CHAPTER 1

Installing the Product Software

The Cisco Configuration Engine is a network management software that acts as a configuration service for automating the deployment, management, and upgrading of network devices and services. Each Configuration Engine manages a group of Cisco devices (switches and routers) and the services that they deliver, storing their configurations and delivering them as needed. The Cisco Configuration Engine automates initial configurations and configuration updates by generating device-specific configuration changes, sending them to the device, executing the configuration change, and logging the results.

This chapter provides system requirements and procedures for installing, uninstalling, and ugrading the Cisco Configuration Engine software on the host system running on Solaris or Linux platforms. It contains the following sections:

- Operating System Dependencies, page 1-1
- System Requirements—Solaris, page 1-2
- System Requirements—Linux, page 1-2
- Understanding Disk Space Calculation, page 1-2
- Cisco IOS Dependencies, page 1-3
- Understanding Installation, page 1-3
- Installing the Software, page 1-4
- Upgrading from Release 2.0 or later to 3.5.3, page 1-5
- Uninstalling the Software, page 1-7
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- Information About the Installation Script, page 1-8

Operating System Dependencies

Table 1-2 lists the supported Red Hat Enterprise Linux and Oracle Solaris OS versions for the Cisco Configuration Engine release 3.5.3.

Table 1-1 Operating System Dependencies

Operating System	Update Supported
Red Hat Enterprise Linux 4	Update 8 or above

Table 1-1   Operating System Dependencies

Operating System	Update Supported
Red Hat Enterprise Linux 5	Update 5 or above
Solaris version 10	Update 8/10 or above

System Requirements—Solaris

With the following system requirements, the device connections can scale up to 30,000 devices:

- Solaris 10
- 16 GB RAM
- 8 core 1.0 GHz UltraSPARC T1 processor
- 70 GB disk space (see Understanding Disk Space Calculation, page 1-2)

System Requirements—Linux

With the following system requirements, the device connections can scale up to 20,000 devices:

- Red Hat Enterprise Linux 4 and Linux 5(32-bit SMP, kernel 2.6 and SELinux disabled)
- 4 Intel(R) Xeon(R) CPUs 5140 at 2.33 GHz or equivalent and above
- 8 GB RAM
- 70 GB disk space (see Understanding Disk Space Calculation, page 1-2)

Understanding Disk Space Calculation

Note   This disk space calculation is based on the Berkeley Database.

The /opt/ConfigEngine/openldap/var/openldap-data/id2entry.bdb file contains all the entries in the directory database. The size of this file provides a good approximation of the size of the directory database.

The following example shows that the size of the id2entry.bdb file is approximately 7 MB. Assume that the average size of an entry in the database is 1 KB and that the database contains approximately 7000 entries. The other *.bdb files are index files, which you must take into account. If you add the size of the id2entry.bdb file (approximately 7 MB) with the size of all of the index files (approximately 4.5 MB), the total database size would equal 11.5 MB.

In addition to the directory database, you must consider the disk space for database backups, Configuration Engine jobs, and log files. Because backups require as much storage as the active directory database, you must allocate space for backups also.

To view the size of the id2entry.bdb file, enter the **ls -alt** command.

Example

```
Average size of config job:

In-Progress/Stopped is 2K.
Completed is 2.5

Average size of Image job:

Stopped is 4K.
In-Progress is 2.5 K.

myCE(/opt/ConfigEngine/openldap/var/openldap-data)# ls -alt
total 31384
-rw------- 1 root other 16384 Sep 10 17:31 __db.001
-rw------- 1 root other 10485760 Sep 10 10:30 log.0000001452
-rw------- 1 root other 2371584 Sep 10 10:30 dn2id.bdb
-rw------- 1 root other 7012352 Sep 10 10:30 id2entry.bdb
-rw------- 1 root other 155648 Sep 10 10:30 objectClass.bdb
drwxr-xr-x 2 bin bin 2560 Sep 10 01:00 .
-rw------- 1 root other 176128 Sep 10 00:50 IOSConfigID.bdb
-rw------- 1 root other 180224 Sep 10 00:50 IOSEventID.bdb
-rw------- 1 root other 1499136 Sep 10 00:50 cn.bdb
-rw------- 1 root other 98304 Sep 8 18:07 __db.003
-rw------- 1 root other 270336 Sep 8 17:34 __db.002
-rw------- 1 root other 409600 Sep 8 17:31 __db.004
-rw------- 1 root other 24576 Sep 8 17:31 __db.005
drwxrwxr-x 5 bin bin 512 Aug 31 15:15 ..
myCE(/opt/ConfigEngine/openldap/var/openldap-data)#
```

Cisco IOS Dependencies

Table 1-2 lists Cisco IOS versions with corresponding versions of Cisco Configuration Engine 3.5.3 including feature limitations associated with each version.

Table 1-2   Cisco Configuration Engine 3.5.3 and Cisco IOS Dependencies

Cisco IOS	Cisco Configuration Engine	Limitations
12.3	1.3.2 or later	—
12.2(11)T	1.2 or later	—
12.2(2)T	1.2 or later with no authentication.	Applications are unable to use exec commands or point-to-point messaging.

Understanding Installation

The Cisco Configuration Engine 3.5.3 image is provided in a tar file format. You must untar the image in a directory, then go to that directory and run the installation script. You need root access to install Cisco Configuration Engine. For details about the installation procedure, see Installing the Software, page 1-4.

Cisco Configuration Engine 3.5.3 shares the web infrastructure-related software with bundled Cisco software. The installation script checks for shared and nonshared packages and takes appropriate action to install, abort, or prompt the user for package path.

To support different types of installations and setup, you are provided with the following installation script options:

./ce_install.sh—Default option. Installs all packages. Allows interactive installation that prompts the user for input.

./ce_install.sh-batch—Allows non-interactive installation. The installation script reads the default values from *installRule.solaris.xml* file or from the i*nstallRule.linux.xml* file as appropriate, and installs Cisco Configuration Engine 3.5.3 based on these settings without query for user input.

./ce_install.sh-demo—Installs the package without checking system resources except for minimum disk space, which is 650MB.

./ce_install.sh-force—Installs/uninstalls Cisco Configuration Engine 3.5.3 without installation or un-installation status check.

For details about the installation script, see Information About the Installation Script, page 1-8.

Installing the Software

The Cisco Configuration Engine 3.5.3 software is contained on a CD-ROM that is in the accessory kit.

Note   You need root access to install the Cisco Configuration Engine software.

Step 1   Install the CD-ROM into the disk drive on the host system.

Step 2   Copy the tar file into a new folder where there is sufficient disk space (see Understanding Disk Space Calculation, page 1-2):

tar xvf <*tarfilename***>**

Note   The tar file must be the only file in this new folder. You should use GNU tar for untarring the file.

Step 3   Check the system requirements for the installation .

./ce_check.sh—Checks the system software and the hardware requirements before installing the Cisco Configuration Engine software.

Step 4   Enter one of the following installation script commands as appropriate:

./ce_install.sh—Default option. Installs all packages. Allows interactive installation that prompts the user to provide input.

./ce_install.sh-batch—Allows non-interactive installation. The installation script reads the default values from *installRule.solaris.xml* file or from the i*nstallRule.linux.xml* file as appropriate, and installs Cisco Configuration Engine 3.5.3 based on these settings without query for user input.

./ce_install.sh-demo—Installs the package without checking system resources except for minimum disk space, which is 650MB.

./ce_install.sh-force—Installs/uninstalls Cisco Configuration Engine 3.5.3 without installation or un-installation status check.

Step 5   After installing the software, log out, then log back in again, or create a new window.

Step 6   Enter the following commands:

cd $CISCO_CE_INSTALL_ROOT/CSCOcnsie/bin/

./setup

Step 7   Go to Chapter 2, "Running the Setup Program" for a description of how to setup your system.

Upgrading from Release 2.0 or later to 3.5.3

The data migration feature allows you to upgrade your system from release 2.0 or later to 3.5.3. This feature populates the directory with the data you established for the prior release.

This is a four-step process:

1. Execute the Patch Script, page 1-5
2. Export Data to a Remote FTP Site, page 1-6.
3. Install Release 3.5.3 Software, page 1-6
4. Retrieve data from the FTP site, then setup the system (see Run datamigrate and Configure the System, page 1-7).

Note   When you perform data migration on a box where the Cisco Configuration Engine 3.5.3 is not installed, then run the script *./reinitialize* from CISCO_CE_HOME/bin.

Execute the Patch Script

If you have custom attributes defined in Cisco Configuration Engine and planning to migrate to Cisco Configuration Engine 3.5.3, then you need to run this schema patch script. The patch script will be a part of Cisco Configuration Engine release 3.5.3 and the patch script file can be located in the RPMS/Patch directory when you untar the Cisco Configuration Engine 3.5.3 tar file. After applying this patch, you can run the search query based on your custom attributes.

To run the patch script, follow these steps:

1. Untar the Cisco Configuration Engine 3.5.3 tar file and go to the Patch folder.
2. Run the **./schema_patch.sh** file.

Example of dataexport Prompts

```
# ./schema_patch.sh
-------------------------------------------------
CE utility to patch schema of custom defined attributes.
-------------------------------------------------
Apply this patch if you are migrating from any CE release prior to CE 3.5.3 to CE 3.5.3 or
above release.
Do you want to apply the patch to update CE schema? (y/n) [n]y
Applying patch...
Patch SUCCESS!!!
Now you can run dataexport script for CE migration.
```

Export Data to a Remote FTP Site

Before exporting the data, it is assumed that your host has already been setup and is up and running.

Step 1   Enter the data export command from *cd $CISCO_CE_HOME/bin* directory:

./dataexport

> **Tip**   Make sure you type the period (**.**) prior to the command.

Step 2   Follow the sequence of prompts to enter information of the FTP site and storage location (absolute pathname including filename).

Example of dataexport Prompts

```
Entering Data Export
Type ctrl-c to exit

Enter FTP server (hostname.domainname or IP address): sername.cisco.com
Enter username used for FTP server: smith
Enter FTP password: *****
Re-enter FTP password: *****
Enter absolute pathname of data file on FTP server: /users/smith/migration.tar
```

> **Note**   To export data to a remote FTP site from the Cisco Configuration Engine release 2.0, follow the below steps.

Step 3   Insert the Release 3.5.3 CD-ROM into the CD drive of your host to be upgraded.

Step 4   To mount the CD-ROM, login as **root**, then enter the command:

mount /mnt/cdrom

Step 5   Copy the following image file from *RPMS/DataExport to cd $CISCO_CE_HOME/bin* directory.

- **cns_export_utils_1.6.sh**
- **cnsexport_1.6.sh**
- **cns_import_utils.pl**
- **dataexport**
- **setuputils.pm**

Step 6   After copying the image files, perform the Step 1 and 2.

Install Release 3.5.3 Software

Install the Cisco Configuration Engine 3.5.3 software on the target system. For the procedure, see Installing the Software, page 1-4.

Run *datamigrate* and Configure the System

Step 1   Log in as **root**.

Step 2   Start datamigrate by entering the following command:
$CISCO_CE_HOME/bin/datamigrate

The script proceeds in the following three stages:

a.   Acquires information of the FTP server that stores the migration data and retrieves the data.

b.   Starts Release 3.5.3 setup prompts and configures the system.

c.   Populates internal directory storage with retrieved data.

Example of datamigrate Prompts

```
Enter FTP server (hostname.domainname or IP address): sername.cisco.com
Enter username used for FTP server: smith
Enter FTP password: *****
Re-enter FTP password: *****
Enter absolute pathname of data file on FTP server: /users/smith/migration.tar
```

Uninstalling the Software

To uninstall the software, use the uninstall script command, **ce_uninstall.sh**. The uninstall script is copied into */var/ciscoce/install* directory. This script reads the *installdata.xml* file to do package uninstallation. It proceeds in the following four stages:

1.   Stops all running Cisco Configuration Engine 3.5.3 processes.

2.   Removes all database data from BDB.

3.   Removes installed database software if it is BDB.

4.   Removes all presence of installed packages.

To uninstall Cisco Configuration Engine 3.5.3 packages without checking the installation status, use the **$ce_uninstall.sh {-force}** command. The option **-force** in the uninstallation script removes all Cisco Configuration Engine 3.5.3 packages except the preexisting shared packages on the target host.

Synchronizing Clocks

The clock (date and time) on your host and the clock on the PC that you use to access the Cisco Configuration Engine 3.5.3 user interface must be synchronized. This is particularly important when scheduling an update-image job for a future time (see the *Cisco Configuration Engine Administration Guide*).

If the host clock lags the PC clock, the user interface will not allow you to schedule the job and you will see an error message. For example, if your host clock reads 11:10 while the PC clock reads 12:10, the user interface will not allow a job to be scheduled before 12:10. You will see the following error message:

```
Please input a future time.
```

To verify that the clocks are correctly synchronized, make sure you have entered a valid time value on the client side. You can do this by using the clock on your PC with the browser used to access the Cisco Configuration Engine user interface.

Information About the Installation Script

The default behavior of the install script, *ce_install.sh,* is defined in the *installRule.solaris.xml* i*nstallRule.linux.xml, or* the i*nstallRule.linux5.xml* file as appropriate. This file is located in the same directory where the Cisco Configuration Engine 3.5.3 tar file is untarred. The *installRule* files contain the following information:

- Which package for which version should be installed.
- Can a package be shared.
- The behavior of the installation if the package exists or not.
- The methods to install and un-install the package.

The result of the installation is logged under */var/log/CNSCE/install.log.* This log file lists exactly what is being installed into the system. For a successful install, the contents of this log file should be the same as the contents of *installRule.solaris.xml* or the i*nstallRule.linux.xml* file as appropriate.

The *installError.xml* file is generated if there is an error during installation. Other files, such as those that contain all Cisco Configuration Engine 3.5.3 related environmental variables, are also generated during the installation stage including: *global.sh*, *global.csh*, *global.pm*, and *installdata.properties*.

Options for Setup Script

- Interactive Mode—This is the default option that prompts the user to provide inputs such as installation base directory, environment variables, and store them in a data file. The default value is read from *setupRule.xml* under: *${CISCO_CE_INSTALL_ROOT}/CSCOcnsie/bin/*.

    The result is stored in the log file: */var/log/CNSCE/appliance-setup.log*.

- Batch Mode—Reads all the information it requires for setup without user interaction from the data file: *${CISCO_CE_INSTALL_ROOT}/CSCOcnsie/bin/setupRule.xml*.

    The result is stored in the log file: */var/log/CNSCE/appliance-setup.log*.

> **Note** Before running batch mode the first time, you must run the utility script **$CISCO_CE_HOME/bin/passwdEncryption.pl**. This creates encrypted passwords and loads them into the *setupRule.xml* file. The passwords in XML must be in encrypted text, not plain text.

Information About the Check Script

The default behavior of the Check script, *ce_check.sh* is defined in the *installRule.solaris.xml* i*nstallRule.linux.xml, or* the i*nstallRule.linux5.xml* file as appropriate. The script checks for the following:

- Root user
- OS

- CPU

- RAM

- Disk space for /var directory

- List of dependent packages and their versions. Reports errors and warnings when there is a mismatch in the requirement and package dependencies.

The result is stored in the checkError.log file in the same directory where the Cisco Configuration Engine 3.5.3 tar file is untarred.

> **Note**   The disk space requirement check for *${CISCO_CE_INSTALL_ROOT}* directory is done only during the installaiton.

Troubleshooting the Installation

For more information about the installation script, see *Cisco Configuration Engine Troubleshooting Guide*.