



Downloading New Client Application Platform Installation Instructions

Please Read

Important

Please read this entire guide. If this guide provides installation or operation instructions, give particular attention to all safety statements included in this guide.

Notices

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About This Guide

Introduction

Important: This guide applies only to networks that use client applications software provided by Cisco. If your site is using another resident application software, you must contact the vendor for the compatible application software and installation instructions.

What Is Application Platform Software?

Application platform software includes updated versions of the Cisco Resident Application (SARA), the PowerTV® Operating System (OS), and CableCARD™ software. Application platform software is also known as a *client release* or a *home server edition*.

Purpose

Regardless of which software release you are installing, this guide provides a consistent and reliable method of installing application platform software onto the Digital Network Control System (DNCS) and then downloading the software onto devices (including DHCTs and CableCARD modules) in your network.



CAUTION:

You must follow the procedures in this guide carefully and in the order presented. Failure to do so can result in a failed installation, which can result in loss of service to subscribers.

Scope

This guide applies to application platform software releases associated with the following Explorer Digital Home Communication Terminals (DHCT or set-top) model classes, as well as other devices that operate with SARA and the PowerTV OS:

- 940 digital-only interactive set-tops
- 1840 digital-only interactive set-tops
- 1850 interactive set-tops
- 2000 network terminals
- 3000 network terminals
- 3340 network terminals
- 3240 high-definition terminals
- 3250 standard- and high-definition terminals

About This Guide

- 4000 home gateways
- 8000 home servers
- 8000 high-definition home servers
- 8240 digital-only home servers
- 8300 home servers
- 8300 Multi-Room™ servers
- MCP-100 DVD set-tops
- CableCARD modules

Audience

This guide is written for operators of Cisco's digital cable television systems that use the SARA. DNCS operators, Cisco field service engineers, and Cisco Services engineers who help system operators manage and troubleshoot their systems, may also find the information in this guide helpful.

Anyone performing the procedures in this guide must be proficient in using basic UNIX commands, a UNIX-based text editor, FTP (File Transport Protocol), and have a high level of proficiency with the DNCS.

Related Publications

You may find the following publications useful as resources when you implement the procedures in this document. Check the copyright date on your resources to assure that you have the most current version. The publish dates for the following documents are valid as of this printing. However, some of these documents may have since been revised:

- *Setting Up PowerKEY® CableCARD™ and M-Card™ Modules on the DNCS for System Releases 2.7/3.7/4.2* (part number 4014667)
- *Best Practices for Using Single-Stream PowerKEY CableCARD Modules* (part number 4015091)
- *Explorer® Digital Home Communications Terminal Staging Guide* (part number 734375)
- *DBDS Utilities Version 5.1 Installation Instructions and DNCS Utilities User's Guide* (part number 740020)
- *Recommendations for Setting System Information to Out-of-Band* (part number 738143)

- *Distributed Broadcast File System Configuration Guide for System Releases 2.2 and 3.2* (part number 745453)
- *Understanding Diagnostic Screens for the Explorer® Digital Home Communications Terminals Application Guide* (part number 749244)
- *DHCT Status Reporting and signonCount Utilities User's Guide* (part number 738186)
- *CoolTools Utilities User's Guide* (part number 749640)
- *Maintenance Recommendations for the DBDS System Guide* (part number 4002341)

Document Version

This is the seventh release of this document. In addition to minor text and graphic changes, the following table provides the technical changes to this document.

Description	See Topic
Added information concerning downloading the client application software to CableCARD modules	Throughout the document
Changed installation instructions to provide for a new installation tool	Throughout the document
Improved installation instructions in several areas to incorporate the most efficient and fastest ways to test the software, download software to test devices, and download software to your subscribers' devices	Throughout the document
Added an important note concerning managing the files on your system	<i>How Do I Manage the Files on My System?</i> (on page 2)
Added information for obtaining the new Cisco installation tool	<i>Package Installation Tool</i> (on page 5)
Added procedures for deleting unused DHCT types from your DNCS	<i>Delete Unused DHCT Types</i> (on page 21)
Added how to estimate the download time of DHCTs and CableCARD modules	<i>How Long Does it Take?</i> (on page 64)
Added information on the Cisco ROM naming conventions and image versions	<i>ROM Naming Conventions and Image Versions</i> (on page Error! Bookmark not defined.)
Added information on LED behavior during software downloads	<i>Download LED Indicators</i> (on page 117)

About This Guide

1

Installation Process Overview

Introduction

This chapter provides a brief overview of the installation prerequisites, the installation phases and tasks associated with each phase, the time requirements to complete each phase, and the system performance impact involved in installing application platform software.

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Before You Begin

When Do I Start?

Due to various necessary system checks, you should begin the installation process approximately one week before the actual installation date.

How Do I Manage the Files on My System?

It is important to keep only the currently active client code loaded on your DNCS.

When you upgrade, you should have both the old version of code and the new version loaded onto your system at the same time (while you test the new code). This is encouraged and does not pose a significant problem; it should not increase download times significantly.

After you test a new release and configure all devices to use the new software, Cisco recommends that you aggressively manage your system to keep unused and unneeded files off your BFS. Following the procedures for loading software that are included in this guide will help you keep unneeded files off of your BFS.

What Do You Need?

Gather These Things First

Before you can install an application platform software release onto your system, you must have the following items and information:

- ☐ 1 Release notes for the application platform software release you are installing
- ☐ 2 Scheduled date and time for the installation
- ☐ 3 *DBDS Utilities Version 5.1 Installation Instructions and DNCS Utilities User's Guide*
- ☐ 4 CableCARD hosts and/or DHCTs that you can use for testing. These test devices should be authorized for all applications and be able to buy impulse pay-per-view (IPPV) events through the normal purchase process (not just test packages). Make sure that you have your current purchase and parental control PINs available for these test DHCTs
- ☐ 5 Software on a CD or access to the Cisco public FTP site (details to access the FTP site are included in the software release notes)
- ☐ 6 You will need a secure GUI password. How you obtain the password depends on if you are a software developer or a site that supports subscribers:
 - If you are a site that supports subscribers, then you are encouraged to obtain a secure GUI password from Cisco Services. This provides Cisco Services the opportunity to communicate known issues about the software as well as other information that may be needed before loading the software onto your network.
 - If you are a software developer, then you can have the secure GUI disabled. Contact Cisco Services for disabling the secure GUI.

System Requirements

Before you can install the application platform software onto your system, your system must meet the following requirements:

- System Release 2.2 or later
- DBDS Utilities 4.1 or later
- dhctStatus tool version 2.5.9.4 or later
- Doctor 4.3 or later
- Quaternary Phase Shift Keying (QPSK) modulator code A62 or later
- listCVT, listOSM, and listQPSK utilities version 1.0 or later
- Cisco package installation tool. See *Package Installation Tool* (on page 5) for more information

If you do not have any of these utilities, or if you are unsure whether you have the latest version of these utilities, contact Cisco Services.

Package Installation Tool

To install software, you need to use the package installation tool (`install_pkg`). This section contains procedures you can follow to verify if you have the tool and to obtain the tool, if necessary.

Verifying the Package Installation Tool

Before you install the application platform software, you need to verify whether the package installation tool (`install_pkg`) exists on the DNCS.

- 1 Open an xterm window on the DNCS.
- 2 Type `cd /usr/sbin` and press **Enter**.
- 3 Type `ls` and press **Enter**.
- 4 Is `install_pkg` present on the DNCS?
 - If **yes**, you are finished with this procedure.
 - If **no**, you must obtain the `install_pkg` from the Cisco FTP site. Go to **Obtaining the Package Installation Tool**, next in this document.

Obtaining the Package Installation Tool

- 1 Open an xterm window on the DNCS.
- 2 Type `cd /export/home/dnscs/download` and press **Enter**. The `/export/home/dnscs/download` directory becomes the working directory.
Note: You might have to create this directory if it does not exist on your system.
- 3 Log on to the Cisco FTP server.
Notes:
 - The address of the server is **ftp.sciatl.com** or **192.133.243.133**.
Note: The address for the Cisco FTP server is subject to change. If you are unable to reach the FTP server, please contact Cisco Services for the latest address.
 - The username is **anonymous**.
 - The password is the e-mail address of the person logging on.
- 4 Choose one of the following options to navigate to the directory in which the file is located:
 - If you are *outside* the firewall, type `cd /pub/scicare/RELEASED/SR2.2Patches`.
 - If you are *inside* the firewall, type `cd /external_pub/scicare/RELEASED/SR2.2Patches`.
- 5 Type `bin` and press **Enter**. The system sets the ftp transfer mode to binary.

- 6 Type **hash** and press **Enter**. The system configures itself to display hash marks that show file-transfer progress.
- 7 Type **get install_pkg** and press **Enter**. The system begins copying files into the /export/home/dncs/download/ directory on your DNCS.
- 8 Type **get install_pkg README_3.0.1.3p2EP1.txt**. The system begins copying files into the /export/home/dncs/download/ directory on your DNCS.
- 9 Type **bye** and press **Enter** to log out of the Cisco FTP server.
- 10 Follow the directions in the **install_pkg Readme** file to install the tool in your system.
- 11 Continue with the installation procedures.

What Are the Download Methods?

The file type and download method you choose depends on the type of device receiving new software:

- OSM: Supported for all Explorer 2000 and 2010 DHCTs, and some 2100 DHCTs that do not support CVT downloads
- CVT: Supported in SR 1.4.x and later environments for all other devices, including CableCARD modules

Follow the instructions in *Determining DHCT Models Supported on Your System* (on page 8) to determine which download method you can use for each DHCT type and revision supported by your network. *ROM Naming Conventions and Image Versions* (on page **Error! Bookmark not defined.**) shows DHCT to file mapping information and what download method each type supports.

Cisco provides application platform software as an image file. The software files are different for the two download methods in the following ways:

- Operating System Manager (OSM) download method: The image file is split into two parts: Part 0 and Part 1
- Code Version Table (CVT) download: The image file is provided as a single, unified image

What to Consider When Choosing a Download Method

Consider the following issues when choosing a DHCT download method:

- Because of the improved (and faster) download performance, Cisco suggests that you use the CVT method whenever possible.
- All Explorer 2000, 2010, 2100 (rev 2.0 and 2.1), and 3100 (rev 2.0 and 2.1) DHCTs in your network must use the OSM download method.
- The following Explorer DHCT revisions cannot use the CVT download method on networks where the BFS QAM is at a harmonically related carrier (HRC) frequency:

- Explorer 2100 rev 2.2 and 2.3 DHCTs
- Explorer 3100 rev 2.4, 2.5, and 2.6 DHCTs

Note: These DHCTs can use the CVT download method on systems using either a standard (STD) frequency plan or an incrementally related-carrier (IRC) plan.

- Call Cisco Services if you are not sure which download method is appropriate for your system.

The CVT Method

The CVT is a table that contains information about download channel and information to map application platform software versions to specific devices.

The DNCS sends the CVT to all QAMs in the network. The QAMs then send the CVT to the devices once every second. The DNCS also sends CVT through the DAVIC (QPSK) or DOCSIS out-of-band forward data channel once every 10 minutes.

The CVT method is the only download method available for newer DHCTs and for all CableCARD modules.

In systems using harmonically related carrier (HRC) frequencies, certain DHCTs can only be staged using the OSM method. See *What to Consider When Choosing a Download Method* (on page 7) for more information.

The OSM Method

In the OSM staging method, the DHCT receives System Information (SI) and a type-specific user-to-network configuration (Unconfig) message, which includes a table of contents (TOC) file, from the DNCS.

The DHCT reads the contents of the TOC file and compares the checksums of the currently installed image files against the file information in the TOC file. If the checksum of either file does not match, the DHCT installs the new software as needed.

In systems using harmonically related carrier (HRC) frequencies, certain DHCTs can only be staged using the OSM method. See *What to Consider When Choosing a Download Method* (on page 7) for more information.

Determining DHCT Models Supported on Your System

Cisco provides the listCVT and listOSM scripts that let you quickly determine which DHCT models are supported on your network and which download method the DHCT currently uses.

Distributed BFS

If the BFS data is carried on more than one QAM, then you must configure your DNCS and the network to carry the OSM data carousel (or the bootloader in newer system releases) out to the various BFS QAMs. Refer to *Distributed Broadcast File System Configuration Guide for System Releases 2.2 and 3.2* for further information.

Note: Even if you use the CVT method, the software files are sent to the DHCT on the OSM data carousel or bootloader.

Additional Download Requirements

You need the SW TOC Verification password (or secure GUI password) to complete the procedures in the following locations:

- *Phase Two - Test New Software* (on page 39)
- *Phase Three - Install New Software* (on page 63)
 - If you are a site that supports subscribers, then you are encouraged to obtain a secure GUI password from Cisco Services. This provides Cisco Services the opportunity to communicate known issues about the software as well as other information that may be needed before loading the software onto your network.
 - If you are a software developer, then you can have the secure GUI disabled. Contact Cisco Services for disabling the secure GUI.

How Long Does Each Phase Take?

This section provides a table with a general description of the four installation phases and the approximate length of time required to complete each phase. The remaining chapters of this document provide more detail for each phase.

The Four Phases

The installation process involves 4 phases, ideally performed across 7 days. The actual amount of time needed to complete the entire process varies depending on the size of the site, the complexity of the system, and the kinds of applications being deployed.

The following table provides a general description of the four phases and the approximate length of time needed to complete each phase.

Phase	Description	Timeframe	Time to Complete
One	Complete pre-upgrade tasks and install the software on the DNCS	1 to 3 days before the start of Phase Two (during business hours)	3 hours
Two	Test load the new software	3 business days after starting Phase One (during business hours)	3 hours
Three	Download the software	24 hours after completing Phase Two (during a maintenance window)	See <i>How Long Does it Take?</i> (on page 64)
Four	Clean up	Wait either: <ul style="list-style-type: none"> ■ 1 week if you used a normal (deferred) download ■ 24 hours if you used an immediate download 	3 hours

Scheduling Considerations

If you are loading new code for new device types, you can schedule the installation at any time. There is no impact on existing devices or normal system operations.

Phase Two can impact your ability to stage some DHCTs. During this phase, you might not be able to stage DHCTs being upgraded using the OSM download method until the new client application platform software is installed. CVT testing can be completed without impacting staging.

Phase Three impacts your subscribers' viewing experiences. Carefully plan and schedule the installation so that the impact is minimal to your subscribers. The impact is based on the download option you select, as follows:

- Normal (CVT) or Deferred (OSM) download – Lets the DHCT load software after it is powered off for 2 minutes
- Immediate (CVT) or Download Now No Reply (OSM) download – Happens in a relatively short period of time, but interrupts watching TV, PPV, VOD, and other services

How Does the Download Affect the System?

Until you actually download the software across your system, there is no performance impact to your subscribers. After the system-wide download is started, any device being upgraded is unavailable while downloading the software. Therefore, Cisco recommends that you perform Phase Three of these procedures during a maintenance window.

In addition to the outage caused by loading the software, two-way hosts and DHCTs will have to re-establish their network connections. This can cause interactive services to be temporarily unavailable after a software download.

After Completing Each Phase

Each of the "Phase" chapters in this document provides a checklist of the tasks required for that phase. After you complete each phase, save a copy of the checklist and all of the results from any tests that you run. You should not proceed to the next phase until the checklist for the previous phase is complete.

What Are Your Installation Tasks?

Phase One: Complete Pre-Upgrade Checks

When? You can complete this phase during normal business hours.

- 1 Verify that the system is operating correctly.
- 2 Run the updateOUI utility.
- 3 Run the listOSM and/or the listCVT utilities to complete the following tasks:
 - Delete unused DHCT types
 - Remove unused files from BFS
- 4 Install the following onto the DNCS:
 - Application Platform Release software
 - New version of OSCheck Table (if necessary)
 - New version of DHCT Resource file (settop.xxx, if necessary)
- 5 Correct any issues identified during Phase One.

Phase Two: Test New Software

When? You can complete this phase during normal business hours.

OSM Downloads

- 1 Remove and unassociate software from the DHCTs being upgraded.
Note: You cannot stage DHCTs that are downloading new software once this is done.
- 2 Add the new files to the OS list.
- 3 Download software to the test DHCTs.
- 4 Verify that the test DHCTs operate correctly.

CVT Downloads

- 1 Create or modify the CVT test groups.
- 2 Load the new CVT image files onto the image list.
- 3 Download the software to the CVT test groups.
- 4 Verify that the test devices operate correctly.

Phase Three: Test New Software

When? Cisco recommends that you complete this phase during a maintenance window, unless you are loading software for a device that is not currently used in your network.

- 1 Run the Doctor utility to verify that the system is operating correctly.
- 2 For OSM downloads, download the software using the OSM method.
- 3 For CVT downloads, complete the following:
 - Pre-check QAM communications
 - Download the software using the CVT method (either normal or immediate)
 - Post-check QAM communications
- 4 Before you begin Phase Four, you need to wait either:
 - 1 week if you used a normal (deferred) download
 - 24 hours if you used an immediate download

Phase Four: Clean Up

When? Cisco recommends that you complete this phase during a maintenance window.

- 1 Force an immediate download to force the devices that have not already loaded the current software to update.
- 2 After downloading software to two-way devices, you need to complete the following:
 - Run the dhctStatus utility to identify devices that did not download the new software.
 - Use the IHH utilities to reboot DHCTs and to download the new software.
 - Run the dhctStatus utility again to confirm that all devices downloaded the new software.
- 3 After downloading software to one-way devices, manually check a sample of installed devices to verify that the devices downloaded the new software.

2

Phase One - Perform Pre-Upgrade Checks

Introduction

This chapter describes the steps you must complete to make sure that you have a healthy system and to correct any issues that might prevent a successful installation.

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■ Install the OS Check Table (Optional)	34
■ Install the Set-Top Resource File (Optional)	36

Overview

Before you install an application platform software on your system, it is imperative that you have a healthy system. If you do not have a healthy system, the installation process could fail and disrupt service to your subscribers.

When Do You Begin Phase One?

Begin Phase One of the installation process 1 to 3 days before you plan to begin Phase Two. This phase takes approximately 3 hours to complete.

You can complete Phase One during business hours.

What Do You Need?

Refer to *What Do You Need?* (on page 3) for the list of items you need.

In addition, this chapter refers to many procedures that are contained in the publications listed in *Related Publications* (on page vii). Therefore, you may also want to gather those publications before you begin.

What's Your First Step?

Before you begin Phase One, review the *Phase One Checklist* (on page 17) for an overview of upcoming tasks to complete during this phase.

Also, contact Cisco Services to make sure that you have the latest version of the software and the software release notes.

Phase One Checklist

Use the checklist in this chapter to check off each task as you complete it. When you finish this phase, save a copy of the checklist and all of the results from any tests that you run in the event that the installation process fails during a later phase.



CAUTION:

You must complete each task in this checklist before you can proceed to the next task. Otherwise, you risk a failed installation, which could disrupt service to your subscribers.

Where necessary, the remaining sections of this chapter provide further detail to help you complete each task in this checklist.

- ☐ 1 Choose one of the following options:
 - If you are upgrading existing DHCTs on a two-way system, reboot, wait for the clock, power on an operational (in two-way mode) test DHCT, and do the following:
 - Verify that all third-party applications and channels are available and function as expected.
 - Check Page 2 of the diagnostic screen to verify that the boot status is READY.
 - If you are loading code for new devices (for example, for a new DHCT type or revision), go to step 6.
- ☐ 2 Run the **listQpsk** utility as described in the *CoolTools Utilities User's Guide*. Record the percentage of DHCTs that are signed on to your network in **listQpsk Results** (on page 19).
- ☐ 3 Run the **updateOUI** utility using the **-r** option command and then run the **updateOUI** command with no options.
- ☐ 4 Run the **doctor -av** utility as described in the *DBDS Utilities Version 5.1 Installation Instructions and DNCS Utilities User's Guide*.
- ☐ 5 Record the results in **Key Doctor Results** (on page 19). If the results of the doctor utility show any unexpected errors, then you should correct these errors before proceeding with the download process.
- ☐ 6 Delete unused DHCT types from the DHCT type list window.
- ☐ 7 Run the **listOSM** utility. Delete the unused VER files and their associated ROM files from the DHCT OS List GUI.
- ☐ 8 Run the **listCVT** utility. Delete the unused ROM files from the Image List GUI.
- ☐ 9 If you are loading software to support a new DHCT or CableCARD module, load the EMM CD for the new device type. This step adds the type, model, and revision information to the system.

Chapter 2 Phase One - Perform Pre-Upgrade Checks

- ☐ **10** Review the software release notes and obtain the new software, OS CheckTable, or set-top resource files.
- ☐ **11** Install the application platform software release onto the DNCS. If you do not have a current version of the OS CheckTable or set-top resource file, then install these files as needed.

Record Results

Copy this page and use it to record the results of the doctor utility and the listQpsk utility. If you are not comfortable with any of the following results, you should address these issues before you proceed.

Key Doctor Results

Which system frequency plan are you running? (Standard, HRC, IRC)

Did all of your QPSK modulators and QAM modulators respond to the **ping** command? _____

Do you have RPC communications with all of your QPSK modulators and QAM modulators? _____

Important! QAMs that do not accept RPC connections or non-responding QAMs can seriously impact CVT downloads to devices. This system issue must be corrected before downloading new application platform software.

Does the DHCT type summary indicate there are unused DHCT types?

listQpsk Results

What is the percentage of DHCTs that are signed on to your network?

Note: You will use this information as a baseline check in Phase Four.

Run updateOUI Utility

If you have previously run the updateOUI utility on your network, then you can skip this section and go to *Delete Unused DHCT Types* (on page 21). If you have not previously run this utility on the network, then you need to complete this procedure before going to Delete Unused DHCT Types. If you are not sure if you have run the updateOUI utility already, you can run it and record the results.

Note: The OUI refers to the first three octets of a MAC address (for example, 00:02:DE). Refer to *Add the updateOUI Utility to the Chrontab File* (on page **Error! Bookmark not defined.**) for information about scheduling this utility.

Running updateOUI Utility

- 1 Open an xterm window on the DNCS.
- 2 Type **updateOUI -r** and press **Enter**. Any null entries in the database are set to the original OUI for each Cisco DHCT.
- 3 Type **updateOUI** and press **Enter**. All DHCTs with a Cisco OUI are set with 00:02:DE as their OUI.
- 4 Go to *Delete Unused DHCT Types* (on page 21).

Delete Unused DHCT Types

If you have previously deleted unused DHCT Types from your network, then you can skip this section and go to *Run listOSM Utility* (on page 22). If you have not previously deleted unused DHCT types from the network, you need to complete this procedure before going to *Run listOSM Utility* (on page 22).

Deleting Unused DHCT Types

Complete the following steps to delete unused DHCT types from the DNCS database.

- 1 On the DNCS Administrative Console, select the **DNCS** tab.
- 2 On the DNCS tab, select the **Element Provisioning** tab.
- 3 Click **Type**. The DHCT Type List window opens, listing the DHCT type, revision, OUI, and name.
- 4 Look at each entry in the list. Is the entry used in your system?
 - If **yes**, there is no need to delete this entry. Look at the next entry.
 - If **no**, or if you are not certain, go to step 5.
- 5 From the drop-down menu at the top of the DHCT Type List window, click **File** then click **Delete**. The following message appears:
Are you sure you want to delete the current item?
- 6 Click **Yes**.
- 7 Did an **Unspecified Error** message appear?
 - If **yes**, the selected DHCT type is used in your system and you cannot delete it.
 - If **no**, the selected DHCT type is not used in your system, and the DNCS deletes it from the database.
- 8 Repeat steps 4 through 7 for each DHCT type in the DHCT Type List.
- 9 From the drop-down menu at the top of the DHCT Type List window, click **File** then click **Close**. The DHCT Type List closes.
- 10 Go to *Run listOSM Utility* (on page 22).

Run listOSM Utility

The listOSM utility determines which DHCT models are currently using the OSM download method and reports the unused files in the OS list.

Running listOSM Utility

- 1 Are you using the OSM download method for any DHCTs in your network?
 - If **yes** or if you are **unsure**, go to step 2.
 - If **no**, go to *Run listCVT Utility* (on page 24).
- 2 Open an xterm window on the DNCS.
- 3 Type **listOSM -v** and press **Enter**. This command provides you the version of listOSM utility that is currently on your network.
- 4 Compare the version number of the listOSM utility on your DNCS with the version number listed in the *ROM to Model Matrix* (on page 107).
 - If the version number is equal to or greater than the one listed in the matrix, go to step 5.
 - If the version number is less than the one listed in the matrix, contact Cisco Services to receive the latest utility.
- 5 Type **cd /export/home/dncs/doctor** and press **Enter**. The current directory is now the doctor directory.

Note: Type a space between **cd** and **/**.
- 6 Type **listOSM > preosm** and press **Enter**.
- 7 Type **more preosm** and press **Enter**. This command lets you view the file and verify the current download configuration for each DHCT type is active in the network.
- 8 Does the report indicate that there are unused files?
 - If **yes**, go to step 9.
 - If **no**, go to step 13.
- 9 On the DNCS Administrative Console, select the **DNCS** tab and then select the following tab based on the system release you have installed:
 - For SR 2.2/3.2/4.0 and earlier, select the **Element Provisioning** tab.
 - For SR 2.5/3.5/4.2 and later, select the **Home Element Provisioning** tab.
- 10 Click **OS**. The DHCT OS List window opens.
- 11 Highlight a DHCT software file that is unused in the network, click **File**, and then select **Delete**.

Important! Do not delete files with different naming formats such as .rle, .res, or .dat. These files are used by other functions such as logos and configuration files.

Note: The DHCT software files typically have file extensions of .ver, _0, and _1.

- 12 Repeat step 11 for each software file that is unused in the network. After you have deleted all of the unused software files, go to step 13.
- 13 Do you have devices that use the CVT download method?
 - If **yes**, go to *Run listCVT Utility* (on page 24).
 - If **no**, go to *Clean Up the ResApp Directory (Optional)* (on page 26).

Run listCVT Utility

The listCVT utility determines which DHCT models are currently using the CVT download method and reports unused files on the image list.

Running listCVT Utility

- 1 Are you using the CVT download method for any devices in your network?
 - If **yes** or you are **unsure**, go to step 2.
 - If **no**, go to *Clean Up the ResApp Directory (Optional)* (on page 26)
- 2 Open an xterm window on the DNCS.
- 3 Type **listCVT -v** and press **Enter**. This command provides the version of listCVT utility that is currently on your network.
- 4 Compare the version number of the listCVT utility on your DNCS with the version number listed in the *ROM to Model Matrix* (on page 107).
 - If the version number is equal to or greater than the one listed in the matrix, go to step 5.
 - If the version number is less than the one listed in the matrix, contact Cisco Services to receive the latest utility.
- 5 Type **cd /export/home/dncs/doctor** and press **Enter**. The current directory is now the doctor directory.

Note: Type a space between **cd** and **/**.
- 6 Type **listCVT > precvt** and press **Enter**.
- 7 Type **more precvt** and press **Enter**. This command enables you to view the file and verify the current download configuration for each DHCT type that is active in the network.
- 8 Does the report indicate that there are unused files?
 - If **yes**, go to step 9.
 - If **no**, go to step 14.
- 9 On the DNCS Administrative Console, select the **DNCS** tab and then select the following tab based on the system release you have installed:
 - For SR 2.2/3.2/4.0 and earlier, select the **Element Provisioning** tab.
 - For SR 2.5/3.5/4.2 and later, select the **Home Element Provisioning** tab.
- 10 Click **Image**. The Image List window opens.
- 11 Click the **Downloadable Files** tab.
- 12 Highlight a software file that is unused in the network. Click **File** and select **Delete**.

Note: The DHCT software files have file extensions of **.rom**.

- 13** Repeat step 12 for each file that is unused in the network. After all of the unused software files are deleted, go to step 14.
- 14** Go to *Clean Up the ResApp Directory (Optional)* (on page 26).

Clean Up the ResApp Directory (Optional)

This section provides instructions to clean up the resapp directory.

Important! This procedure is optional, but Cisco recommends you clean up the directory. The fewer files that are in the directory, the easier the remaining installation procedures. Refer to *How Do I Manage the Files on My System?* (on page 2) for more information.

Cleaning Up the ResApp Directory

- 15 Open an xterm window on the DNCS.
- 16 Type **su root** and press **Enter** to log on as root user. The password prompt appears.
- 17 Type the root password and press **Enter**.
- 18 Type **cd /dvs/resapp** and press **Enter**.
Note: Type a space between **cd** and **/**.
- 19 Type **ls** and press **Enter**.
- 20 Delete the software files for the previous versions of software.

Example: Type **rm *1.52*** and press **Enter**.

Important! The OSM and CVT download processes make copies of the files currently in use; therefore, deleting files from this directory has no system impact.

- 21 Go to *Verify the Download Directory* (on page 27).

Verify the Download Directory

Before you download the client application software from the FTP server, you must verify that the `/export/home/dnscs/download` directory exists on your DNCS. If it does not, you need to create that directory.

Follow these instructions to verify the existence of the download directory on your DNCS and to create it if it does not exist.

- 1 Open an xterm window on the DNCS.
- 2 Log on to the DNCS as root.
- 3 Type `cd /export/home/dnscs/download` and press **Enter**.
Note: Type a space between `cd` and `/`.
- 4 Does the `/export/home/dnscs/download` directory exist on your DNCS?
 - If **yes**, you are finished with this procedure. Go to *Clean Up the Download Directory* (on page 28).
 - If **no**, go to step 5.
- 5 Type `mkdir /export/home/dnscs/download` and press **Enter**.
Note: Type a space between `mkdir` and the `/`.
- 6 Type `cd /export/home/dnscs/download` and press **Enter**.
Note: Type a space between `cd` and `/`.
- 7 Go to *Obtain Software* (on page 29).

Clean Up the Download Directory

This section provides instructions to clean up the download directory (/export/home/dnscs/download). This is important so that the only files in this directory after your FTP download are those you need for the software update.

Cleaning Up the Download Directory

- 1 Open an xterm window on the DNCS.
- 2 Type **su root** and press **Enter** to log on as root user. The password prompt appears.
- 3 Type the root password and press **Enter**.
- 4 Type **cd /export/home/dnscs/download** and press **Enter**.
Note: Type a space between **cd** and **/**.
- 5 Type **ls** and press **Enter**.
- 6 Type **rmi -rf [filename]** for each file listed in the directory.
Note: Do not type the brackets **[]** in the command.
- 7 Confirm the file deletion by typing **yes** and pressing **Enter**.
- 8 Repeat steps 6 and 7 for each file in the directory.
- 9 Choose one of the following options:
 - **If you have not yet installed the software**, go to *Obtain Software* (on page 29).
 - **If you have completed installing the software**, go to *Phase Two - Test New Software* (on page 39).

Obtain Software

There are two ways you can obtain Application Platform software from Cisco:

- You can choose to order a software binder. Software binders are available for released software and include CDs and release notes. Contact Cisco Services for more information on receiving a software binder.
- You can download the software by connecting to an FTP server maintained by Cisco Services. BETA software, emergency patches, and released software are available through the FTP server.

The remainder of this section provides an outline for obtaining the software through the FTP server. If you have received a software binder, go to *Install the Application Software Platform Release onto the DNCS* (on page 31) for instructions to load the software from a CD.

Download Software from the FTP Server

Access to the FTP server requires current FTP server site access information. This information is located in the software release notes.

Important! BETA software is provided to labs which, in turn, provide a broader testing environment. BETA software releases are provided in their current state of development and are not covered under the same software license agreements as released software. BETA software releases should only be used on test units until the software is released by Cisco and approved through your organization's software acceptance process.

The following procedure provides generic steps to directly download software from the FTP server onto the DNCS. For security reasons, many sites do not allow open Internet connections from the DNCS. As a result, your process might vary from the procedure provided.

The software release notes provide additional information necessary to download software. If you have any questions about this process, contact Cisco Services.

Downloading the Application Platform Software Release from the FTP Server

- 1 Log on to the Cisco FTP server.

Note: The address of the server and login information are provided in the release notes for the software release.

- 2 Go to the directory containing the software release you are installing.

Example: If you installing SARA 1.54.23, type one of the following:

- If you are *outside* the firewall, type **cd /pub/scicare/RELEASED/SARA1.54.23**
- If you are *inside* the firewall, type **cd/external_pub/scicare/RELEASED/SARA1.54.23**

- 3 Type **bin** and press **Enter**. The system sets the ftp transfer mode to binary.
- 4 Type **hash** and press **Enter**. The system configures itself to display hash marks that show file-transfer progress.
- 5 Type **prompt** and press **Enter**. This command turns off the interactive mode of the FTP utility.
- 6 Type **mget *** and press **Enter**.
Note: This command starts the transfer of the files from the FTP server to the DNCS. A # symbol displays on the screen for each 8192 bytes transferred from the FTP server to the DNCS.
- 7 Are you planning to use the CVT download method?
 - If **yes**, complete the following steps:
 - a Type **cd /pub/scicare/RELEASED/SettopResourceFile** and press **Enter**.
 - b Type **ls** and press **Enter**.
 - c Type **get settop.vxx** and press **Enter**, where **vxx** is the set-top resource file version.
Example: Type **get settop.v91**
Note: See the *ROM to Model Matrix* (on page 107) for the correct set-top resource file version.
 - If **no**, go to step 8.
- 8 Type **bye** and press **Enter**. This command closes the connection from the FTP server.

Install the Application Software Platform Release onto the DNCS

This section provides instructions for installing the application platform software release onto the DNCS and for choosing a download method.

You can install the software from either the Cisco FTP Server or you can install the software from a CD. After you install the software, you will choose a download method that determines the next set of procedures that are necessary to complete during the upgrade.

Note: If Cisco Services has already delivered the software to your DNCS, skip this section, and go to *Install the OS Check Table (Optional)* (on page 34).

Installing the Software from Files Downloaded from the FTP Server

Depending on the device types in your system, you might need to install multiple gzipped tar files for each device type. You must tar then install each gzipped tar file separately, because some files might overwrite existing files in the download directory.

Complete the following steps to install the application platform software release onto the DNCS.

Notes:

- System components do not have to be shut down to install the software.
 - This procedure assumes the `install_pkg` package installer is located in the `/usr/sbin/` directory.
- 1 From the xterm window where you are logged in as root, type `cd /export/home/download`.
 - 2 Type `/usr/local/bin/gzip -d [gzipped file name]` and press **Enter**.
Example:
`/usr/local/bin/gzip -d SARA_15423.tar.gz`
 - 3 Repeat step 2 for each gz file you downloaded to your DNCS. Each of the files is uncompressed into a tar file.
 - 4 Type `tar xvf [filename.tar]` for a tar file from steps 2 and 3 that you need to install.
 - 5 Type `/usr/sbin/install_pkg SAiresapp` and press **Enter**.

Results:

- The system lists the packages that will be installed.
- A confirmation message appears asking you to confirm that you want to proceed with the installation.

- 6 Type **y** and press **Enter** to start the installation.
Note: The installation should take less than 30 seconds.
- 7 Did a message appear indicating that the installation was successful?
 - If **yes**, go to step 8.
 - If **no**, contact Cisco Services.
- 8 Use the UNIX **rm -rfi** command to remove the following file and directory:
 - SAiresapp.tar (file)
 - SAiresapp (directory)**Example:** Type **rm -rfi SAI*** and press **Enter**.
Result: A confirmation question message appears asking you to confirm the removal.
- 9 Type **Yes** and press **Enter**.
- 10 Are there additional tar files in the directory you need to install?
 - If **yes**, repeat steps 4 through 7 until you have installed all the necessary files.
 - If **no**, go to *Install the OS Check Table (Optional)* (on page 34).

Installing the Software from a CD

Complete the following steps to install the application platform software release onto the DNCS.

Notes:

- System components do not have to be shut down to install the software.
 - This procedure assumes the install_pkg package installer is located in the /usr/sbin/ directory.
- 1 Insert the CD into the CD-ROM drive on the DNCS. The system automatically mounts the CD to /cdrom/cdrom0 within 30 seconds.
 - 2 Type **df -n** and press **Enter**. A list of the mounted file systems appears. If **/cdrom** displays in the output, then this confirms that the system correctly mounted the CD.
 - 3 From the xterm window where you are logged on as root, type **cd /cdrom/cdrom0** and press **Enter**.
 - 4 Type **/usr/sbin/install_pkg SAiresapp** and press **Enter**.

Results:

- The system lists the packages that will be installed.
 - A confirmation message appears asking you to confirm that you want to proceed with the installation.
- 5 Type **y** and press **Enter** to start the installation.
Note: The installation should take less than 30 seconds.

- 6 Did a message appear indicating that the installation was successful?
 - If **yes**, go to step 7.
 - If **no**, contact Cisco Services.
- 7 In the xterm window, type **cd /** and then press **Enter**. The root directory of the CD becomes the working directory.
- 8 Type **eject cd** and then press **Enter**. The system ejects the CD.
- 9 Do you have other versions of software on another CD to install?
 - If **yes**, repeat steps 1 through 8 for each of the other software versions you need to install, then go to *Install the OS Check Table (Optional)* (on page 34).
 - If **no**, go to *Install the OS Check Table (Optional)* (on page 34).

Install the OS Check Table (Optional)

This section provides instructions for verifying the version of the OS Check Table currently on your system and for installing the latest OS Check Table version onto the DNCS, if necessary.

Important! The instructions in this section are for sites using the OSM download method. If you are using the CVT download method, go to the *Install the Set-Top Resource File (Optional)* (on page 36).

Checking the OS Check Table Version and Backing Up the OS Check Table File

Before installing the OS Check Table file, complete the following steps to verify the version of the OS Check Table currently on your system.

Note: You should already be logged in to an xterm window on the DNCS as dncs user.

- 1 Type **head -1 /dvs/dvsFiles/OsCheckTable** and press **Enter**.

Note: The 1 in -1 is the number 1, not the lowercase L.

Result: A message similar to the following displays on the screen:

! OsCheckTable Contents *Version 3.191 [This Table applies to all Released OS's]**

- 2 Does the message display a version of the OS Check Table that either matches or is a later version than the version specified in the software release notes?
 - If **yes**, you already have the current OS Check Table file. Select one of the following options:
 - If you plan to use the CVT method to upgrade some of your DHCTs, go to *Install the Set-Top Resource File (Optional)* (on page 36)
 - If you plan to use only the OSM method, go to *Clean Up the Download Directory* (on page 28)
 - If **no**, go to step 3.
- 3 Type **cd /dvs/dvsFiles** and press **Enter**. The /dvs/dvsFiles directory becomes the working directory.
- 4 Type **cp -p OsCheckTable OsCheckTable.bak.[date]** and press **Enter**.

Note: Use today's date in *mmddyy* format as the [date].

Result: The system copies the OsCheckTable file to OsCheckTable.bak.[date].
- 5 Choose one of the following options:
 - If you are installing the OS Check Table from the FTP server, go to the next topic in this document
 - If you are installing the OS Check Table from a CD, go to *Installing the OS Check Table File from a CD* (on page 35)

Installing the OS Check Table File from an FTP Server

After installing the application platform release onto the DNCS, use these instructions to install the OS Check Table onto the DNCS.

Note: You should still be logged in to an xterm window as root user.

- 1 Type **cd /export/home/dnCS/download** and press **Enter**. The /export/home/dnCS/download directory becomes the working directory.
- 2 Type **cp OsCheckTable . <version> /dvs/dvsFiles/OSCheckTable** and press **Enter**.

Example: Type **cp OsCheckTable .3.338 /dvs/dvsFiles/OSCheckTable**.

Result: The system copies the OsCheckTable file from the current directory to the /dvs/dvsFiles directory.

- 3 Are you installing the set-top resource file for CVT downloads of the new software?
 - If **yes**, go to *Install the Set-Top Resource File (Optional)* (on page 36).
 - If **no**, type **exit** and press **Enter** to log out of the xterm window as root user. Then, go to *Phase Two - Test New Software* (on page 39).
- 4 Go to *Clean Up the Download Directory* (on page 28).

Installing the OS Check Table File from a CD

After installing the application platform release onto the DNCS, use these instructions to install the OS Check Table onto the DNCS.

Note: You should still be logged in to an xterm window as root user.

- 1 Insert the CD containing the OS Check Table into the CD drive of the DNCS. The system automatically mounts the CD to /cdrom/cdrom0 within 30 seconds.
- 2 Type **df -n** and press **Enter**. A list of the mounted file systems appears.

Note: The presence of /cdrom in the output confirms that the system correctly mounted the CD.
- 3 Type **cd /cdrom/cdrom0** and press **Enter**. The /cdrom/cdrom0 directory becomes the working directory.
- 4 Type **cp OsCheckTable /dvs/dvsFiles** and press **Enter**. The system copies the OsCheckTable file from the CD to the /dvs/dvsFiles directory.
- 5 In the xterm window, type **cd /** and then press **Enter**. The root directory of the CD becomes the working directory.
- 6 Type **eject cdrom** and press **Enter**. The system ejects the CD.
- 7 Are you installing the set-top resource file for CVT downloads of the new software?
 - If **yes**, go to *Install the Set-Top Resource File (Optional)* (on page 36).
 - If **no**, type **exit** and press **Enter** to log out of the xterm window as root user.

Install the Set-Top Resource File (Optional)

For CVT downloads, you must install the set-top resource file (settop.xxx) that contains the device types installed in your network. The system refers to this data during the image file download assignment process to verify software compatibility with the selected device type.

Note: The DNCS user interface for the CVT download was created before CableCARD modules existed. Therefore, the interface displays *DHCT* in several places where the more generic term *devices* would be more accurate. This is a cosmetic issue; all screens work as required for CableCARD modules.

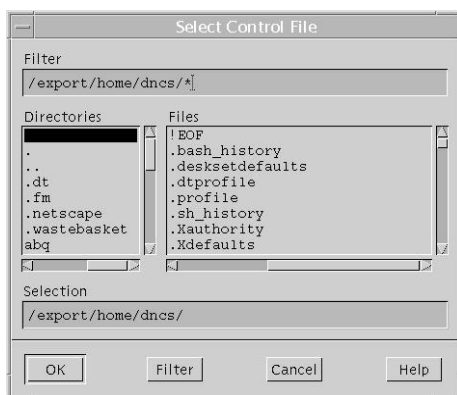
Loading the Set-Top Resource File

Complete the following steps to load the set-top resource file (settop.res) into the DNCS database.

- 1 On the DNCS Administrative Console, select the **DNCS** tab and then select the following tab based on the system release you have installed:
 - For SR 2.2/3.2/4.0 and earlier, select the **Element Provisioning** tab.
 - For SR 2.5/3.5/4.2 and later, select the **Home Element Provisioning** tab.
- 2 Click **Image**. The Image List window opens.
- 3 Click **Advanced** and select **Load DHCT Resource File**. The Load DHCT Resource File window opens.



- 4 Click **Browse**. The Select Control File window opens.



- 5 Highlight the current entry in the Filter field and press **Backspace** to delete it.

- 6 Choose one of the following options:
 - If you are installing the set-top resource file from the FTP Server, type **/export/home/dncs/download/settop*** in the Filter field.
 - If you are installing the set-top resource file from a CD, complete the following steps.
 - a Insert the CD containing the settop.res file into the CD drive of the DNCS. The system automatically mounts the CD to /cdrom/cdrom0 within 30 seconds.
 - b Type **/cdrom/cdrom0/settop*** in the Filter field.
- 7 Click **Filter**. The Selection field updates with the directory from which you selected the resource file.
- 8 Click **settop.vxx** in the Files column.

Important! This file is named **settop.v** followed by a version number (for example, **settop.v62**). Be sure that you select the latest version of this file.
- 9 Click **OK**. The DHCT Resource File field in the Load DHCT Resource File window updates to display the settop.res file path.
- 10 Click **Save**. A **Process Control file saved** message appears on the Image List window.
- 11 On the Image List window, click **File** and select **Close**.
- 12 If you installed the settop resource file from a CD, type **eject cdrom** (in either the CD window or in an xterm window) and press **Enter**.
- 13 Go to *Phase Two - Test New Software* (on page 39).

3

Phase Two - Test New Software

Introduction

This chapter describes the steps necessary to complete testing of the software download process.

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Overview

After you confirm that your system is healthy and you have downloaded software onto the DNCS, you must test the download process with your test devices. To do this, you must load the software onto the BFS carousel and send a directed download to the test devices.

Before You Begin

Before you begin Phase Two, you must complete *Phase One - Perform Pre-Upgrade Checks* (on page 15) and record your results in the *Phase One Checklist* (on page 17).

When Do You Begin Phase Two?

Begin Phase Two of the installation process on the day before the scheduled installation date. This phase takes from 10 to 20 minutes for each device you are testing.

You can complete Phase Two during regular business hours.

Important! After you begin Phase Two, you will not be able to stage DHCTs that will be upgraded using the OSM download method until you have finished installing the client application platform software in Phase Three.

What Do You Need?

Refer to *What Do You Need?* (on page 3) for the list of items you need.

In addition, this chapter refers to many procedures that are contained in the publications listed in *Related Publications* (on page vii). Therefore, you may also want to gather those publications before you begin.

The test procedures in this chapter assume that you are testing one DHCT hardware revision for every set of files.

You will need a secure GUI password. Use one of the following options to obtain the password:

- **If you are a site that supports subscribers**, then you can obtain a secure GUI password from Cisco Services. This provides Cisco Services with the opportunity to communicate known issues about the software as well as other information that may be needed before loading the software onto your network.
- **If you are a software developer**, Cisco Services can disable the secure GUI for you. Contact Cisco Services for more information on disabling the secure GUI.

Note: DHCTs are designed to use specific software files and versions. Even with the secure GUI password disabled, you cannot associate files with a DHCT that it was not designed to use.

Third-Party Applications

In many cases, changes to the application platform software require changes to third-party applications that you use. Check with the third-party application providers to determine if the applications need to change.

Your test results might be invalid or might show known issues that the new third-party application will correct. Therefore, you should be familiar with the changes to the application platform software so that you can accurately evaluate the test results.

Phase Two OSM Checklist

Use the checklist in this chapter to check off each task as you complete it. When you finish this phase, save a copy of the checklist and all of the results from any tests that you run in the event that the installation process fails during a later phase.



CAUTION:

You must complete each task in this checklist before you can proceed to the next task. Otherwise, you risk a failed installation, which could disrupt service to your subscribers.

Where necessary, the remaining sections of this chapter provide further detail to help you complete each task in this checklist.

OSM Installation Checklist

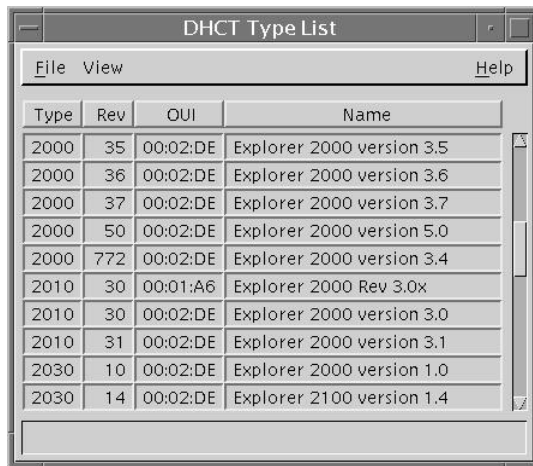
- ☐ 1 Unassign the TOC files for the DHCT types you are upgrading that use the OSM download method.
- ☐ 2 Remove the unused ver and split image files from the OS List.
- ☐ 3 Install the application platform software release onto the BFS.
- ☐ 4 Download OSM software to the test DHCTs.
- ☐ 5 Verify that the test DHCTs operate as expected by checking the following:
 - Check Page 5 of the diagnostic screens on the test DHCT to verify that the software version is correct.
 - Check Page 2 of the diagnostic screens to verify that all boot statuses are correct.
 - Verify that the IPG can display current and future data.
 - Verify that all third-party applications are available and function as expected.
 - Verify that you can successfully purchase and view a PPV or IPPV event on the test DHCT.
- ☐ 6 When you finish the OSM portion of Phase Two, do one of the following:
 - If you have DHCTs to test for CVT, go to *Phase Two CVT Checklist* (on page 52).
 - If you do not have DHCTs to test for CVT, go to *Phase Three - Install New Software* (on page 63).

Remove and Unassociate the OSM Software

The next step in the OSM download process is to remove and unassociate the TOC files for the DHCTs in your network that will receive the new software.

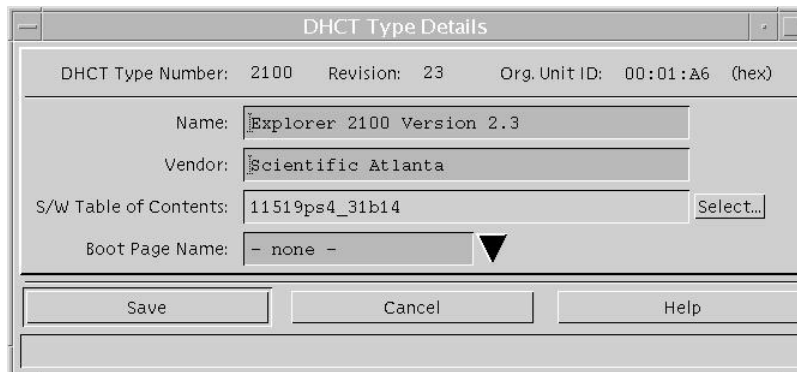
Unassociating and Removing the OSM Files

- 1 On the DNCS Administrative Console, select the **DNCS** tab and then select the following tab based on the system release you have installed:
 - For SR 2.2/3.2/4.0 and earlier, select the **Element Provisioning** tab.
 - For SR 2.5/3.5/4.2 and later, select the **Home Element Provisioning** tab.
- 2 Click **Type**. The DHCT Type List window opens, listing the DHCT type, revision, OUI, and name.



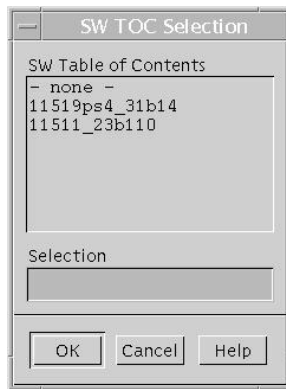
Type	Rev	OUI	Name
2000	35	00:02:DE	Explorer 2000 version 3.5
2000	36	00:02:DE	Explorer 2000 version 3.6
2000	37	00:02:DE	Explorer 2000 version 3.7
2000	50	00:02:DE	Explorer 2000 version 5.0
2000	772	00:02:DE	Explorer 2000 version 3.4
2010	30	00:01:A6	Explorer 2000 Rev 3.0x
2010	30	00:02:DE	Explorer 2000 version 3.0
2010	31	00:02:DE	Explorer 2000 version 3.1
2030	10	00:02:DE	Explorer 2000 version 1.0
2030	14	00:02:DE	Explorer 2100 version 1.4

- 3 Double-click the DHCT type and revision that matches the DHCT type and revision receiving the new software being tested. The DHCT Type Details window opens.



DHCT Type Details			
DHCT Type Number:	2100	Revision:	23
Org. Unit ID:	00:01:A6	(hex)	
Name:	Explorer 2100 Version 2.3		
Vendor:	Scientific Atlanta		
S/W Table of Contents:	11519ps4_31b14	Select...	
Boot Page Name:	- none -		
<div> <div>Save</div> <div>Cancel</div> <div>Help</div> </div>			

- 4 Click **Select** next to the S/W Table of Contents field. The SW TOC Selection window opens.



Note: The SW TOC Selection window lists the software files eligible for download into DHCTs of this type. Both the current and the new files should be listed.

- 5 Select **None** and click **OK**. The SW TOC Selection window closes.
- 6 Click **Save**.
- 7 Repeat steps 3 through 6 for every DHCT type that you plan to upgrade that is using OSM, as well as any DHCT type that will be switching to CVT as part of this upgrade.
- 8 After you unassociate the last DHCT type, select **File** and choose **Close**. The DHCT Type List window closes.

Important! At this point in the download process, you can no longer stage DHCTs that are receiving new software using OSM.

- 9 Open an xterm window on the DNCS.
- 10 Run the listOSM utility. See *Run listOSM Utility* (on page 22) for more information.

Note: The output of this script helps you to determine which files are no longer required.

- 11 On the DNCS Administrative Console, select the **DNCS** tab and then select the following tab based on the system release you have installed:
 - For SR 2.2/3.2/4.0 and earlier, select the **Element Provisioning** tab.
 - For SR 2.5/3.5/4.2 and later, select the **Home Element Provisioning** tab.

- 12 Click **OS**.

- 13 Highlight the file name and select **Delete** for each DHCT software file in step 10 that is identified as unused.

Important! Do not delete files with different naming formats such as .rle, .res, or .dat. These files are used by other functions such as logos and configuration files.

Note: The DHCT software files typically have file extensions of .ver, _0, and _1.

- 14 Repeat step 10 to confirm you have deleted all unnecessary software files.
Important! Configuration and logo files might be listed as unused. Do not remove these files.
- 15 Your next step is to install the application platform software release onto the BFS. Go to *Install the Application Platform Release for OSM Downloads* (on page 46).

Install the Application Platform Software Release for OSM Downloads

After disassociating and removing the old software files in the OS List window, complete the procedures in this section to install the application platform software release onto the BFS.

DHCT types that use the OSM Download method require the VER file and two software files to be loaded onto the BFS carousel before being downloaded to the DHCTs in the network.

Example: For Explorer 2000s, you would need the following files:

- 15423001pe2m_3109002.ver (sent out-of-band as a software TOC file)
- 15423001pe2m__0 (sent in-band)
- 15423001pe2m__1 (sent in-band)

Note: See the *ROM to Model Matrix* (on page 107) for information on the ROM file names.

Before You Begin

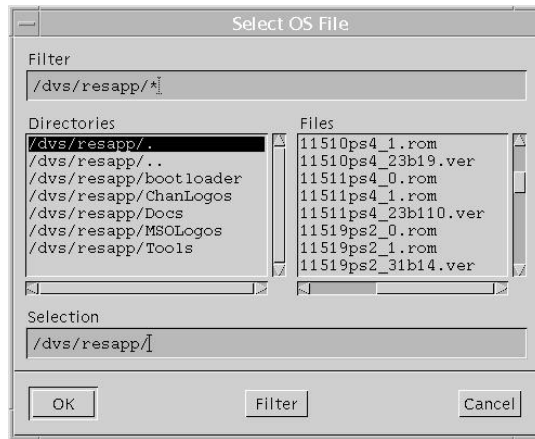
Use the DHCT Type, Revision, and Source File Matrix in the *ROM to Model Matrix* (on page 107) to identify the source files needed to download software to the DHCT population.

Important!

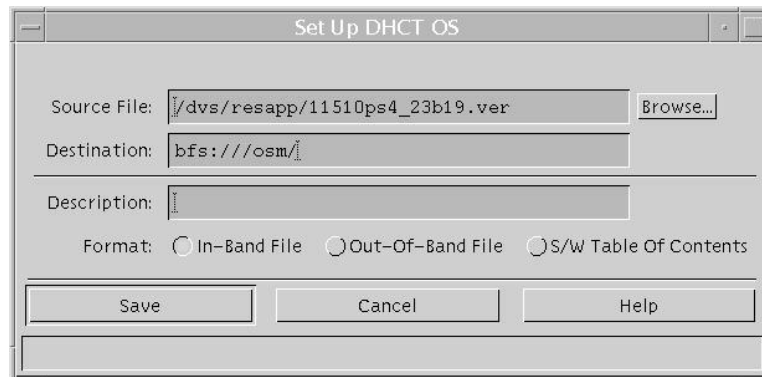
- If a file is used by more than one DHCT type or DHCT revision, you only need to add that file once.
- Unnecessary files will slow the software download. Be careful to load only those files currently required by your system. Refer to *How Do I Manage the Files on My System?* (on page 2) for more information.

Installing the Software onto the BFS

- 1 On the DNCS Administrative Console, select the **DNCS** tab and then select the following tab based on the system release you have installed:
 - For SR 2.2/3.2/4.0 and earlier, select the **Element Provisioning** tab.
 - For SR 2.5/3.5/4.2 and later, select the **Home Element Provisioning** tab.
- 2 Click **OS**. The DHCT OS List window opens.
- 3 Select **File** and choose **New**.
- 4 Click **Browse**. The Select OS File window opens.



- 5 In the filter field, type **/dvs/resapp/xxx*** (where **xxx*** is part of the software file name) and then select the appropriate **VER** file.
Example: If you type **/dvs/resapp/141***, the system shows a list of all the **141** files.
- 6 Select the ver file you need for the DHCTs used in your system.
Example: Select **1419pe2b10_3321001.ver**.
- 7 Click **OK**. The Set Up DHCT OS window opens.



- 8 Configure the fields on the Set Up DHCT OS window as follows:
 - **Destination:** Append the file name to the path shown for the destination file name.
Example: `bfs:///osm/1419pe2b10.ver`
 - **Description:** Copy or enter the file name.
Example: `1419pe2b10.ver`
 - **Format:** Select **S/W Table of Contents**.
- 9 Click **Save**. If the save is successful, the DHCT OS List window opens.
Note: If the save fails, verify that the file name is listed in the OS list.
 - If it is listed, the file already exists on your BFS. Continue with the installation.
 - If it is **not** listed, call Cisco Services.
- 10 Select **File** and choose **New**.
- 11 Click **Browse**. The Select OS File window opens.
- 12 Select the related `_0` file from the file list.
Example: `1419pe2b10_0`
- 13 Click **OK**.
- 14 Configure the fields on the Set Up DHCT OS window as follows:
 - **Destination:** Append the file name to the path shown for the destination file name.
Example: `bfs:///osm/1419pe2b10_0`
 - **Description:** Copy or enter the file name.
Example: `1419pe2b10_0`
 - **Format:** Select **In Band File**.
- 15 Click **Save**. If the save is successful, the DHCT OS List window opens.
Note: If the save fails, verify that the file name is listed in the OS list.
 - If it is listed, the file already exists on your BFS. Continue with the installation.
 - If it is **not** listed, call Cisco Services.
- 16 Select **File** and choose **New**.
- 17 Click **Browse**. The Select OS File window opens.
- 18 Select the related `_1` file from the file list.
Example: `1419pe2b10_1`
- 19 Click **OK**.

- 20 Configure the fields on the Set Up DHCT OS window as follows:
 - **Destination:** Append the file name to the path shown for the destination file name.
Example: `bfs:///osm/1419pe2b10_1`
 - **Description:** Copy or enter the file name.
Example: `1419pe2b10_1`
 - **Format:** Select **In Band File**.
- 21 Click **Save**. If the save is successful, the DHCT OS List window opens.
Note: If the save fails, verify that the file name is listed in the OS list.
 - If it is listed, the file already exists on your BFS. Continue with the installation.
 - If it is **not** listed, call Cisco Services.
- 22 Repeat steps 2 through 21 for each set of files you are loading onto the BFS carousel. When all of the files are loaded, go to step 23.
- 23 Select **File** and choose **Close**. The DHCT OS List Window closes.
- 24 Your next step is to associate the software for each of the test DHCTs. Go to *OSM Download for Individual Test DHCTs* (on page 50).

OSM Download for Individual Test DHCTs

The next step in the OSM download process is to use the DNCS to associate software for each test DHCT.

Assigning the TOC File for Test DHCTs

Complete the following steps to associate software for individual test DHCTs using the OSM download method.

- 1 Ping the test DHCTs to make sure that they are connected to the network and set to two-way mode.
- 2 Open the Set Up DHCT screen and associate the new code to the DHCT.

- 3 Click **Select** next to the **S/W Table of Contents** field.
- 4 Select the **.ver** file and click **OK**.
Note: If all of the steps in this process (up to this point) have been executed correctly, then the **.ver** file for the new software should be your only choice.
- 5 Click **Save**.
- 6 Repeat steps 1 through 5 for each DHCT that you are testing.
- 7 Your next step is to download OSM software to the DHCTs. Go to *Download Software to the Individual Test DHCTs* (on page 51).

Download Software to the Individual Test DHCTs

This section contains procedures for downloading software to the test DHCTs.

Note: The following test configuration requires that test DHCTs are In Service Two Way and are connected to a functioning two-way RF cable drop. You can confirm this by viewing Page 4 diagnostic screen and verifying that the DHCT has an IP address.

Downloading Software to Individual Test DHCTs

- 1 Unplug the power cord from the back of the DHCT.
- 2 Press and hold the **VOL -** key on the DHCT while plugging the power cord into the back of the DHCT. The DHCT boots into Guardian mode.
- 3 Press the **Power** button on the DHCT you are testing.

Results:

- The DHCT reads the index file.
- The DHCT loads the _0 ROM file and reboots back into Guardian mode.

- 4 Press the **Power** button again on the DHCT you are testing.

Results:

- The DHCT reads the index file.
- The DHCT loads the _1 ROM file and reboots back into Guardian mode.

- 5 When the download is complete, verify that the test DHCT operates as expected.
- 6 Repeat steps 1 through 5 for each test DHCT, and then go to step 7.
- 7 Complete one of the following options:
 - If you have DHCTs to test for CVT, go to *Phase Two CVT Checklist* (on page 52).
 - If you do not have DHCTs to test for CVT, go to *Phase Three - Install New Software* (on page 63).

Phase Two CVT Checklist

Use the checklist in this chapter to check off each task as you complete it. When you finish this phase, save a copy of the checklist and all of the results from any tests that you run in the event that the installation process fails during a later phase.



CAUTION:

You must complete each task in this checklist before you can proceed to the next task. Otherwise, you risk a failed installation, which could disrupt service to your subscribers.

Where necessary, the remaining sections of this chapter provide further detail to help you complete each task in this checklist.

CVT Installation Checklist

- ☐ 1 Create or update test group(s) for each DHCT or CableCARD module type and revision that will be upgraded using the CVT download process.
Note: A test group can contain multiple types of both DHCTs and CableCARD modules, therefore, you can have a single test group for all of your test devices.
- ☐ 2 Load the new image files onto the BFS.
- ☐ 3 Download the new software to the test groups.
- ☐ 4 Verify that the test devices operate as expected by checking the following:
 - DHCTs**
 - Check Page 5 of the diagnostic screens on the test DHCT to verify that the software version is correct.
 - Check Page 2 of the diagnostic screens to verify that all services are available.
 - Verify that the IPG contains 7 days of data.
 - Verify that all third-party applications are available and function as expected.
 - Verify that you can successfully purchase and view a PPV event on the test DHCT.
 - CableCARD Modules**
 - Verify that each host can display all authorized services.
- ☐ 5 You have completed Phase Two. Save a copy of both Phase Two checklists and copies of the results from any tests that you completed during this phase. Go to *Phase Three - Install New Software* (on page 63)

Create and Update CVT Test Groups

To ensure a successful software download to all devices in the network, Cisco recommends that you create a unique test group to test the CVT download process and the operation of the new software in your network.

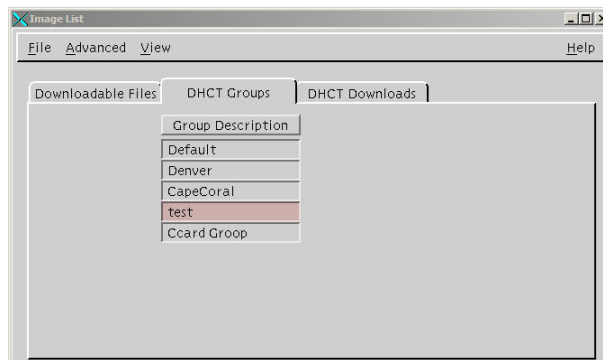
This section provides instructions to create test groups.

Creating CVT Test Groups

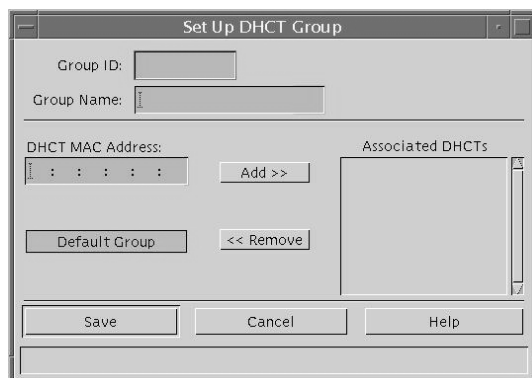
Note: If you already created CVT test groups, do not complete this procedure; go to *Updating CVT Test Groups* (on page 55).

Complete the following steps to create test groups for devices in the network.

- 1 On the DNCS Administrative Console, select the **DNCS** tab and then select the following tab based on the system release you have installed:
 - For SR 2.2/3.2/4.0 and earlier, select the **Element Provisioning** tab.
 - For SR 2.5/3.5/4.2 and later, select the **Home Element Provisioning** tab.
- 2 Click **Image**. The Image List window opens.
- 3 Click the **DHCT Groups** tab. The DHCT Groups tab opens.



- 4 Select **File** and choose **New**. The Set Up DHCT Group window opens.



- 5 Configure the fields on the Set Up DHCT Group window as follows:
 - **Group ID:** Type a unique group identification number (other than zero)
 - **Group Name:** Type a meaningful name for the group.
Example: CVT_Download_Test.

- **DHCT MAC Address:** Type the MAC address of a device you want to include in the new group.

Important! Before you add CableCARD modules to a CVT group, the modules should be installed in a host and functioning correctly.

- 6 Click **Add**. The MAC Address of the device moves to the Associated DHCTs column.
- 7 Repeat steps 5 and 6 for each device you want to add to the group.
- 8 Click **Save**. The new group appears in the list of group descriptions on the DHCT Groups tab.

Note: A device should be connected to the network within 2 hours of creating or adding it to a test group. If the device is not connected within 2 hours, then the device does not receive a group assignment until the DNCS database cycles through all in-service devices at a rate of approximately one device per second. Depending on the number of devices in your system, this process could take a significant amount of time.

- 9 Choose one of the following options to confirm that the device was successfully placed into the test group:

- **DHCTs:** Go to Page 12 of the diagnostic screens and look at the **Group ID** field. This group ID should match the Group ID displayed on the Set Up a DHCT Group window on the DNCS. Go to step 10.

Note: The Group ID on the DHCT is in hexadecimal format. The Group ID on the DNCS is in decimal format. You might need to convert the Group ID to verify this step.

- **CableCARD modules:** You cannot determine the group assignment from the diagnostic screens. Diagnostic screens are different for each host vendor. Therefore, you can only determine that the CableCARD module downloaded software after you complete the download process. Go to *Updating CVT Test Groups* (on page 55).

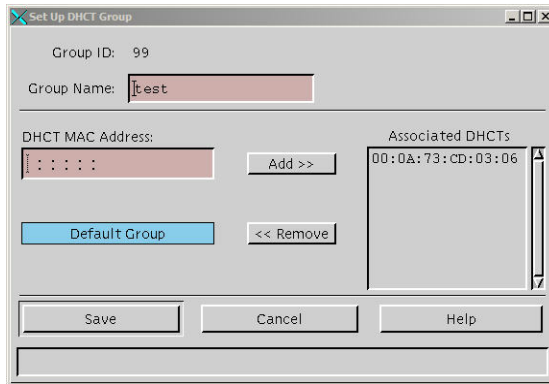
Note: The group ID value on the diagnostic screen displays a hex value. The group ID value on the DNCS displays a decimal value.

- 10 Do the Group ID values on the diagnostic screen and DNCS match?
 - If **yes**, go to **Updating CVT Test Groups**, next in this document.
 - If **no**, contact Cisco Services.

Updating CVT Test Groups

Complete the following steps to update test groups for devices in the network.

- 1 From the DHCT Groups tab in the Image List window, select the group you want to update from the list.
- 2 Click **File** and select **Open**. The Set Up DHCT Group window for the group you selected opens.



- 3 Evaluate the list in the Associated DHCTs list. Are the Associated DHCTs listed correct?
 - If **yes**, click **Cancel**, and then go to *Load the New Image File* (on page 56).
 - If **no**, add or remove MAC addresses (as needed), then click **Save**.
- 4 Do you need to modify another group?
 - If **yes**, repeat steps 1 through 3.
 - If **no**, go to *Load the New Image File* (on page 56).

Load the New Image File

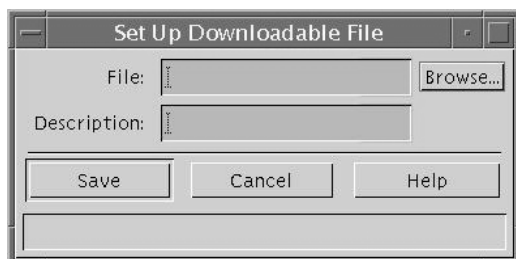
The next step is to load the image files onto the BFS. Load only the image files for the devices that you have in your system.

Important!

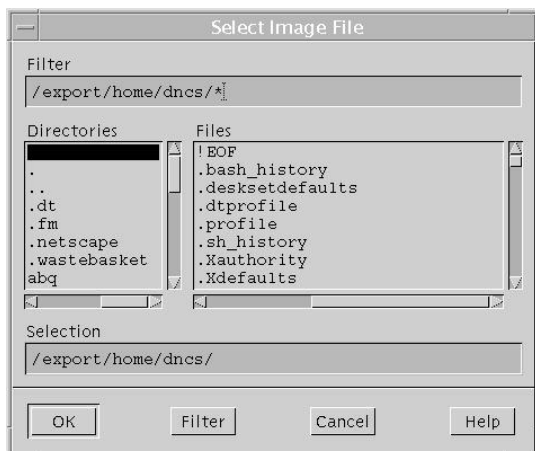
- If a file is used by more than one DHCT type or DHCT revision, you only need to add that file once.
- Unnecessary files will slow the software download. Be careful to load only those files currently required by your system. Refer to *How Do I Manage the Files on My System?* (on page 2) for more information.

Loading the Image File onto the BFS

- 1 On the DNCS Administrative Console, select the **DNCS** tab and then select the following tab based on the system release you have installed:
 - For SR 2.2/3.2/4.0 and earlier, select the **Element Provisioning** tab.
 - For SR 2.5/3.5/4.2 and later, select the **Home Element Provisioning** tab.
- 2 Click **Image**. The Image List window opens.
- 3 Click the **Downloadable Files** tab.
- 4 On the Image List window, click **File** and select **New**. The Set Up Downloadable File window opens.



- 5 Click **Browse**. The Select Image File window opens.



- 6 Highlight the current entry in the **Filter** field and press **Backspace** to delete it.
- 7 Choose one of the following options for the **Filter** field:
 - **DHCTs:** Type **/dvs/resapp/xxx*rom**
 - **CableCARD modules:** Type **/dvs/cablecard/xxx*rom**

Note: The "xxx" is part of the file name provided in the software release notes document.

Example: For a DHCT, type **/dvs/resapp/141*rom**.
- 8 Click **Filter**. The directory entered becomes the working directory and a filters file list opens.
- 9 In the Files column, select the ROM file that you want to add to the list of downloadable files.

Example: **1419pe4a7.rom**
- 10 Click **OK**. The file path for the ROM file opens on the Set Up Downloadable File window.
- 11 In the Downloadable File window, copy or type the file name without the path in the **Description** field.

Example: **1419pe4a7.rom**
- 12 Click **Save**. The new file and file description appear in the Image List window.

Note: If the save fails, the file may already exist in the list.
- 13 Go to *Download to the CVT Test Groups* (on page 58).

Download to the CVT Test Groups

This section provides instructions for downloading the software to the test groups you have created.

Downloading Software to the CVT Test Groups

Important! You will need the SW TOC Verification password (or secure GUI password) that you requested in *Additional Download Requirements* (on page 9) to complete the following steps.

- 1 Open an xterm window on the DNCS.
- 2 Type `cd /export/home/dncs/doctor` and press **Enter**.
- 3 Type `doctor -q` and press **Enter**. Initially, this command sends a ping command to the QAM to ensure the QAM is communicating with the DNCS. Then, a remote procedure call (RPC) request is sent to each QAM to validate that the higher levels functions in the QAM are working correctly.
- 4 Are all of the QAMs active in the network?
 - If **yes**, go to step 5.
 - If **no**, reboot any non-responding QAM. If a QAM continues to be unresponsive, then contact Cisco Services.

Example: The following is an example list of network elements that have non-responding QAMs.

```
Error: QAM BIGQam      172.16.4.200    is not pingable.
OK:    QAM BCASTQAM1   172.16.4.201    is alive.
OK:    QAM BCASTQAM1   172.16.4.201    RPC working.
Error: QAM VODMBQAM1   172.16.4.210    is not pingable.
OK:    QAM BCASTQAM2   172.16.4.202    is alive.
OK:    QAM BCASTQAM2   172.16.4.202    RPC working.
OK:    QAM BCASTQAM3   172.16.4.203    is alive.
OK:    QAM BCASTQAM3   172.16.4.203    RPC working.
OK:    QAM VODMQAM2    172.16.4.212    is alive.
OK:    QAM VODMQAM2    172.16.4.212    RPC working.
OK:    BIG CVLab       172.16.4.101    is alive.
OK:    TED dncsted     192.168.1.2     is alive.
```

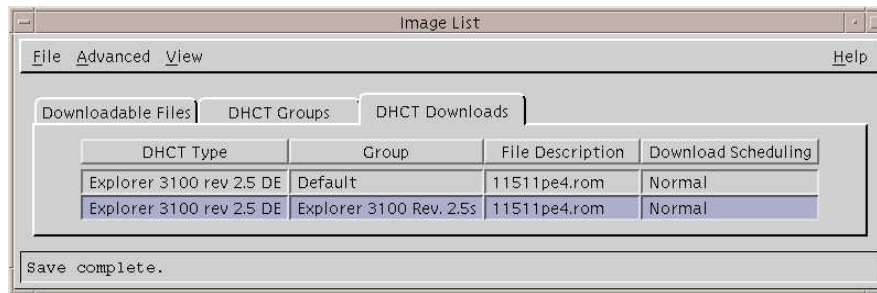


CAUTION:

Non-responding QAMs may have an old CVT table retained in memory. If the non-responding QAMs do not become active, then the DHCT or CableCARD module may attempt to download software because it is receiving conflicting information from the non-responding QAMs.

- 5 Click **Image**. The Image List window opens.

- 6 On the Image List window, click the **DHCT Downloads** tab. The Image List window updates to display the different devices that have already been configured for a CVT download.



- 7 Click on the top of the **Group** column to sort the list of DHCT types by group.
- 8 Does a configured download already exist for the DHCT type, revision, and group that you are testing?
- If **yes**, select **File** and choose **Open**.
 - If **no**, go to step 10.
- 9 At the **File Description** field, click the down arrow and choose the new software. Go to step 12.
- 10 Select **File** and click **New**. The Set Up DHCT Download window opens.
- 11 Complete the following steps to configure the Set Up DHCT Download window for the test download.
- a Click the **DHCT Type** field arrow and select a device that needs to receive the new software.
 - b Click the **Group** field arrow and select the test group you created in *Create and Update CVT Test Groups* (on page 53).
 - c Click the **File Description** field arrow and select the file that corresponds to the new application platform release that you want to download.
Note: Unless you have old or test versions still posted, there should be only one choice.
 - d Click the **Download Scheduling** field arrow and select **Emergency**.

- 12 On the Set Up DHCT Download window, click **Save**.

Notes:

- The image on the window may not match the image in this guide. The software versions and the DHCT types and revisions may differ.
- An emergency download begins instantaneously and no barker opens to the subscriber.

Result: The Association Verification window opens.



- 13 Verify that the DHCT Type, Group, and Image File versions shown on the Association Verification window are correct.
- 14 Configure the following fields on the Association Verification window:
- **Are you SURE you want to do this?:** Type **yes**.
 - **Enter your name:** Type the name (in lowercase letters) you provided to Cisco Services when you requested the secure GUI password.
 - **Password:** Type the password you received from Cisco Services.
- 15 Click **OK**.

Results:

- The Association Verification window closes.
 - The Image List window is updated with the newly defined test download schedule.
 - The software download to the DHCT test groups begins.
- 16 Do you have more devices or groups to test?
- If **yes**, repeat steps 7 through 15 for each group being tested.
Note: Since a group can contain multiple DHCT types, you might have multiple downloads to the same DHCT group.
 - If **no**, in the Image List window, click **File** and select **Close** to return to the Admin Console window.
- 17 Open an xterm window on the DNCS.
- 18 Type **cd /export/home/dnccs/doctor** and press **Enter**.

- 19 Type **doctor -q** and press **Enter**.
- 20 Are all of the QAMs still active in the network?
 - If **yes**, go to step 21.
 - If **no**, reboot any non-responding QAM. If a QAM continues to be unresponsive, then contact Cisco Services.
- 21 Your next step is to verify that the test device or devices downloaded software and operate as expected. Go back to step 4 of *Phase Two CVT Checklist* (on page 52) for more information. Then, go to *Phase Three - Install New Software* (on page 63).

4

Phase Three - Install New Software

Introduction

This chapter contains procedures for downloading the software to your subscribers' DHCTs.

In This Chapter

■ Overview	64
■ Installation Checklist.....	67
■ OSM Download Method.....	68
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■ Phase Three Completion Check.....	76

Overview

At this stage, you are ready to download and install the software onto your system. Before you update your system software, review your system's health and take appropriate action to correct any problems.

When Do You Begin Phase Three?

Begin Phase Three of the installation process within 24 hours after completing Phase Two.

This phase takes 5 minutes per device to initiate the download process. The time for the DHCT or the CableCARD module to load software varies as it depends on the configuration at the site.

You should complete Phase Three during a maintenance window.

What Do You Need?

Refer to *What Do You Need?* (on page 3) for the list of items you need.

In addition, this chapter refers to many procedures that are contained in the publications listed in *Related Publications* (on page vii). Therefore, you may also want to gather those publications before you begin.

You will need a secure GUI password. Use one of the following options to obtain the password:

- **If you are a site that supports subscribers**, then you can obtain a secure GUI password from Cisco Services. This provides Cisco Services with the opportunity to communicate known issues about the software as well as other information that may be needed before loading the software onto your network.
- **If you are a software developer**, Cisco Services can disable the secure GUI for you. Contact Cisco Services for more information on disabling the secure GUI.
Note: DHCTs are designed to use specific software files and versions. Even with the secure GUI password disabled, you cannot associate files with a DHCT that it was not designed to use.

How Long Does it Take?

The download times for both OSM and CVT are directly related to the number of image files you have on your BFS (carousel). The number of files is determined by the following factors:

- The number of different DHCT and CableCARD module types requiring unique files on your system

- The number of test releases and/or old releases still on your system

You should use the listOSM and listCVT utilities to identify unnecessary files that can be removed. See *Run listOSM Utility* (on page 22) and *Run listCVT Utility* (on page 24) for information on setting up and running these utilities. You should also keep the number of test releases on your system to a minimum.

Important! These times are approximate and do not consider outside influences. For example, a DHCT on an RF cable with a poor signal might have to wait for the carousel to cycle multiple times to completely read the file due to a high number of bit errors. You should use these methods for estimating download times only to set expectations as you prepare to perform the download. You should not use them as absolute measures of download performance.

Run the Doctor Report

To help determine what the expected download times should be, you should run version 5.1.0.6 of the Doctor report. This report shows the ACCT (average or approximate carousel cycle time), which you can use to determine a reasonably accurate expected download time.

Example:

```
BFS Carousel and OSM Sessions Status

=====

                                =Datarate=      =KBytes=Intrvl=Enabled=ACCT=
OK: System_Carousel OOB s( 0) up  .01 Mbps      14.047   200      Y      0:12
OK: Out_of_Band      OOB s( 1) up  .05 Mbps      62.779   200      Y      0:11
OK: In_Band          IB s( 2) up  1.00 Mbps    19650.700  100      Y      2:56
OK: CAM_OOB          OOB s( 3) up  .01 Mbps       0.312   200      Y      0:00
OK: SGM_IB           IB s( 24) up  1.00 Mbps       0.376   100      Y      0:00
OK: bootloader       IB s( 199) up  3.00 Mbps   145554.676  100      Y      7:16
OK: VCS-IB           IB s( 204) up  1.00 Mbps       0       100      Y      0:00

Aggregate IB Carousel Datarate      = 33.25 Mbps
Warning: Aggregate OOB Carousel Datarate= .43 Mbps

=====
```

Note: Several lines of the above report have been removed for clarity.

CVT Download Times

For CVT downloads, review the ACCT column for the boot loader carousel in the Doctor report results. This is your best-case download time.

Note: The time shown in the ACCT column for the boot loader carousel is the time it takes the carousel to cycle and does not consider "hunting time." If the DHCT has to hunt for the CVT, the time can increase.

You can expect a CVT download (that requires no hunting) to take about 7 minutes and 16 seconds, based on the bootloader carousel ACCT number (the `OK: bootloader` line in the example report). If the download misses a block and has to wait for the carousel to start again, it could take up to 14 minutes. Remember that some code files are significantly larger than others. As a result, some download times will be faster, while others will be closer to the predicted value.

Note: The more extraneous files you have in your system, the longer your download times will be. Be sure to clean up your system files, as described in *Clean Up the Download Directory* (on page 28).

OSM Download Times

For OSM downloads, review the ACCT "time" for the inband carousel, add the ACCT "time" for the out-of-band carousel, and then double the resulting "time." This is because the OSM download must read two files and the files are not read at the same time. You then need to add the uncfg and SI times. The uncfg interval and SI insert rate can affect the actual download time, so the variation from the predicted times can be slightly more for OSM than for CVT.

From the example report, we have the following configuration in our example system:

- The inband carousel (`OK: In_Band`) is 2:56
- The out-of-band carousel (`OK: Out_of_Band`) is 0:11
- uncfg interval is 0:30
- SI insert rate is 0:10

You can expect an OSM device on this example system to take approximately 8 minutes, as shown in the following example:

- 0:30 to load the first uncfg file
- 0:11 to read the .ver file
- 2:56 to read the _0 file
- 0:30 to read the second uncfg file
- 0:11 to read the .ver file a second time
- 2:56 to read the _1 file
- 0:20 to program the flash memory
- 7:34 minutes to download the software to the DHCT

Installation Checklist

Use the checklist in this chapter to check off each task as you complete it. When you finish this phase, save a copy of the checklist and all of the results from any tests that you run in the event that the installation process fails during a later phase.



CAUTION:

You must complete each task in this checklist before you can proceed to the next task. Otherwise, you risk a failed installation, which could disrupt service to your subscribers.

Where necessary, the remaining sections of this chapter provide further detail to help you complete each task in this checklist.

Installation Checklist

- ☐ 1 Review *Installation Process Overview* (on page 1). Contact Cisco Services if you have questions.
- ☐ 2 Run the **doctor -av** utility as described in the *DBDS Utilities Version 5.1 Installation Instructions and DNCS Utilities User's Guide*.
Important! If you believe your system is having problems, contact Cisco Services.
- ☐ 3 Follow the instructions in *OSM Download Method* (on page 68). The OSM procedures include the following tasks:
 - Assigning the TOC Files to the DHCTs in the network.
 - Downloading the Software to DHCTs to download software to the DHCTs in your system.
- ☐ 4 Follow the instructions in *CVT Download Method* (on page 72). The CVT procedures provide instructions to download software to newer DHCT models and CableCARD modules.
- ☐ 5 When you finish, save a copy of this checklist and the results from your tests in case the installation process fails in a later phase.
Important! Cisco recommends that you wait one week before proceeding to Phase Four.

OSM Download Method

The following instructions provide the steps to use the OSM Download Method to download the current version of the application platform software release to the DHCT network population.

Note: For those DHCTs that support CVT in your network, use the CVT download method. See *Installation Process Overview* (on page 1) for details.

Technical Support

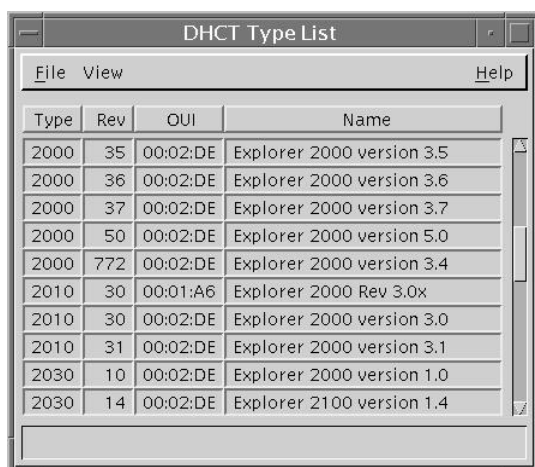
If you encounter problems with conducting your system download, please contact Cisco Services for assistance.

If your system appears unstable after downloading the application platform software release, contact Cisco Services first, before referring to the instructions in *Rollback Process* (on page **Error! Bookmark not defined.**).

Assigning the TOC Files

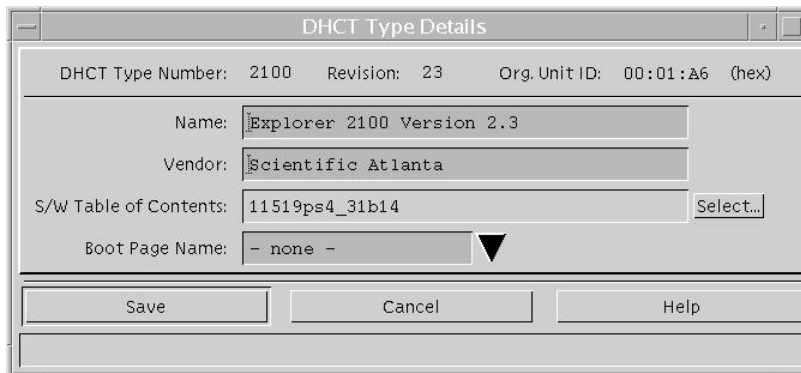
Complete the following steps to assign TOC files for DHCT types using the OSM download method.

- 1 On the DNCS Administrative Console, select the **DNCS** tab and then select the following tab based on the system release you have installed:
 - For SR 2.2/3.2/4.0 and earlier, select the **Element Provisioning** tab.
 - For SR 2.5/3.5/4.2 and later, select the **Home Element Provisioning** tab.
- 2 Click **Type**. The DHCT Type List window opens, listing the DHCT type, revision, OUI, and name.



Type	Rev	OUI	Name
2000	35	00:02:DE	Explorer 2000 version 3.5
2000	36	00:02:DE	Explorer 2000 version 3.6
2000	37	00:02:DE	Explorer 2000 version 3.7
2000	50	00:02:DE	Explorer 2000 version 5.0
2000	772	00:02:DE	Explorer 2000 version 3.4
2010	30	00:01:A6	Explorer 2000 Rev 3.0x
2010	30	00:02:DE	Explorer 2000 version 3.0
2010	31	00:02:DE	Explorer 2000 version 3.1
2030	10	00:02:DE	Explorer 2000 version 1.0
2030	14	00:02:DE	Explorer 2100 version 1.4

- Double-click the DHCT type and revision you want to download software to using the OSM method. The DHCT Type Details window opens.

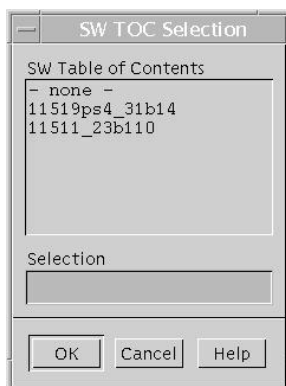


The DHCT Type Details window displays the following information:

- DHCT Type Number: 2100
- Revision: 23
- Org. Unit ID: 00:01:A6 (hex)
- Name: Explorer 2100 Version 2.3
- Vendor: Scientific Atlanta
- S/W Table of Contents: 11519ps4_31b14 (with a Select... button)
- Boot Page Name: - none - (with a dropdown arrow)

Buttons at the bottom: Save, Cancel, Help.

- Click **Select** next to the S/W Table of Contents field. The SW TOC Selection window opens.



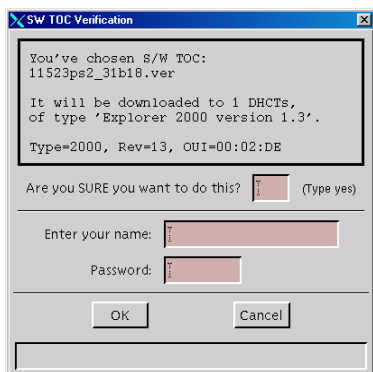
The SW TOC Selection window displays the following information:

- SW Table of Contents:
 - none -
 - 11519ps4_31b14
 - 11511_23b110
- Selection: (empty text field)

Buttons at the bottom: OK, Cancel, Help.

Note: The SW TOC Selection window lists all software files eligible for download into DHCTs of this type.

- Highlight the TOC file for the **new** software.
- Click **OK**. The SW TOC Selection window closes.
- Click **Save** on the DHCT Type Details window. The SW TOC Verification window opens.



The SW TOC Verification window displays the following information:

- You've chosen S/W TOC: 11523ps2_31b18.ver
- It will be downloaded to 1 DHCTs, of type 'Explorer 2000 version 1.3'.
- Type=2000, Rev=13, OUI=00:02:DE
- Are you SURE you want to do this? ☐ (Type yes)
- Enter your name: (text field)
- Password: (password field)

Buttons at the bottom: OK, Cancel.

- 8 Configure the following fields on the SW TOC Verification window:
 - **Are you SURE you want to do this?:** Type **yes**.
 - **Enter your name:** Type the name (in lowercase letters) you provided to Cisco Services.
 - **Password:** Type the password you received from Cisco Services.
- 9 Click **OK**. The SW TOC Verification window closes and the DHCT Type List window opens.
- 10 Repeat steps 3 through 9 for each DHCT type using the OSM download method.
- 11 Type **listOSM** and press **Enter**. A list of all DHCT types and revisions using the OSM download method displays.
- 12 Verify the list displayed on the screen with your DHCT Planning Worksheet to confirm all DHCT types and revisions are configured correctly to download the software.

Downloading the Software to the DHCTs

After assigning the TOC files, follow these instructions to begin a download of software to the DHCTs throughout your system.

Important! Subscribers experience no service interruptions during a download because the download takes place after the DHCT is powered off.

- 1 From the DNCS Administrative Console, select the **System Provisioning** tab.
- 2 Select **UN-Config**. The UN-Config window opens.
- 3 Select the **Initiate UN-Config for DHCT Type** option.
- 4 Click the **DHCT Type Name** field arrow and select the DHCT type you are upgrading using the OSM method.
- 5 Click the Reason Code field arrow and select one of the following options:
 - **Download No Reply** (for a deferred download)
 - **Download Now No Reply** (for an immediate download)

Important! Do not send download commands to CableCARD modules.

- 6 Click **Send**. The download begins after the DHCT has been turned off for three minutes.
- 7 Repeat steps 3 through 6 for each DHCT type that will use the OSM method to load the new software.
- 8 Click **Close**. The UN-Config window closes.
- 9 You have completed the OSM download to DHCTs in your network. What's your next step?
 - If you have devices that need to load software using the CVT method, then go to *CVT Download Method* (on page 72).
 - If you do not have devices that need to load software by CVT method, go to *Phase Three Completion Check* (on page 76).

CVT Download Method

The instructions in this section provide the steps to prepare and download the application platform software release to devices using the CVT method.

Examples of File Names and Version Numbers

The file names and version numbers provided as examples in this section might not match the file names and version numbers you see on your system.

Downloading Software to All DHCTs

This section provides instructions for setting up and downloading the software to DHCTs on your system that can use the CVT method.

- 1 Open an xterm window on the DNCS.
- 2 Type `cd /export/home/dnscs/doctor` and press **Enter**.
- 3 Type `doctor -q` and press **Enter**.
- 4 Are all of the QAMs active in the network?
 - If **yes**, go to step 5.
 - If **no**, reboot any non-responding QAM. If a QAM continues to be unresponsive, then contact Cisco Services.

Example: The following is an example list of network elements that have non-responding QAMs.

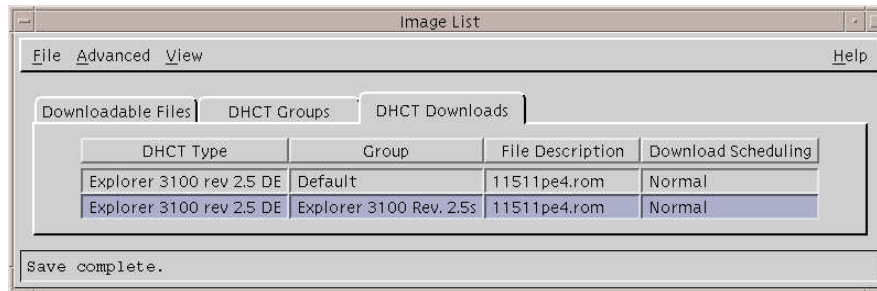
```
Error: QAM BIGQam          172.16.4.200    is not pingable.
OK:    QAM BCASTQAM1       172.16.4.201    is alive.
OK:    QAM BCASTQAM1       172.16.4.201    RPC working.
Error: QAM VODMBQAM1       172.16.4.210    is not pingable.
OK:    QAM BCASTQAM2       172.16.4.202    is alive.
OK:    QAM BCASTQAM2       172.16.4.202    RPC working.
OK:    QAM BCASTQAM3       172.16.4.203    is alive.
OK:    QAM BCASTQAM3       172.16.4.203    RPC working.
OK:    QAM VODMQAM2        172.16.4.212    is alive.
OK:    QAM VODMQAM2        172.16.4.212    RPC working.
OK:    BIG CVLab          172.16.4.101    is alive.
OK:    TED dnccsted       192.168.1.2     is alive.
```



CAUTION:

Non-responding QAMs may have an old CVT table retained in memory. If non-responding QAMs do not become active, then the device may attempt to download software because it is receiving conflicting information from a non-responding QAM. This may cause the device to download incorrect software.

- 5 On the DNCS Administrative Console, select the **DNCS** tab and then select the following tab based on the system release you have installed:
 - For SR 2.2/3.2/4.0 and earlier, select the **Element Provisioning** tab.
 - For SR 2.5/3.5/4.2 and later, select the **Home Element Provisioning** tab.
- 6 Click **Image**. The Image List window opens.
- 7 On the Image List window, click the **DHCT Downloads** tab. The Image List window updates to display the different devices that have already been configured for a CVT download.

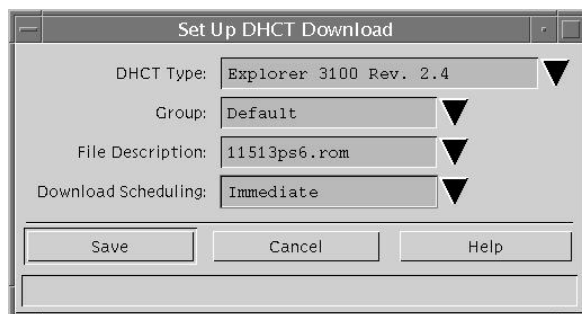


- 8 In the DHCT Type column, select the DHCT or CableCARD module type that will receive the new software where the value in the Group column is labeled **Default**.
- 9 Click **File** and choose **Delete**.
- 10 Repeat steps 8 and 9 for each DHCT type that is receiving new software.
- 11 Open an xterm window on the DNCS.
- 12 Type **listCVT** and press **Enter**. The listCVT report displays. Look for unused files in the report.
- 13 Select the **Downloadable Files** tab on the Image List window and compare the list of files displayed with the list of unused files listed in the listCVT report.
- 14 Select any unused file on the **Downloadable Files** tab.

Note: The new software should not be listed as unused because it is associated with a test group.
- 15 Click **File** and choose **Delete**.

Note: The DNCS will not allow you to delete a file that is already associated with a download.
- 16 Repeat steps 14 and 15 until you have deleted all unused files.
- 17 Select the **DHCT Downloads** tab.

- 18 Click **File** and select **New**. The Set Up DHCT Download window opens.



- 19 Complete the following steps to configure the Set Up DHCT Download window for the test download.

- a Click the **DHCT Type** field arrow and select a device that needs to receive the new software.
- b Click the **Group** field arrow and select **Default**.
- c Click the **File Description** field arrow and select the file that corresponds to the new application platform release that you want to download.
Note: Unless you have old or test versions still posted, there should be only one choice.
- d Click the **Download Scheduling** field arrow and select one of the following, based on the device type:
 - DHCTs: Select either **Normal** or **Immediate**. A Normal download does not begin until the DHCT is turned off.
 - CableCARD modules: Select **Immediate**.

- 20 Click **Save**. The Association Verification window opens.



- 21 Verify that the DHCT Type, Group, and Image File versions shown on the Association Verification window are correct.
- 22 Configure the following fields on the Association Verification window:
- **Are you SURE you want to do this?:** Type **yes**.
 - **Enter your name:** Type the name (in lowercase letters) you provided to Cisco Services when you requested the secure GUI password.
 - **Password:** Type the password you received from Cisco Services.

- 23 Click **OK**. The system schedules the software download according to the schedule you configured earlier in this section.
- 24 Repeat steps 18 through 23 for each device type that you want to receive the software using the CVT method.
- 25 Open an xterm window on the DNCS.
- 26 Type **cd /export/home/dncs/doctor** and press **Enter**.
- 27 Type **doctor -q** and press **Enter**.
- 28 Are all of the QAMs still active in the network?
 - If **yes**, go to *Phase Three Completion Check* (on page 76).
 - If **no**, reboot any non-responding QAM. If a QAM continues to be unresponsive, contact Cisco Services.

Phase Three Completion Check

The instructions in this section provide the steps to ensure that you have successfully completed the procedures for phase three of the installation process.

Verifying Phase Three Installation

Complete the following steps to verify that you have successfully completed the procedures for phase three of the installation process.

- 1 Open an xterm window on the DNCS.
- 2 Type **listOSM** and press **Enter**. The output displays a list similar to the following data.

Model Rev OUI	Description	S/W Table of Contents
2000 1.0 02DE	Explorer 2000 version 1.0	15806001pe2_31131.ver
2000 1.3 02DE	Explorer 2000 version 1.3	15806001pe2_31131.ver
2000 1.5 02DE	Explorer 2000 version 1.5	15806001pe2_31131.ver
2010 3.0 02DE	Explorer 2000 rev 3.0	15806001pe3m_31131.ver
2100 2.0 02DE	Explorer 2100 rev 2.0	15806001pe4m_31131.ver
2100 2.3 02DE	Explorer 2100 rev 2.3	15806001pe4m_31131.ver
2200 1.0 02DE	Explorer 2200 rev 1.0	
2200 1.1 02DE	Explorer 2200 version 1.1	
3000 1.0 02DE	Explorer 3000 rev 1.0 DE	
3030 1.2 02DE	Explorer 3030 version 1.2	-CVT-
3040 1.2 02DE	Explorer 3040 version 1.2	-CVT-
3040 1.3 02DE	Explorer 3250 HD version 1.3	
3040 1.4 02DE	Explorer 3040 version 1.4	
3040 1.8 02DE	Explorer 3040 version 1.8	-CVT-
3041 2.1 02DE	Explorer 3240HD Digital Only	-CVT-

Results: The software Table of Contents column contains one of the following entries for each model:

- The **VER** file for the software associated with the DHCT type.
- A **-CVT** dash indicator informing you that the box is configured for CVT download.
- A blank indicating that there is no download configured for the device.

Important! You must correct each DHCT type that has a blank entry in the S/W Table of Contents column.

- 3 After all of the devices in your network have been configured for either OSM or CVT download, go to *Phase Four - Clean Up* (on page 77).

5

Phase Four - Clean Up

Introduction

This chapter contains procedures to verify that DHCTs active in the network received the new software. It also includes procedures to do an immediate download to the DHCTs if any of the DHCTs did not receive the new software.

In This Chapter

■ Overview	78
■ Phase Four Checklist	79
■ Force an Immediate Download	80

Overview

During Phase Three, you downloaded and installed software to devices on your network. You are now ready to verify the download.

Note: If you only loaded the new software to CableCARD modules in one-way hosts, you only need to verify the success of the download on the host diagnostic screens.

Before You Begin

Before you begin Phase Four, you must complete *Phase Three - Install New Software* (on page 63) and record your results in the *Installation Checklist* (on page 67) and the *Phase Three Completion Check* (on page 76).

How Long Will It Take?

Completing the procedures in Phase Four takes approximately 3 hours. This time may vary depending on the size of your site and the complexity of your system.

You can complete this phase during business hours.

What Do You Need?

Refer to *What Do You Need?* (on page 3) for the list of items you need.

In addition, this chapter refers to many procedures that are contained in the publications listed in *Related Publications* (on page vii). Therefore, you may also want to gather those publications before you begin.

Phase Four Checklist

Use the checklist in this chapter to check off each task as you complete it. When you finish this phase, save a copy of the checklist and all of the results from any tests that you run in the event that the installation process fails during a later phase.

**CAUTION:**

You must complete each task in this checklist before you can proceed to the next task. Otherwise, you risk a failed installation, which could disrupt service to your subscribers.

Where necessary, the remaining sections of this chapter provide further detail to help you complete each task in this checklist.

Installation Checklist

- ☐ 1 Go to *Force an Immediate Download* (on page 80) to download software to DHCTs that did not receive the software in the original download.
- ☐ 2 Run a `dhctStatus` report using the procedures outlined in the *DHCT Status Reporting and signonCount Utilities User's Guide* to determine which DHCTs did not receive the new software.
 - If all of the DHCTs received the new software, you have completed these procedures.
 - If some DHCTs did not receive the new software, go to step 3.
- ☐ 3 Run the IIH utility, as described in the *CoolTools Utilities User's Guide*, to reboot DHCTs with the old software. Wait 24 hours before performing step 4.
- ☐ 4 Twenty-four hours after performing step 3, run a new **dhctStatus** report. If the report indicates that there are several DHCTs still using old software, contact Cisco Services.

Force an Immediate Download

After a deferred download (*download no reply*) of software to the DHCTs, you should wait at least 24 hours and then force an immediate download.

By doing so, you download software to all DHCTs that have not been powered off.

Forcing an Immediate OSM Download to DHCTs

Important!

- This procedure cause DHCTs that have not yet loaded new code to reboot. You should only complete this procedure during a maintenance window.
 - If you chose **Download Now No Reply** in Phase Three, then you can go to *Forcing an Immediate CVT Download to DHCTs* (on page 81).
- 1 From the DNCS Administrative Console, select the **System Provisioning** tab.
 - 2 Select **UN-Config**. The UN-Config window opens.
 - 3 Select the **Initiate UN-Config for DHCT Type** option.
 - 4 Click the **DHCT Type Name** field arrow and select the DHCT type you are upgrading using the OSM method.
 - 5 Click the **Reason Code** field arrow, and select **Download Now No Reply** (for an immediate download).
 - 6 Click **Send**. The download begins after the DHCT has been turned off for 2 to 3 minutes.
 - 7 Repeat steps 3 through 6 for each DHCT type that used the OSM method for this upgrade.
- Important!** Do not send download commands to CableCARD modules.
- 8 Click **Close**. The UN-Config window closes.
 - 9 Do you have devices in your network that used a CVT Download to receive the new software as part of this upgrade?
 - If **yes**, go to *Forcing an Immediate CVT Download to DHCTs* (on page 81).
 - If **no**, you have completed the application platform software release installation. Go to the *Phase Four Checklist* (on page 79) to complete the clean up process.

Forcing an Immediate CVT Download to DHCTs

Unless a DHCT is powered off for at least 3 minutes, it may not process the notification to load the latest software. To make certain that all DHCTs have the current software, you can force a download to any DHCTs that have not been powered off.

Wait 24 hours after configuring a normal download. Then, force an immediate download of software by completing the following steps.

Important!

- If you chose **Immediate download** in Phase Three, or only downloaded software to CableCARD modules, then you have completed the application platform software release installation. Go to the *Phase Four Checklist* (on page 79) to complete the clean up process.
 - Devices that have already received the latest software will ignore the immediate download message.
 - This procedure causes affected devices to reboot. You should only perform this procedure during a maintenance window.
- 1 On the DNCS Administrative Console, select the **DNCS** tab and then select the following tab based on the system release you have installed:
 - For SR 2.2/3.2/4.0 and earlier, select the **Element Provisioning** tab.
 - For SR 2.5/3.5/4.2 and later, select the **Home Element Provisioning** tab.
 - 2 Click **Image**. The Image List window opens.
 - 3 On the Image List window, click the **DHCT Downloads** tab. The Image List window updates to display the different devices that have already been configured for a CVT download.
 - 4 Highlight the download for a device that received the new software.
 - 5 Select **File** and click **Open**. The Set Up Download window opens.
 - 6 In the Set Up DHCT Download window, click the **Download Scheduling** field arrow and choose **Immediate**.
 - 7 Click **Save**. The Association Verification window opens.



- 8 Verify that the DHCT Type, Group, and Image File versions shown on the Association Verification window are correct.
- 9 Configure the following fields on the Association Verification window:
 - **Are you SURE you want to do this?:** Type **yes**.
 - **Enter your name:** Type the name (in lowercase letters) you provided to Cisco Services when you requested the secure GUI password.
 - **Password:** Type the password you received from Cisco Services.
- 10 Click **OK**.
- 11 Repeat steps 4 through 10 for each device type and revision that is not set for an immediate download.
- 12 Click **Cancel**. You have completed the application platform software release installation. Go to the *Phase Four Checklist* (on page 79) to complete the clean up process.

6

Customer Information

If You Have Questions

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.

Access your company's extranet site to view or order additional technical publications. For accessing instructions, contact the representative who handles your account. Check your extranet site often as the information is updated frequently.

A

Add the updateOUI Utility to the Chrontab File

Introduction

This appendix provides procedures to establish a cron job to automatically run the updateOUI utility periodically throughout the day.

In This Appendix

- Overview 86
- Edit the chrontab File for updateOUI Utility 87

Overview

Prior to the introduction of PowerTV OS 3.1, Cisco DHCTs signed on to the DBDS network using the OUI identifiers of 00:01:A6, 00:40:7B, or 00:02:DE.

Note: The OUI refers to the first three octets of a MAC address.

Starting with PowerTV OS 3.1, all Cisco DHCTs sign on to the network using the OUI identifier of 00:02:DE, regardless of the DHCT MAC address. Cisco developed the updateOUI utility to modify the DNCS database so that DHCTs with OUI identifiers of 00:01:A6 and 00:40:7B are changed to 00:02:DE.

System operators must run the updateOUI utility between the time when EMMs are loaded and when two-way communication is expected from the DHCT. Cisco recommends that system operators establish a cron job to run the utility periodically throughout the day.

During normal operations, this schedule for running the cron job should be sufficient to avoid issues with establishing two-way communication.

Edit the crontab File for updateOUI Utility

Follow these instructions to edit the crontab file so that the system runs the updateOUI utility periodically throughout the day.

These instructions assume that your system has never been configured to run the updateOUI utility or its earlier version updateOUI.sh.

Note: The command you enter in step 12 of this procedure schedules the updateOUI utility to run at 37 minutes after 5 AM, 8 AM, 11 AM, 2 PM, 5 PM, and 8 PM each day.

Important! Do not attempt this procedure unless you are a skilled user of the UNIX vi text editor.

Editing the crontab File for updateOUI Utility

- 1 Call Cisco Services to determine the version number of the latest release of SAIDutils code.
- 2 Open an xterm window on the DNCS.
- 3 To determine the version of the updateOUI utility that you have on your system, type **pkginfo -l SAIDutils** and press **Enter**.

Note: The "l" in **-l** is a lowercase letter L.

Result: The system displays your version of the SAIDutils code.

- 4 Does the Version field indicate that you have the latest version of SAIDutils?

- If **yes**, go to step 5.
- If **no**, call Cisco Services for the correct code before continuing with this procedure.

- 5 Type **crontab -l** and press **Enter**.

Note: The "l" in **-l** is a lowercase letter L.

Result: The system displays the contents of the crontab file.

- 6 Does the following entry exist in the file?

```
37 5,8,11,14,17,20 * * * (./dvs/dncs/bin/dncsSetup ;
$DNCS_TOP/bin/updateOUI) > /dev/null 2>&1
```

- If **no**, continue with this procedure.
- If **yes**, choose one of the following options:
 - If **the entry is exactly as shown above**, you have completed this procedure.
 - If **the entry is similar but does not match**, call Cisco Services for assistance.

- 7 Complete the following steps to specify the editor you will use to edit the crontab:
 - a Type **EDITOR=vi** and press **Enter**.
 - b Type **export EDITOR** and press **Enter**.
- 8 Type **crontab -e** and press **Enter**. The crontab opens for editing.
- 9 Press **Shift + L** (the **Shift** and **L** keys at the same time). The cursor moves to the last line on the screen.
- 10 Press **o**.

Note: The "o" is a lowercase letter O.

Result: The vi editor opens a line below the cursor. The vi editor is automatically in Insert mode.

- 11 Type the following command on one line; do *not* press Enter:

```
37 5,8,11,14,17,20 * * * (. /dvs/dnscs/bin/dnscsSetup ;  
$DNCS_TOP/bin/updateOUI) > /dev/null 2>&1
```

Important! Note these important points about this command:

- **Do not press Enter.** Depending upon the size of your window, the command will wrap to the following line automatically.
- Be sure there is a space between the following arguments:
 - The period (.) and **/dvs**
 - The **37** and the **5**
 - The **20** and the first asterisk (*)
 - The first and the second asterisk
 - The second and the third asterisk
- Be sure there is a space between the **;** and the **\$DNCS**.

Note: Call Cisco Services if you are unsure about the formatting of this command.

- 12 Press **Esc** when you have finished typing the command in step 11. The vi editor exits Insert mode.
- 13 Complete the following steps to save and close the file.
 - a Type **:** (colon)
 - b Type **wq!**
 - c Press **Enter**. The system saves your edit to the crontab file.

14 Type **crontab -l** and press **Enter**.

Note: The "l" in **-l** is a lowercase letter L.

Result: The system displays the contents of the crontab file.

15 Did the system successfully add the updateOUI entry, as shown in step 11?

- If **yes**, type **exit** and press **Enter** to close the xterm window.
- If **no**, call Cisco Services.

B

Rollback Process

Introduction

This appendix describes the rollback process. Use the rollback process if you are unable to successfully download software to either the test groups in Phase Two or to the device population in Phase Three.

In This Appendix

- What is the Rollback Process? 92

What is the Rollback Process?

The rollback process is to use the procedures in this document and download the previous software files to the device population.

Important! If your system appears unstable after downloading the application platform software release, you may need to roll back to the previous version of software. Please contact Cisco Services to ensure that there are no obvious errors with the system configuration before you download the previous versions of software.

C

Recommended Frequencies for Improved CVT Download Performance

Introduction

During the CVT download process, the DHCT scans a set of recommended frequencies. If the DHCT does not initially find the recommended frequency, it then searches all frequencies.

This appendix provides the recommended download frequencies for the following frequency plans:

- Standard frequency (STD)
- Incrementally related carrier (IRC)
- Harmonically related carrier (HRC)

In This Appendix

- Frequency Plan Recommendations..... 94

Frequency Plan Recommendations

Using the frequencies in this appendix vastly improves the speed and performance of the initial staging process.

After a DHCT has been successfully downloaded using the CVT download method, the DHCT retains the frequency of the carousel for subsequent downloads and, therefore, does not search for the frequency again.

What Are the Recommended Frequencies?

Cisco strongly recommends that you configure at least one QAM modulator to use one of the recommended frequencies shown in the following table.

Channel	HRC Frequencies	IRC and STD Frequencies
36	295.75 MHz	297.0 MHz
61	445.75 MHz	447.0 MHz
77	541.75 MHz	543.0 MHz
79	553.75 MHz	555.0 MHz
101	655.75 MHz	657.0 MHz

Important!

- These are the channels and frequencies that the DHCT checks first during staging. If you use other frequencies, then the DHCT is forced to scan all possible frequencies until it finds the correct frequency.
- Although additional scanning increases the time needed to download software, the CVT download method operates at all STD, IRC, and HRC frequencies.
- Because the CVT information is loaded into all QAMs, or those selected as staging bridges, the selected QAM does not need to be the QAM used to carry the BFS sessions. You may select from any of the QAMs configured in your network.

D

Using CVT Download for Staging DHCTs on HRC Systems

Introduction

This appendix contains information about the revisions of Explorer DHCTs that cannot tune to harmonically related carrier (HRC) frequencies during staging.

In This Appendix

■ Overview	96
■ CVT Download Recommendations.....	97

Overview

During staging, some revision of Explorer DHCTs cannot tune to HRC frequencies. This failure to tune to HRC frequencies prevents the DHCT from loading new software using the CVT method.

The following Explorer DHCT revisions cannot use CVT download on systems where the BFS QAM is at an HRC frequency:

- Explorer 2100 Rev 2.2 and 2.3 DHCTs
- Explorer 3100 Rev 2.4, 2.5, and 2.6 DHCTs

Important! These DHCTs can use the CVT download method on systems employing either a standard (STD) frequency plan or an incrementally related carrier (IRC) plan.

CVT Download Recommendations

Recommendation

For HRC cable systems using the Explorer DHCTs identified in the list in the *Overview* (on page 96), you must use the OSM download method or the alternate recommended configuration.

Alternate Recommendation

You can use the CVT download method to stage the Explorer DHCTs identified in the list in the *Overview* (on page 96). However, you must move the BFS QAM to either a STD or IRC frequency if your frequency configuration allows for this deviation.

E

ROM Naming Conventions and Image Versions

Introduction

As the complexity of software releases increases, naming the software release version becomes increasingly important. Beginning with the release of the HD 1.5.0, DC 5.2, and DVR 1.5 DHCT ROM images, Cisco implemented a revised naming convention for DHCT ROM images. This appendix describes the components and structure of this new DHCT ROM image naming convention.

After reading this appendix, you will be able to tell which hardware and software features are included in a particular software build by looking at the product or ROM image name.

In This Appendix

■ ROM Image Naming Convention	100
■ ROM to Model Matrix.....	107

ROM Image Naming Convention

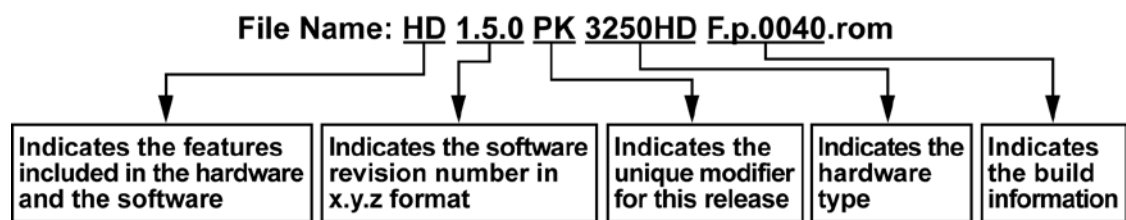
Introduction

The new ROM image naming convention simplifies the product and software release naming process by naming the ROM image based on the hardware and software features contained in the release.

The ROM image name also has the specific build information added to the end of the product name. In addition, the DHCT diagnostics have been modified so that this new ROM naming convention displays at the DHCT.

ROM File Name Example

The following illustration shows an example the new DHCT ROM file naming convention. This document provides a detailed explanation of each component of this new naming convention.



T11947

Naming Convention

The DHCT ROM image name is no longer tied to a particular Cisco Resident Application (SARA) or operating system (OS). Instead, the ROM image name includes the following five components:

- Features
- Software revision
- Modifiers
- Hardware type
- Build information

This section describes each of these components.

Naming Convention Features

The first component of the ROM image name is the features that are included in the hardware and software. If an image has more than one feature, the features are arranged in the ROM image name according to the priorities listed in the following table.

Priority	Feature	Important: If a product contains multiple features, these features are separated by a period (.).
1	DVR	
2	DVD	
3	DOCSIS (DOC)	
4	HD	
5	MR	
6	SD Only	

Notes:

- For DVR products, **HD** does not appear in the name, because a single build contains both features.
- **DVD** and **DOCSIS** appear *after* **DVR**, because separate builds exist for those features.
- There are separate builds for the Explorer 4200 DHCT. Therefore, the high-definition version of the Explorer 4200HD DHCT is shown as **DOC.HD**, while the standard-definition version of the Explorer 4200 DHCT is shown simply as **DOC**.

Software Revision Number

The second component of the ROM image name is the software revision number in **x.y.z** format. The software revision number changes under one of the following scenarios:

- The “x” portion of the software name changes when a major feature is added to the software.

Example: A complete redesign of the user interface or the addition of a major new feature initiates a change in the “x” portion of the software name.

- The “y” portion of the software name changes when minor features that the subscriber would see are added to the software.

Example: A minor change to the user interface or the addition of a minor feature initiates a change in the “y” portion of the software name.

- The “z” portion of the software name changes when the software is updated and then released.

Example: If the initial software revision name is 1.5.0 and the OS changes from 3.12.13.2 to 3.12.14.2, then the software revision number does not change. Only the build number changes.

Note: See **Build Information** (on page 105) for additional information about the build information component of the ROM image name.

Modifiers

The third component of the ROM image name is the modifier. A modifier can be a new feature or a new function. If a feature or functionality is unique and could disrupt services when that code is sent to the wrong cable system, a modifier is added to the product name. This will *not* be a change in x, y, or z (the software revision number).

One example is Dual CAK. If the wrong cable system received a Dual CAK build, it would disrupt that system's services. However, the other features in the software would be applicable to all customers. Thus, the x.y.z would be the same, but the modifier would be different.

Examples:

- DVR 1.5.0_DC (for a cable system requiring Dual CAK)
- DVR 1.5.0_PK (for all other cable systems)

The following table shows the current list of modifiers.

Important: This list may be updated as new features and functionality are added to the software.

Priority	Modifier
1	PowerKEY (PK)
2	Dual CAK (DC)
3	HTML Engine (HE)
4	Digital Only (DO)
5	CA Overlay (CAO)
6	SWR
7	OpenCable™ Application Platform (OCAP™)
8	Basic DSG (BDSG)
9	Advanced DSG (ADSG)

Notes:

- If the software has multiple modifiers, they are separated by a period (.).
Example: **DC.HE** is a dual CAK (DC) with HTML Engine
- Dual CAK refers to any other non-PowerKEY conditional access system (for example, NDS or Nagra).

Appendix E

ROM Naming Conventions and Image Versions

Hardware Type

The fourth component of the ROM image name is the hardware type. The following table shows the hardware type from the **settop.res** file and what is included in the ROM name for that hardware type.

Hardware Type	What is included in the ROM name
1850	1850
3040	3250HD
4200	4200SD
4210	4200HD
8000	8000
8010	8000HD
8240	8300 Note: Applies to 8300HD and 8300SD models
8300	8300 Note: Applies to 8300HD, 8300SD, 8300HDM, and 8300SDM models

Build Information

In addition to the four components of the product name described earlier, the full ROM image name also includes the build information at the end of the name. This is the fifth component of the naming convention. This build information is determined at the time of build.

The following information is included when the numbers change:

- Type of build
 - Official (F)
 - Development (D)
 - Engineering Only (G)
- Type of ROM
 - Production (p)
 - Debug (d)
- Build Number
 - Up to 4 characters (0010-9999)
 - Incremented by 10s
 - Restarts at 0010 when the "z" value is changed

Full ROM Image Name

The *entire ROM image* name looks like this:

< Feature(s)> _ <x.y.z> _ <Modifiers> _<Hardware Type> _ <Build info>.rom

Examples:

- For the release of a 3250HD that includes PowerKEY conditional access, the fourth official production build of the 1.5.0 code is
HD_1.5.0_PK_3250HD_F.p.0040.rom
- For the release of an 8300HD that includes DOCSIS and Dual CAK with the HTML Engine, the fourth official production build of the 1.3.1 code is
DVR.DOC_1.3.1_DC.HE_8300_F.p.0040.rom

Diagnostic Screens

The naming convention for DHCT ROM images can assist in troubleshooting by quickly identifying the version of software that a DHCT is running and which features are included. Therefore, the information on the Explorer diagnostic screens also reflects the naming convention.

This section provides examples of how the diagnostic screens appear.

Component Information Diagnostic Screen

Based on the ROM image name described in the previous section of this document, the Component Information diagnostic screen (Page 17 of the diagnostic screens) displays information similar to the following example for HD 1.5.0.

Name	Version	Date
ROM Image	1.5.0.40	06/04/05 1:23:13 PM EDT
OS	3.12.13.2	06/04/05 1:23:13 PM EDT
SARA	1.58.7.1	06/04/05 10:15:23 AM EDT
Powerkey LIB	3.7.5.3	06/04/05 11:35:17 AM EDT

Software Versions Diagnostic Screen

Based on the ROM image name described in the previous section of this document, the Software Versions diagnostic screen (Page 3 of the diagnostic screens) displays information similar to the following example for HD 1.5.0.

SOFTWARE VERSIONS
PTV OS: OS, High Definition Edition 1.5.0
App(s): SARA 1.58.7.1Flash:
HD_1.5.0_PK_3250HD_f.p.0040.rom

ROM to Model Matrix

In some cases, new software is made available for multiple platforms or models. Differences in hardware require different software versions in different models. For example, software designed for the Explorer 2000 DHCT cannot be used on the Explorer 3250 DHCT.

The *ROM to Model Matrix* (on page 109) maps a ROM name to a DHCT model and its software versions. A sample of the ROM names is shown in the following example of a list of available software files.

```
-rw-rw-r-- 1 dncs dncs 3811888 Dec 2 2005 15904a020pedm.rom
-rw-rw-r-- 1 dncs dncs 3814488 Dec 2 2005 15904a020pe7m.rom
-rw-rw-r-- 1 dncs dncs 1985360 Dec 2 2005 15904a020pe6m_1
-rw-rw-r-- 1 dncs dncs 128 Dec 2 2005 15904a020pe6m_31151.ver
-rw-rw-r-- 1 dncs dncs 3820368 Dec 2 2005 15904a020pe6m.rom
-rw-rw-r-- 1 dncs dncs 1835008 Dec 2 2005 15904a020pe6m_0
-rw-rw-r-- 1 dncs dncs 4045016 Dec 2 2005 15904a020pe6h.rom
-rw-rw-r-- 1 dncs dncs 1755984 Dec 2 2005 15904a020pe4m_1
-rw-rw-r-- 1 dncs dncs 128 Dec 2 2005 15904a020pe4m_31151.ver
-rw-rw-r-- 1 dncs dncs 2064384 Dec 2 2005 15904a020pe4m_0
-rw-rw-r-- 1 dncs dncs 3820368 Dec 2 2005 15904a020pe4m.rom
-rw-rw-r-- 1 dncs dncs 128 Dec 2 2005 15904a020pe3m_31151.ver
-rw-rw-r-- 1 dncs dncs 2097152 Dec 2 2005 15904a020pe3m_0
-rw-rw-r-- 1 dncs dncs 1729408 Dec 2 2005 15904a020pe3m_1
-rw-rw-r-- 1 dncs dncs 1301616 Dec 2 2005 15904a020pe2_1
-rw-rw-r-- 1 dncs dncs 126 Dec 2 2005 15904a020pe2_31151.ver
-rw-rw-r-- 1 dncs dncs 2097152 Dec 2 2005 15904a020pe2_0
```

To determine which files you need on your BFS, complete the following steps.

- 1 Run a Doctor report. The Doctor results determine which models and revisions are active on your network.
- 2 Look at the Doctor results and determine what ROM names are needed for each DHCT type in your network by comparing the results to the *ROM to Model Matrix* (on page 109).

Example 1

Your Doctor report results are as follows:

2000	10	00:02:de	7	15903006pe2_31151.ver
2000	13	00:02:de	7	15806001pe2_31131.ver
2000	15	00:02:de	2	15806001pe2_31131.ver
2000	16	00:02:de	1	
2000	20	00:02:de	24	159osm310.ver
2000	21	00:02:de		815423001pe2_31091002.ver
2000	37	00:02:de	5	15806001pe2_31131.ver
2005	10	00:02:de	1	
2010	30	00:02:de	47	

Looking at the first line of these results, you can see that your system is using Explorer 2000 DHCTs, with revision 1.0 (the report does not display decimals in revision numbers). Looking at the *ROM to Model Matrix* (on page 109), you can see that this DHCT revision requires the files with a pe2 as part of the file name, and that these DHCTs only support the OSM download method. Therefore, you would need to load the following three files on the OS list for those DHCTs to load software:

```
15904a020pe2_31151.ver
15904a020pe2_0
15904a020pe2_1
```

Example 2

Your Doctor report results are as follows:

3200	11	00:02:de	7
3200	12	00:02:de	6
3250	11	00:02:de	3
3270	13	00:02:de	1
3340	20	00:02:de	50

Looking at the first two lines of these results, you can see that your system is using Explorer 3200 DHCTs with revisions 1.1 and 1.2, and that these DHCTs only support the CVT download method. Looking at the *ROM to Model Matrix* (on page 109), you can see that these DHCT revisions require the file with a pe7m as part of the file name, as shown below.

```
15904a020pe7m.rom
```

Only one file is listed with pe7 as part of the name because these DHCTs *only* support the CVT download method. You need to use the unified image file listed above for the CVT downloads to these DHCTs.

DHCTs That Support Both Download Methods

When you have the option of using either the OSM or the CVT download method for a particular DHCT, if your system uses the STD or the IRC frequency plan, you should always use the CVT download method (if it is supported by the DHCT type). If your system uses the HRC frequency plan, you should use the CVT download method, except for those DHCTs that do not support CVT in an HRC environment. See *Recommended Frequencies for Improved CVT Download Performance* (on page **Error! Bookmark not defined.**) and *Using CVT Download for Staging DHCTs on HRC Systems* (on page **Error! Bookmark not defined.**) for more information on HRC environments.

Note: The ROM name that includes **pe4** is the only software version that you can post as *both* OSM and CVT downloads, depending on the revisions present on your network.

Explorer Model	Version Number	ROM Name includes...	Notes/Options	Download Method
940	1.0, 1.1, 1.2, 1.3, 1.4	petm		CVT
1800		pe7		CVT
		pe7m	Multiroom	CVT
1840		pe7		CVT
		pe7m	Multiroom	CVT
1850	1.0, 1.1, 1.2, 1.3, 1.4, 2.0, 2.1, 2.2, 2.3, 2.4	ped	PI and PowerKey, no smartcard	CVT
		pedm	PI and PowerKey, no smartcard	CVT
		pef	DC, NDS, smartcard	CVT
2000	1.0, 1.1, 1.3, 1.4, 1.5, 1.9, 2.0, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.4, 3.5, 3.6, 3.7, 5.0, 7.7.2	pe2		OSM
	3.0, 3.1	pe3		OSM
		pe3m	Multiroom	OSM
2005HD	1.0	pe2h	OBSOLETE	OSM
2030	1.4	pe4		OSM or CVT
		pe4m	Multiroom	OSM or CVT

Appendix E
ROM Naming Conventions and Image Versions

Explorer Model	Version Number	ROM Name includes...	Notes/Options	Download Method
2060		pedm	Multiroom (E940)	CVT
2100	1.4, 2.0, 2.1, 2.3, 2.8	pe4	<p>Versions 2.0 and 2.1 <i>only</i> support the OSM download method</p> <p>Versions 2.2 and 2.3 <i>only</i> support the OSM download method in an HRC environment</p>	OSM/CVT
		pe4m	<p>Multiroom</p> <p>Versions 2.0 and 2.1 <i>only</i> support the OSM download method</p> <p>Versions 2.2 and 2.3 <i>only</i> support the OSM download method in an HRC environment</p>	OSM/CVT
	2.2, 2.9	pe6	Different hardware platform from above	OSM or CVT
		pe6m	Multiroom	OSM or CVT
2200	1.0, 1.1, 1.2, 1.3	pe7		CVT
		pe7m	Multiroom	CVT
3000	1.0, 1.1	pe3		OSM
		pe3m	Multiroom	OSM

Explorer Model	Version Number	ROM Name includes...	Notes/Options	Download Method
3100	1.5, 2.0, 2.1, 2.2, 2.3, 2.5, 2.7, 3.0	pe4	Versions 2.0 and 2.1 <i>only</i> support the OSM download method Versions 2.4, 2.5, and 2.6 <i>only</i> support the OSM download method in an HRC environment	OSM/CVT
		pe4m	Multiroom Versions 2.0 and 2.1 <i>only</i> support the OSM download method Versions 2.4, 2.5, and 2.6 <i>only</i> support the OSM download method in an HRC environment	OSM/CVT
	2.4, 2.6, 3.1	pe6	Different hardware platform from above	OSM or CVT
		pe6m	Multiroom	OSM or CVT
3100HD	1.0, 1.1, 1.2	pe6h	High resolution	CVT
3170HD	1.2	pe6h	High resolution	CVT
3200	1.0, 1.1, 1.2, 1.3	pe7		CVT
		pe7m	Multiroom	CVT
3250	1.0, 1.1	pe7		CVT
		pe7m	Multiroom	CVT
3250HD	1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.0, 2.1, 2.2	pe7h	High resolution	CVT
		pe7hm	High resolution, multiroom, SARA 1.59>	CVT
3270HD	1.3, 1.4	pe7h	High resolution	CVT
3300		pe7		CVT
		pe7m	Multiroom	CVT

Appendix E
ROM Naming Conventions and Image Versions

Explorer Model	Version Number	ROM Name includes...	Notes/Options	Download Method
3340		pe7		CVT
		pe7m	Multiroom	CVT
3350		pe7		CVT
		pe7m	Multiroom	CVT
4200SD	1.0, 1.1, 1.2, 1.3	pe1n	Multiprocessor, PowerKey, no smartcard OBSOLETE	CVT
		peh	PowerKey, smartcard OBSOLETE	CVT
	1.1	pej	DC, NDSHD, SARA 1.59>	CVT
		peju	DC, NDSHD, high resolution, smartcard, SARA 1.59>	CVT
4200HD	1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.0	pe1h	Multiprocessor, PowerKey, no smartcard OBSOLETE	CVT
		pehh	PowerKey, smartcard OBSOLETE	CVT
	1.2	pejh	DC, NDSHD, smartcard, SARA 1.59>	CVT
		pejhu	DC, NDSHD, high resolution, SARA 1.59>	CVT

Explorer Model	Version Number	ROM Name includes...	Notes/Options	Download Method
4250SD	1.1	pejha	HD, PowerKey, AD SG, SARA 1.58 or SARA 1.59	CVT
		pejhb	HD, PowerKey, BDSG, SARA 1.58 or SARA 1.59	CVT
		pejhn	HD, DC, BDSG, SARA 1.58 or SARA 1.59	CVT
		pejhnu	HD, DC, BDSG, high resolution, SARA 1.59	CVT
		pejhc	HD, DAVIC, CableCARD host support, SARA 1.61	CVT
4250HD	1.2	pejha	HD, PowerKey, AD SG, SARA 1.58 or SARA 1.59	CVT
		pejhb	HD, PowerKey, BDSG, SARA 1.58 or SARA 1.59	CVT
		pejhn	HD, DC, BDSG, SARA 1.58 or SARA 1.59	CVT
		pejhnu	HD, DC, BDSG, high resolution, SARA 1.59	CVT
		pejhc	HD, DAVIC, CableCARD host support, SARA 1.61	CVT
8000	1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8	pe8		CVT
8010SD	1.2, 3.0, 3.1	pe9h		CVT
		pe9hu		CVT
8010HD	1.3, 1.4, 1.5, 1.6	pe9h		CVT
		pe9hu	High resolution	CVT

Appendix E
ROM Naming Conventions and Image Versions

Explorer Model	Version Number	ROM Name includes...	Notes/Options	Download Method
8300HD	1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.0, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 3.0, 3.1, 3.2	peqh_docsispk	DOCSIS, SARA 1.87 and SARA 1.88	CVT
		peqhm	Davic, multiroom	CVT
		peqmu	Davic, multiroom, high resolution, SARA 1.89 only	CVT
		perh	DOCSIS, DC	CVT
		perhbu	DOCSIS, DC, high resolution (Used w/BDSG Drivers), SARA 1.89 only	CVT
		peqhu_docsispk	DOCSIS, PowerKey, high resolution, non-adsg/bdsg SARA 1.87 only	CVT
		peqh_docsisPkBdsgMac	DOCSIS, PowerKey, used w/BDSG drivers, hard-coded MAC address in drivers	CVT
		peqh_docsisPkAdsg	DOCSIS, PowerKey, ADSG Drivers)	CVT
		peqhu_docsisPkAdsg	DOCSIS, PowerKey, high resolution, ADSG drivers, SARA 1.89 only	CVT

Explorer Model	Version Number	ROM Name includes...	Notes/Options	Download Method
8300HDC		peqhdc	SARA CableCARD host, Davic, SARA 1.90>	CVT
		peqhcu	SARA CableCARD host, Davic, high resolution, SARA 1.90>	CVT
		peqhdc_docsisPkAdsg	SARA CableCARD host, DOCSIS, PK, AD SG, SARA1.90>	CVT
		peqhcu_docsisPkAdsg	SARA CableCARD host, DOCSIS, PK, AD SG, high resolution, SARA1.90>	CVT
8500HDC		peuhc	SARA NGP, CableCARD host, SARA 1.90>	CVT
		peuhu	SARA NGP, No CableCARD host, high resolution, SARA1.90>	CVT
		peuhcu	SARA NGP, CableCARD host, high resolution, SARA 1.90>	CVT
MCP-100		pesh	Multiroom, SARA 1.89>	CVT

F

Download LED Indicators

Introduction

This appendix contains explanations of what the front-panel Light-Emitting Diode (LED) displays on the Explorer DHCTs mean. It also contains examples of the front-panel LED displays, TV screen sequences, and POWER LED flash codes that might appear during DHCT software downloads.

In This Appendix

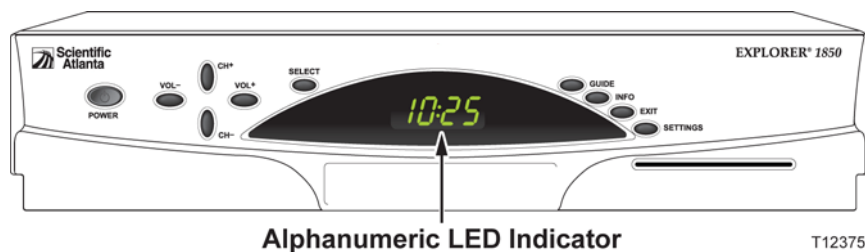
■ Overview	118
■ LED Indicators Displayed During an OSM Download.....	120
■ LED Indicators Displayed During a CVT Download	123
■ POWER LED Indictors Displayed on DHCTs	126

Overview

DHCTs provide feedback during the process of downloading, installing, and booting into the SARA. Where and how this feedback is displayed depends on the type of DHCT you are staging.

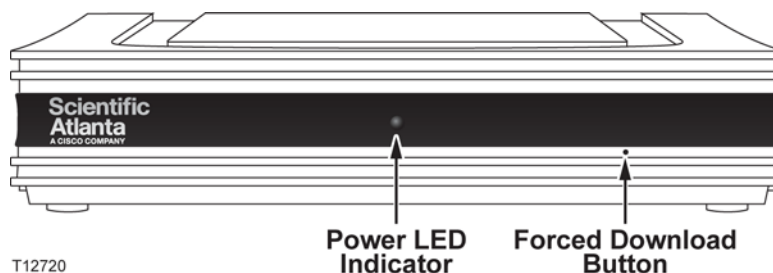
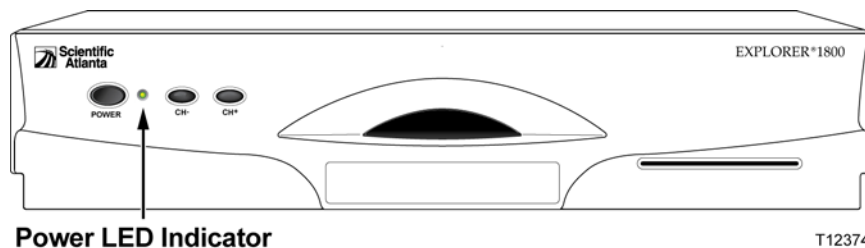
DHCTs with LED Indicators

Explorer DHCTs with front-panel alphanumeric LED indicators display the codes associated with downloading, installing, and booting into the SARA on the front-panel LED indicator.



DHCTs with Only POWER LED Indicators

DHCTs with only POWER LED indicators display the codes associated with downloading, installing, and booting into the SARA as a series of flashing lights using the POWER LED indicator light on the front panel.



Note: You must stage DHCTs with only POWER LED indicators using the CVT download method.

The information conveyed by the POWER LED indicator is discussed in the following sections of this document:

- ***LED Indicators Displayed During a CVT Download*** (on page 123) – Displays the POWER LED indicators during the CVT download
- ***POWER LED Indicators Displayed on DHCTs*** (on page 126) – Displays the POWER LED error indicators if the CVT download fails

LED Indicators Displayed During an OSM Download


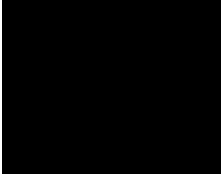



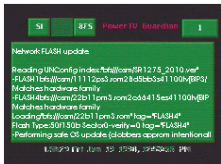
Understanding the LED Indicator Sequence in OSM Downloads


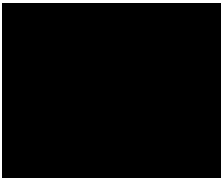



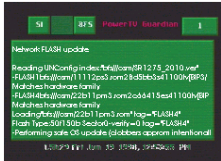
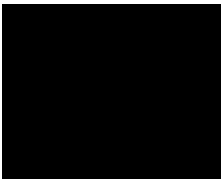



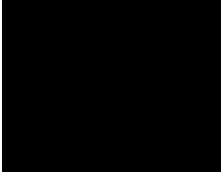
After a DHCT is connected to the RF network and AC power is applied, the Bootloader monitors the download, verification, and installation of the new OS into memory. At the end of the process (which might repeat until the DHCT receives a valid OS download), the DHCT displays one of the following:

- The Service Disconnect mode (brick mode) indicator (if enabled on your system)
- The clock




The following table shows an example of an OSM download sequence of front panel LED displays that appear after AC power is applied to the DHCT.

Note: The front-panel alphanumeric LED displays that appear on the Explorer DHCTs may change for each stage of the DHCT software download process. Therefore, in the following table, the LED displays that correspond to certain stages of the download process may be repeated or skipped, as noted in the Description column. In other words, the stages do not always occur in the order shown.

Stage	Alphanumeric LED Indicator	TV Monitor	Description
1.			The “wave” appears each time the DHCT resets. The DHCT is initializing and testing the system. The wave provides a visual cue as to when to press buttons to force auxiliary functions.
2.			The DHCT boots into the OS.
3.			“Dancing dashes” that alternate between the middle [- -] and outside [- -] segments appear when the OS runs the Guardian Mode application to receive the upgrade. The image installs from the BFS into internal DRAM.

Stage	Alphanumeric LED Indicator	TV Monitor	Description
4.			CLr appears when the current OS image clears. Pr.00 appears when the new received image overwrites it the current OS image.
5.			The rotating border appears when the DHCT boots into the OS.
6.			Dancing dashes appear when Guardian downloads the second part of the image, which contains the ResApp, from BFS to internal DRAM.
7.			The wave indicates that the DHCT resets to execute programming.
8.			CLr and PR.00 indicate that the second part of the OS is installed into flash memory. Programs upper memory area with ResApp.
9.			The wave appears after the DHCT resets to boot into the OS and the newly downloaded ResApp.
10.			The rotating border appears when the DHCT resets and boots into the OS.
11.			The LED is clear when the OS has started the ResApp. The DHCT is in an Off state.

Appendix F
Download LED Indicators

Stage	Alphanumeric LED Indicator	TV Monitor	Description
12.	 or 		The DHCT displays the time (normal operation) or the Service Disconnect mode indicator (if activated). The DHCT has received the time from the DNCS.








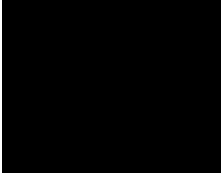
LED Indicators Displayed During a CVT Download

Understanding the LED Indicator Sequence in CVT Downloads



The following table shows an example of a CVT download sequence of front panel LED displays that appear after AC power is applied to the DHCT.

Note: The front-panel alphanumeric LED displays that appear on the Explorer DHCTs may change for each stage of the DHCT software download process. Therefore, in the following table, the LED displays that correspond to certain stages of the download process may be repeated or skipped, as noted in the Description column. In other words, the stages do not always occur in the order shown.



If the DHCT only has a POWER LED indicator, the appropriate blink patterns are listed in the Power LED Indicator column.

Stage	Alphanumeric LED Indicator	POWER LED Indicator	TV Monitor	Description
1.		The light is off.		The “wave” appears each time the DHCT resets. The DHCT is initializing and testing the system. The wave provides a visual cue as to when to press buttons to force auxiliary functions.
2.		Solid on, then off. The light is off as the DHCT boots into the OS.		The rotating border appears when the DHCT boots into the OS.
3.		The light blinks once every half-second.		Fr.LA appears if the DHCT can tune to the last known good frequency in NVM and acquires the CVT. Go to stage 9 of this table.
4.		The light blinks once every half-second.		If the DHCT cannot acquire the CVT through a known good QAM frequency, it scans the recommended QAM frequencies. The LED displays FR.00 through FR.09 as the DHCT checks each of the ten recommended QAM frequencies. Go to stage 6 of this table.

Appendix F
Download LED Indicators

Stage	Alphanumeric LED Indicator	POWER LED Indicator	TV Monitor	Description
5.		The light blinks once every half-second.		If the DHCT cannot acquire the CVT through a recommended QAM frequency, it 'hunts' until it finds the frequency of a QAM with a valid CVT table for that DHCT. The [000] indicates the QAM frequency.
6.		The light blinks twice, pauses, then repeats.		The LED displays r.xxx, where [xxx] indicates the number of packets remaining to be downloaded. This number counts down to zero as the packets are downloaded.
7.	 and then 	The light blinks 3 times, pauses, then repeats.		CLr and PR.00 indicate that the second part of the OS is installed into flash memory. Programs upper memory area with ResApp.
8.		The light is off.		The wave appears after the DHCT resets to boot into the OS and the newly downloaded ResApp.
9.		Solid on, then off. The light is off as the DHCT boots into the OS.		The rotating border appears when the DHCT resets and boots into the OS.
10.		The light is off.		The LED is clear when the OS has started the ResApp. The DHCT is in an Off state. If you use Service Disconnect (brick) mode, go to stage 11 of this table. If you do not use Service Disconnect (brick) mode, go to stage 12 of this table.
11.		For Service Disconnect (brick) mode, the light blinks eight times, pauses for half a second, and repeats.		The DHCT displays the Service Disconnect mode indicator (if activated).

LED Indicators Displayed During a CVT Download

Stage	Alphanumeric LED Indicator	POWER LED Indicator	TV Monitor	Description
12.		For normal operation, the light blinks four times, pauses, then repeats only once.		The DHCT displays the time (normal operation). The DHCT has received the time from the DNCS.

POWER LED Indictors Displayed on DHCTs

Some DHCTs do not include front-panel alphanumeric LED indicators. These DHCTs rely on the flashing POWER LED indicators to give you information about their status.

Understanding the POWER LED Indicators

Blinks Once Every Half-Second

The POWER LED indicator blinks once every half-second. This is equivalent to the **h.nnn** message LED code that appears on the front panel of alphanumeric LED DHCTs.

An h.nnn condition indicates normal behavior for the DHCT. The condition occurs while the DHCT scans the entire frequency spectrum for the presence of a CVT. The DHCT is scanning the QAM frequency spectrum for all of your QAMs.

Blinks 2 Times, Pauses, Repeats

The POWER LED indicator blinks twice, pauses, then repeats. This is equivalent to the **r.xxx** LED code that appears on the front panel of alphanumeric LED DHCTs.

An r.xxx condition indicates that the DHCT may be downloading software. Do not reboot the DHCT. As a CVT download progresses, the hex number decreases sequentially to zero, showing the number of blocks remaining. Block size is configured on the headend.

The r.xxx message is normal behavior for the DHCT. Do not reboot the set-top unless the message appears constantly.

To clear the r.xxx message, complete the following steps.

- 1 Wait 5 to 20 minutes. The DHCT could be downloading software.
- 2 Did this clear the message?
 - If **yes**, you have corrected the problem.
 - If **no**, follow your company's escalation procedure.

Blinks Twice Quickly, Pauses, Repeats

The POWER LED indicator blinks twice in rapid succession (like a heartbeat) that repeats 1 time a second. This is equivalent to the **BR.xx** message LED code that appears on the front panel of alphanumeric LED DHCTs.

A BR.xx (where xx is a hexadecimal number) message usually indicates that the DHCT has a software or hardware malfunction that prevented it from properly receiving an instruction to complete a function. This condition is also referred to as an OS trap.

For example, an exception may have caused the CPU to trap while the Bootloader's trap table was in effect.

To clear a BR.xx message, complete the following steps.

- 1 Turn off the DHCT and unplug it from the wall outlet or rear panel of the DHCT.
- 2 Plug the DHCT into the wall outlet or rear panel and turn it on.
- 3 Did this clear the error message?
 - If **yes**, you have corrected the problem.
 - If **no**, the DHCT may need to be replaced. Follow your company's replacement procedure.

Blinks 3 Times, Then Pauses

The POWER LED indicator blinks 3 times, pauses, then repeats. This is equivalent to the **PR.xx** LED code that appears on the front panel of alphanumeric LED DHCTs.

This message indicates that the DHCT is receiving new software. This is normal behavior. Do not reboot the DHCT or remove power.

The PR.xx condition can take 15 to 30 minutes to clear if the software download is interrupted.

Important: If you interrupt the DHCT in its download process, the DHCT could be damaged and will have to be replaced. If the DHCT does not update its software after 30 minutes, notify your supervisor or headend manager. The DHCT may have an RF issue or a download issue. Follow your company's escalation procedure.

Blinks 4 Times, Pauses, Repeats Only Once

The POWER LED indicator blinks 4 times, pauses, and repeats only once. This indicates that you have activated the Staging Toolkit.

This is normal behavior and is given so you know when the Staging Toolkit is ready for further instructions. Refer to *Explorer® Digital Home Communications Terminal Staging Guide* for more information.

Blinks 5 Times Quickly, Pauses, Repeats

The POWER LED indicator blinks 5 times quickly, pauses, then repeats. This indicates that the DHCT has no stranded IPPV events.

Important: This behavior only appears when you activate the Staging Toolkit and check for stranded IPPV events. Refer to *Explorer® Digital Home Communications Terminal Staging Guide* for more information on the Staging Toolkit.

Blinks 5 Times Quickly, Pauses, Repeats

The POWER LED indicator blinks 5 times slowly, pauses, then repeats. This indicates that the DHCT has stranded IPPV events.

Important: This behavior only appears when you activate the Staging Toolkit and check for stranded IPPV events. Refer to *Explorer® Digital Home Communications Terminal Staging Guide* for more information on the Staging Toolkit.

Blinks 8 Times, Then Pauses

The POWER LED indicator blinks eight times and then pauses for half a second. This is equivalent to the **four dashes** [- - - -] LED code that appears on the front panel of alphanumeric LED DHCTs.

This message indicates that the DHCT is not authorized for the brick mode avoidance package. In addition, the Service Disconnect Barker message appears on the screen of any TV connected to the DHCT.

If a DHCT has not received the brick mode avoidance package, the DHCT is considered in brick mode. The brick mode avoidance package lets cable service providers authorize services for the DHCT.

The possible causes for this condition are as follows:

- The cable service was disconnected.
- The DHCT needs to receive a hit from the billing system that authorizes services that a subscriber has requested.
- The DHCT is not authorized for the brick mode avoidance package.
- The DHCT timed out while receiving EMMs.

Glossary

CVT

Code Version Table. A method for staging DHCTs. The CVT is a table that contains information about download channels and information to map client release software versions to specific DHCT types. The Broadcast File Server (BFS) broadcasts this information once per second on every quadrature amplitude modulation (QAM) frequency and on the quadrature phase shift keying (QPSK) frequency. If a DHCT does not have valid client release software installed (such as new DHCTs), the DHCT searches QAM frequencies for software download information. When the DHCT finds this information, it can begin to download valid client release software.

DhctlInstantHit

See instant hit.

DVR

digital video recorder. A device that records television programs without the use of videotape and saves them to a hard drive located inside the recorder. The programs can then be deleted, saved to a tape, or left on the hard drive. A DVR allows you to pause live broadcast for interruption, such as creating your own instant replays. *Also known as* PVR.

EA

Entitlement Agent. Data structures transmitted within messages having cryptographic protection that authorize reception of service to a DHCT.

EMM

Entitlement Management Message. Contains information for a specific DHCT that enables it to access secure services.

Explorer®

Cisco's registered trademark name for the Digital Home Communications Terminal (DHCT). *Also known as* a set-top box.

FDC

Forward Data Channel. Carries digital data (tuning, management, Internet, and at least two days of IPG data) in ATM cells on RF signals from the ATM switch to a router, which then forwards the data to the correct network. *Also known as* out-of-band data channel.

Glossary

Field-return DHCT

A DHCT that has been removed from the subscriber's home has been returned to the cable service provider for service or repair.

flash memory (ROM)

Nonvolatile storage that can be electrically erased and reprogrammed so that software images can be stored, booted, and rewritten as necessary.

FTP

File Transfer Protocol. A method used to exchange files between computers on a network or the Internet using the TCP/IP protocol.

Guardian mode

A process that monitors the correct and accurate loading and flashing of critical software elements for DHCTs.

instant hit

A transaction from the DNCS or billing system that initiates the transmission of all existing EMMs to the device being staged.

IPPV

impulse pay-per-view. Service for which cable subscribers can electronically order program events using two-way (or reverse path) methods. Subscribers are charged a user fee for individual program events. *See also* PPV.

LED

light-emitting diode. Semiconductor device that converts electrical energy into light. Status lights on hardware devices are typically LEDs.

MAC address

Media Access Control address. A unique physical address embedded into a network device. Similar to a serial number.

modulator

A device that sends control and authorization information from the DNCS to the DHCT.

MSO

multiple system operator. A cable company that operates more than one cable system.

NVM

non-volatile memory. Memory that holds its content when the device it is associated with is turned off.

OSM

Operating System Manager. A method for staging DHCTs. In the OSM method, the DHCT receives System Information (SI) and a type-specific user-to-network configuration (UN-Config) message, which includes a table of contents (TOC) file, from the DNCS. The DHCT reads the contents of the TOC file and compares the checksums of the currently loaded image files against the file information in the TOC file.

PIN

personal identification number. A password used for identification.

PowerKEY® Conditional Access system

Cisco's registered trademark name for the hardware and software encryption and decryption of digital signal. Uses secret key, public key, and private key data to secure the digital signal.

PPV

pay-per-view. Service for which subscribers are charged a user fee for individual program events. *See also* IPPV.

provision

The process of preparing a device or service so that the DNCS recognizes the device, which allows the device to operate properly.

PVR

See DVR.

QAM

quadrature amplitude modulation. A frequency modulation technique primarily used for program audio and video. QAM supports data rates from 27 Mbps to 36 Mbps.

QAM modulator

A device that uses QAM techniques to modulate a digital signal onto an HFC network to deliver voice, video, and data to a DHCT.

Glossary

QPSK

Quadrature Phase-Shift Keying. Digital modulation scheme that send data by modulating the phase of a reference signal (the carrier wave).

QPSK modulator/demodulator

The QPSK modulator works with the QPSK demodulator and the DHCT to provide forward signaling and a reverse communications path for interactive video and data services. The QPSK modulator and demodulator convert digital bit streams to RF format and RF signals to digital bits, respectively.

RF

radio frequency. The range of electromagnetic frequencies above the audio range and below infrared light. Most wireless transmission uses RF, including radio, TV, satellites, portable phones, cellular phones, and wireless networks.

RMA DHCT

Return Material Authorization DHCT. A DHCT that the service provider has received back from factory repair.

SAM

Service Application Manager. Associates a specific service with an application that defines the medium to be used for that service, such as the World Wide Web. The SAM maintains the application in a specific directory to be used when needed by the DHCTs.

SARA

Cisco Resident Application. The set of operating programs that is “permanently” loaded into the DHCT. These programs are immediately available to the subscriber upon activation of the DHCT.

Service Disconnect feature

The process of disabling a DHCT so that it cannot be used to view cable services. Also known as *Brick mode*.

SI

system information. A standard set of tables providing the data necessary for a navigation device to discover and access services.

SR

System Release. Cisco's software release package for components of the DBDS.

staging

The process of loading the necessary software and security information into the Explorer DHCT prior to deployment in subscriber's homes.

TOC

Table of contents. A file that lists the files included in the OSM EMM transfer.

un-config

User-to-network configuration. A message sent from the DNCS that configures the DHCT.

UNIX

An operating system that is less computer/server-specific than other operating systems. UNIX is widely used in the telecommunications industry and by the Internet.

VCR

videocassette recorder.

VOD

video-on-demand. The ability of a subscriber to select a program event and watch it within moments of selection. VOD allows pausing and rewinding of the event.

xOD

anything-On-Demand. Combines two on-demand delivery mechanisms, VOD and SVOD, into one application.

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