CISCO SYSTEMS

Cisco Extensible Provisioning and Operations Manager Getting Started Guide

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Preface

Obtaining Documentation

Cisco provides several ways to obtain documentation, technical assistance, and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com

International Cisco websites can be accessed from this URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which may have shipped with your product. The Documentation CD-ROM is updated regularly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual or quarterly subscription.

Registered Cisco.com users can order a single Documentation CD-ROM (product number DOC-CONDOCCD=) through the Cisco Ordering tool:

http://www.cisco.com/en/US/partner/ordering/ordering_place_order_ordering_tool_launch.html

All users can order monthly or quarterly subscriptions through the online Subscription Store:

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

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You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:

  http://www.cisco.com/en/US/partner/ordering/index.shtml

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, U.S.A.) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

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You can submit comments electronically on Cisco.com. On the Cisco Documentation home page, click **Feedback** at the top of the page.

You can e-mail your comments to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com, which includes the Cisco Technical Assistance Center (TAC) website, as a starting point for all technical assistance. Customers and partners can obtain online documentation, troubleshooting tips, and sample configurations from the Cisco TAC website. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC website, including TAC tools and utilities.

Cisco.com

Cisco.com offers a suite of interactive, networked services that let you access Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

Cisco.com provides a broad range of features and services to help you with these tasks:

- Streamline business processes and improve productivity
- Resolve technical issues with online support
- Download and test software packages
- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

To obtain customized information and service, you can self-register on Cisco.com at this URL:

http://tools.cisco.com/RPF/register/register.do

Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available: the Cisco TAC website and the Cisco TAC Escalation Center. The type of support that you choose depends on the priority of the problem and the conditions stated in service contracts, when applicable.

We categorize Cisco TAC inquiries according to urgency:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration. There is little or no impact to your business operations.

- Priority level 3 (P3)—Operational performance of the network is impaired, but most business operations remain functional. You and Cisco are willing to commit resources during normal business hours to restore service to satisfactory levels.

- Priority level 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operations are negatively impacted by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

- Priority level 1 (P1)—An existing network is "down," or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Cisco TAC Website

The Cisco TAC website provides online documents and tools to help troubleshoot and resolve technical issues with Cisco products and technologies. To access the Cisco TAC website, go to this URL:

http://www.cisco.com/tac

All customers, partners, and resellers who have a valid Cisco service contract have complete access to the technical support resources on the Cisco TAC website. Some services on the Cisco TAC website require a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to this URL to register:

http://tools.cisco.com/RPF/register/register.do

If you are a Cisco.com registered user, and you cannot resolve your technical issues by using the Cisco TAC website, you can open a case online at this URL:

http://www.cisco.com/tac/caseopen

If you have Internet access, we recommend that you open P3 and P4 cases online so that you can fully describe the situation and attach any necessary files.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses priority level 1 or priority level 2 issues. These classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer automatically opens a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to this URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

Before calling, please check with your network operations center to determine the Cisco support services to which your company is entitled: for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). When you call the center, please have available your service agreement number and your product serial number.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The *Cisco Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the *Cisco Product Catalog* at this URL:

    http://www.cisco.com/en/US/products/products_catalog_links_launch.html

- Cisco Press publishes a wide range of networking publications. Cisco suggests these titles for new and experienced users: *Internetworking Terms and Acronyms Dictionary, Internetworking Technology Handbook, Internetworking Troubleshooting Guide,* and the *Internetworking Design Guide.* For current Cisco Press titles and other information, go to Cisco Press online at this URL:

    http://www.ciscopress.com

- *Packet* magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access *Packet* magazine at this URL:

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

- iQ Magazine is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:

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

- Internet Protocol Journal is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

    http://www.cisco.com/en/US/about/ac123/ac147/about_cisco_the_internet_protocol_journal.html

- Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:

    http://www.cisco.com/en/US/learning/le31/learning_recommended_training_list.html

CONTENTS

Overview of Cisco EPOM

This chapter contains the following topics:

Features

Cisco EPOM is a web-based application for real-time provisioning of the BTS 10200 Softswitch that allows authorized users to show, add, modify, delete, and check the status of Cisco BTS 10200 components.

Provisioning tasks in Cisco EPOM generally match tasks done using the Cisco BTS 10200 Softswitch CLI or MAC interface, but are accomplished through a web-browser interface. Common multistep procedures are simplified by being grouped together into tasks executed with task wizards.

Authorized Cisco EPOM administrators set up and manage the Cisco EPOM server software and perform Cisco EPOM user administration and network setup tasks:

- Start and stop the Cisco EPOM web server software. (See the "Starting and Stopping Cisco EPOM" section on page 2-4.)
- Add, modify, and delete users, user groups, and domains. (See the "Adding Domains, Groups, and Users" section on page 3-10.)
- Assign users to groups. (See the "Adding Users and Assigning Them to Groups" section on page 3-13.)
- Assign domain access (either read/write or read only) to groups. (See the "Adding Groups and Assigning Them to Domains" section on page 3-12.)
- Assign a Cisco BTS login to a Cisco EPOM group. This restricts a Cisco EPOM user's access to that of the assigned Cisco BTS user login. (See the "Setting Up Cisco EPOM Security" section on page 6-2.)
- Set up the network initially. (See the "Setting Up the Network" section on page 3-9.)
- Show, add, modify, and delete single or multiple Cisco BTS 10200 devices. (See the "Bulk Command Provisioning" section on page 4-6.)

- Set up custom navigation trees. (See the "Creating Custom Navigation Trees" section on page 6-3.)

- Create custom provisioning flows. (See the "Customizing Cisco EPOM Provisioning Flows" section on page 5-5.)

- View reports and download them to a Cisco BTS EMS server. (See the "Viewing Reports" section on page 7-1.)

- Troubleshoot problems. See Chapter 8, "Troubleshooting Cisco EPOM."

The Cisco EPOM Database

The Cisco EPOM database maintains Cisco EPOM administrative data (users, groups, and domains) and the inventory of Cisco BTS 10200 devices. Device-level information (such as subscribers, subscriber features, and communication with media gateways) is retrieved from the Cisco BTS EMS server devices in real time, and is not stored in the Cisco EPOM database.

Cisco EPOM Server Requirements

- Sun Ultra-5 workstation (440 MHz or faster)

- 512 MB RAM

- 256 MB disk space

- Sun Solaris 8 operating system

Default Port Assignments

Note   These port assignments can be changed during installation. See the "Accessing Cisco EPOM" section on page 2-5.

- MySQL port is 3310

- Tomcat non-secure port is 8080

- Tomcat secure port is 443

- Tomcat shutdown port is 8041

Cisco EPOM Client Requirements

- Microsoft Internet Explorer for Windows, version 5.5 or later.

- Netscape version 6.2 or later

Note   If you attempt to access Cisco EPOM with unsupported web browser versions, this error message is displayed:

```
Incompatible Browser Version
```

```
You must use one of the following browsers with cookies and javascript enabled:
Internet Explorer 5.x or higher
Netscape 6.x or higher
```

Cisco BTS Server Requirements

- Cisco BTS 10200 EMS Server 3.5
- Cisco BTSCis software package

Cisco BTS/Cisco EPOM Compatibility

Cisco BTS Release	Cisco EPOM Release
Cisco BTS 3.2	Cisco EPOM 1.1
Cisco BTS 3.3	Cisco EPOM 1.3
Cisco BTS 3.5.x with Visigenics CORBA	Cisco EPOM 1.3
Cisco BTS 3.5.x with OpenOrb CORBA	Cisco EPOM 1.5

Installing Cisco EPOM

This chapter contains the following topics:

About Cisco EPOM Installation

Note The installation information in this section shows Cisco EPOM as being installed in the /opt/CSCOepom directory.

Cisco EPOM installation sets up two separate directories:

- Application directory: /opt/CSCOepom directory.

  Do not create or modify any of the files in this directory.

- Data directory: /var/opt/CSCOepom directory.

  This is the location of log files and live data. Note that this directory is not deleted when you uninstall the Cisco EPOM application.

During its initial installation, Cisco EPOM creates and initializes a database used to store user IDs, login passwords, group information, and device inventories.

During installation, if an existing database is detected, the installation script does not reinitialize the database. You can determine if the database must be reinitialized, but this is not generally recommended.

If you wish to reinitialize the database, see the "Reinitializing the MySQL and Cisco EPOM Databases" section on page 2-5.

Prerequisites for Installing Cisco EPOM

Before you install Cisco EPOM, check that the Cisco BTScis package is installed on both the Cisco BTS EMS primary and secondary servers. Refer to the *Cisco BTS 10200 Softswitch Application Installation*.

You can also check if the CORBA application is running on the BTS EMS servers as described in the *Cisco BTS 10200 Softswitch Application Installation*.

Installing Cisco EPOM

Note
- Cisco EPOM can be installed on the same server as the Cisco BTS EMS, or on a separate server.
- Install Cisco EPOM on the primary and secondary Cisco BTS EMS servers.

Step 1   Become a Superuser by typing:

su - root

Step 2   Download the Cisco EPOM image from this location:

http://www.cisco.com/cgi-bin/tablebuild.pl/epom11

Step 3   Extract the tarfile:

tar -xvf epom-n_n_n_x-nnnnnnnn-n.tar

Step 4   Change directory by typing:

cd epom-n_n_n_x-nnnnnnnn-n

Step 5   Run the Setup script:

./setup

Step 6   Remove the installation image by typing these commands:

cd epom-n_n_n_x-nnnnnnnn-n

rm -f epom-n_n_n_x-nnnnnnnn-tar

rm -rf epom-n_n_n_x-nnnnnnnn-n

The working Cisco EPOM image is installed in the /opt/CSCOepom directory.

Uninstalling Cisco EPOM

After you uninstall Cisco EPOM, manually delete data files from the /var/opt/CSCOepom directory. These files are not automatically deleted by the uninstallation process.

Step 1   Become a Superuser by typing:

su - root

Step 2   Check that you are not in the /opt/CSCOepom directory.

Step 3   Run the uninstallation script by typing:

/opt/CSCOepom/uninstall/uninstall

Upgrading Cisco EPOM

This procedure shows the upgrade from Cisco EPOM 1.1 to Cisco EPOM 1.3. Follow the same procedure in order to upgrade to Cisco EPOM 1.5.

Step 1   Become a Superuser by typing:

su - root

Step 2   Create a temporary directory (epom_install2) for the Cisco EPOM 1.3 image:

cp epom-1_3_1_B-20020822-2.tar /opt/epom_install2

cd /opt/epom_install2

Step 3   Untar the image:

tar -xvf epom-1_3_1_B-20020822-2.tar

Step 4   List the image contents:

ls

epom-1_3_1_B-20020822-2 epom-1_3_1_B-20020822-2.tar

Step 5   Change to the location of the new, untarred image:

cd epom-1_3_1_B-20020822-2

Step 6   Start installing the new image:

./setup

This message is displayed:

```
Warning:
The Extensible Provisioning and Operations Manager 1.1 (1.D) is currently installed and
must be uninstalled before this version is installed.
```

Step 7   Verify that you wish to uninstall your current version of Cisco EPOM:

Do you wish to uninstall this product [y,n,?] **y**

```
Note: The CSCOepom data directory, /var/opt/CSCOepom still exists and must be removed
manually.

Using previously installed MySQL database.

Using previously installed EPOM database.
Verifying EPOM Database.
Starting mysqld daemon with databases from /var//opt/CSCOepom/data/db
MySQL Server has started
Verifying EPOM Database Tables

Extensible Provisioning and Operations Manager installation is complete.
```

> **Note** If you wish to reinitialize the Cisco EPOM database, see the "Reinitializing the MySQL and Cisco EPOM Databases" section on page 2-5.

Starting and Stopping Cisco EPOM

The Cisco EPOM web server must be running in order to be accessed by web clients.

Starting Cisco EPOM

Step 1 From the EPOM web server, type:

/opt/CSCOepom/bin/epom start

You will see the following:

```
% /opt/CSCOepom/bin/epom start
-------------------------------------------------
Starting EPOM
-------------------------------------------------
```

Step 2 Enter responses to the InstallShield Wizard sequence.

When the installation is complete, you will see the following:

```
Starting MySQL
MySQL server is already started
Starting Tomcat
Tomcat has started
-------------------------------------------------
EPOM Started
-------------------------------------------------
```

Stopping Cisco EPOM

From the EPOM web server, type:

/opt/CSCOepom/bin/epom stop

You will see the following:

```
% /opt/CSCOepom/bin/epom stop
-------------------------------------------------
Stopping EPOM
-------------------------------------------------
Stopping MySQL
030220 15:26:12 mysqld ended (This appears only in the window from which EPOM was started)
MySQL server has stopped
Stopping Tomcat
Tomcat has stopped
```

```
------------------------------------------------
EPOM Stopped
------------------------------------------------
```

Reinitializing the MySQL and Cisco EPOM Databases

You may wish to reinitialize the MySQL and Cisco EPOM databases for these reasons:

- To reset the Admin password necessary to log in to Cisco EPOM.
- To clear the databases following a Cisco EPOM upgrade.

Reinitialize the MySQL and Cisco EPOM databases by typing:

/opt/CSCOepom/mysql/install/bin/installMySQLDB -ifs

/opt/CSCOepom/mysql/install/bin/installEPOMDB -ifs

Note   If you reinitialize the MySQL database, you must initialize the Cisco EPOM database as well.

Accessing Cisco EPOM

You can access Cisco EPOM from a web browser. (For supported web browsers, see the "Cisco EPOM Client Requirements" section on page 1-2.)

Before you start Cisco EPOM, you will need this information:

- Tomcat non-secure port number
- Tomcat secure port number

You can also select the displayed defaults for these ports.

For a secure connection:

- If using the default port 443, type:

    https://*EPOMhostname*

- If using any other port, type:

    https://*EPOMhostname***:***port number*

    Where

    *EPOMhostname—*The host where Cisco EPOM is installed.

    port number—Identifies the port used.

For an insecure connection:

- If using port 80, type:

    http://*EPOMhostname*

- If using any other port (default installed port is 8080), type:

    http://*EPOMhostname***:***port number*

    Where

    EPOMhostname—The host where Cisco EPOM is installed.

    port number—Identifies the port used.

Logging in to Cisco EPOM

Step 1   Launch a web browser. (For supported web browsers, see the "Cisco EPOM Client Requirements" section on page 1-2.)

Step 2   Access Cisco EPOM (see the "Accessing Cisco EPOM" section on page 2-5.)

Step 3   Log in with the default administrator account:

User Name: **admin**

Password: **admin**

Step 4   Click **Login**.

You can now build a Cisco EPOM inventory as described in Chapter 3, "Setting Up Cisco EPOM."

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Setting Up Cisco EPOM

This chapter contains the following topics:

- Navigating the Cisco EPOM Interface, page 3-1
- Setting Up the Network, page 3-9
- Adding Domains, Groups, and Users, page 3-10

Navigating the Cisco EPOM Interface

Navigating the Cisco EPOM interface is described in these topics:

- Understanding the Cisco EPOM Application Window, page 3-2
- Exploring Main Cisco EPOM Views, page 3-6
- Using Cisco EPOM Forms, page 3-7

Understanding the Cisco EPOM Application Window

This is an example of the Cisco EPOM application window:
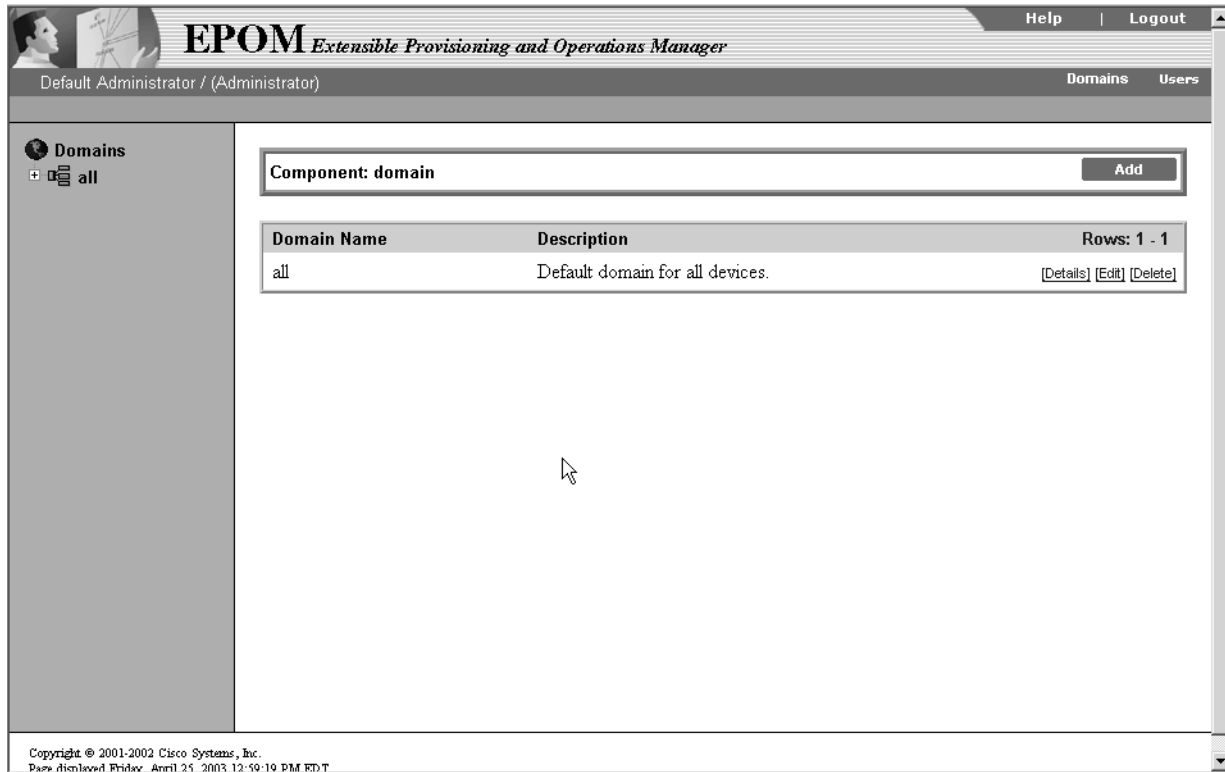
Standard Window Elements

Window Element	Description
Window title	Identifies the current view such as Component: domain management.
Window banner	Displays the application name and includes the **Help** and **Logout** buttons.
Main menu	Displays the current user name, user type (Administrator or User). This menu bar also includes main menu buttons to switch between domain management and user administration.

Window Element	Description
Submenu	Displays the currently selected component, if any, and buttons for major operations on that component.

<div align="center">

BTS10200 : ems-server

</div>

This submenu bar also has the Reports, Config, Edit, and Delete buttons. These buttons are duplicated in the BTS10200 Details pane. They have the same function whether you click them in the submenu bar or the Details pane.

The submenu includes a highlighted link to the selected Cisco BTS EMS server. Click the link to go to the index for the selected server, where you can access reports or Help.

Window Element	Description
Navigation pane, tree view	Displays a tree view you can use to display the structure of the current view, such as the Domains tree, the User/Groups tree, the inventory device Configuration tree, the Reports tree, and navigate through tree objects.

ems-server2
- AIN
- Centrex
- Feature/Services
- H323
- ISDN
- MGW & Terminations
- MultiLine Hunt Group
- Office Tables
- POTS
- Routing
- Subscriber
- Tandem
- Trunk Groups
- Billing
- SNMP
- Scheduler
- Security
- Provisioning Flow

User Administration
- Users
- Groups

Window Element	Description
Navigation pane, icons	When you select a Cisco BTS EMS server and click on **Config**, icons (in the Configuration tree) identify the main object types and the default action that occurs when you click on the tree object. The available actions depend on the object type.

Window Element	Description
	A main component, expandable to view subcomponents.
	Click to show the component or list of components of that type, and access other operations such as adding a new component of that type or searching for components.
	Click to search for components of this type.
	Click to check or change status.
	Click to diagnose the component.

Window Element	Description
Content area	Displays information about the object selected in the navigation pane. The display changes if you select a different object or click a command button, such as **Add** or **Edit**.

Component: domain	Add

Domain Name	Description	Rows: 1 - 1
all	Default domain for all devices.	[Details] [Edit] [Delete]

This pane includes a title box across the top, containing a description of the current object and command buttons for actions that apply to it. Management views display a list of the managed objects and buttons applicable to the object, such as **Edit** or **Delete**.

Managed object views	These views include standard elements and navigation features as shown in this example.

ⓘ Success: Entries 1-9 of 9 returned.

Component: dial_plan	Add	Search

Check All   Clear All   Details   Edit   Delete

	id ▲	dest_id	digit_string	reqd_digits	Rows: 1 - 9 of 9
☐	dp1	dest-tg6	2022341111	10	[Details] [Edit] [Delete]
☐	dp1	local_call	214223	10	[Details] [Edit] [Delete]
☐	dp1	ss7dest2	301234	10	[Details] [Edit] [Delete]
☐	dp1	local_call	408526	10	[Details] [Edit] [Delete]
☐	dp1	local_call	512378	10	[Details] [Edit] [Delete]
☐	dp1	local_call	703484	10	[Details] [Edit] [Delete]
☐	dp1	local_call	717484	10	[Details] [Edit] [Delete]
☐	dp1	local_call	919423	10	[Details] [Edit] [Delete]
☐	dp1	local_call	972213	10	[Details] [Edit] [Delete]

- You can sort on column headers.

- All defined objects of the selected type are listed.

- Allowed operations on a selected object are listed at right, such as Details, Edit, and Delete. See the "Standard Cisco BTS Operations" section on page 3-6 for a complete list.

- Links to other parts of the configuration are provided, for quick navigation between related views. Click the items displayed with blue underlining to jump to that component. In the example above, you can click a dial plan profile ID (dp1) to go directly to a dial plan profile.

Standard Cisco BTS Operations

In managed object view, you can carry out any operation supported for the selected object type. The operation appears as an underlined blue link. Operations are executed in real time. These Cisco BTS operations are available in Cisco EPOM:

- **Add**—Add a component.
- **Edit**—Edit the component.
- **Details**—Show all the information on the component.
- **Delete**—Remove the component from the configuration.

  You cannot delete a component if other components depend on it. For example, you cannot delete a subscriber profile until you have deleted all the subscribers that are associated with it.

- **Status**—Check the status of the component.
- **Control**—Take the component in or out of service.
- **Diag**—Issue a diagnostic command to the component.
- **Equip**—Equip components to put them in service.
- **Unequip**—Unequip a component prior to deleting.
- **Reset**—Reset defined circuit identification codes (CICs).

  Reset the CIC if there are errors in the communication on that trunk.

- **Search**—Search for components meeting the specified criteria.

  Fill in the search criteria, then click **Search**. For example, in the subscriber window, to find a list of subscribers using a particular media gateway, in **mgw_id** enter the gateway id, then click **Search**. A list of matching subscribers is displayed.

Exploring Main Cisco EPOM Views

Cisco EPOM's two main views are Domain Management and User Management. From Domain Management you access all device-related functions. From User Management, Cisco EPOM administrators can access user and group access functions, and Cisco EPOM users can access their own user record, for example, to change their password.

This table describes the main Cisco EPOM views in each category. The Access With column gives an example of how to access the view, but as in any web application, there are many links between views that can shortcut hierarchical navigation.

View—Domains	Access With	Use To…
Domain Management	Domains button	• Manage domains and devices • Access domain-level tasks
Domain Details	**Details** or click the domain in the Domain tree	• View what inventory devices are contained in the domain and what user groups have access to the domain
Modify Domain	**Edit** from Domain Details	• Add devices, add groups with access to the domain

Cisco BTS 10200 Component Status	With a Cisco BTS 10200 EMS server selected in the Domain tree view, click **Config**	• View, modify, and check or change the status of BTS devices • Schedule provisioning tasks • Access Provisioning Wizards
BTS 10200 Configuration Wizard	In the Configuration tree, click **Provisioning Flow** and click the provisioning task	• Carry out common provisioning operations with prompts for each required step in the procedure
BTS Component Reports	With a BTS EMS server selected in the Domain tree view, click **Reports**	• Select and view Performance or Billing Reports
View—Users	**Use To…**	
User Administration	**Administrators**—Add, modify, or delete users, including assigning users to one or more groups. **Users**—View your settings and change your first name, last name, password, or email.	
Group Administration	**Administrators**—Add or delete groups. Groups are listed under Groups in the Edit User window so that you can assign or unassign users to them.	

Using Cisco EPOM Forms

You can use Cisco EPOM forms to add, view, and change information on inventory components, domains, users, and groups, to specify report parameters, to search for devices, and so forth. The Add component form is an example:

Form Actions

In a form, you can do the following:

- Fill in or select field values. Required fields are identified with a red checkmark.
- Click **Clear Form** to clear out existing information.
- Click **OK** to save the current field values, including any changes you have made, and return to the previous view
- Click **Cancel** to discard any changes and return to the previous view.

Adding Multiple Components with Common Properties

In Component Add forms, you can use **Apply** to add multiple components with the same properties. For example, in the Subscriber Add form, enter common properties and fill in the ID for the first subscriber of that type, then click **Apply**. The subscriber is added and the form stays open. Fill in the id for the next subscriber and click **Apply**. Repeat for each subscriber of this type.

Field Types
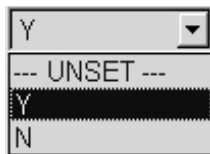
There are five field types:

- **Text fields**, where you fill in text information:

For many text fields, you need to know the correct value to enter, such as the hostname of a Cisco BTS EMS server.

- **Dropdown list boxes**, where you select one from a list of choices:

- **Multiple-select fields**, such as the Groups field in the Edit User window, where you select one or more in a list of choices:

Click to select a single value, or **Ctrl**+**click** to select multiple values. Selected values are highlighted.

- **Parameter fields**, where you click to select from a list of parameters values:

Click to open the Selection Helper window. Make your choices, then click **OK**.

- **Add subelement fields**, where you click to drill down to a form to add a subelement. In this example for the component, ISDN B-channel, the trunk group ID field is empty:

No trunk_grp items defined.

Click to open a form to define the subelement, then click **OK** to save the changes and return to the previous form, or **Apply** to save the changes and keep working in the subelement form.

View-only fields have a gray background and cannot be edited.

Field-Level Help

For help on a field, point to in order to view a short description of the field and any requirements, such as minimum or maximum number of characters.

For parameter fields, click to open the Selection Helper window.

Moving Between Windows

Use the application buttons or the various tree views in the navigation pane to move between windows.

If you simply want to move back to the previous window, use the Cisco EPOM **Cancel** button, if available, or another application button.

Setting Up the Network

Setting up the network is described in these topics:

- About Adding a Cisco BTS EMS Server, page 3-9
- Adding a Cisco BTS EMS Server, page 3-9

About Adding a Cisco BTS EMS Server

The first step is to add a Cisco BTS 10200 Softswitch EMS server to the Cisco EPOM inventory.

Before you begin, obtain this information about the Cisco BTS EMS server:

- Hostname or IP address.
- Login and password.
- Site ID. This is necessary for CORBA communication (how Cisco EPOM communicates with the BTS EMS server). See "Determining a Cisco BTS EMS Server Site ID" section on page 3-9.

Determining a Cisco BTS EMS Server Site ID

This server ID enables Cisco EPOM to communicate with the Cisco BTS EMS server via the CORBA interface.

Step 1   Log in to the Cisco BTS EMS server as the root user.

Step 2   To determine the site ID, type:

grep SITEID /etc/opticall.cfg

SITEID=rtpvtc2

Adding a Cisco BTS EMS Server

This procedure adds a Cisco BTS EMS server to the **all** domain and sets up its initial configuration.

Step 1   Start Cisco EPOM (see the "Logging in to Cisco EPOM" section on page 2-6).

Cisco EPOM opens to the Domain Management view.

Step 2   In the Domain pane, in the **all** domain row click **Edit**.

The Modify component: Domain view opens.

Tip   Since you are viewing the **all** domain, the Inventory and Groups items are also preceded by **all** (all Inventory and all Groups).

Step 3   In the all Inventory pane, click **Add**.

The Add component view opens.

| Add component: BTS10200 | OK | Cancel |

| Clear Form |

✓ **Hostname** [   ] ②
✓ **Type** [BTS10200 ▾] ②
Login [   ] ②
Password [   ] ②
Site Id [   ] ②

Note   Red checkmarks identify required fields.

Step 4   Specify the required information:

Tip   Move your cursor over the ② symbol to access field-level help such as the range of characters allowed for a response.

- Hostname: The hostname or IP address of the EMS server.
- Type: Select BTS 10200.
- Login: The Cisco BTS EMS server login.
- Password: The Cisco BTS EMS server password.
- Site Id: The site ID for the Cisco BTS EMS server. See "Determining a Cisco BTS EMS Server Site ID" section on page 3-9.

Step 5   Click **OK**.

The specified Cisco BTS EMS server is added to the **all** domain.

Adding Domains, Groups, and Users

Using Cisco EPOM's user, group, and domain administration tools you can set up read/write or read-only access for Cisco EPOM users to any Cisco BTS EMS server network. Use domains to organize networks into logical groupings that can be made accessible to specified user groups. Use groups to organize users based on the domains to which you want them to have access. You can also assign a Cisco BTS user login to a Cisco EPOM user group to further control access to the Cisco BTS EMS server (see Chapter 6, Managing Security with Cisco EPOM).

Procedures to add domains, groups, and users are described in the following topics:

- Adding Domains, page 3-11
- Adding Groups and Assigning Them to Domains, page 3-12
- Adding Users and Assigning Them to Groups, page 3-13

Adding Domains

Add a domain to create a logical network grouping accessible to specified user groups. A domain definition includes a Cisco BTS EMS server (which may have been already defined in another domain, or may be defined on the fly when you add the domain) and groups with access to the domain.

Step 1   Click **Domains** if you are not already in Domain Management view.

Step 2   Click **Add**. The Add Domain view opens.

Add component: domain	OK	Cancel

Clear Form

✓ **Domain Name** [   ] ⑦
Description [   ] ⑦

Step 3   Define the domain:

a. **Domain Name—**The domain name that appears in the Domain tree. Enter up to 15 characters, spaces allowed.

b. (Optional) **Description**—Descriptive information that appears in Domain Management view.

c. Click **OK**. You return to Domain Management view, with the new domain listed in the domain list, but not yet listed in the Domain tree.

Step 4   To add a Cisco BTS EMS server or user groups to the domain, click **Edit**. The Modify Domain view opens.

Step 5   Do one of the following:

a. To add a Cisco BTS EMS server to this domain, next to **No Inventory Found**, click **Edit**. The Inventory Edit view opens listing existing Cisco BTS EMS servers. Check the server you want to add to this domain, then click **OK.** If you want to add a new Cisco BTS EMS server and include it in this domain at the same time, click **Add**, then define the server (see Chapter 4, Configuring Cisco BTS Components).

b. To specify which groups have access to this domain, next to *XYZ Domain* **Groups**, click **Edit**. The Group Edit view opens listing all groups and their current access. For each group that should have access to this domain, select the desired access type, Read/Write or Read Only. Click **OK**.

   You return to the Domain Management view.

Step 6   If you added a Cisco BTS EMS server and now want to add groups, or vice versa, repeat steps 4 and 5.

Adding Groups and Assigning Them to Domains

A domain definition specifies user groups with read/write or read-only access to that domain. Add groups to organize users according to what domains they should have access to.

Step 1   Click **Users** if you are not already in User Administration view.

Step 2   In the navigation pane, click **Groups**. The Group Administration view opens listing existing groups.

Step 3   Click **Add**.

Step 4   Specify the name of the new group which can be up to 255 characters. Spaces are allowed.

Step 5   Click **OK**. The group is added to the group list.

Add Group		OK	Cancel
Group Name			
BTS Login			
BTS Navigation Tree			

Note   The BTS Login and BTS Navigation Tree fields are described in the "Setting Up Cisco EPOM Security" section on page 6-2.

Step 6   Click **Domains** to switch to Domain Management view.

Step 7   In the Domain list, click **Edit** for the domain you want the new group to be able to access. The Modify Domain view opens. Under *XYZ Domain* Groups you see a list of groups that currently have access to this domain.

Step 8   Click **Edit**. The Group Edit view opens listing all groups and their current access.

Step 9   In the dropdown list box for the new group, select the desired access:

   • None (to remove access from a group that has had access)

   • Read/Write

   • Read Only

Step 10   Click **OK**. The access change for this domain is executed and you return to the Domain Management view.

Deleting Groups

You can delete obsolete groups. For example, you might delete a group if you delete the domain it is associated with.

Step 1   Click **Users** if you are not already in User Administration view.

Step 2   In the navigation pane, click **Groups**. The Group Administration view opens listing existing groups.

Step 3 In the row for the group you want to delete, click **Delete**. The Delete Group view opens.

Delete group: san jose	OK	Cancel

Group Name	san jose

Step 4 Click **OK**. The group is deleted and you return to the Group Administration view. The Group Names list reflects the deletion.

✎
Note   The default group admin and the default userid admin cannot be deleted.

Adding Users and Assigning Them to Groups

Step 1 Click **Users** if you are not already in User Administration view. The list of current users is displayed.

Step 2 Click **Add**. The Add User view opens.

Add user	Add	Cancel

Username	
First Name	
Last Name	
Password	
Confirm Password	
Email Address	
Groups	admin

Step 3 Define the user:

- **Username**—Enter the name the user will use to log in to Cisco EPOM.

- **First Name**—Enter the user's first name.

- **Last Name**—Enter the user's last name.

- **Password**—Enter the initial password for Cisco EPOM access. The user can change this later.

- **Confirm Password**—Enter the password again for confirmation.

- **Email Address**—Enter the user's email address, which provides an email shortcut in the user list.

- **Groups**—Click the group this user will belong to. To select multiple groups, press **Ctrl+click**. The selected groups are highlighted.

  To unselect a selected group, point to the group and press **Ctrl+click**.

Step 4   Click **OK**. The user is added, and you return to the User Administration view, where the new user is listed.

Modifying and Deleting Users

If you are a member of the admin group, you can modify user information, including group membership, or delete users that no longer require Cisco EPOM access. (If you are not a member of the Admin group, you can change your password, name, and email, but not your userid or group association.)

Step 1   Click **Users** if you are not already in User Administration view. The list of current users is displayed.

Step 2   In the row for the user you want to change, do one of the following:

    a.   To modify user information, click **Edit**. The Edit User view opens. Make the desired changes, then click **Edit** to execute them.

Modify user: admin		OK	Cancel
Username	admin		
First Name	Default		
Last Name	Administrator		
Password	************************************		
Confirm Password	**********************************		
Email Address			
Groups	admin		

    b.   To delete the user, click **Delete**. The Delete User view opens. Click **Delete** to execute the deletion, or **Cancel** if you have changed your mind.

Delete user: rtp user		Delete	Cancel
Username	rtp user		
First Name	rtp		
Last Name	user		
Password	************************************		
Email Address	rtpuser@cisco.com		

You return to the User Administration view, showing the list of users.

Changing Your User Information

As a user, you can change your password, email address, and first name/last name information. You cannot change your user name, group membership, or domain access, which can be changed only by the Cisco EPOM administrator.

Step 1 From any Cisco EPOM view, click **Users**. The User Administration view opens.

Step 2 In the row with your user information, click **Edit**. The Edit User view opens.

Step 3 Modify the desired fields. You can change these fields:

- First Name
- Last Name
- Password (you must enter the password again in Confirm Password)
- Email Address

Step 4 Click **Edit** to execute the changes and return to the User Administration view.

C H A P T E R **4**

Configuring Cisco BTS Components

This chapter contains the following topics:

- Configuring a Cisco BTS EMS Server, page 4-1
- Adding a Component to the Cisco BTS Configuration, page 4-2
- Editing a Component in the Cisco BTS Configuration, page 4-4
- Deleting a Component from the Cisco BTS Configuration, page 4-5
- Bulk Command Provisioning, page 4-6
- Checking Status and Controlling Components, page 4-8

Configuring a Cisco BTS EMS Server

Use this procedure after you have added a new Cisco BTS EMS server to the Cisco EPOM inventory. (See the "Adding a Cisco BTS EMS Server" section on page 3-9.)

Step 1   In the navigation pane, expand the domain tree:

   a.   Click **all**.

   b.   Click **BTS 10200s**.

   You see the Cisco BTS EMS servers currently in the inventory. In this example, there are two, **ems server** and **ems server 3**:
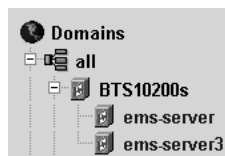
Step 2   Click the BTS EMS server you want to configure. The Details view opens, as shown in this example:

Step 3   Click **Config**. The Component Status view opens (see Step 4).

The navigation pane shows the Configuration tree, and the content area displays the status of the selected Cisco BTS EMS server.

✎

Note   The initial access of the Cisco BTS EMS server component status may take a few seconds.

Step 4   To show or change the Cisco BTS EMS Server configuration, select objects in the Configuration tree. See the "Adding a Component to the Cisco BTS Configuration" section on page 4-2.

Adding a Component to the Cisco BTS Configuration

🔍

Tip   Have on hand the configuration information for the component you want to add to the Cisco EPOM inventory.

Add components to the Cisco EPOM inventory to build the managed network. The device information includes static and dynamic selections to other parts of the configuration. This example adds a dial plan.

Step 1   In a Domain view, select the desired domain > **BTS10200s** > the desired Cisco BTS EMS server.

Step 2   Click **Config**.

The Cisco BTS 10200 Component Status view opens.

Step 3   In the Configuration tree, select **Office Tables > dial_plan**.

The Cisco BTS 10200 Component view opens showing a list of dial plans. If this is the first dial plan (or device of this type) that you are adding, the list is empty.

(i) Success: Entries 1-9 of 9 returned.				

Component: dial_plan			Add	Search

Check All   Clear All   Details   Edit   Delete

	id ▲	dest_id	digit_string	reqd_digits	Rows: 1 - 9 of 9
☐	dp1	dest-tg6	2022341111	10	[Details] [Edit] [Delete]
☐	dp1	local_call	214223	10	[Details] [Edit] [Delete]
☐	dp1	ss7dest2	301234	10	[Details] [Edit] [Delete]
☐	dp1	local_call	408526	10	[Details] [Edit] [Delete]
☐	dp1	local_call	512378	10	[Details] [Edit] [Delete]
☐	dp1	local_call	703484	10	[Details] [Edit] [Delete]
☐	dp1	local_call	717484	10	[Details] [Edit] [Delete]
☐	dp1	local_call	919423	10	[Details] [Edit] [Delete]
☐	dp1	local_call	972213	10	[Details] [Edit] [Delete]

Step 4   Click **Add**.

The Cisco BTS 10200 Component Add view opens.

Add component: dial_plan		OK	Apply	Cancel

Clear Form   ☐ Expand range expression ?

✓	id	— UNSET — ▾ ?
✓	dest_id	— UNSET — ▾ ?
✓	digit_string	[ ] ?
✓	noa	NATIONAL ?
	del_digits	[ ] ?
	max_digits	[ ] ?
	min_digits	[ ] ?
	pfx_digits	[ ] ?
	reqd_digits	10 ?
	split_npa	NONE ▾ ?

Step 5   Define the device. Required fields are identified with a red checkmark.

Step 6   Click **Ok**.

You return to the Cisco BTS 10200 Component view. The new dial plan is added to the list.

> ✎
> **Note**   To edit a single component, see the "Editing a Component in the Cisco BTS Configuration" section on page 4-4; to delete a single component, see the "Deleting a Component from the Cisco BTS Configuration" section on page 4-5.

> ✎
> **Note**   To add, edit, or delete multiple components with a single operation, see the "Bulk Command Provisioning" section on page 4-6.

Editing a Component in the Cisco BTS Configuration

Step 1   In a Domain view, select the desired domain > **BTS10200s** > the desired Cisco BTS EMS server.

Step 2   Click **Config**.

The Cisco BTS 10200 Component Status view opens.

Step 3   In the Configuration tree, select **Office Tables > dial_plan**.

The Cisco BTS 10200 Component view shows a list of currently configured dial plans.

Step 4   Select the box next to the dial plan you wish to edit.

Step 5   Click **Edit** in the row of the dial plan you wish to edit.

The Change component window is displayed.

Change component: dial_plan		OK	Cancel

Clear Form		☐ Expand range expression ?
	☑	
✓ id	dp1 ▾ ?	
✓ digit_string	214223 ?	
✓ noa	NATIONAL ?	
del_digits	?	
dest_id	local_call ▾ ?	
max_digits	10 ?	
min_digits	1 ?	
pfx_digits	?	
reqd_digits	10 ?	
split_npa	NONE ▾ ?	

Step 6   Make required changes to the attribute fields.

Step 7   Click **OK**.

You return to the Cisco BTS 10200 Component view. The edited dial plan is shown in the list.

✎
Note   To add a single component, see the "Adding a Component to the Cisco BTS Configuration" section on page 4-2; to delete a single component, see the "Deleting a Component from the Cisco BTS Configuration" section on page 4-5.

✎
Note   To add, edit, or delete multiple components with a single operation, see the "Bulk Command Provisioning" section on page 4-6.

Deleting a Component from the Cisco BTS Configuration

Step 1   In a Domain view, select the desired domain > **BTS10200s** > the desired Cisco BTS EMS server.

Step 2   Click **Config**.

The Cisco BTS 10200 Component Status view opens.

Step 3   In the Configuration tree, select **Office Tables > dial_plan**.

The Cisco BTS 10200 Component view shows a list of currently configured dial plans.

Step 4   In the Component:*name* window, select one or more dial plans to delete.

Step 5   Click **Delete**.

The Delete component window is displayed and the requested deletion is displayed.

Step 6   Click **OK**.

✎
Note   To add a single component, see the "Adding a Component to the Cisco BTS Configuration" section on page 4-2; to edit a single component, see the "Editing a Component in the Cisco BTS Configuration" section on page 4-4.

✎
Note   To add, edit, or delete multiple components with a single operation, see the "Bulk Command Provisioning" section on page 4-6.

Bulk Command Provisioning

Cisco EPOM allows you to perform add, delete, and edit commands on multiple components with a single operation. These bulk provisioning commands can be performed only on devices of the same type. For instance, if a group of subscribers will use the same Media Gateway and subscriber profile, you can add or edit these subscribers using a single command.

Adding Multiple Components

Step 1   In the ems-server view left pane, click a component.

The Component:*name* window is displayed.

Step 2   Click **Add**.

The Add component window is displayed.

Add component: dial_plan			OK	Apply	Cancel

Clear Form   ☐ Expand range expression ☑

✓ **id**	— UNSET — ▼ ☑
✓ **dest_id**	— UNSET — ▼ ☑
✓ **digit_string**	[ ] ☑
✓ **noa**	NATIONAL ☑
del_digits	[ ] ☑
max_digits	[ ] ☑
min_digits	[ ] ☑
pfx_digits	[ ] ☑
reqd_digits	10 ☑
split_npa	NONE ▼ ☑

Step 3   Check the Expand range expression checkbox.

If you fail to check this you get an error message when you attempt to execute a range expression.

For information on acceptable range expressions, move your cursor over the ☑ symbol next to the Expand range expression field.

Step 4   In the id field, enter a range expression in square brackets [ ].

For example, to add a group of 10 dial plans with the id prefix dp001_new, enter dp001_new[01-10]. This adds dial plans dp001_new01, dp001_new02, through dp001_new10.

Step 5   Enter information in the remaining attribute fields.

Step 6   Click **OK** or **Apply**.

- When you click OK, the component is added and the list of components in the Component:*name* window is displayed.

- When you click Apply, the component is added, but you remain in the Add component window for further operations.

You have now added multiple components to the Cisco BTS EMS network.

Editing Multiple Components

Step 1   In the ems-server view left pane, click a component.

The Component:*name* window is displayed.

Step 2   In the Component:*name* window, select one or more components to edit.

Step 3   Click **Edit**.

The Change component window is displayed.

Change component: dial_plan			OK	Cancel

Clear Form		□ Expand range expression ⑦	
	☑		☑
✓ id	dp1 ▾ ⑦		dp1 ▾ ⑦
✓ digit_string	2022341111 ⑦		214223 ⑦
✓ noa	NATIONAL ⑦		NATIONAL ⑦
del_digits	⑦		⑦
dest_id	dest-tg6 ▾ ⑦		local_call ▾ ⑦
max_digits	10 ⑦		10 ⑦
min_digits	1 ⑦		1 ⑦
pfx_digits	⑦		⑦
reqd_digits	10 ⑦		10 ⑦
split_npa	NONE ▾ ⑦		NONE ▾ ⑦

Step 4   Make required changes to the attribute fields.

Step 5   Click **OK**.

You have now edited multiple components in the Cisco BTS EMS network.

Deleting Multiple Components

Step 1   In the ems-server view left pane, click a component.

The Component:*name* window is displayed.

Step 2   In the Component:*name* window, select one or more components to delete.

Step 3   Click **Delete**.

The Delete component window is displayed and the requested deletions are displayed.

Step 4   Click **OK**.

You have now deleted multiple components in the Cisco BTS EMS network.

Checking Status and Controlling Components

You can check the status of a device and you can control a device's status. For example, you can change status of a Cisco BTS EMS server from Normal to Forced Active Standby.

Note   Exercise care in changing component status.

Step 1   In a Domain view, navigate to the desired Cisco BTS EMS server.

Step 2   Click **Config**. The Cisco BTS 10200 Component Status view opens. The Configuration tree appears in the left navigation pane.

Step 3   Navigate to the desired device and click to select it.

Step 4   In the Status window, click **Control**.

Step 5   In the Component Control window, verify that you have selected the correct component, then click the dropdown list for **target_state**.

Step 6   Select the desired state. Options depend on the type of component selected.

Step 7   Click **OK** to execute the state change or **Cancel** to cancel it.

Using Cisco EPOM Flow Provisioning

This chapter is designed for network operators using Cisco EPOM for ongoing provisioning once the network inventory has been set up. In the typical "add subscriber" scenario, you receive an order ticket to add a subscriber or a subscriber service.

This chapter contains the following topics:

- About Provisioning Flows, page 5-1
- Adding or Deleting Subscribers, page 5-2
- Provisioning Other Components using Cisco EPOM Wizards, page 5-4
- Customizing Cisco EPOM Provisioning Flows, page 5-5
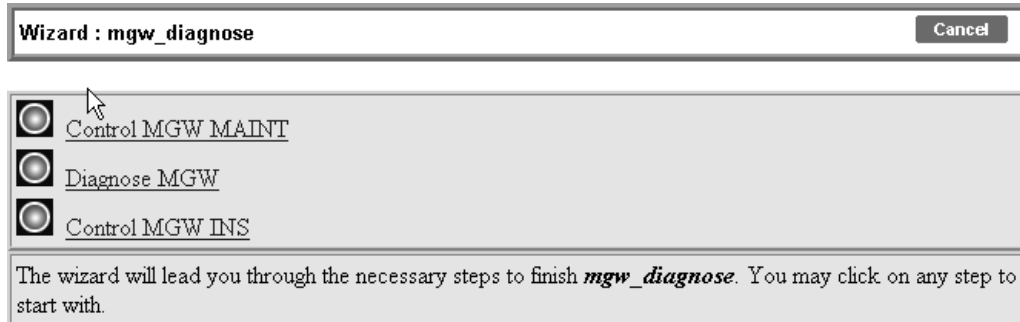
About Provisioning Flows

A provisioning flow consists of a number of steps that you perform to complete a task. Each step can also be performed by expanding the Cisco BTS navigation tree, finding the right components, and clicking the appropriate action. A provisioning flow links these steps together for your convenience.

Using a Provisioning Flow Wizard

This section describes the general process for using a wizard; specifics depend on the type of task.

Step 1   In a Domain view, click the desired domain, then click **BTS10200s**, then click the desired Cisco BTS EMS server.

Step 2   Click **Config**. BTS 10200 Component Status view opens.

Step 3   In the Configuration tree, click **Provisioning Flows**, then click the appropriate provisioning wizard. The Cisco BTS 10200 Configuration Wizard opens showing the list of provisioning tasks for this flow.

Wizard : mgw_diagnose	Cancel

◉ Control MGW MAINT
◉ Diagnose MGW
◉ Control MGW INS

The wizard will lead you through the necessary steps to finish *mgw_diagnose*. You may click on any step to start with.

Step 4   Click the first task. The form for the selected task opens.

Control component: mgw	OK	Apply	Skip

Clear Form

✓ **id**   [   ] ⑦
✓ **mode**   [FORCED ▼] ⑦
✓ **target_state** [MAINT ▼] ⑦

Step 5   Fill in the form, then click **OK**. Alternatively, if this task is not required or you are not ready to complete it now, click **Skip**. The form for the next task opens.

Step 6   Repeat step 5 for the remaining tasks.

Adding or Deleting Subscribers

Adding a subscriber involves adding the subscriber termination, equipping the subscriber termination, and then adding the subscriber. The Cisco EPOM Subscriber wizard steps you through these tasks, and also allows you to add a media gateway or subscriber profile if the desired ones have not yet been added.

Deleting a subscriber reverses the task sequence to add a subscriber. The Cisco EPOM Subscriber wizard steps you through these tasks as well.

Tip   Have on hand the subscriber information and, if you are adding a subscriber to a new media gateway, the gateway IP address or Fully Qualified Domain Name (FQDN) and its ID, the number of terminations, and the termination prefix.

Adding a Subscriber

The Provisioning Flow wizard steps you through each of the steps to add a subscriber.

Step 1   In a Domain view, click the desired domain > **BTS10200s >** the desired Cisco BTS EMS server.

Step 2   Click **Config** to open the BTS 10200 Component Status view.

Step 3   In the Configuration tree, click **Provisioning Flows > Subscriber (add)**. The BTS 10200 Configuration Wizard opens showing the list of subscriber provisioning tasks:

Wizard : subscriber_provisioning   Cancel

⊙ Add MGW Profile

⊙ Add MGW

⊙ Add Termination

⊙ Add Subscriber Profile

⊙ Add Subscriber

⊙ Add Subscriber-Feature-Data

⊙ Add Subscriber-Service-Profile

⊙ Control MGW INS

⊙ Equip Subscriber-Termination

⊙ Control Subscriber-Termination INS

The wizard will lead you through the necessary steps to finish *subscriber_provisioning*. You may click on any step to start with.

Step 4   Click the first task. The Component Add form for the selected task opens.

Step 5   Fill in the form, then click **OK**. Alternatively, if this task is not required or you are not ready to complete it now, click **Skip**. The Component Add form for the next task opens.

Step 6   Repeat step 5 for the remaining tasks.

Deleting a Subscriber

Step 1   In a Domain view, click the desired domain > **BTS10200s >** the desired Cisco BTS EMS server.

Step 2   Click **Config** to open the BTS 10200 Component Status view.

Step 3   In the Configuration tree, click **Provisioning Flows > Subscriber (delete)**. The Cisco BTS 10200 Configuration Wizard opens showing the list of subscriber provisioning tasks:

Step 4   Click the first task. The form for the selected task opens.

Step 5   Fill in the form, then click **OK**. Alternatively, if this task is not required or you are not ready to complete it now, click **Skip**. The form for the next task opens.

Step 6   Repeat step 5 for the remaining tasks.

Adding, Modifying, or Deleting Subscriber Services

You can add, modify, or delete subscriber services in either of two ways:

- Use the Subscriber wizard, where subordinate steps allow adding, modifying, or deleting subscriber services.
- Navigate to **subscriber-service-profile** and assign a service to a subscriber.

Provisioning Other Components using Cisco EPOM Wizards

The Provisioning Flow wizards step you through each of the steps in a multistep provisioning task. Information is carried over from one step to the next. Cisco EPOM provides wizards for these common provisioning tasks:

- Announcement provisioning
- Call agent provisioning
- Subscriber adding
- Subscriber deleting
- Residential MGW (deleting)
- MGW Diagnosis
- Centrex group provisioning
- Centrex subscriber provisioning
- Multi-line hunt group provisioning
- Multi-line hunt group subscriber provisioning

- SS7 trunk group provisioning

- H323 trunk group provisioning

- Basic SS7 routing provisioning

- Advanced SS7 routing provisioning

- ISDN trunk group provisioning

- Softswitch trunk group provisioning

- 911 (CAS) trunk group provisioning

Tip Before you begin: have on hand the relevant provisioning information.

Note For additional information on provisioning the Cisco BTS 10200, refer to the Cisco BTS 10200 Softswitch documentation.

Customizing Cisco EPOM Provisioning Flows

Cisco EPOM is shipped with several default navigation trees and provisioning flows which organize frequently used tasks in order to reduce the need to navigate through multiple windows. (See the "Provisioning Other Components using Cisco EPOM Wizards" section on page 5-4.)

Cisco EPOM also allows you to define new provisioning flows (consisting of the tasks necessary to achieve them) and add them to the list of existing provisioning flows in the left pane. To develop a customized provisioning flow, complete these tasks:

1. "Creating the .xml File" section on page 5-5

2. "Creating a Provisioning Flow" section on page 5-7

Creating the .xml File

The following example shows the process of creating a new provisioning flow called MTA Diag.

Note Cisco EPOM sees the Media Termination Adapter (MTA) as a Media Gateway (MGW).

The tasks achieved by this provisioning flow are:

- Place the MGW into the maintenance state

- Diagnose the MGW

- Restore the MGW to service

Note In this example, the filename used is mgw_diagnose.xml. It is located in this directory: /opt/CSCOepom/tomcat/webapps/ROOT/xml/bts/wizard/.

```
<Provisioning_wizard>

    <step_name="Control MGW MAINT"
        url="btscompcontrol.jsp?_noun=mgw"
        help_mssg="Control the mgw into MAINT state"
        img="bluedot.gif">
        <provideParameterList>
        <parameter name="mgwId" sourceName="id"/>
        </provideParameterList>
        <takeParameterList>
        <parameter name="mode" sourceName="FIXED" value="FORCED"/>
        <parameter name="target_state" sourceName="FIXED" value="MAINT"/>
        </takeParameterList>
    </step>

    <step_name="Diagnose MGW"
        url="btscompdiag.jsp?_noun=mgw"
        help_mssg="When done with diagnosis, click the skip button, I really should not
        carry you away from this page"
        img="bluedot.gif">
        <provideParameterList>
        <parameter name="mgwId" sourceName="id"/>
        </provideParameterList>
        <takeParameterList>
        <parameter name="id" sourceName="mgwId/">
        <parameter name="test" sourceName="FIXED" value="3"/>
        </takeParameterList>
    </step>

    <step_name="Control MGW INS"
        url="btscompcontrol.jsp?_noun=mgw"
        help_mssg="Control the mgw into INS state"
        img="bluedot.gif">
        <provideParameterList>
        <parameter name="mgwId" sourceName="id"/>
        </provideParameterList>
        <takeParameterList>
        <parameter name="mode" sourceName="mgwId/">
        <parameter name="mode" sourceName="FIXED" value="INS"/>
        <parameter name="mgwId" sourceName="id"/>
        </takeParameterList>
    </step>
```

Where,

- *step_name*—The name of the task displayed in the right pane when you click on the MTA Diag provisioning flow item in the left pane.

- *url*—The jsp page name from the URL, followed by the component name.

- *help_mssg*—Reserved for future use.

- *img*—The example uses the default icon, but you can define your own icon for each step.

- *provideParameterList*—Items within this tag record user input for this step after the page is shown and the user clicks the Ok button. Parameters used here can be used by subsequent steps.

    - *name*—The parameter name used by the page.

    - *sourceName*—When this is FIXED, the value that follows is used. Otherwise, parameter names defined under the provideParameterList tag in previous steps can be used.

- *takeParameterList*—Items within this tag accept parameters passed from previous step(s).

    - *name*—The parameter name used by the page.

- *sourceName*—When this is FIXED, the value that follows is used. Otherwise, parameter names defined under the provideParameterList tag in previous steps can be used.

This file is used in the "Creating a Provisioning Flow" task on page 5-7.

Creating a Provisioning Flow

Note In this sequence, the filename used is mgw_diagnose.

Step 1 Create the mgw_diagnose.xml file (see the "Creating the .xml File" section on page 5-5).

Step 2 Place the mgw_diagnose.xml file in /opt/CSCOepom/tomcat/webapps/ROOT/xml/bts/wizard.

Step 3 Make a backup copy of the defaulttree.xml file (located at /opt/CSCOepom/tomcat/webapps/ROOT/xml/bts/navigation/defaulttree.xml).

Step 4 Modify the defaulttree.xml by adding these lines to the file:

<node name="MTA Diagnose">

<url base="btswizard">mgw_diagnose</url>

</node>

Note The location of this code in the .xml file defines the structure of the navigation tree. Make sure that you add it to the correct "<branch."

Step 5 Stop and start Cisco EPOM. See the "Starting and Stopping Cisco EPOM" section on page 2-4.

Step 6 Verify that MTA Diag is added to the Provisioning Flow list by navigating to **Domain** > **all** > **BTS10200** > **Summary** > **Provisioning Flow**.

Managing Security with Cisco EPOM

This chapter contains the following topics:

The Cisco EPOM security management system extends the functionality of the Cisco BTS security system which controls and monitors access to the Cisco BTS 10200 Softswitch from outside sources. This security system is important in preventing:

- Errors by personnel not trained in specific procedures
- Unauthorized changes to system provisioning
- Unauthorized viewing or modification of databases

Internal security functions include:

- Providing user interface to provision users and security classes (privilege levels)
- Storing user login profiles
- Performing user authentication
- Managing the level of access on a per user basis
- Providing session oriented security measures
- Providing transaction oriented security measures
- Logging all access activity to a log
- Maintaining security log for 7 days
- Providing user interface for security log reporting

About Cisco EPOM Security

Cisco EPOM provides the ability to assign a Cisco BTS login to a Cisco EPOM group. This allows Cisco EPOM to restrict a user's access to that of the assigned Cisco BTS login. A combination of user identity and command tables determines if access is granted or denied.

When a user logs in to Cisco EPOM, the user's group is examined for an associated Cisco BTS login. If an association is found, Cisco EPOM queries the Cisco BTS user table for that login's assigned security level and work groups. Cisco EPOM caches the command table for each Cisco BTS EMS server to which it is connected. The command table defines valid noun-verb combinations as well as required security

level and work groups to execute those combinations. Using the login security level and work groups, Cisco EPOM determines if the user has permission to execute a command. This check is done for every request. if the user does not meet or exceed permission requirements, a "permission denied" message is displayed.

Note   If no Cisco BTS login name is assigned to the Cisco EPOM group, security defaults to the user login and password specified for the device. (To check the user and password for a device, select **Domains** > *domain name* > **Edit** > *device name* > **Edit**.)

Tip   • Since all commands are issued from Cisco EPOM, they show up in the Cisco BTS audit logs as being performed by a single Cisco BTS user. You can check the Cisco EPOM audit.log to determine who issued which commands. The trace.log shows the access denials that occurred. The audit.log and trace.log files are located on the Cisco EPOM server in /var/opt/CSCOepom/logs.

   • If the Cisco BTS login security level or work groups are modified, the impacted Cisco EPOM user must log out and log in to Cisco EPOM for those changes to take effect.

   • Since Cisco EPOM caches the command table when the initial connection is made, if you change the security level or work groups for commands on the Cisco BTS, restart Cisco EPOM in order to load the changes.

Setting Up Cisco EPOM Security

Step 1   Create Cisco BTS users with required security levels. Refer to the *Cisco BTS 10200 Softswitch Operations Manual*.

Step 2   On the Cisco EPOM server, log in as admin and create user groups. See the "Adding Domains, Groups, and Users" section on page 3-10.

Step 3   On the Cisco EPOM server, create users and assign them to the user groups created in Step 2. See the "Adding Domains, Groups, and Users" section on page 3-10.

Step 4   Select **Users** > *user name* > **Edit**.

The Modify User dialog is displayed.

Step 5   Enter a password for Cisco EPOM access.

Step 6   Select **Users** > **Groups** > **Edit**.

The Edit Group dialog is displayed.

Step 7   Select a group from the list, and click **Edit**.

Edit Group	OK	Cancel

Group Name	admin
BTS Login	
BTS Navigation Tree	

Step 8   Assign the Cisco EPOM user group to a Cisco BTS user by entering the user's Cisco BTS Login and (optional) Cisco BTS Navigation Tree.

> **Note**   If a Cisco EPOM user group is not assigned to a Cisco BTS user, all users in that group have a security level of 10 (unrestricted).

Step 9   To verify the assigned Cisco BTS login, select **Users** > **Groups** > *group name* > **Edit**.

The assigned login is displayed.

Creating Custom Navigation Trees

With Cisco EPOM, you can create custom navigation trees that define how Cisco BTS objects (such as Media Gateways, subscribers, and Call Agents) are presented. These trees are defined by an .xml file that follows simple syntax rules. The tree is then assigned to a Cisco EPOM user group. Customized trees allow administrators to define and limit navigation functionality based on a user's job function.

Example of a Navigation Tree

The defaulttree.xml file shown here is located in:
/opt/CSCOepom/tomcat/webapps/ROOT/xml/bts/navigation.

This file can be used as a template for defining new trees.

```
<tree name="default">

    <baseurl name="bts">
        <urlprefix><![CDATA[/bts/btscomp.jsp?_inv=[_inv]&_noun=]]></urlprefix>
    </baseurl>

    <baseurl name="btssearch">
        <urlprefix><![CDATA[/bts/btscompsearch.jsp?_inv=[_inv]&_noun=]]></urlprefix>
    </baseurl>

    <baseurl name="btsstatus">
        <urlprefix><![CDATA[/bts/btscompstatus.jsp?_inv=[_inv]&_noun=]]></urlprefix>
    </baseurl>
```

```
<baseurl name="btsdiag">
    <urlprefix><![CDATA[/bts/btscompdiag.jsp?_inv=[_inv]&_noun=]]></urlprefix>
</baseurl>

<baseurl name="btswizard">
    <urlprefix><![CDATA[/bts/btswizard.jsp?_inv=[_inv]&_noun=]]></urlprefix>
</baseurl>

<baseurl name="images">
    <urlprefix>../images/treemenuimage</urlprefix>
</baseurl>

<imagepath>
    <url base="images"/>
</imagepath>

<image name="BTS10200">
    <url base="images">16x16_BTS_10200_Softswitch_Blue.gif</url>
</image>

<image name="tablegrp">
    <url base="images">table16_window.gif</url>
</image>

<image name="bts">
    <url base="images">table16.gif</url>
</image>

<image name="btssearch">
    <url base="images">table16_basicquery.gif</url>
</image>

<image name="btsstatus">
    <url base="images">table16_show.gif</url>
</image>

<image name="btsdiag">
    <url base="images">table16_diag.gif</url>
</image>

<image>
    <url base="images">menu_folder_open.gif</url>
</image>

<image>
    <url base="images">menu_folder_closed.gif</url>
</image>

<image>
    <url base="images">menu_corner.gif</url>
</image>

<image>
    <url base="images">menu_corner_plus.gif</url>
</image>

<image>
    <url base="images">menu_corner_minus.gif</url>
</image>

<image>
    <url base="images">menu_bar.gif</url>
</image>
```

```
<image>
    <url base="images">menu_link.gif</url>
</image>

<cssclassmap type="branch" class="parent_node"/>
<cssclassmap type="node" class="child_node"/>

<imagemap type="branch" image="tablegrp"/>
<imagemap type="node" image="bts"/>

<root name="[_hostname]" class="parent_node" image="BTS10200">
    <url base="btsstatus"><![CDATA[system&_cmd=do_status]]></url>
    <branch name="bts.head.ain">
    <node name="bts.ani_wb_list"
    <url base="bts">ani_wb_list</url>
    </node>

    <node name="bts.cust_grp"
    <url base="bts">cust_grp</url>
    </node>

    <node name="bts.dn2cust_grp"
    <url base="bts">dn2cust_grp</url>
    </node>

    <node name="bts.ii_restrict_list"
    <url base="bts">ii_restrict_list</url>
    </node>

    </branch>
    </root>
</tree>
```

Activating the Navigation Tree

Step 1   Create the .xml file that defines your navigation tree. (See the "Example of a Navigation Tree" section on page 6-3.)

Step 2   Place the .xml file in the /opt/CSCOepom/tomcat/webapps/ROOT/xml/bts/navigation directory.

Step 3   Select **Users** > **Groups** > *group name* > **Edit**.

The Edit Group dialog is displayed.

Edit Group		OK	Cancel
Group Name	admin		
BTS Login			
BTS Navigation Tree			

Step 4   In the BTS Navigation Tree field, enter the name of the file you created.

Step 5   Click **OK**.

Note   If you do not specify the name of a customized navigation tree, Cisco EPOM uses the defaulttree.xml.

7

Viewing and Exporting Reports with Cisco EPOM

With Cisco EPOM you can access Cisco BTS EMS reporting parameters. These include Performance and Billing reports (Call Detail Records created on the system through the billing_record function). You can also export report data to a comma-delimited file.

This chapter contains the following topics:

- Viewing Reports, page 7-1
- Exporting a Report to a File, page 7-2

Viewing Reports

Step 1 In a Domain view, navigate to the desired Cisco BTS EMS server.

Step 2 Click **Reports**. The BTS 10200 Component Reports view opens.

Step 3 In the Reports tree, under Performance or Billing, select the type of report you want.

A report query form opens.

Report on: call_trace_summary	OK	Cancel

Clear Form

call_date		?
calling_dn		?
customer_dn		?
end_time		?
privacy_status		?
start_time		?
sub_id		?
term_id		?
trace_date		?

Step 4 Specify criteria for the report and click **OK**.

The window changes to display the requested report.

Note
- For detailed information on performance (traffic) reports refer to the *Cisco BTS 10200 Softswitch Operations Manual*.

- For detailed information on billing reports refer to the *Cisco BTS 10200 Softswitch Billing Interface Guide*.

Exporting a Report to a File

You can export a report to a comma-delimited .csv file.

Step 1   Generate the report. See the "Viewing Reports" section on page 7-1.

Step 2   Click **Output**. Enter a name for the file.

Cisco BTS writes the data to an output file named Tm_*filename*.csv which is then stored in the report directory located at http://<*ems-server*>:10200/report/Tm_*filename*.csv.

C H A P T E R **8**

Troubleshooting Cisco EPOM

This chapter contains Cisco EPOM specific troubleshooting procedures. For information on troubleshooting the Cisco BTS 10200 Softswitch, refer to the *Cisco BTS 10200 Softswitch Operations Manual.*

Problem	Troubleshooting Action

Recreating the Cisco EPOM database if needed (for example, if you forget the admin password and cannot access the database)	Reinitialize the Cisco EPOM databases:
	`/opt/CSCOepom/mysql/install/bin/install/MySQLDB –ifs`
	`/opt/CSCOepom/mysql/install/bin/install/EPOMDB –ifs`

Problems in Cisco EPOM communicating to the Cisco BTS EMS server, such as the one reflected in the message below.	View log files: Log files are stored in `/var/opt/CSCOepom/logs` Use log files for debugging Cisco EPOM problems or for supplying information to Cisco TAC.
Message: "Could not retrieve object attributes for object name. The most possible reason is failure to log into the Cisco BTS EMS server or CORBA agent on Cisco EMS server is not working. Please make sure hostname/login/password/siteid is correct. Also check log file."	• Check the information in the Cisco BTS EMS server definition to make sure it is correct. See the "Determining a Cisco BTS EMS Server Site ID" section on page 3-9. • Check connectivity between Cisco EPOM and the Cisco BTS EMS (if they are not co-resident): Log in to the Cisco EPOM server and ping the Cisco BTS EMS server. • Verify that the correct CORBA adapter has been installed on the Cisco BTS EMS server. • Check the log files.

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