exported and compressed. A progress bar tracks the progress of the export.

The table summarizes the results of the export. For each data category, the table lists the exported database tables, the number of rows exported, and the length of time the export took.

**Step 10** Click **Exit**.

**Step 11** At the prompt “The operation is complete,” click **OK**.

### 4.4 Using the Data Migrator Wizard to Import Your Data

**Step 1** Enter the following command to verify whether the server is running:

```
opticalctl status
```

If the server is running, enter the following command to stop it:

```
opticalctl stop
```

**Step 2** Navigate to the installation folder (for example, /tmp/DataMigrator/bin) and run the DataMigrator executable.
Step 3  The Data Migrator wizard opens. Do the following:
   a. (Optional) To view the supported versions that are available for import, click Show Migration Matrix. The Supported Migration Paths dialog box opens, listing the valid migration versions. After reviewing the supported migration paths, click Close.
   b. From the Migration Mode drop-down list, choose Import.
   c. Click OK.

Step 4  In the Open dialog box, select the .zip archive file to import; then, click Open.

Step 5  In the Archive Summary screen, review the details of the archive file to import. To select a different archive file to import, click the browse (...) button. The table summary shows the database tables that will be imported, including the data category and the number of rows in each table. Click Next.

Step 6  In the Categories screen, do the following:
   a. Select the categories to import. General, Services, and Users are mandatory categories; the NEs, L1, and L2 topologies categories are optional.
   b. (Optional) In the General category, click the Setup link to open the General Import Options dialog box. If desired, check the Import pruning options check box; then, click Apply. The dialog box closes.
   c. (Optional) In the NEs category, click the Setup link to open the NE Import Options dialog box and specify additional setup options for the import. The dialog box has the following tabs:
      - NE Services—Lets you tune the NE services of the target server after the import.
      - NEs—Lets you change the NE state and disable automatic subnetwork grouping. (Automatic subnetwork grouping slows down the initial discovery of the new server.)
      - Miscellaneous—Lets you customize the import of user maps and equipment inventory notes.
      After making your selections in the NE Import Options dialog box, click Apply. The dialog box closes.
   d. Click Next.

Step 7  In the Database Connection screen, specify details of the database to which you want to import data. Do the following:
   a. If the release to which you want to import data has an embedded database, check the Server uses an embedded database check box.
      When the Server uses an embedded database check box is checked:
      - You cannot edit any fields in the Connection Properties area.
      - The hostname is set to the current machine’s name.
      - The instance name is set to CTM, which is the default for an embedded database and cannot be changed.
      - The port number is set to 1521, which is the default for an embedded database and cannot be changed.
      - The Username and Password fields are cleared. After you click the Connect button, the Username and Password fields are filled in if the Data Migrator wizard can find those properties in the CTMServer.cfg configuration file.
   b. If the release to which you want to import data does not use an embedded database, verify that the Server uses an embedded database check box is unchecked.
      When the Server uses an embedded database check box is unchecked:
      - You can edit all fields in the Connection Properties area.
Using the Data Migrator Wizard to Import Your Data

Chapter 4 Using the Cisco Prime Optical 9.3.1 Data Migrator Wizard

- The Username and Password fields are restored to their default values.
- Enter the hostname in the Hostname field.
- Enter the port number in the Port Number field. The default port number is 1521.
- Enter values in the remaining fields, or accept the defaults.

c. Click Connect. The progress bar at the bottom of the screen tracks the progress of the operation. (To cancel the operation, click the X icon to the right of the progress bar.)

After the connection succeeds, the Connection State area shows the state as “Connected.” The version, size, and installed modules are retrieved from the database and displayed.

d. Click Next.

Step 8

If you receive the following prompt, shut down the server and reconnect to the database; then, click OK:

The server is still running on the selected server. The connection to the database will be closed. Before continuing, you must shut down the server and then reconnect to the database.

⚠️ Caution It is important that you shut down the server and reconnect to the database before proceeding to the next step.

Step 9

In the Validation screen, do the following:

a. Click the Start button to validate the size, installed modules, and data on the selected destination server. The Result field shows whether the validation succeeded (Allowed) or failed (Impossible).

The following server sizes produce the following results:

<table>
<thead>
<tr>
<th>Original Server Size</th>
<th>Target Server Size</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>Small</td>
<td>Allowed</td>
</tr>
<tr>
<td>Small</td>
<td>Medium</td>
<td>Allowed</td>
</tr>
<tr>
<td>Small</td>
<td>Large</td>
<td>Allowed</td>
</tr>
<tr>
<td>Small</td>
<td>High end</td>
<td>Allowed</td>
</tr>
<tr>
<td>Medium</td>
<td>Small</td>
<td>Impossible</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium</td>
<td>Allowed</td>
</tr>
<tr>
<td>Medium</td>
<td>Large</td>
<td>Allowed</td>
</tr>
<tr>
<td>Medium</td>
<td>High end</td>
<td>Allowed</td>
</tr>
<tr>
<td>Large</td>
<td>Small</td>
<td>Impossible</td>
</tr>
<tr>
<td>Large</td>
<td>Medium</td>
<td>Impossible</td>
</tr>
<tr>
<td>Large</td>
<td>Large</td>
<td>Allowed</td>
</tr>
<tr>
<td>Large</td>
<td>High end</td>
<td>Allowed</td>
</tr>
<tr>
<td>High end</td>
<td>Small</td>
<td>Impossible</td>
</tr>
<tr>
<td>High end</td>
<td>Medium</td>
<td>Impossible</td>
</tr>
<tr>
<td>High end</td>
<td>Large</td>
<td>Impossible</td>
</tr>
<tr>
<td>High end</td>
<td>High end</td>
<td>Allowed</td>
</tr>
</tbody>
</table>
b. In the Data Validation area > Details column, click the Details link to see why a particular table could not be imported. At the following prompt, click OK:

   Table-name must be empty; it contains x row(s) instead.

   **Note**   To avoid this error, click Back, return to the Validation screen, and select a different server that has a new Prime Optical 9.3.1 installation.

c. Click Next.

**Step 10**  In the Import screen, click the Start button to import the data to the target database.

**Step 11**  The confirmation popup reminds you that if you have not done so already, you should run the export_full_db.sh script to make a backup copy of your current data before proceeding. (Without a backup copy of your data, you would need to completely reinstall the Prime Optical server if problems were to occur.) Click Yes at the following prompt:

   This action will write the selected data to the target database. Make a copy of the current data using the export_full_db.sh tool.

   Select Yes to proceed or No to cancel the operation.

**Step 12**  A progress bar tracks the progress of the import. (To cancel the operation, click the X icon to the right of the progress bar.) The table summarizes the results of the import. For each data category, the table lists the imported database tables, the result of the housekeeping phase (purging old data to make room for the new data), the result of the data migration phase, and the length of time the import took.

   **Caution**   If a database table was not imported, click the Details link to show the reason for the failure. If errors occurred during the import, use the import_full_db.sh script to reimport the Prime Optical database. See the *Cisco Prime Optical 9.3.1 User Guide* section “Restoring the Prime Optical Database from the Previous Backup.”

**Step 13**  Click Exit.

---

### 4.5 Uninstalling the Data Migrator Wizard

To uninstall the Data Migrator wizard, delete the folder where you installed the wizard. The default folder is $HOME/DataMigrator.
Upgrading to Cisco Prime Optical 9.3.1 from an Earlier Release

Caution
A reliable network connection is required when carrying out an installation on a remote workstation.

This chapter describes how to upgrade to Cisco Prime Optical 9.3.1 from CTM R9.2 or later. This chapter contains the following sections:

- 5.1 Backing Up the Database on Solaris 10 Before Migration, page 5-2
- 5.2 Installing the Latest CTM or Prime Optical Service Pack, page 5-3
- 5.3 Upgrading from CTM R9.2 and Oracle 10g to Prime Optical 9.3.1 and Oracle 11g on the Same Workstation, page 5-3
- 5.4 Upgrading from CTM R9.2 and Oracle 10g to Prime Optical 9.3.1 and Oracle 11g on Separate Workstations, page 5-7
- 5.5 Upgrading from Prime Optical 9.3 to Prime Optical 9.3.1, page 5-15
- 5.6 Verifying That the Oracle and Prime Optical Server Processes Are Running, page 5-16
- 5.7 Upgrading the Prime Optical Network Configuration Size, page 5-17
- 5.8 Upgrading the Performance of the Oracle Database, page 5-18

Note
- You can upgrade directly from CTM R9.2 to Prime Optical 9.3.1 on Solaris, not Linux. If you are upgrading from a release earlier than CTM R9.2, you must first upgrade to CTM R9.2. See the Cisco Transport Manager Release 9.2 Installation Guide for the exact installation procedure. After you install CTM R9.2, you can upgrade to Prime Optical 9.3.1.
- You can upgrade to Prime Optical 9.3.1 with embedded Oracle only from CTM R9.2T with embedded Oracle.
- You can upgrade to Prime Optical 9.3.1 with external Oracle only from CTM R9.2 with external Oracle.
- After upgrading to Prime Optical 9.3.1, the old CTM server directory is moved to CiscoTransportManagerServer-old. Any data previously saved in the following directories is saved in the new /opt/CiscoTransportManagerServer directory:
  - /opt/CiscoTransportManagerServer/admin
  - /opt/CiscoTransportManagerServer/images
  - /opt/CiscoTransportManagerServer/cms
Before upgrading to Prime Optical 9.3.1, verify that the NE versions in your network are supported by Prime Optical 9.3.1. See the *Release Notes for Cisco Prime Optical 9.3.1* for the NE software versions that are supported. If your network contains NEs with an unsupported software version, it will not be possible to discover or manage them.

**Note**
- If your network contains NE types that are no longer supported in Prime Optical 9.3.1, those NEs will be removed automatically from your database during the upgrade.
- For an explanation of error messages that you might encounter during the upgrade, see Appendix B, “Understanding Installation Error Messages.”
- If you need instructions to mount or unmount DVDs, see Appendix D, “Mounting and Unmounting DVDs.”

After the upgrade is complete, you can delete `/opt/CiscoTransportManagerServer.oldCTM` and the install location it points to (if it is a link), because the new server `/opt/CiscoTransportManagerServer` is now installed.

If you canceled the upgrade, do the following:

**Step 1** Delete the new Prime Optical server that was installed—`/opt/CiscoTransportManagerServer`—as well as the install location it points to. The new server installation might not be complete.

**Step 2** Delete `/opt/CiscoTransportManagerServer.oldCTM` and create a new `/opt/CiscoTransportManagerServer` (if it is a link) that points to the same old install location. Alternately, rename `/opt/CiscoTransportManagerServer.oldCTM` to `/opt/CiscoTransportManagerServer` (if it is a directory).

**Step 3** Reimport the database.

**Step 4** Proceed with the upgrade.

### 5.1 Backing Up the Database on Solaris 10 Before Migration

Before upgrading the database to Prime Optical 9.3.1, it is strongly recommended that you back up the existing database. This ensures that you can revert to the old data in the event that the upgrade fails.

To back up your existing database, see the following sections in the *Cisco Prime Optical 9.3.1 User Guide*:

- Backing Up the Database from the CLI (recommended)
- Backing Up the Database from the GUI
5.2 Installing the Latest CTM or Prime Optical Service Pack

Install the latest CTM or Prime Optical service pack. See the *Migration Matrix for Cisco Prime Optical Service Pack Releases* for more information.

5.3 Upgrading from CTM R9.2 and Oracle 10g to Prime Optical 9.3.1 and Oracle 11g on the Same Workstation

This section describes how to upgrade from CTM R9.2 to Prime Optical 9.3.1 when you are installing the Prime Optical 9.3.1 server and database on the same workstation. As part of the upgrade, you will upgrade from Oracle 10g to Oracle 11g.

5.3.1 Preliminary Steps to Migrate to the Prime Optical 9.3.1 Server

Log in as the root user and do the following:

**Step 1** Verify that your server has enough RAM available for your network size. See **2.1.1 Server Specifications, page 2-3** for details.

**Step 2** Enter the following command to verify whether the CTM R9.2 server is running:

```
showctm
```

If the CTM server is running, enter the following command to stop it before performing the upgrade:

```
ctms-stop
```

5.3.2 Upgrading from Oracle 10g to Oracle 11g (Not Embedded)

Log in as the root user and do the following:

**Step 1** Copy the oracle_migration.tar file from the installation disks (../Disk1/oracle_migration.tar) to a temporary directory on the workstation (for example, /temp).

**Step 2** Enter the following command to untar the oracle_migration.tar file in the temporary directory:

```
tar xvf oracle_migration.tar
```

**Step 3** Check that the following files have been created under your temporary directory:

- . pre_migration.sh
- . post_migration.sh
- . sqlnet.ora
- . utlu112i.sql
- . ctms-env
- . cshrc
- . initCTM_0_small.ora
Chapter 5  Upgrading to Cisco Prime Optical 9.3.1 from an Earlier Release

5.3.3 Post Oracle 11g Migration Steps

Step 1  Log in as a root user and run the post_migration.sh script from your temporary directory. The script may take over two hours to complete and creates the following log files in /temp_CTM:

- . post_migration.log (50Mb)
- . upgrade.log
- . catupgrd.log (50Mb)
- . utlu112s.log
- . catuppst.log
- . utlrp.log

Wait until the following message appears:

End of script

Step 2  Enter the following commands to verify that the script was successful:

```
su - oracle
sqlplus /nolog
conn /as sysdba
```

The migration is successful when Connected appears.

Step 3  Enter the following command:

```
quit
```

Step 4  As root user, enter the following commands to create migration directories under /cisco/PrimeOpticalServer/log:

```
mkdir /cisco/PrimeOpticalServer/log/migration
chmod 777 /cisco/PrimeOpticalServer/log/migration
```
Step 5  
Enter the following command to copy the contents of /temp_CTM to /cisco/PrimeOpticalServer/log/migration:

```bash
cp /temp_CTM/* /cisco/PrimeOpticalServer/log/migration
```

### 5.3.4 Upgrading from CTM 9.2 to Prime Optical 9.3.1

**Step 1**  
As the oracle user, enter the following commands:

```bash
chmod 777 $ORACLE_HOME/network/log
chmod 777 $ORACLE_HOME/network/trace
chmod +t $ORACLE_HOME/network/log
chmod +t $ORACLE_HOME/network/trace
```

**Step 2**  
As the root user, insert the Prime Optical Server Disk 1 installation DVD and enter the following commands:

```bash
cp DVD-mount-point/Disk1/InstData/VM/dbstart /oracle/product/11.2.0/bin/dbstart
chown oracle:dba /oracle/product/11.2.0/bin/dbstart
chmod +x /oracle/product/11.2.0/bin/dbstart
su - oracle
$ORACLE_HOME/bin/dbstart
lsnrctl start
```

**Step 3**  
When migrating data, the migration could stall if the /temp directory contains temporary files left over from previous upgrades. Remove all temporary files from /temp before upgrading.

**Step 4**  
As the root user, enter the following commands to start the Prime Optical installation:

```bash
cd /
DVD-mount-point/Disk1/setup.sh
```

The setup program searches for Sun Microsystems JDK version 1.6.0_24 on your workstation. Wait for up to 90 seconds while the following message appears:

*Installing Cisco Prime Optical Server, please wait...*  

**Step 5**  
At the Introduction screen, click Next.

**Step 6**  
At the License Agreement screen, read the license agreement and click the I accept the terms of the license agreement radio button. Click Next.

**Step 7**  
At the Installation Options screen, verify that Upgrade from existing CTM release is selected; then, click Install.

**Step 8**  
At the Server Configuration screen, click Next. The system performs a system check.

**Step 9**  
Do one of the following:

- a. If the system check appears normal for your setup, click Next.
- b. If the system check is not successful, a message prompts you to check the /temp_CTM/report_oracle_pre_install_checks.log.
    - If you want to continue, click Continue.
    - If you want to check the log file, click Cancel.

**Step 10**  
At the Checking Oracle User and Groups screen, confirm that the User check succeeded and click Next.
Step 11  
At the Cisco Prime Optical Group Information & Sudo Installation screen, do the following:

a. Enter the name of the UNIX group to which you want to assign administrator privileges.

b. To install sudo, check the **Install Prime Optical Sudo** check box. If you do not want to install sudo, uncheck the check box.

c. Click **Next**.

Step 12  
At the FTP Information screen, do the following to configure an FTP account for software download operations:

a. Enter the following information:
   - FTP username
   - FTP user password
   - Confirm FTP user password
   - FTP directory

b. Check or uncheck the **Create new FTP account** check box. If checked, the FTP user will be created automatically on the Prime Optical server workstation by the install script. If unchecked, it is assumed that an FTP user already exists on the Prime Optical server workstation.

c. Click **Next**.

Step 13  
(For Solaris operating systems only; not applicable to Linux) At the Configure TFTP Server screen, do the following if you want to enable TFTP:

a. Check the **Enable TFTP Server** check box.

b. Enter the TFTP directory name. The default is `/tftpboot`.

c. Click **Next**.

Step 14  
At the Destination Folder screen, specify where you want to install the Prime Optical server. The default directory is `/cisco/PrimeOpticalServer`. You can click **Change** to choose a different destination. After you specify your destination, click **Next**.

---

**Note**

- If the destination directory that you specified is a new directory, you will receive the message, “The specified directory does not exist. Do you want to create it?” Click **Yes**.

- Do not specify a mount point as the target installation directory for the Prime Optical server installation, or the installation data will be lost when the workstation restarts. You must create a dedicated Prime Optical subdirectory. For example, if `/cisco` is the mount point for the disk partition `/dev/dsk/c0t0d0s5`, you cannot specify `/cisco` as the Prime Optical installation directory. Instead, specify a dedicated subdirectory such as `/cisco/PrimeOpticalServer`.

---

**Caution**

Prime Optical checks for the `/opt/CiscoTransportManagerServer` directory or a symbolic link to it. If Prime Optical cannot find the `/opt/CiscoTransportManagerServer` directory or a symbolic link, Prime Optical creates a symbolic link automatically. Therefore, do not delete any instances of `/opt/CiscoTransportManagerServer` from your Prime Optical file structure.

---

Step 15  
The Pre Installation Summary screen shows the items that will be installed. Click **Install**.

It might take 30 to 60 minutes or longer to install the Prime Optical server and upgrade the database, depending on your system performance.
5.4 Upgrading from CTM R9.2 and Oracle 10g to Prime Optical 9.3.1 and Oracle 11g on Separate Workstations

This section describes how to upgrade from CTM R9.2 to Prime Optical 9.3.1 when you are installing the Prime Optical 9.3.1 server and database on separate Sun Solaris 10 workstations. As part of the upgrade, you will upgrade from Oracle 10g to Oracle 11g.
5.4.1 Preliminary Steps to Migrate to the Prime Optical 9.3.1 Server

Log in as the root user on the workstation where the Prime Optical server will run and do the following:

---

**Step 1**
Verify that your server has enough RAM available for your network size. See 2.1.1 Server Specifications, page 2-3 for details.

**Step 2**
Enter the following command to verify whether the CTM R9.2 server is running:
```
showctm
```
If the CTM server is running, enter the following command to stop it before performing the upgrade:
```
ctms-stop
```

**Step 3**
Verify that SSH is configured on the server and database workstations. See 3.2.1 Enabling SSH on the Prime Optical Server and Database Workstations, page 3-9.

**Step 4**
When migrating data, the migration could stall if the /temp directory contains temporary files left over from previous upgrades. Remove all temporary files from /temp before upgrading.

---

5.4.2 Upgrading the Previous Oracle Client to Oracle 11g Client (Not Embedded)

---

**Step 1**
As the Oracle user, run the runInstaller command to uninstall the previous Oracle client.

**Step 2**
Complete the steps in A.4 Installing the Oracle Client on the Prime Optical Server Workstation, page A-4.

---

5.4.3 Migrating to the Prime Optical 9.3.1 Server

---

**Step 1**
Insert the Prime Optical Server Disk 1 installation DVD and enter the following commands:
```
cd DVD-mount-point/Disk1/setup.sh
```
The setup program searches for Sun Microsystems JDK version 1.6.0_24 on your workstation.

Wait for up to 90 seconds while the following message appears:

```
Please wait, Cisco Prime Optical Server Release 9.3.1 is being configured for your system. This may take a moment...
```

**Step 2**
At the Introduction screen, click Next.

**Step 3**
At the License Agreement screen, read the license agreement and click the I accept the terms of the license agreement radio button. Click Next.

**Step 4**
At the Installation Options screen, verify that Upgrade from existing Prime Optical release is selected; then, click Next.

**Step 5**
At the Server Configuration screen, click Next to confirm the current configuration. The system performs a system check.
Step 6 At the Cisco Prime Optical Group Information & Sudo Installation screen, do the following:
   a. Enter the name of the UNIX group to which you want to assign administrator privileges.
   b. To install sudo, check the Install Prime Optical Sudo check box. If you do not want to install sudo, uncheck the check box.
   c. Click Next.

Step 7 At the FTP Information screen, do the following to configure an FTP account for software download operations:
   a. Enter the following information:
      - FTP username
      - FTP user password
      - Confirm FTP user password
      - FTP directory
   b. Check or uncheck the Create new FTP account check box. If checked, the FTP user will be created automatically on the Prime Optical server workstation by the install script. If unchecked, it is assumed that an FTP user already exists on the Prime Optical server workstation.
   c. Click Next.

Note The FTP information that you enter during the Prime Optical server installation can be modified later from the Prime Optical client Control Panel window. See the Cisco Prime Optical 9.3.1 User Guide for more information.

Step 8 At the Server IP Address screen, specify an IP address for the Prime Optical server; then, click Next.

Step 9 (For Solaris operating systems only; not applicable to Linux) At the Configure TFTP Server screen, do the following if you want to enable TFTP:
   a. Check the Enable TFTP Server check box.
   b. Enter the TFTP directory name. The default is /tftpboot.
   c. Click Next.

Step 10 At the Specify Cisco Prime Optical Database to Connect to screen, complete one of the following options, depending on the type of installation you are performing:
   - Standard dual server—Enter the IP address or hostname of the workstation where the Prime Optical database will run; then, click Next. See IPv4 address_2 in Figure 3-1 on page 3-8.
   - Dual server with a dedicated connection—Enter the IP address of the workstation where the Prime Optical database will run; then, click Next. See IP Address_4 in Figure 3-2 on page 3-9.

Caution Be sure to enter the correct IP address or hostname. Do not simply accept the default.

Note (For standard dual server only) If you entered a hostname, the setup program automatically translates the hostname to a physical IP address and prompts you to confirm the address. Click Yes.

Step 11 At the Destination Folder screen, specify where you want to install the Prime Optical server. The default directory is /cisco/PrimeOpticalServer. You can click Change to choose a different destination. After you specify your destination, click Next.
Chapter 5  Upgrading to Cisco Prime Optical 9.3.1 from an Earlier Release

Upgrading from CTM R9.2 and Oracle 10g to Prime Optical 9.3.1 and Oracle 11g on Separate Workstations

Note

- If the destination directory that you specified is a new directory, you will receive the message, “The specified directory does not exist. Do you want to create it?” Click Yes.
- Do not specify a mount point as the target installation directory for the Prime Optical server installation, or the installation data will be lost when the workstation restarts. You must create a dedicated Prime Optical subdirectory. For example, if /cisco is the mount point for the disk partition /dev/dsk/c0t0d0s5, you cannot specify /cisco as the Prime Optical installation directory. Instead, specify a dedicated subdirectory such as /cisco/PrimeOpticalServer.

Caution

Prime Optical checks for the /opt/CiscoTransportManagerServer directory or a symbolic link to it. If Prime Optical cannot find the /opt/CiscoTransportManagerServer directory or a symbolic link, Prime Optical creates a symbolic link automatically. Therefore, do not delete any instances of /opt/CiscoTransportManagerServer from your Prime Optical file structure.

Step 12

The Pre Installation Summary screen shows the items that will be installed. Click Install.

It might take 20 minutes or longer to install the server, depending on your system performance. The Web Server Installation Summary screen summarizes the results of the web server installation.

Step 13

Click Next.

The Upgrade Complete screen summarizes the results of the installation.

Step 14

Click Done.

Do not reboot the system at this time. Before rebooting, you must install the Prime Optical database, which you will do in a later section.

5.4.4 Upgrading the Database on the Prime Optical Database Workstation

Log in as the root user on the Prime Optical database workstation and do the following:

Step 1

If you are using an xterm window or a remote host, enter the following command to set the DISPLAY variable:

```
setenv DISPLAY hostname-or-IP-address:0.0
```

Step 2

Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the command output, you should see:

```
hostname-or-IP-address:0.0
```
Step 3 As the oracle user, enter the following commands to shut down Oracle:

```
su - oracle
sqlplus /nolog
SQL> connect / as sysdba
SQL> shutdown immediate
SQL> quit
lsnrctl stop
```

5.4.5 Upgrading from Oracle 10g to Oracle 11g (Not Embedded)

Log in as the root user and do the following:

Step 1 Copy file the oracle_migration.tar file from the installation disks (../Disk1/oracle_migration.tar) to a temporary directory on the workstation (for example, /temp).

Step 2 Enter the following command to untar the oracle_migration.tar in the temporary directory:

```
tar xvf oracle_migration.tar
```

Step 3 Check that the following files have been created under your temporary directory:

- .pre_migration.sh
- .post_migration.sh
- .sqlnet.ora
- .utlu112i.sql
- .ctms-env
- .cshrc
- .initCTM_0_small.ora
- .initCTM_1_small.ora
- .initCTM_medium.ora
- .initCTM_large.ora
- .initCTM_highend.ora

Step 4 Log in as root and run the pre_migration.sh script from your temporary directory. The script creates the following log files in /temp_CTM:

- pre_migration.log
- utlu112i.log

Wait until the following message appears:

```
End of script
```

Step 5 Complete the steps in A.2 Installing the Oracle 11g Software with the Response File (*.rsp) Provided by Cisco, page A-2.

Step 6 Complete the steps in A.3 Downloading and Installing the Required Oracle 11g Patches for 64-Bit Solaris or Linux Platforms, page A-4.
Chapter 5   Upgrading to Cisco Prime Optical 9.3.1 from an Earlier Release

5.4.6 Post Oracle 11g Migration Steps

Step 1  Log in as a root user and run the post_migration.sh script from your temporary directory. The script may take over two hours to complete and creates the following log files in /temp_CTM:

- post_migration.log (50Mb)
- upgrade.log
- catupgrd.log (50Mb)
- utlu112s.log
- catuppst.log
- utlrp.log

Wait until the following message appears:

End of script

Step 2  Enter the following commands to verify that the script was successful:

su - oracle
sqlplus /nolog
conn /as sysdba

The migration is successful when Connected appears.

Step 3  Enter the following command:

quit

Step 4  As root user, enter the following commands to create migration directories under /cisco/PrimeOpticalServer/log:

mkdir /cisco/PrimeOpticalServer/log/migration
chmod 777 /cisco/PrimeOpticalServer/log/migration

Step 5  Enter the following command to copy the contents of /temp_CTM to /cisco/PrimeOpticalServer/log/migration:

cp /temp_CTM/* /cisco/PrimeOpticalServer/log/migration

5.4.7 Upgrading from CTM 9.2 to Prime Optical 9.3.1

Step 1  Enter the following commands to shut down Oracle and the listener:

su - oracle
lsnrctl stop
sqlplus /nolog
SQL> connect / as sysdba
SQL> shutdown immediate
SQL> quit

Step 2  As the oracle user, enter the following commands:

chmod 777 $ORACLE_HOME/network/log
chmod 777 $ORACLE_HOME/network/trace
chmod +t $ORACLE_HOME/network/log
Step 3  As the root user, insert the Prime Optical Server Disk 1 installation DVD and enter the following commands:

```
cp DVD-mount-point/Disk1/InstData/VM/dbstart /oracle/product/11.2.0/bin/dbstart
chown oracle:dba /oracle/product/11.2.0/bin/dbstart
chmod +x /oracle/product/11.2.0/bin/dbstart
su - oracle
$ORACLE_HOME/bin/dbstart
lsnrctl start
```

Step 4  When migrating data, the migration could stall if the /temp directory contains temporary files left over from previous upgrades. Remove all temporary files from /temp before upgrading.

Step 5  Insert the Prime Optical Server Disk 1 installation DVD and enter the following commands:

```
cd DVD-mount-point/Disk1/setup.sh
```

The setup program searches for Sun Microsystems JDK version 1.6.0_24 on your workstation. Wait for up to 90 seconds while the following message appears:

Please wait, Cisco Prime Optical Server Release 9.3.1 is being configured for your system. This may take a moment...

Step 6  At the Introduction screen, click Next.

Step 7  At the License Agreement screen, read the license agreement and click the I accept the terms of the license agreement radio button. Click Next.

Step 8  At the Installation Options screen, verify that Upgrade from existing Prime Optical release is selected; then, click Next.

Step 9  At the Server Configuration screen, click Next to confirm the current configuration. The system performs a system check.

Step 10  The Pre Installation Summary screen shows the items that will be installed. Click Install. It might take 40 minutes or longer to upgrade the database, depending on your system performance.

Step 11  The Upgrade Database Complete screen summarizes the results of the upgrade. Click Done.

Step 12  Do the following to increase the size of the undo and temp directories:

a. Go to /opt/CiscoTransportManagerServer/bin.

b. Check the size of the following files:
   - `ls -lh /db01/CTM/undotbs01.dbf`
   - `ls -lh /db02/CTM/CTM_temp_1.dbf`

c. Specify a different location to store a copy of the preceding files.

d. Enter the following command to run the ctm_resize_undo_temp_tbls.sh script:

```
./ctm_resize_undo_temp_tbls.sh directory/undo_temp.dbf directory/temp_temp.dbf
```

where:

- `directory` is a partition or directory with enough space to store the two files.
- `undo_temp.dbf` and `temp_temp.dbf` are the names of temporary files.

A confirmation message appears when the operation is complete.

Step 13  As the root user, enter the following commands to create the Database read-only user:
setenv PYTHONPATH
/opt/CiscoTransportManagerServer/lib/python:/opt/CiscoTransportManagerServer/bin

/usr/bin/python (or /usr/sw/bin/python) -c "import manage_oracle_users;
manage_oracle_users.create_special_user('ctmreadonly',
'/opt/CiscoTransportManagerServer/cfg/oracle_users.cfg')"

Step 14  As the root user, enter the following command to reboot the system:
init 6

Step 15  After the system reboots, enter the following command to verify that the Oracle database and listener are running:
ps -ef | grep ora

The command output displays the tnslsnr and ora_[...].Oracle-SID processes.

5.4.8 Verifying the Oracle Client Installation on the Prime Optical Server Workstation and Restarting the Prime Optical Server

Log in as the root user on the workstation where the Prime Optical server is installed and do the following:

Step 1  Enter the following command to reboot the system:
init 6

The Prime Optical server starts automatically after rebooting.

Step 2  To verify that the Prime Optical server is running, enter the opticalctl status command after the server reboots. The opticalctl status command displays the Prime Optical server version running as 9.3.1, followed by the build number. In the command output, you should see two instances of “Prime Optical Server,” “SnmpTrapService,” “SMService,” “Apache Web Server,” and “OrchestrationService.” This indicates that the server is running.

Step 3  If the following error is returned on the command prompt for the web server, do the following:
(125)Address already in use: make_sock: could not bind to address IP-address no listening sockets available, shutting down

a. Enter the following command on the server workstation; then, kill the processes listed:
   ps -ef | grep httpd | grep CiscoTransportManagerServer | grep -v grep

b. Enter the following command to shut down the Prime Optical server:
opticalctl stop

c. Enter the following command to restart the Prime Optical server and the latest installed web server:
opticalctl start
5.5 Upgrading from Prime Optical 9.3 to Prime Optical 9.3.1

Log in as the root user on the workstation where the Prime Optical server will run and do the following:

---

**Step 1** Verify that your server has enough RAM available for your network size. See 2.1.1 Server Specifications, page 2-3 for details.

**Step 2** Enter the following command to verify whether the Prime Optical 9.3 server is running:

```
showctm
```

If the Prime Optical server is running, enter the following command to stop it before performing the upgrade:

```
ctms-stop
```

**Step 3** For Linux operating systems, check to see if the /etc/oratab file exists. If it does not exist, do the following:

a. Enter the following command to copy the contents of the oratab file in the /etc/oratab directory:

```
cp /var/opt/oracle/oratab /etc/oratab
```

b. Enter the following command to remove /var/opt/oracle/oratab:

```
rm /var/opt/oracle/oratab
```

c. Enter the following commands to create a soft link to /etc/oratab:

```
cd /var/opt/oracle
ln -s /etc/oratab oratab
```

**Step 4** Identify a directory with at least 3 GB of free space and download the script:


b. At the Select a Product screen, select **Cisco Prime Optical**.

c. Click **Cisco Prime Optical 9.3**.

d. In the left pane, select **9.3.1.129.1**.

e. In the right pane, click the **Download Now** button next to the appropriate file:

   - (Solaris) **PrimeOptical_upgrade_9.3.1_Solaris.tar.zip**
   - (Linux) **PrimeOptical_upgrade_9.3.1_Linux.tar.zip**

f. At the Log In screen, enter your registered Cisco.com username and password; then, click **Log In**.

---

**Note** If you do not have a Cisco.com username and password, you can register for them at [http://tools.cisco.com/RPF/register/register.do](http://tools.cisco.com/RPF/register/register.do).

---

**Step 5** Enter the following commands:

---

**Step 2** Enter the following command to verify whether the Prime Optical 9.3 server is running:

```
showctm
```

If the Prime Optical server is running, enter the following command to stop it before performing the upgrade:

```
ctms-stop
```

**Step 3** For Linux operating systems, check to see if the /etc/oratab file exists. If it does not exist, do the following:

a. Enter the following command to copy the contents of the oratab file in the /etc/oratab directory:

```
cp /var/opt/oracle/oratab /etc/oratab
```

b. Enter the following command to remove /var/opt/oracle/oratab:

```
rm /var/opt/oracle/oratab
```

c. Enter the following commands to create a soft link to /etc/oratab:

```
cd /var/opt/oracle
ln -s /etc/oratab oratab
```

**Step 4** Identify a directory with at least 3 GB of free space and download the script:


b. At the Select a Product screen, select **Cisco Prime Optical**.

c. Click **Cisco Prime Optical 9.3**.

d. In the left pane, select **9.3.1.129.1**.

e. In the right pane, click the **Download Now** button next to the appropriate file:

   - (Solaris) **PrimeOptical_upgrade_9.3.1_Solaris.tar.zip**
   - (Linux) **PrimeOptical_upgrade_9.3.1_Linux.tar.zip**

f. At the Log In screen, enter your registered Cisco.com username and password; then, click **Log In**.

---

**Note** If you do not have a Cisco.com username and password, you can register for them at [http://tools.cisco.com/RPF/register/register.do](http://tools.cisco.com/RPF/register/register.do).

---

**Step 5** Enter the following commands:
Verifying That the Oracle and Prime Optical Server Processes Are Running

After installation, do the following to verify that the Oracle and Prime Optical server processes are running:

Step 1 Enter the following commands on the Prime Optical database workstation to verify that Prime Optical database is running:

```
su - oracle
sqlplus ctmanager/password-for-ctmanager-oracle-user
```

Note The default password for the ctmanager oracle user is *ctm123!*

In the command output, you should see:
```
Connected to:
Oracle11g...
```

Step 2 Enter the following command to exit SQL*Plus:

```
exit
```

Step 3 Log into the Prime Optical server workstation as the root user.

Step 4 Enter the following command to verify that the Prime Optical 9.3.1 server is running:
opticalctl status

In the command output, you should see “Prime Optical Server,” “SnmpTrapService,” “SMService,” “Apache Web Server,” and “OrchestrationService.” This indicates that the Prime Optical server is running. You should also see some NE-specific processes, depending on your network. You might also see Prime Optical GateWay/CORBA instances.

If the Prime Optical server is not running, enter the following command:

```bash
opticalctl start
```

If the following error is returned on the command prompt for the web server, do the following:

```
(125)Address already in use: make_sock: could not bind to address IP-address
no listening sockets available, shutting down
```

a. Enter the following command on the server workstation; then, kill the processes listed:

```bash
ps -ef | grep httpd | grep CiscoTransportManagerServer | grep -v grep
```

b. Enter the following command to shut down the Prime Optical server:

```bash
opticalctl stop
```

c. Enter the following command to restart the Prime Optical server and the latest installed web server:

```bash
opticalctl start
```

If you do not have root user privileges but you belong to the UNIX group that can use sudo functionality to run commands as nonroot, enter the following command:

```bash
sudo opticalctl start
```

## 5.7 Upgrading the Prime Optical Network Configuration Size

**Note**

- You can complete this procedure whether you are installing Prime Optical as a new installation or upgrading from an earlier release.
- If the Prime Optical server and Oracle are installed on separate workstations, you can upgrade the Prime Optical network size on the workstation where Oracle is installed.

**Step 1**

Enter the following command to verify whether the Prime Optical 9.3.1 server is running:

```bash
opticalctl status
```

If the Prime Optical server is running, enter the following command to stop it:

```bash
opticalctl stop
```

**Step 2**

As the root user, insert the Prime Optical Server Disk 1 installation DVD and enter the following commands:

```bash
cd DVD-mount-point/Disk1/setup.sh
```

Wait for up to 90 seconds while the following message appears:
Please wait, Cisco Prime Optical Server Release 9.3.1 is being configured for your system. This may take a moment...

Step 3  At the Introduction screen, click Next.

Step 4  At the License Agreement screen, read the license agreement and click the I accept the terms of the license agreement radio button. Click Next.

Step 5  At the Installation Options screen, choose Upgrade Cisco Prime Optical network configuration size.

Step 6  Click Next.

Step 7  At the Select Network Configuration screen, specify the size of your network; then, click Next.

Note  You can upgrade the network configuration only if your network size is medium or large. Small and high-end configurations cannot be upgraded.

Step 8  At the Update System Parameters screen, choose Optimize Cisco Prime Optical database parameters and Optimize Cisco Prime Optical server parameters. (Both options are selected by default.) Click Next.

Step 9  At the Pre Installation Summary screen, click Install.

Step 10 As the root user, enter the following command to reboot the system:

```
init 6
```

The Prime Optical server starts automatically after rebooting. After the server reboot, it might take up to 20 minutes for the server to come up.

Step 11 As the root user, enter the following commands to create the Database read-only user:

```
setenv PYTHONPATH
/opt/CiscoTransportManagerServer/lib/python:/opt/CiscoTransportManagerServer/bin
/usr/bin/python (or/usr/sfw/bin/python) -c "import manage_oracle_users;
manage_oracle_users.create_special_user('ctmreadonly',
'./opt/CiscoTransportManagerServer/cfg/oracle_users.cfg')"
```

5.8 Upgrading the Performance of the Oracle Database

See 3.4 Upgrading the Performance of the Oracle Database, page 3-19.
Installing Cisco Prime Optical 9.3.1 GateWay/CORBA

The Cisco Prime Optical 9.3.1 GateWay/CORBA option is a CORBA-based interface that provides higher-layer management systems with information for all Prime Optical-supported NEs. This chapter describes how to install Prime Optical GateWay/CORBA after installing the Prime Optical server.

Caution
A reliable network connection is required when carrying out an installation on a remote workstation.

Note
For more information about CORBA support, including how to configure Prime Optical GateWay/CORBA, see the Cisco Prime Optical 9.3.1 GateWay/CORBA User Guide and Programmer Manual.

This chapter contains the following sections:

- 6.1 Installing Prime Optical GateWay/CORBA, page 6-1
- 6.2 Re-enabling Prime Optical GateWay/CORBA After Reinstalling the Prime Optical Database, page 6-3

6.1 Installing Prime Optical GateWay/CORBA

Note
- You must install Prime Optical GateWay/CORBA on the same workstation as the Prime Optical server. During the Prime Optical GateWay/CORBA installation, you do not need to shut down the Prime Optical server.
- The Prime Optical database must be up and running before you install Prime Optical GateWay/CORBA.

Step 1
(For Solaris operating systems only; not applicable to Linux) Log into the Prime Optical server workstation as the root user. The C shell (csh) is recommended. To start the C shell, enter the following command:

```
/bin/csh
```
Step 2 Enter the following command to set the DISPLAY variable:

```
setenv DISPLAY hostname-or-IP-address:0.0
```

Step 3 Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
hostname-or-IP-address:0.0
```

Step 4 If you are using an xterm window or a remote host, enter the following command to enable the xterm connection from the clients:

```
xhost +
```

The default path is one of the following:

- (Solaris) /usr/openwin/bin
- (Linux) /usr/bin

Step 5 Before you install Prime Optical GateWay/CORBA, Oracle must be running. Enter the following command on the Prime Optical database server to determine whether Oracle processes are running:

```
ps -ef | grep ora
```

The command output is similar to the following:

```
oracle 20557  1  0 Sep 25 ?  0:00 oracleCTM (LOCAL=NO)
oracle 1216  1  0 Sep 17 ?  0:42 ora_q001_CTM
oracle 20599  1  0 Sep 25 ?  0:05 oracleCTM (LOCAL=NO)
oracle 770  1  0 Sep 17 ?  24:11 ora_pmon_CTM
oracle 20607  1  0 Sep 25 ?  0:05 oracleCTM (LOCAL=NO)
oracle 790  1  0 Sep 17 ?  9:34 ora_lgwr_CTM
oracle 773  1  0 Sep 17 ?  1:45 ora_psp0_CTM
oracle 779  1  0 Sep 17 ?  2:02 ora_mman_CTM
oracle 784  1  0 Sep 17 ?  3:55 ora_dbw0_CTM
oracle 803  1  0 Sep 17 ?  27:25 ora_ckpt_CTM
oracle 808  1  0 Sep 17 ?  2:29 ora_mman_CTM
oracle 812  1  0 Sep 17 ?  0:02 ora_reco_CTM
oracle 818  1  0 Sep 17 ?  39:32 ora_cqj0_CTM
oracle 838  1  0 Sep 17 ?  66:10 ora_mmm1_CTM
oracle 832  1  0 Sep 17 ?  10:27 ora_mmon_CTM
oracle 1181  1  0 Sep 17 ?  0:50 ora_cmnc_CTM
oracle 1198  1  0 Sep 17 ?  0:00 ora_q000_CTM
oracle 20589  1  0 Sep 25 ?  0:05 oracleCTM (LOCAL=NO)
oracle 20749  1  0 Sep 25 ?  0:00 oracleCTM (LOCAL=NO)
oracle 7316  1  0 09:13:02 ?  0:00
/oracle/product/11.2.0/bin/tnslsnr LISTENER -inherit
oracle 20741  1  0 Sep 25 ?  0:00 oracleCTM (LOCAL=NO)
```

Step 6 Depending on your configuration, insert one of the following DVDs into the DVD drive:

- Cisco Prime Optical Server installation DVD—Linux
- Cisco Prime Optical Server installation DVD—Solaris

Step 7 Enter the following commands:

```
    cd/
    DVD-mount-point/Disk1/setup.sh
```
The installation begins. Wait for up to 90 seconds while the following message appears:

Please wait, Cisco Prime Optical Server Release 9.3.1 is being configured for your system. This may take a moment...

**Step 8** At the Introduction screen, click Next.

**Step 9** At the License Agreement screen, read the license agreement and click the I accept the terms of the license agreement radio button. Click Next.

**Step 10** At the Installation Options screen, check Cisco Prime Optical GateWay/CORBA; then, click Next.

**Step 11** The Pre-Installation Summary screen shows the items that will be installed. Click Install.

**Step 12** The Install Complete screen summarizes the results of the installation. Click Done.

### 6.2 Re-enabling Prime Optical GateWay/CORBA After Reinstalling the Prime Optical Database

If you reinstall the Prime Optical database on the workstation where Prime Optical GateWay/CORBA is installed, the Prime Optical GateWay/CORBA node will be disabled in the Control Panel window.

To re-enable the Prime Optical GateWay/CORBA node in the Control Panel, run the update_config_for_gwcorba.sh script located in the /opt/CiscoTransportManagerServer/bin directory.
Chapter 6  Installing Cisco Prime Optical 9.3.1 GateWay/CORBA

Re-enabling Prime Optical GateWay/CORBA After Reinstalling the Prime Optical Database
Installing the Cisco Prime Optical 9.3.1 Client

This chapter describes how to install and start the Cisco Prime Optical 9.3.1 client on Windows, Solaris, or Linux. When you install the Prime Optical client, you automatically install Cisco Edge Craft, the local craft application used to manage ONS 15305 NEs.

- You can have multiple versions of the Windows Prime Optical client installed simultaneously (in different folders). When installing the Prime Optical client, you can remove earlier versions or leave them installed.
- You must have administrator privileges on the local workstation. The client software must be shut down before you install the Prime Optical client.
- Cisco Edge Craft is not supported on Windows 7 client workstations.
- Cisco Edge Craft is an SNMP-based application. Verify that the workstation performing the installation can reach the ONS 15305 devices through UDP port 161, before launching Cisco Edge Craft.

This chapter contains the following sections:

- 7.1 Installing the Prime Optical Client, page 7-1
- 7.2 Logging Into the Prime Optical Client on Windows, page 7-2
- 7.3 Starting Cisco Edge Craft on Windows, page 7-4
- 7.4 Starting Cisco Edge Craft on Solaris or Linux, page 7-4
- 7.5 Configuring Windows 7 to Launch Cisco Transport Controller, page 7-5
- 7.6 Specifying the Default Browser to Display the Online Help, page 7-5
- 7.7 Special Considerations when Proxy Server Is Enabled, page 7-6
- 7.8 Verifying the Mozilla Firefox Version for Solaris or Linux, page 7-6

7.1 Installing the Prime Optical Client

The Prime Optical client uses Java Web Start technology. When the Prime Optical administrator updates or patches the server, the client is updated automatically.
To launch the Prime Optical client on your workstation:

**Step 1** Enter the following URL in your web browser:

```
http://server-name
```

where *server-name* is the name of the server where Prime Optical is installed.

**Step 2** In the Cisco Prime Optical login screen, click **Start**.

Depending on your browser, one of the following occurs:

- If you are using Internet Explorer, the Prime Optical client is installed automatically.
- If you are using Mozilla Firefox, you are prompted to open the PrimeOptical.jnlp file or save it to your desktop. After you open and run the .jnlp file, the Prime Optical client is installed automatically.
- The Java Runtime Engine (JRE) 1.6 must be installed on the machine. If the client does not start, check that the Java Web Start is associated to the browser with the correct javaws.

For Windows operating systems, the installer creates the following:

- A Prime Optical desktop icon
- A shortcut in the Windows Start menu.
- A C:\Cisco\PrimeOptical_9.3.1 installation folder which contains all of the installation-related files.

For Solaris and Linux operating systems, the installer creates a /cisco/PrimeOptical_9.3.1 installation folder, that contains all of the installation-related files.

## 7.2 Logging Into the Prime Optical Client on Windows

The following procedure applies only when Prime Optical is installed as a standalone product. When Prime Optical is installed as part of the Prime Central suite, the suite offers single sign-on (SSO). With SSO, when you log into the Prime Central portal, you do not have to log in separately to Prime Optical.

**Step 1** After you install the Prime Optical client, the Cisco Prime Optical - Login window opens.

For subsequent logins, you can do one of the following to launch the Prime Optical client:

- Enter `http://server-name` in a browser and click the **Start** button.
- Double-click the Prime Optical desktop icon.
- Navigate to the Start menu shortcut.
- On the workstation where the Prime Optical server is installed, enter the following command:
  ```
  opticalctl client
  ```

**Step 2** The first time you log in, enter the default username and password:

- Username: **SysAdmin**
- Password: **Ctm123!**
Chapter 7      Installing the Cisco Prime Optical 9.3.1 Client

Logging Into the Prime Optical Client on Windows

Note
The username and password are case sensitive. After you enter the password, the Password field displays a fixed-length string of 15 asterisks (*), regardless of the actual length of the password.

Step 3
Complete one of the following options to specify the server to connect to:

- If you want the Prime Optical client to connect to the Prime Optical server directly (without going through a SOCKS server), enter the server IP address or hostname in the Server field.

  Note
  Do not enter a hostname unless Domain Name System (DNS) is enabled in your network. If you are installing Prime Optical as part of the Prime Central suite, DNS must be enabled on the Prime Optical client.

- If you want to configure a SOCKS v5 proxy server IPv4 address and port value to manage connectivity through network firewalls, do the following:
  - Click Configure Settings. The Configure Settings dialog box opens.
  - Check the Connect server Through SOCKS Server check box. Then, for the SOCKS host, enter the hostname or IP address and the TCP port number.
  - (Optional) Check the Save as Default check box to save the SOCKS settings for the next time you log in.
  - Click Save. The Configure Settings dialog box closes.

Note
Click Show Advisory Message to view the default login text, which can be customized to display information for the particular server that you want to connect to. To display your own custom message, you must create a text file that contains your custom text. Save the file with the filename OtherLegal.txt in the /opt/CiscoTransportManagerServer/webServer/htdocs/config directory.

By default, the /config directory does not exist in the original installation. To create the directory, enter the following commands as the root user:

```bash
cd /opt/CiscoTransportManagerServer/webServer/htdocs
mkdir config
```

Step 4
Click Login.

Step 5
Click OK at the advisory message.

Step 6
By default, for security reasons you are prompted to change the password after you log in for the first time. Click Yes. The password complexity is configurable in the Control Panel > Security Properties pane. By default, the password must:

- Contain at least six characters, but not more than 15 characters.
- Contain at least two alphabetic characters (A–Z, a–z). Of the alphabetic characters, at least one must be uppercase and one must be lowercase.
- Contain at least one numeric character (0–9).
- Contain at least one special character (+ # % , ; & !). The default special character set is TL1+UNIX.
- Allow a special character as the first or last character.
- Allow a numeric character as the first or last character.
Starting Cisco Edge Craft on Windows

Step 1 Choose Start > Programs > Accessories > Command Prompt to open a Windows DOS Command Prompt window.

Step 2 Change directories to the Prime Optical-home-directory/CiscoEdgeCraft/bin directory.

Step 3 Double-click the CiscoEdgeCraft.exe file. The Cisco Edge Craft login screen appears.

Note It is not necessary to restart the workstation.

Step 4 At the Cisco Edge Craft login screen, do the following:
   a. Enter the IP address of the NE that you want to connect to.
   b. Ignore the User field.
   c. Enter the Password string.
      The password string represents the NE community string, which is set in the NE flash memory by using the command-line interface (CLI).
   d. Click Logon.

Starting Cisco Edge Craft on Solaris or Linux

Step 1 Depending on the option you chose during installation, execute the link that you specified, or enter the following command:

```
/opt/CiscoTransportManagerClient/CiscoEdgeCraft/bin/CiscoEdgeCraft
```

Step 2 At the Cisco Edge Craft login screen, do the following:
   a. Enter the IP address of the NE that you want to connect to.
   b. Ignore the User field.
   c. Enter a password string. The password string represents the NE community string, which is set in the NE flash memory by using the CLI.
d. Click Logon.

### 7.5 Configuring Windows 7 to Launch Cisco Transport Controller

If you plan to use Cisco Transport Controller (CTC) on a Windows 7 workstation, do the following:

**Step 1** In Internet Explorer 8, disable the Protected Mode for a zone:

- Choose **Tools > Internet Options**.
- Click the **Security** tab.
- Select the appropriate zone; then, uncheck the **Enable Protected Mode** check box.

The Protected Mode status ("Protected Mode: On" or "Protected Mode: Off") is visible in the bottom right corner of the IE status bar.

**Step 2** Configure the security zone level to Medium.

**Step 3** Disable automatic TCP tuning. To do this, open the CMD prompt and enter the following command:

```bash
netsh interface tcp set global autotuninglevel=disabled
```

**Note** To re-enable automatic tuning, enter:

```bash
netsh interface tcp set global autotuninglevel=normal
```

Note, however, that you cannot use CTC on a Windows 7 workstation when automatic tuning is enabled.

### 7.6 Specifying the Default Browser to Display the Online Help

In Windows, Prime Optical uses the default browser to display the online help. If you want to use a specific browser to launch the online help, make that the default browser for your workstation.

**Note** During testing, Cisco uses Internet Explorer and Mozilla Firefox to display the online help; other browsers have not been tested.

The online help for Cisco Edge Craft requires Adobe Acrobat Reader. Acrobat Reader is not required in your path environment variable, but the PDF file type must be associated with Acrobat Reader.
On Solaris, the online help for Cisco Edge Craft requires Adobe Acrobat Reader to be installed and included in your path environment variable.

Tip

If you cannot launch the online help, open a command prompt from another window and enter the `xhost +` command (usually `/usr/openwin/bin [Solaris]` or `/usr/bin [Linux]`) and the full path name. Also, verify that the DISPLAY variable is set correctly.

### 7.7 Special Considerations when Proxy Server Is Enabled

If you are using a proxy-server enabled web browser, complete one of the following options, depending on your browser type.

For Internet Explorer, do the following:

**Step 1** Choose **Tools > Internet Options**.

**Step 2** Click the **Connections** tab.

**Step 3** Click the **LAN Settings** button.

**Step 4** Complete one of the following options:

- Uncheck the **Use a proxy server for your LAN** check box.
- If the **Use a proxy server for your LAN** check box must remain checked, click **Advanced**. Enter your server IP address in the **Do not use proxy server addresses beginning with** field. Separate each address with a semicolon.

**Step 5** Click **OK**.

For Mozilla Firefox, do the following:

**Step 1** Choose **Edit > Preferences**.

**Step 2** Expand **Advanced** and choose **Proxies**.

**Step 3** Complete one of the following options:

- If you do not want to use a proxy, click **Direct connection to the Internet**.
- If you do not have a proxy location (URL), click **Manual proxy configuration**. In the **No Proxy for** field, enter the domains that you do not want to use a proxy for. Use a comma to separate domains.

**Step 4** Click **OK**.

### 7.8 Verifying the Mozilla Firefox Version for Solaris or Linux

To verify the Mozilla Firefox version for the Solaris or Linux client, enter the following command on the command line:

```
which mozilla
```
If the `which mozilla` command returns output that is similar to the following, Mozilla Firefox is not in your path:

```
no mozilla found /usr/bin /usr/bin/bin ..... 
```

**Step 2** To correct the path, enter the following commands:

```
ln -s /usr/sfw/bin/mozilla /usr/bin/mozilla
which mozilla
```

**Step 3** Verify that the `which mozilla` command output reads as follows:

```
/usr/bin/mozilla
```

**Step 4** To verify the correct version of Mozilla Firefox, enter the following command:

```
mozilla -version
```

**Step 5** Verify that in the output, you see the correct Mozilla Firefox version:

```
Mozilla 3.6, ...
```
Verifying the Mozilla Firefox Version for Solaris or Linux
Installing and Patching Oracle

This section provides supporting information to assist you with the Oracle 11g installation.

Note

- Oracle 11g is available only for a 64-bit architecture.
- Use the information in this section in conjunction with the Oracle documentation available on the Oracle website.

A.1 Oracle Prerequisites

Before you install Oracle 11g, verify that:

- Oracle is not running
- The oracle UNIX user exists and is configured correctly
- One of the following DVDs is in the disk drive:
  - Cisco Prime Optical Server installation DVD—Linux
  - Cisco Prime Optical Server installation DVD—Solaris

Step 1
Enter the following command to create a UNIX group for database administrators:

```
groupadd -g 3303 dba
```  

Step 2
Enter the following command to create a UNIX group for installation of the Oracle software:

```
groupadd oinstall
```  

Step 3
Enter the following command to create a UNIX account to own the Oracle software:

```
useradd -g oinstall -G dba -m -s /bin/csh -d /oracle oracle
```  

Step 4
Enter the following command to change the Oracle user password:

```
pwd oracle
```  

Step 5
Enter the new password and then re-enter it to confirm it.
Appendix A      Installing and Patching Oracle

A.2 Installing the Oracle 11g Software with the Response File (*.rsp) Provided by Cisco

Step 1  Enter the following command to copy the default profile to the Oracle home directory:
        
        cp DVD-mount-point/Disk1/oracle.cshrc /oracle/.cshrc

Step 2  Enter the following command for 64-bit Oracle Enterprise Edition:
        
        For Solaris, enter:
        cp DVD-mount-point/Disk1/oracle11_enterp.rsp /oracle
        
        For Linux, enter:
        cp DVD-mount-point/Disk1/oracle11_enterp_linux.rsp /oracle

Step 3  Enter the following commands to change ownership of the Oracle software directories:
        
        chown -R oracle:dba /oracle
        chown -R oracle:dba /db01
        chown -R oracle:dba /db02
        chown -R oracle:dba /db03
        chown -R oracle:dba /db04
        chown -R oracle:dba /db05
        chown -R oracle:dba /ctm_backup

Step 4  If you are using db01_rd or db02_rd, enter the following commands to change ownership of the Oracle software directories:
        
        chown -R oracle:dba /db01_rd
        chown -R oracle:dba /db02_rd

Step 5  Enter the following command to add read-write permissions:
        
        chmod +rw /oracle/.cshrc

Step 6  Follow the preinstallation steps in the Oracle 11g Installation Guide for Solaris or Linux, available on the Oracle website. Note the following constraints:
        
        • No RAC configuration
        • No ASM configuration
        • Linux 64-bit
        • No Oracle application server

Step 7  Enter the following command to log in as the oracle user:
        
        su - oracle

Step 8  Depending on the distribution media of the Oracle software, change to the directory where the runInstaller application is located. For example, if you are using a DVD, enter:
        
        cd /dvd/dvd0

Step 9  Enter the following command to set the display on your terminal:
        
        setenv DISPLAY hostname-or-IP-address:0.0

Step 10 Enter the following command to verify that the display is set correctly:
echo $DISPLAY

In the command output, you should see:
hostname-or-IP-address:0.0

If you are using an xterm window or a remote host, as a root user enter the following command to enable the xterm connection from clients:

xhost +

The default path is one of the following:
- (Solaris) /usr/openwin/bin
- (Linux) /usr/bin

**Step 11**
Enter the following command to start the Oracle installer:

- For Solaris, enter:
  . /runInstaller -silent -responseFile /oracle/oracle11_enterp.rsp &

- For Linux, enter:
  . /runInstaller -silent -responseFile /oracle/oracle11_enterp_linux.rsp &

When this step is complete, you will be prompted to run several shell scripts as root. Instead, press the Enter key to return to the prompt.

---

**Note**
- If you do not have a DVD, see your Oracle documentation for instructions on how to download and extract the correct software for the installation.
- When carrying out the steps in this section, see the Oracle Content Database Installation Guide on the Oracle website.

---

**Step 12**
Enter the following commands to create the local/bin directory:

cd /oracle/product/11.2.0
mkdir -p local/bin

If you were prompted to run the /oracle/product/11.2.0/root.sh script, log into another terminal window as the root user and do the following:

a. Enter the following command:

   cd /oracle/product/11.2.0

b. Enter the following command to run the root.sh script:

   . /root.sh

---

**Step 13**
Because the client static library is not generated during installation, you must do the following to generate and link your applications to the client static library:

a. Go back to the terminal window where you are logged in as the Oracle user.

b. Enter the following command to generate the client static library:

   $ORACLE_HOME/bin/genclntst
A.3 Downloading and Installing the Required Oracle 11g Patches for 64-Bit Solaris or Linux Platforms

See the Oracle installation documentation to install the patches listed in Table A-1. You must install the Oracle patches in the exact order shown.

<table>
<thead>
<tr>
<th>Table A-1</th>
<th>Oracle 11g Patches for Solaris and Linux</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Installation Order</strong></td>
<td><strong>Patch Number</strong></td>
</tr>
<tr>
<td>Solaris</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

| Linux     | 1 | 6880880 | p6880880_112000_Linux-x86-64.zip | Installs the new OPatch version. |
|           | 2 | 10248516 | p10248516_112010_Linux-x86-64.zip | Installs Oracle 11.2.0.1.4. |
|           | 3 | 6904068 | p6904068_112014_Linux-x86-64.zip | — |
|           | 4 | 10126094 | p10126094_112014_Linux-x86-64.zip | — |

A.4 Installing the Oracle Client on the Prime Optical Server Workstation

Complete the following steps to install the Oracle client software on a Solaris or Linux server to meet the Prime Optical server requirements for a remote database configuration.

**Note**
You must be a root user to complete this procedure.

**Step 1**
Depending on your configuration, insert one of the following DVDs into the DVD drive:
- Cisco Prime Optical Server installation DVD—Linux
- Cisco Prime Optical Server installation DVD—Solaris

**Step 2**
Enter the following command to copy the default profile to the Oracle home directory:

```
cp DVD-mount-point/Disk1/oracle.cshrc /oracle/.cshrc
```

**Step 3**
Choose a value for the Oracle SID. The default value for the Oracle SID is CTM.
- If you want to keep CTM as the Oracle SID, proceed to Step 4.
- If you want to use a different Oracle SID, use a text editor to edit the /oracle/.cshrc file. In the following line, replace CTM with the desired Oracle SID value:

```
setenv ORACLE_SID CTM
```
Step 4  Enter the following command to copy the response files to your workstation:

- For Solaris, enter:
  \[ cp \text{ DVD-mount-point/Disk1/oracle11_client.rsp } /\text{oracle} \\]
- For Linux, enter:
  \[ cp \text{ DVD-mount-point/Disk1/oracle11_client_linux.rsp } /\text{oracle} \\]

Step 5  Enter the following commands to eject the Prime Optical installation DVD:

  \[ cd / \\]
  \[ eject \text{ cdrom} \\]

Step 6  Enter the following command to change ownership of the Oracle software directories:

  \[ chown -R \text{ oracle:dba } /\text{oracle} \\]

Step 7  Enter the following command to add read-write permissions:

  \[ chmod +rw /\text{oracle/.cshrc} \\]

Step 8  Enter the following command to log in as the oracle user:

  \[ su - oracle \\]

Tip  To verify the username, enter the \texttt{id} command.

Step 9  Insert the disk for the Oracle Database 11g Client release 2 (11.2) installation.

Step 10 Enter the following command to set the display on your terminal:

  \[ setenv \text{ DISPLAY hostname-or-IP-address:0.0} \]

Step 11 Enter the following command to verify that the display is set correctly:

  \[ echo \$\text{DISPLAY} \\]

  In the command output, you should see:

  \[ hostname-or-IP-address:0.0 \]

Step 12 If you are using an xterm window or a remote host, as a root user enter the following command to enable the xterm connection from the clients:

  \[ xhost + \]

  The default path is one of the following:

  - (Solaris) /usr/openwin/bin
  - (Linux) /usr/bin

Step 13 Depending on the distribution media of the Oracle software, insert the DVD or use the image provided on the Oracle website.

Note  If you do not have a DVD, see your Oracle documentation for instructions on how to download and extract the correct software for the installation.

Step 14 Depending on the distribution media of the Oracle software, change to the directory where the application runInstaller is located. For example, if you are using a DVD, enter:
Step 15 Enter the following command to install the Oracle client:

- For Solaris:
  ```
  ./runInstaller -silent -responseFile /oracle/oracle11_client_solaris.rsp
  ```

- For Linux:
  ```
  ./runInstaller -silent -responseFile /oracle/oracle11_client_linux.rsp
  ```

Step 16 If you are prompted to run the `/oracle/oraInventory/orainstRoot.sh` script, log into another terminal window as the root user and enter the following commands:

  ```
  cd /oracle/oraInventory
  ./orainstRoot.sh
  ```

**Note** The Installer does not prompt you to run the orainstRoot.sh script if you have a previous version of Oracle installed on your workstation or if the oratab file already exists on your workstation. In a Solaris setup, the oratab file is located in the `/var/opt/oracle` directory. In a Linux setup, the oratab file is located in the `/etc` directory.

Step 17 If you are prompted to run `/oracle/product/11.2.0/root.sh` from another window, log into another terminal window as the root user and enter the following command:

  ```
  cd /oracle/product/11.2.0
  ```

Step 18 Enter the following command to run the root.sh script:

  ```
  ./root.sh
  ```

Step 19 At the prompt for the local bin directory, enter the following command in the root.sh script:

  ```
  /oracle/product/11.2.0/local/bin
  ```

Step 20 Return to the Oracle Setup Privileges screen and click **OK**.

Step 21 Enter the following command to change permissions for sqlplus:

  ```
  chmod 755 /oracle/product/11.2.0/bin/sqlplus
  ```

Step 22 For Solaris operating systems, edit the `/var/opt/oracle/oratab` file by adding the following line as the first line in the file:

  ```
  Oracle-SID:/oracle/product/11.2.0:Y
  ```

  For example, if the **Oracle-SID** is CTM, add the following line:

  ```
  CTM:/oracle/product/11.2.0:Y
  ```

Step 23 For Linux operating systems, edit the `/etc/oratab` file by adding the following line as the first line in the file:

  ```
  Oracle-SID:/oracle/product/11.2.0:Y
  ```

  For example, if the **Oracle-SID** is CTM, add the following line:

  ```
  CTM:/oracle/product/11.2.0:Y
  ```

Step 24 Enter the following command to create the network/admin directory:
cd /oracle/product/11.2.0
mkdir -p network/admin

**Step 26** Enter the following command to change folder ownership:
chown -R oracle:dba network
Understanding Installation Error Messages

B.1 Prime Optical Client Installation Error Messages

The following table lists the error messages that you might encounter during the Prime Optical client installation and recommends solutions.

<table>
<thead>
<tr>
<th>Error Message</th>
<th>Recommended Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>EID-1: Enter the destination directory.</td>
<td>Specify the destination location.</td>
</tr>
<tr>
<td>EID-2: Physical memory on your machine is less than 256 MB; Cisco Transport</td>
<td>Upgrade the system RAM or install the software on another workstation.</td>
</tr>
<tr>
<td>Manager might not perform as expected.</td>
<td></td>
</tr>
<tr>
<td>EID-3: Please select either desktop menu or Shortcut menu or both to proceed.</td>
<td>Specify whether you want to create a Prime Optical desktop icon, a Prime Optical</td>
</tr>
<tr>
<td></td>
<td>shortcut in the Start menu, or both.</td>
</tr>
<tr>
<td>EID-24: Not enough space in the selected disk drive. Please choose a different</td>
<td>Choose a disk drive that has enough space.</td>
</tr>
<tr>
<td>disk drive.</td>
<td></td>
</tr>
<tr>
<td>EID-26: Error occurred while extracting the files. Please check disk space and</td>
<td>Verify that the system has enough disk space; then, reinstall the Prime Optical</td>
</tr>
<tr>
<td>reinstall.</td>
<td>client.</td>
</tr>
<tr>
<td>Warning: The installation will write over an existing installation. Press</td>
<td>Click Previous and select a new installation location.</td>
</tr>
<tr>
<td>“Previous” if you want to change the install folder.</td>
<td></td>
</tr>
<tr>
<td>Error: The installation of Cisco Edge Craft will overwrite the CTM client</td>
<td>Click Previous and select a new installation location.</td>
</tr>
<tr>
<td>installation.</td>
<td></td>
</tr>
</tbody>
</table>
B.2 Prime Optical Server Installation Error Messages

The following table lists the error messages that you might encounter during the Prime Optical server installation and recommends solutions.

<table>
<thead>
<tr>
<th>Error Message</th>
<th>Recommended Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>EID-26: Enter a directory for the CTM Index tablesapce.</td>
<td>Enter the directory name.</td>
</tr>
<tr>
<td>EID-27: Enter a directory for the CTM Data1 tablesapce.</td>
<td>Enter the directory name.</td>
</tr>
<tr>
<td>EID-28: Enter a directory for the CTM Data2 tablesapce.</td>
<td>Enter the directory name.</td>
</tr>
<tr>
<td>EID-29: Enter the database administrator name.</td>
<td>Enter the database administrator name.</td>
</tr>
<tr>
<td>EID-30: Enter the database administrator password.</td>
<td>Enter the database administrator password.</td>
</tr>
<tr>
<td>EID-31: Enter the database file size in MB.</td>
<td>Enter the database file size.</td>
</tr>
<tr>
<td>EID-32: Enter a valid number for the database file size.</td>
<td>Enter the database file size.</td>
</tr>
<tr>
<td>EID-33: Enter the data file path.</td>
<td>Enter the data file path.</td>
</tr>
<tr>
<td>EID-35: The installation directory is not specified.</td>
<td>Specify the installation directory.</td>
</tr>
<tr>
<td>EID-36: I/O exception occurred while writing to the USER.DAT file.</td>
<td>Check file permissions and disk space.</td>
</tr>
<tr>
<td>EID-38: Error occurred while removing the USER.DAT file.</td>
<td>Check file permissions.</td>
</tr>
<tr>
<td>EID-43: Select at least one option to proceed.</td>
<td>Select at least one option.</td>
</tr>
<tr>
<td>EID-44: IP address and username must be specified.</td>
<td>Enter the IP address and username.</td>
</tr>
<tr>
<td>EID-45: Username and password are mandatory.</td>
<td>Enter the username and password.</td>
</tr>
<tr>
<td>EID-46: IP address or hostname is mandatory.</td>
<td>Enter the IP address or hostname.</td>
</tr>
<tr>
<td>EID-47: The installation directory must be specified.</td>
<td>Enter the installation directory.</td>
</tr>
<tr>
<td>EID-48: The IP address must be specified.</td>
<td>Enter the IP address.</td>
</tr>
<tr>
<td>EID-49: Hostname and password must be specified.</td>
<td>Enter the hostname and password.</td>
</tr>
<tr>
<td>EID-50: Hostname could not be located. Specify the correct name or IP address.</td>
<td>Enter the hostname or IP address.</td>
</tr>
<tr>
<td>EID-51: Both hostnames and the password must be specified.</td>
<td>Enter the hostname(s) and password.</td>
</tr>
<tr>
<td>EID-52: Source hostname could not be located. Specify the correct name or IP address.</td>
<td>Enter the source hostname or IP address.</td>
</tr>
<tr>
<td>EID-53: Destination hostname could not be located. Specify the correct name or IP address.</td>
<td>Enter the destination hostname or IP address.</td>
</tr>
<tr>
<td>EID-54: The hostname translates to multiple IP addresses. Specify one physical IP address.</td>
<td>Enter the IP address.</td>
</tr>
<tr>
<td>EID-100: Invalid SID. The SID is null or contains spaces. Enter an SID that is not null and does not contain spaces.</td>
<td>Enter a valid system ID (SID).</td>
</tr>
</tbody>
</table>
### Table B-2  Server Installation Error Messages (continued)

<table>
<thead>
<tr>
<th>Error Message</th>
<th>Recommended Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>EID-101: The CTM GateWay/CORBA installation failed. The CTM database might be down or not installed. Start the CTM database or install it. Then, retry the CTM GateWay/CORBA installation.</td>
<td>1. Start or install the Prime Optical database. &lt;br&gt;2. When the server and database are installed on separate workstations (and before you install Prime Optical GateWay/CORBA on the server workstation), you must manually update the oratab file on the server for the Oracle SID of the remote database server. &lt;br&gt;On a Solaris setup, the oratab file is located in the /var/opt/oracle directory. &lt;br&gt;On a Linux setup, the oratab file is located in the /etc directory. &lt;br&gt;3. Retry the Prime Optical GateWay/CORBA installation.</td>
</tr>
<tr>
<td>EID-382: The CTM server is initializing. Please try again after some time.</td>
<td>Wait for several minutes for the server to finish initializing.</td>
</tr>
<tr>
<td>GNU tar is not installed on this machine. GNU tar is required to install the CTM server. Install GNU tar; then, relaunch the installation.</td>
<td>Install GNU tar on the Prime Optical server workstation; then, restart the installation.</td>
</tr>
</tbody>
</table>
Uninstalling Cisco Prime Optical 9.3.1

This appendix describes how to uninstall the Prime Optical server, the Prime Optical client, Cisco Edge Craft, and the Oracle software.

Note
You cannot uninstall only Prime Optical GateWay/CORBA. To uninstall Prime Optical GateWay/CORBA, you must uninstall the entire Prime Optical server. See C.1 Uninstalling the Prime Optical Server, page C-1.

C.1 Uninstalling the Prime Optical Server

Uninstalling the Prime Optical server automatically uninstalls the web server, which cannot be uninstalled on its own.

Step 1 Enter the following command to shut down the Prime Optical server:

```
opticalctl stop
```

Step 2 Enter the following command to set the display on your terminal:

```
setenv DISPLAY hostname-or-IP-address:0.0
```

Step 3 Enter the following command to verify that the display is set correctly:

```
echo $DISPLAY
```

In the output, you should see:

```
hostname-or-IP-address:0.0
```

Step 4 Log into the Prime Optical server as the root user and enter the following command, where version is the specific version of the Prime Optical server that you want to uninstall:

```
/opt/CiscoTransportManagerServerversion/UninstallerData/IAUninstaller.sh
```

For example, enter the following command to uninstall Prime Optical 9.3.1:

```
/opt/CiscoTransportManagerServer9.3.1/UninstallerData/IAUninstaller.sh
```

Step 5 Wait for up to 90 seconds while the following message appears:

```
Uninstalling Cisco Prime Optical server...
```

Step 6 At the Uninstall Cisco Prime Optical screen, click Uninstall.
Appendix C      Uninstalling Cisco Prime Optical 9.3.1

C.2 Uninstalling the Oracle 11g Software

Note
If the Prime Optical server is still running, you are prompted with an error dialog box. To stop the uninstallation process, click OK. Use the opticalctl stop command to stop the Prime Optical server. The uninstall process will proceed once the Prime Optical server is no longer running.

Step 7 At the Uninstall Complete screen, click Done.
Step 8 Choose y or n when prompted to remove the files that were not removed by the uninstaller script.

C.3 Reverting to the Previous Database

To revert to the database as it was prior to the upgrade to Prime Optical 9.3.1, see the Cisco Prime Optical 9.3.1 User Guide section “Restoring the Database from the Previous Backup.”

Note The revert procedure will result in loss of local database information stored after the upgrade. In other words, a reverse database migration is not supported; rather, a backup copy of the original database is used.
### Mounting and Unmounting DVDs

This appendix describes how to mount and unmount DVD-ROMs on a Solaris or Linux system. It includes general information only. For detailed instructions, consult your Sun Solaris or Red Hat Linux documentation.

#### D.1 Mounting a Local DVD-ROM Drive in Solaris

To mount a local DVD-ROM drive in Solaris, insert the DVD-ROM into the drive and do the following:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Become the superuser by entering the <code>su</code> command and the root password at the command prompt, or log in as the root user. The command prompt changes to the pound sign (#).</td>
</tr>
</tbody>
</table>
| 2    | If the `/cdrom` directory does not already exist, enter the following command to create it:  

```bash
mkdir /cdrom
```

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Mount the DVD-ROM drive.</td>
</tr>
</tbody>
</table>

**Note**  
The vold process manages the DVD-ROM device and performs the mounting. The DVD-ROM might automatically mount onto the `/cdrom/cdrom0` DVD mount point.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>If you are running File Manager, a separate File Manager window displays the contents of the DVD-ROM. From the File Manager, double-click the <code>setup.sh</code> file. The Action: Run dialog box appears. Click <strong>OK</strong> to continue the installation.</td>
</tr>
</tbody>
</table>
| 5    | If the `/cdrom/cdrom0` (Solaris) or `/cdrom/server/` (Linux) directory is empty because the DVD-ROM was not mounted, or if the File Manager does not open a window displaying the contents of the DVD-ROM, enter the following command to verify that the vold daemon is running:  

```bash
ps -ef | grep vold | grep -v grep
```

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
</table>
| 6    | If vold is running, the system displays the process identification number of vold. If the system does not display anything, enter the following command to restart the daemon:  

```bash
/usr/sbin/vold &
```

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
</table>
| 7    | If the vold daemon is running but did not mount the DVD-ROM, stop the vold daemon and then restart it. To stop the vold process, you must know the process identification number. If you do not know the process identification number, enter the following command to obtain it:  

```bash
ps -ef | grep vold | grep -v grep
```
Appendix D  Mounting and Unmounting DVDs

D.2 Mounting a Local DVD-ROM Drive in Linux

To mount a local DVD-ROM drive in Linux, insert the DVD-ROM into the drive and do the following:

Step 1  Log in as the root user.

Step 2  If the /cdrom directory does not already exist, enter the following command to create it:

```
mkdir /cdrom
```

Step 3  Enter the following command to mount the DVD-ROM drive:

```
mount –t iso9660 –o ro /dev/cdrom /cdrom
```

D.3 Mounting a Remote DVD-ROM Drive

Insert the DVD-ROM into the DVD-ROM drive of the remote workstation and perform Step 1 to Step 12 only on the remote workstation. Then, perform Step 13 to Step 16 on the workstation where you want to install the application.

Step 1  Log in as the root user. The command prompt changes to the pound sign (#).

Step 2  If the /cdrom directory does not already exist, enter the following command to create it:

```
mkdir /cdrom
```

Step 3  Mount the DVD-ROM drive.

Note  The vold daemon process manages the DVD-ROM device and performs the mounting. The DVD-ROM might automatically mount onto the /cdrom/cdrom0 directory.

Step 4  If you are running File Manager, a separate File Manager window displays the contents of the DVD-ROM. From the File Manager, double-click the setup.sh file. The Action: Run dialog box appears. Click OK to continue the installation.
Appendix D  Mounting and Unmounting DVDs

Mounting a Remote DVD-ROM Drive

Step 5 If the /cdrom/cdrom0 directory is empty because the DVD-ROM was not mounted, or if the File Manager
does not open a window displaying the contents of the DVD-ROM, enter the following command to
verify that the vold daemon is running:

```
ps -ef | grep vold | grep -v grep
```

Step 6 If vold is running, the system displays /usr/sbin/vold. If the system does not display anything, enter the
following command to restart the daemon:

```
/usr/sbin/vold &
```

Step 7 If the vold daemon is running but did not mount the DVD-ROM, stop the vold daemon and then restart
it. To stop the vold process, you must know the process identification number. If you do not know the
process identification number, enter the following command to obtain it:

```
ps -ef | grep vold | grep -v grep
```

Step 8 Enter the following command to stop the vold process:

```
kill -15 process-ID-number
```

Step 9 Enter the following command to restart the vold process:

```
/usr/sbin/vold &
```

Step 10 If you have problems using the vold daemon, enter the following command to mount the DVD-ROM:

```
mount -F hsfs -r ro /dev/dsk/c.xtyz /cdrom/cdrom0
```

where x is the DVD-ROM drive controller number, y is the DVD-ROM drive SCSI ID number, and z is
the slice of the partition on which the DVD-ROM is located.

Step 11 Use a text editor to create an /etc/dfs/dfstab file, if one does not already exist.

Step 12 Add the following line to the /etc/dfs/dfstab file:

```
share -F nfs -o ro /cdrom/cdrom0
```

Step 13 Enter the following command to verify that your remote workstation is enabled as a Network File System
(NFS) server:

```
ps -ef | grep nfs | grep -v grep
```

The output of this command shows whether or not the /usr/lib/nfs/nfsd and /usr/lib/nfs/mountd daemons
are running. If they are not running, enter the following command to enable your workstation as an NFS
server:

```
/etc/init.d/nfs.server start
```

If your workstation is enabled as an NFS server, enter the `share` or `shareall` command.

Step 14 Go to the workstation where you want to install the application.

Step 15 Log in as the superuser by entering the `su` command and the root password, or log in as the root user.

Step 16 Enter the following command to create a /cdrom directory, if one does not already exist:

```
mkdir -p /cdrom/directory-name
```

Step 17 Enter the following command to mount the DVD-ROM drive:

```
/usr/sbin/mount -r remote-workstation-name:/cdrom/cdrom0 /cdrom/directory-name
```
D.4 Unmounting a Local DVD-ROM Drive in Solaris

Step 1  As the root user, enter the following commands:

```
cd
umount /cdrom/cdrom0
eject
```

Step 2  Remove the DVD-ROM and store it in a safe place.

D.5 Unmounting a Local DVD-ROM in Linux

Step 1  As the root user, enter the following commands:

```
cd
umount /cdrom
```

Step 2  Remove the DVD-ROM and store it in a safe place.

D.6 Unmounting a Remote DVD-ROM Drive

Step 1  As the root user, enter the following command on the local workstation:

```
umount /cdrom/directory-name
```

Step 2  As the root user, enter the following command on the remote workstation:

```
umount /cdrom/cdrom0
```

Step 3  Remove the DVD-ROM and store it in a safe place.
Changing the Cisco Prime Optical 9.3.1 Server IP Address

This appendix describes how to change the IP address of the Prime Optical server when Prime Optical and Oracle are on the same or separate servers.

E.1 Changing the IP Address when Prime Optical and Oracle Are on the Same Server

To change the IP address of a standalone Prime Optical server with a single IP interface when Prime Optical and Oracle are on the same server, do the following:

Caution
This procedure lets you change the IP address but not the hostname.

Step 1
Log into the Prime Optical server as the root user.

Step 2
Enter the following command to shut down the Prime Optical server:

```
opticalctl stop
```

Step 3
Enter the following commands to shut down Oracle:

```
# su - oracle
% sqlplus /nolog
SQL> connect username/password as sysdba
SQL> shutdown immediate;
SQL> exit
% exit
```

Step 4
(For Solaris operating systems only; not applicable to Linux) On Solaris, do the following:

a. Enter the following command to change the IP address and subnet mask in the /etc/netmasks file:

```
# vi /etc/netmasks
```

b. Enter the following command to change the IP address in the /etc/inet/hosts file:

```
# vi /etc/inet/hosts
```

c. Enter the following command to verify that the /etc/inet/ipnodes file contains the changed IP address:
Changing the IP Address when Prime Optical and Oracle Are on the Same Server

Step 5  (For Linux operating systems only; not applicable to Solaris) On Linux, do the following:  
   a. On GNOME, choose System > Administration > Network.  
   b. Select the correct interface.  
   c. Edit and save the interface properties (IP address, subnet mask, and default gateway).

Step 6  If your server does not have a hostname configured and can only be accessed by an IP address, you must change the IP address in the following file: /Apache/htdocs/cpocws/PrimeOptical.jnlp

Note  There are two instances in the file where the IP address needs to be changed. The IP address is referenced in the codebase and homepage properties.

If your server’s hostname is configured, go to the next step.

Step 7  Do the following at the application level:  
   a. Enter the following command to change the IP address in the Oracle listener file:  
      # vi /oracle/product/11.2.0/network/admin/listener.ora
   b. Enter the following command to change the IP address in the Oracle tnsnames file:  
      # vi /oracle/product/11.2.0/network/admin/tnsnames.ora
   c. Enter the following commands to change the IP address in the Prime Optical server configuration file:  
      # vi /opt/CiscoTransportManagerServer/cfg/CTMServer.cfg  
      # vi /opt/CiscoTransportManagerServer/cfg/CTMServer.perm

Note  Make sure to change all IP addresses where they are referenced.

   d. Enter the following command to change the IP address in the jacORB properties file:  
      # vi /opt/CiscoTransportManagerServer/openfusion/classes/jacorb.properties
   e. Enter the following command to change the IP address in the web server configuration file:  
      # vi /opt/CiscoTransportManagerServer/webServer/conf/httpd.conf

Step 8  Enter the following command to reboot the Prime Optical server:  
      # init 6

Step 9  After the Prime Optical server has rebooted, enter the following command to verify that it has started:  
      # opticalctl status

Step 10 Enter the following command to stop the Prime Optical server:  
      # opticalctl stop

Step 11 Enter the following command to start the Prime Optical server:
# opticalctl start

If you change the Prime Optical server IP address, you must replace the old IP address with the new IP address in the configuration files shown in the following table. Use a standard UNIX text editor such as vi to update the files. Changes in the configuration files take effect after you reboot the server.

**Table E-1 Configuration Files that Require Updating**

<table>
<thead>
<tr>
<th>Filename</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UNIX Configuration Files</strong></td>
<td></td>
</tr>
<tr>
<td>hosts</td>
<td>/etc</td>
</tr>
<tr>
<td>netmasks</td>
<td>/etc</td>
</tr>
<tr>
<td>defaultrouter</td>
<td>/etc</td>
</tr>
<tr>
<td>ipnodes</td>
<td>/etc/inet</td>
</tr>
<tr>
<td><strong>Oracle Configuration Files</strong></td>
<td></td>
</tr>
<tr>
<td>tnsnames.ora</td>
<td>/oracle/product/11.2.0/network/admin</td>
</tr>
<tr>
<td>listener.ora</td>
<td>/oracle/product/11.2.0/network/admin</td>
</tr>
<tr>
<td><strong>Prime Optical Server Configuration File</strong></td>
<td></td>
</tr>
<tr>
<td>CTMServer.cfg</td>
<td>/opt/CiscoTransportManagerServer/cfg</td>
</tr>
<tr>
<td>jacob.properties</td>
<td>/opt/CiscoTransportManagerServer/openfusion/classes</td>
</tr>
<tr>
<td>httpd.conf</td>
<td>/opt/CiscoTransportManagerServer/webServer/conf</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>Two IP address instances require modification:</td>
</tr>
<tr>
<td></td>
<td>Listen IP-address:51</td>
</tr>
<tr>
<td></td>
<td>ServerName IP-address:51</td>
</tr>
<tr>
<td>CTMServer.perm</td>
<td>/opt/CiscoTransportManagerServer/cfg/</td>
</tr>
<tr>
<td>NotificationService.xml</td>
<td>/opt/CiscoTransportManagerServer/openfusion/domains/OpenFusion/localhost/NotificationService/</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>The NotificationService.xml file is present only if Prime Optical GateWay/CORBA is installed.</td>
</tr>
</tbody>
</table>

### E.2 Changing the IP Address when Prime Optical and Oracle Are on Separate Servers

To change the IP address of the Prime Optical server when Prime Optical and Oracle are on separate servers, complete **E.1 Changing the IP Address when Prime Optical and Oracle Are on the Same Server**, page E-1 on both the Prime Optical server workstation and the Prime Optical database workstation. Apply the changes to the same files on both servers.
changing the IP address when Prime Optical and Oracle are on separate servers
Verifying the Integrity of the Cisco Prime Optical 9.3.1 Installation Images

This appendix describes how to verify that the Prime Optical installation ISO image and upgrade package are not corrupt.

Note
The validity of the checksum does not guarantee the integrity of the ISO image. However, if the checksum is invalid, the ISO image is definitely corrupt.

Step 1
Copy the Prime Optical images to the local disk. The disk partition must have at least 2 gigabytes (GB) of disk space to store the Prime Optical images.

Step 2
Depending on your workstation type, complete one of the following substeps to generate SHA-1 checksums:

a. On a Solaris server, enter the following command for each image:
   `digest -a sha1 filename`

b. On a Linux server, enter the following command for each image:
   `sha1sum filename`

c. On a Windows PC, use a tool such as the Microsoft File Checksum Integrity Verifier (FCIV) utility to generate the checksum for each image.
   For example, if you are using the FCIV utility, enter:
   `fciv.exe -sha1 filename`

   Note
   The FCIV utility is available on the Microsoft website at http://support.microsoft.com/kb/841290.

Step 3
In the command output, verify that the checksum matches the value shown in the following table.
### Table F-1  Image Sizes and SHA-1 Checksums

<table>
<thead>
<tr>
<th>ISO Filename</th>
<th>File Size (Bytes)</th>
<th>SHA-1 Checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIME_OPTICAL_931_SOL.iso</td>
<td>4438319104</td>
<td>bf419ea509f44a1f2121786665ee902c56438240</td>
</tr>
<tr>
<td>PRIME_OPTICAL_931_LNX.iso</td>
<td>4390371328</td>
<td>ff7775d69d54971356cfe6ce07a54144e309a498</td>
</tr>
<tr>
<td>PrimeOptical_upgrade_9.3.1_Solaris.tar.zip</td>
<td>1431927072</td>
<td>b0ef2b3b60010aa44dd9023c655ea71dd303dacfd</td>
</tr>
<tr>
<td>PrimeOptical_upgrade_9.3.1_Linux.tar.zip</td>
<td>1416575006</td>
<td>135d30349a8db81af94080b7bcd0dbcc5574c6e1</td>
</tr>
</tbody>
</table>
Setting Up Client-Server Encrypted Connections Through SSH Tunneling and SOCKS Proxy Forwarding

This appendix describes how to configure the Prime Optical client to route all its outbound network (TCP) connections to a SOCKS proxy server. The following hosts are involved:

- Proxy host
- Client host, on which the Prime Optical client runs
- Server host, on which the Prime Optical server runs

_Figure G-1_ explains the route of a connection. Every outbound connection of the client host, instead of being sent directly to the server host, is tunneled to the SSH port (22) of the proxy. Alternatively, you can also configure the server host to act as a proxy host. If configured, the Secure Shell Daemon (SSHD) service runs on the server host.

_Figure G-1  Route of a Connection_

The proxy host must satisfy the following prerequisites:

- No firewall is present between the proxy host and the server host. In other words, the proxy host must be able to establish a connection on every port on the server host.
- A UNIX user has been created on the proxy host.

_Note_  Cisco recommends that you avoid using the root UNIX user as the endpoint of the SSH tunnel.
The Proxy host is SSH-enabled.
You have changed the AllowTcpForwarding property value in the /etc/ssh/sshd_config file to yes and then restarted the SSH service.

Prime Optical Client on Windows (using SSH tunneling)

This procedure explains the steps involved in configuring the Prime Optical client route and all its outbound connections into an SSH tunnel. This SSH tunnel connection is between the client machine and the proxy host. At the end of this procedure, the client will begin to use SOCKS through an SSH tunnel.

To log into the client:

**Step 1**  
On the client machine, go to [http://www.putty.org](http://www.putty.org) and download the plink.exe file.

**Step 2**  
Open a command prompt (cmd.exe), and then change directory to the location where plink.exe has been saved.

**Step 3**  
Execute the following command:

```
plink -N -D <proxy_port> <proxy_user>@<proxy_host>
```

For example:

```
plink -N -D 10080 myuser@myproxyhost
```

**Note**  
- The `<proxy_user>` user must exist on `<proxy_host>`. For security reasons, do not use root user for this purpose.
- Ensure that the `<proxy_port>` is not already in use on the client host. You can use the `netstat` command to verify if it is already in use.

**Step 4**  
Enter the user’s password when prompted.

**Caution**  
To avoid SSH being dropped, do not close the command prompt during the procedure or after the user has logged in.

**Step 5**  
Launch the Prime Optical client.

**Step 6**  
At the login screen, enter the server hostname, and the Prime Optical username and password.

**Note**  
Do not click the Login button at this time.

**Step 7**  
Click Configure Settings.
Step 8  In the Configure Settings dialog box, perform the following:
- Check the **Connect server Through SOCKS Server** check box.
- Enter “localhost” in the SOCKS Host field.
- Enter a value for Port that is the same as the port value specified in the plink.exe command (for example, 10080).
- (Optional) Check the **Save as Default** check box to save the SOCKS settings for the next time you log in.

Click **Save**.

Step 9  Click **Login**.

---

**Prime Optical Client on UNIX (using SSH tunneling)**

This procedure explains the steps involved in configuring the Prime Optical client route and all its outbound connections into an SSH tunnel. This SSH tunnel connection is between the client machine and the proxy host. Use this procedure if the Prime Optical client is launched on Solaris or Linux. At the end of this procedure, the client will begin to use SOCKS through an SSH tunnel.

To log into the client:

**Step 1**  On the client machine, open a terminal window and enter the following command:

```
ssh -N -D <proxy_port> <proxy_user>@<proxy_host>
```

For example:
Appendix G  Setting Up Client-Server Encrypted Connections Through SSH Tunneling and SOCKS Proxy

Prime Optical Client on UNIX (using SSH tunneling)

```
ssh -N -D 10080 myuser@myproxyhost
```

**Note**  The `<proxy_user>` user must exist on `<proxy_host>`. For security reasons, do not use root user for this purpose.

**Step 2**  Enter the user's password when prompted.

**Caution**  To avoid SSH being dropped, do not close the command prompt during the procedure or after the user has logged in.

**Step 3**  Launch the Prime Optical client.

**Step 4**  At the login screen, enter the server hostname, and the Prime Optical username and password.

**Note**  Do not click the Login button at this time.

**Step 5**  Click **Configure Settings**.

**Step 6**  In the Configure Settings dialog box, perform the following:

- Check the **Connect server Through SOCKS Server** check box.
- Enter “localhost” in the SOCKS Host field.
- Enter a value for Port that is the same as the port value specified in the plink.exe command (for example, 10080).
- (Optional) Check the **Save as Default** check box to save the SOCKS settings for the next time you log in.

Click **Save**.

**Step 7**  Click **Login**.
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