

# Using Cisco Cable Manager

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This chapter describes the procedures for managing Cisco uBR7200 series universal broadband routers and cable modems. Cisco Cable Manager runs as part of the Cisco Element Manager Framework (Cisco EMF) and provides the following features:

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**Note** Refer to the Cisco EMF documentation for a description of the Cisco EMF features.

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- Display a topology tree view of the network
- Display centralized list of color-coded events
- Perform IP and MAC layer connectivity tests
- Download software images to cable modems
- View object status and commission/decommission device states
- Display inventory, performance, and customized reports
- Monitor real-time configuration and performance status with CiscoView
- Optionally, use Cisco IP Manager for template-based configuration

This chapter describes the following procedures:

- Starting Cisco Cable Manager
- Accessing Cisco Cable Manager
- Managing Cisco uBR7200 series universal broadband routers
- Managing cable modems
- Troubleshooting

# Starting Cisco Cable Manager

Cisco Cable Manager can be started following two different procedures depending on whether Cisco IP Manager is installed.

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**Note** The installation log files are stored in the /tmp directory and show a record of the installed components.

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## Starting Cisco Cable Manager without Cisco IP Manager

After successfully completing the installation steps, Cisco Cable Manager can be started. To start Cisco Cable Manager server for the first time, log in as root and enter the following commands:

```
cd /opt/AV/bin
./av start
./av dataload
```

After Cisco Cable Manager has been started for the first time, it can be restarted using the command:

```
./av start
```

## Starting Cisco Cable Manager with Cisco IP Manager

Cisco IP Manager and Oracle server are optional and can be installed to enable Cisco Cable Manager configuration management. If you plan to use configuration management, start the required network components and Cisco Cable Manager in the following order:

- 1 Oracle server
- 2 Cisco IP Manager
- 3 Cisco Cable Manager

After successfully completing the installation steps and running Oracle and Cisco IP Manager, Cisco Cable Manager can be started. To start Cisco Cable Manager server for the first time, log in as root and enter the following commands:

```
cd /opt/AV/bin
./av start
./av dataload
```

After Cisco Cable Manager has been started for the first time, it can be restarted using the command:

```
./av start
```

## Accessing Cisco Cable Manager

To access Cisco Element Management Framework (CEMF) and Cisco Cable Manager, ensure the Cisco Cable Manager server is started and complete one of the following operations:

- From the Cisco Cable Manager server console, move to the /opt/AV/bin directory and enter **./avsession**.
- From a UNIX workstation or PC, open a display session (rlogin, Telnet, rsh) to the Cisco Cable Manager server or Cisco Cable Manager client, move to the /opt/AV/bin directory, and enter **./avsession**

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**Note** If you are using a display session, be sure the DISPLAY environment variable is set correctly.

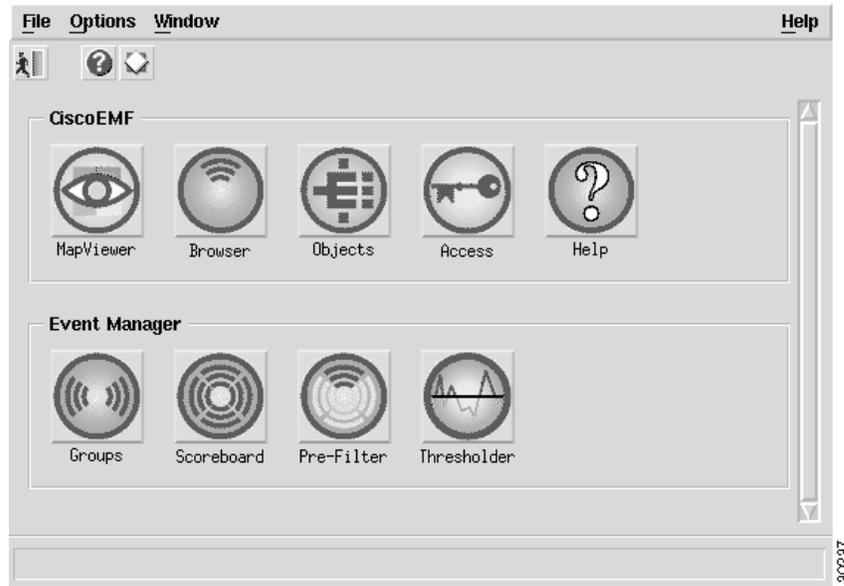
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Enter a valid username and password. The default username is *admin*. The default password is *admin*. Admin or root users can add additional users and passwords.

After CEMF and Cisco Cable Manager are started, the CEMF application window appears with the Launch Pad.

Figure 3-1 shows the CEMF Launch Pad.

Figure 3-1 Cisco EMF Launch Pad



### Deploying Device Containments and Objects

The first step in managing a device is to deploy CEMF management containment levels and objects. To deploy containment levels and objects, click **Objects**. The Object tree appears with the default Manager level as the top level.

To assign additional levels and objects, from the right-click menu, select **Deploy Object** and choose the desired level. The CEMF management levels are region, site, network, and bay. Cisco Cable Manager containment levels include Cisco uBR7200 series universal broadband routers, RF line cards, port adapters, upstream connections, and downstream connections. Cable modem objects appear under the upstream connections.

After the containment levels are created, the objects can be deployed. By default, performance polling is disabled for the deployed or discovered objects. Performance polling can be activated per Cisco uBR7200 series universal broadband router. See “Enabling/Disabling Cable Modem Performance Polling” section on page 3-8.

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**Note** Do not rename any of the parent node objects.

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In CEMF, “deployment” can be carried out on actual or soon-to-be installed hardware devices through these methods. Cisco recommends that you “discover” each Cisco uBR7200 series universal broadband router individually.

- **Autodiscovery**—Locates devices already physically installed on the network by IP address range of the Cisco uBR7200 series universal broadband routers and automatically deploys them as CEMF objects for display in the CEMF tree. Autodiscovery also discovers the objects under each Cisco uBR7200 series universal broadband router. By default, performance polling is disabled for the deployed or discovered objects.

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**Note** When a new card is inserted in a previously discovered Cisco uBR7200 series universal broadband router, Cisco Cable Manager will automatically discover and commission the card as a Cisco uBR7200 series universal broadband router object.

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- **Manual device deployment**—Enables you to configure actual or soon-to-be-installed devices as CEMF objects for display in the CEMF tree. This method can be used for adding individual Cisco uBR7200 series universal broadband routers as CEMF objects without having to rerun the autodiscovery process. Manual discovery also discovers the objects under each Cisco uBR7200 series universal broadband router. By default, performance polling is disabled for the deployed or discovered objects.

## Using Autodiscovery

Use the CEMF Autodiscovery function to automatically discover existing Cisco uBR7200 series universal broadband routers already physically installed on your network by IP address range of the Cisco uBR7200 series universal broadband routers and display them and their objects in the CEMF tree views. Cisco recommends that you “discover” each Cisco uBR7200 series universal broadband router individually. Due to the size restrictions of the alarm database, Cisco recommends that you reset the alarm database after the initial discovery of every 2,000 cable modems or manually delete the alarms from the alarm database.

## Starting Cisco Cable Manager

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**Note** Before running the autodiscovery process, ensure sufficient system resources are available. For large networks, the autodiscovery process may require a significant amount of time and resources to complete.

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- Step 1** In the CEMF tree view, right-click the level under which you want to deploy devices. This displays the Options menu.
- Step 2** Select **Autodiscovery** to display the Discover Network Devices dialog. Run the Discovery process as described in your CEMF documentation. You will need to enter the IP addresses, SNMP read-only string, and physical path. This read-only string needs to match the Cisco uBR7200 string setting. If the strings do not match, Cisco Cable Manager will not discover the Cisco uBR7200 series universal broadband routers. The Cisco uBR7200 series universal broadband router community strings can be set individually using the CEMF Open Configuration menu command.

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**Note** Do not invoke “IP only” autodiscovery. “IP only” autodiscovery does not use the SNMP capabilities of the devices and will mark all devices as generic IP devices. Use the SNMP or IP and SNMP autodiscovery options.

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**Note** If a discovered containment level does not contain any objects (for example, a Cisco uBR7246 router without any RF line cards or port adapters), objects from other areas of the tree can be displayed as part of the discovered containment level. After an object is added to the containment level, the correct objects will be displayed.

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**Note** To be discovered and managed, cable modems must have public/private community string settings. The CEMF Open Configuration menu command allows you to change device community strings.

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To check the status of the autodiscovery process, select a Cisco uBR7200 series universal broadband router and from the right-click menu, choose **Commission/Decommission Object**. The Commission/Decommission dialog appears and displays the object status. A status of “normal” indicates the Cisco uBR7200 series universal broadband router and its components have been discovered. You can also verify the status of the autodiscovery process by accessing the AV log file.

Due to the size restrictions of the alarm database, Cisco recommends that you reset the alarm database after the initial discovery of every 2,000 cable modems or manually delete the alarms from the alarm database.

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**Note** After the discovery process, when the Cisco uBR7200 series universal broadband router returns to a normal state, all the cable modems are discovered. To count the number of cable modems discovered, execute the **wc -l /tmp/cmHashTable** command. The number of words in this file will equal the number of discovered cable modems.

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To reset the alarm database after the initial discovery of every 2,000 cable modems, follow these procedures:

- Step 1** Ensure you are logged in to Cisco Cable Manager server as user root.
- Step 2** When all the cable modems connected to a Cisco uBR7200 series universal broadband router have been discovered, execute the **/opt/AV/bin/av stop** command to gracefully bring down Cisco Cable Manager.  
  
Typically, Cisco uBR7200 series universal broadband routers are discovered individually. When all the cable modems connected to an individual Cisco uBR7200 series universal broadband router have been discovered, the numbers of lines in the */tmp/ip-address-file(s)* file matches the number of lines in the */tmp/cmHashTable* file.
- Step 3** To stop the Object Store server, execute the **/etc/init.d/S80ostore4** command.
- Step 4** Move to the */opt/AV/db* directory and either copy the *alarm.db* file to another filename and remove the original file or move the *alarm.db* file to another directory location.
- Step 5** Ensure the *OS\_CACHE\_SIZE* is set to 64 MB. Refer to instructions under CShell, **setenv OS\_CACHE\_SIZE 67108864**.

## Starting Cisco Cable Manager

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- Step 6** To restart the Object Store server, execute the `/etc/init.d/S80ostore4 start` command.
- Step 7** To start CEMF and Cisco Cable Manager, execute the `/opt/AV/bin/av start` command.
- Step 8** Continue the discovery process for the next Cisco uBR7200 series universal broadband router deployment and cable modem object creation. Repeat these steps to reset the alarm database after all the connected cable modems for the Cisco uBR7200 series universal broadband router have been discovered.

## Enabling/Disabling Cable Modem Performance Polling

By default, performance polling is disabled for the deployed or discovered objects. Cable modem performance polling can be activated per Cisco uBR7200 series universal broadband router and is used to collect data for the cable modem customized report.

To enable polling for a Cisco uBR7200 series universal broadband router:

- Step 1** Select the desired Cisco uBR7200 series universal broadband router in the Object or Map View.
- Step 2** Select **AV Tools>Open Configuration Dialog**.
- Step 3** Verify the COMMON-EM.mib:controllerState attribute has a value of *normal*. Performance polling can only be set for objects with a value of *normal*.
- Step 4** Change the COMMON-EM.mib:controllerAction attribute value from *ERROR* to *startPolling*.
- Step 5** Click **Save**.
- Step 6** To verify performance polling is activated, in the Open Configuration dialog box, verify the COMMON-EM.mib:controllerState value is *perPolling*.

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**Note** Cisco recommends that up to 4,000 cable modems be polled simultaneously. To stop polling on a Cisco uBR7200 series universal broadband router, in the Open Configuration dialog box, change the COMMON-EM.mib:controllerAction to *stopPolling* and click **Save**. Values other than the case-sensitive *startPolling* and *stopPolling* can cause system interruptions.

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## Using Manual Device Deployment

As an alternative to running the automated deployment of the Autodiscovery function, the CEMF Deployment feature allows you to manually deploy containment levels and their objects or only individual objects. Cisco Cable Manager devices include Cisco uBR7200 series universal broadband routers RF line cards, port adapters, upstream connections, and downstream connections. Cable modems appear under the upstream connections.

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**Note** When a new card is inserted in a previously discovered Cisco uBR7200 series universal broadband router, Cisco Cable Manager will automatically discover and commission the card as a Cisco uBR7200 series universal broadband router object. Manual deployment is best suited for predeployment, deploying an object in Cisco Cable Manager before the device is actually present in the network.

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**Note** If a discovered containment level does not contain any objects (for example, a Cisco uBR7246 router without any RF line cards or port adapters), objects from other areas of the tree may be displayed as part of the discovered object. After an object is added to the containment level, the correct objects will be displayed.

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Cisco recommends that you discover each Cisco uBR7200 series universal broadband router individually. Due to the size restrictions of the alarm database, Cisco recommends that you reset the alarm database after the initial discovery of every 2,000 cable modems or manually delete the alarms from the alarm database.

To manually discover an object:

- Step 1** In the CEMF tree view, right-click **Object level** or the Cisco uBR7200 series universal broadband router that you wish to deploy. This displays the options menu.
- Step 2** Select the desired deployment option:
- For an object in the Map View or Object Tree, select **Deploy Cisco UBR and put the state to “Decommissioned”** to display objects for any discovered Cisco uBR7200 series universal broadband routers. These router objects will be in a state that cannot be managed.

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- Select **Deploy Cisco UBR and autodiscovery its constituents** to display objects for any discovered Cisco uBR7200 series universal broadband routers and any discovered router components.

For a Cisco uBR7200 series universal broadband router level, from the right-click menu:

- Select **Deploy Cards** and select **Deploy RF line card and put the state to “Decommissioned”** to display objects in the Map View or Object Tree for any discovered RF line cards in the selected Cisco uBR7200 series universal broadband routers. These RF line card objects will be in a state that cannot be managed.
- Select **Deploy port adapter and put the state to “Decommissioned”** to display objects in the object map for any discovered port adapters in the selected Cisco uBR7200 series universal broadband routers. These port adapter card objects will be in a state that cannot be managed.

**Step 3** In the following Deployment Selection Screen, specify the desired information and click **Forward**:

- Number of objects
- Cisco uBR7200 name
- SNMP polling IP address
- Read community
- Write community
- Version
- System name

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**Note** This screen reappears with blank fields for each additional object specified in the Number of Objects field.

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**Step 4** When deployment is complete, the Deployment Summary screen appears. Click **Dismiss**. Your newly deployed objects will appear in the CEMF Map View and Object Tree.

- Step 5** Commission the containment level so the containment object and the manually deployed objects are synchronized.

Due to the size restrictions of the alarm database, Cisco recommends that you reset the alarm database after the initial discovery of every 2,000 cable modems or manually delete the alarms from the alarm database.

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**Note** After the discovery process, when the Cisco uBR7200 series universal broadband router returns to a normal state, all the cable modems are discovered. To count the number of cable modems discovered, execute the **wc -l /tmp/cmHashTable** command. The number of words in this file will equal the number of discovered cable modems.

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To reset the alarm database after the initial discovery of every 2,000 cable modems, follow these procedures:

- Step 1** Ensure you are logged in to Cisco Cable Manager server as user root.
- Step 2** When all the cable modems connected to a Cisco uBR7200 series universal broadband router have been discovered, execute the **/opt/AV/bin/av stop** command to gracefully bring down Cisco Cable Manager.
- Typically, Cisco uBR7200 series universal broadband routers are discovered individually. When all the cable modems connected to an individual Cisco uBR7200 series universal broadband router have been discovered, the numbers of lines in the */tmp/ip-address-file(s)* file matches the number of lines in the */tmp/cmHashTable* file.
- Step 3** To stop the Object Store server, execute the **/etc/init.d/S80ostore4** command.
- Step 4** Move to the */opt/AV/db* directory and either copy the *alarm.db* file to another filename and remove the original file or move the *alarm.db* file to another directory location.
- Step 5** Ensure the *OS\_CACHE\_SIZE* is set to 64 MB. Refer to instructions under CShell, **setenv OS\_CACHE\_SIZE 67108864**.
- Step 6** To restart the Object Store server, execute the **/etc/init.d/S80ostore4 start** command.

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- Step 7** To start CEMF and Cisco Cable Manager, execute the `/opt/AV/bin/av start` command.
- Step 8** Continue the discovery process for the next Cisco uBR7200 series universal broadband router deployment and cable modem object creation. Repeat these steps to reset the alarm database after all the connected cable modems for the Cisco uBR7200 series universal broadband router have been discovered.

After the containment levels are created, the objects can be deployed. By default, performance polling is disabled for the deployed or discovered objects. Performance polling can be activated per Cisco uBR7200 series universal broadband router. See “Enabling/Disabling Cable Modem Performance Polling” section on page 3-8.

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**Note** To be discovered and managed, cable modems must have public/private community string settings. The CEMF Open Configuration menu command allows you to change device community strings.

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## Commissioning/Decommissioning Devices

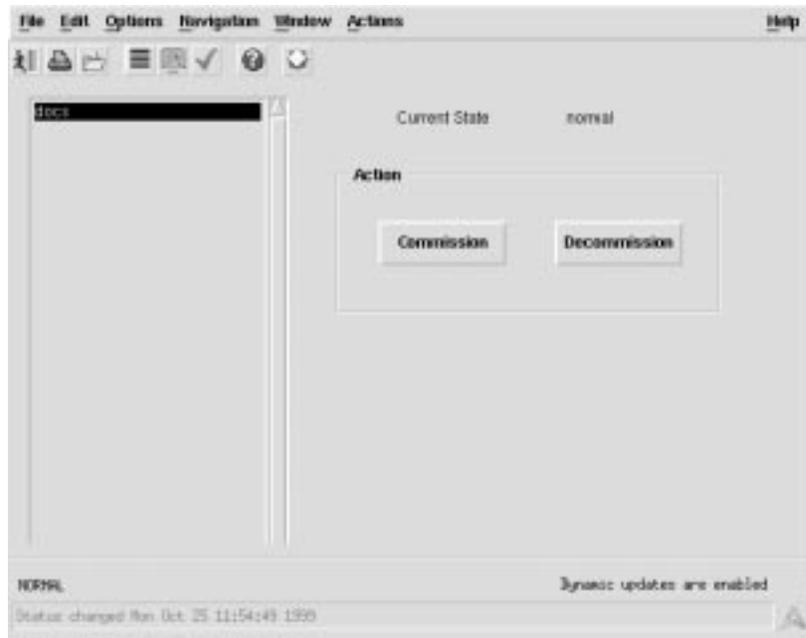
After a device is discovered and deployed, Cisco Cable Manager allows you to add devices to be managed (commission) and remove devices from being managed (decommission).

You can commission/decommission single Cisco uBR7200 series universal broadband routers and all the cable modems connected to the router, a single RF line card or a single port adapter. You can also commission all the objects under a Cisco uBR7200 series universal broadband router by decommissioning the router and then recommissioning it.

To commission or decommission an object, select the desired object and from the right-click menu, select the displayed commission/decommission command. The Open Commission/Decommission dialog box appears.

Figure 3-2 shows the Commission/Decommission dialog box.

Figure 3-2 Commission/Decommission Dialog Box



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**Note** The Commission/Decommission dialog box also displays the status of the selected object.

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In the Cisco Cable Manager Launch Pad, select the desired view and toggle to the desired cable object. To access the Cisco Cable Manager features, select the desired object and choose an option from the right-click menu.

## Managing Cisco uBR7200 Series Universal Broadband Routers

Cisco Cable Manager enables you to perform the following Cisco uBR7200 series router management features:

- Fault management
- Configuration management
- Performance management
- Inventory management

### Fault Management

Cisco Cable Manager integrates fault management with Cisco EMF/EM so you can:

- Display events in the CEMF Event Browser for a select object
- Display an alarm counter for a selected object
- Change color of object icons in displayed maps to reflect the most current error severity
- Generate threshold-based alarms when user-specified thresholds are exceeded
- Customize event notification
- Filter alarms
- Clear alarms
- Propagate alarms in the topology tree
- Forward traps to other management systems

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**Note** Refer to the Cisco EMF EM documentation for a detailed explanation of these fault management features.

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## Displaying Events

To display event messages:

- For all active objects, click **Browser** in the Cisco EMF Launch Pad. The Cisco EMF Event Manager window appears with a display of the received event messages.
- For a specific object level or device, select the desired containment level or object in a Map View or Object Tree. Either click **Browser** in the Cisco EMF Launch Pad or from the right-click menu, select **Event Browser**. The Cisco EMF Event Manager window appears with a display of the received event messages for the selected object level device.

By default, event messages are stored for seven days. This setting is controlled by the `alarmDirServer.ini` file located in the `/opt/AV/config/init` directory.

## Forwarding Traps

Make sure the desired Cisco uBR7200 series universal broadband routers are configured to send traps to the Cisco Cable Manager. This configuration involves enabling traps, specifying a source interface for SNMP traps, setting destination host IP addresses, and ensuring the cable modem MIB is set.

To enable the cable-specific SNMP traps, configure the Cisco uBR7200 series universal broadband router with the following commands:

```
snmp-server enable traps
snmp-server trap-source [interface port/slot]
snmp-server host [IP address] [community string]
```

Multiple host IP addresses can be entered to forward traps to multiple SNMP management stations.

The **SetCmOnOff.pl** script is an additional tool distributed with the Cisco Cable Manager and located under `/opt/AV/config/scripts`. This script enables the `cdxCmtsCmOnOffTrap` with a default interval of 600 seconds (10 minutes). The interval determines how long the system waits after the event occurs before sending out the trap message. You have the option of not using this script if other tools are available.

## Managing Cisco uBR7200 Series Universal Broadband Routers

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To enable the cable modem on/off trap notification:

**Step 1** Launch an xterm and execute:

```
/opt/AV/bin/av shell
```

**Step 2** Change to /opt/AV/config/scripts.

**Step 3** Execute:

```
./SetCmOnOff.pl ip-address-uBR read-comm-str write-comm-str  
interval-in-seconds
```

where interval-in-seconds is greater than 0.

Table 3-1 shows the traps supported for Cisco uBR7200 series universal broadband router and cable modem management.

**Table 3-1** Trap Descriptions

Trap	Description
Cable modem on Cable modem off	Cable modem connected to a Cisco uBR7200 series universal broadband router turns on or off.
ccCopy Completion	The notification is used to indicate that a config-copy operation to or from the agent has been completed.
ciscoConfigManEvent	Notification of a Configuration Management event as recorded in the History Event Table.
ciscoEnvMonShutdownNotification	A ciscoEnvMonShutdownNotification is sent if the environmental monitor detects a test point reaching a critical state and is about to initiate a shutdown. This notification contains no objects so that it may be encoded and sent in the shortest amount of time possible. Even so, management applications should not rely on receiving such a notification as it may not be sent before the shutdown completes.

**Table 3-1 Trap Descriptions (continued)**

Trap	Description
ciscoEnvMonVoltageNotification	A ciscoEnvMonVoltageNotification is sent if the voltage measured at a given test point is outside the normal range for the test point (that is, at the warning, critical, or shutdown stage). Since such a notification is usually generated before the shutdown state is reached, it can convey more data and has a better chance of being sent than does the ciscoEnvMonShutdownNotification.
ciscoEnvMonTemperatureNotification	A ciscoEnvMonTemperatureNotification is sent if the temperature measured at a given test point is outside the normal range for the test point (that is, at the warning, critical, or shutdown stage). Because such a notification is usually generated before the shutdown state is reached, it can convey more data and has a better chance of being sent than does the ciscoEnvMonShutdownNotification.
ciscoEnvMonFanNotification	A ciscoEnvMonFanNotification is sent if any one of the fans in the fan array (where extant) fails. Because such a notification is usually generated before the shutdown state is reached, it can convey more data and has a better chance of being sent than does the ciscoEnvMonShutdownNotification.
ciscoEnvMonRedundantSupplyNotification	A ciscoEnvMonRedundantSupplyNotification is sent if the redundant power supply (where extant) fails. Because such a notification is usually generated before the shutdown state is reached, it can convey more data and has a better chance of being sent than does the ciscoEnvMonShutdownNotification.

**Table 3-1 Trap Descriptions (continued)**

Trap	Description
ciscoFlashCopyCompletionTrap	A ciscoFlashCopyCompletionTrap is sent at the completion of a Flash copy operation if such a trap was requested when the operation was initiated.
Link up Link down	The link between a Cisco uBR7200 series universal broadband router and a cable modem goes up or down.
Cold start	A Cisco uBR7200 router is cold started, warm started, or reloaded.
SNMP authentication failed	Community string settings between a management station and an SNMP-enabled device did not match.

### Setting Threshold Alarms

Cisco Cable Manager allows you to set thresholds on a Cisco uBR7200 series universal broadband router with specified polling intervals to generate alarm notification when a threshold level is exceeded. Thresholds can be set for the following Cisco Cable Manager attribute groups:

- cblCM—Attributes for the cable modem
- cblCPE—Attributes for customer premises equipment
- cblUBR—Attributes for Cisco uBR7200 series universal broadband routers
- cblIDS—Attributes for downstream interfaces
- cblUS—Attributes for upstream interfaces
- cblIPA—Attributes for port adapters
- cblIPApport—Attributes for port adapter interfaces
- cblRFCard—Attributes for RF line cards

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**Note** Additional attributes are also available for objects not specific to Cisco Cable Manager.

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To launch the Threshold Manager, click the **Threshold** icon in the Launch Pad. For more detailed instructions on setting thresholds, refer to the Cisco EMF/EM documentation.

## Configuration Management with Cisco IP Manager

Cisco Cable Manager can optionally run with Cisco IP Manager so you can create configuration templates and configure Cisco uBR7200 series universal broadband routers in single or batch mode. The configuration templates contain a template body and template data. The template body contains attribute variables that are converted to Cisco IOS configuration files that can be downloaded to the routers. The template data is a matrix of devices identified by IP address and attribute variable values for each device.

Cisco Cable Manager enables you to:

- Download the configuration file to the router(s) for new configurations or configuration updates
- Back up configuration files for rollback
- Show running configurations
- Generate an event when a router's configuration file is modified with a newly downloaded configuration

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**Note** For new devices, first ensure the physical connection is available, reboot the device, and (in setup mode) manually load the basic configuration commands.

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Predefined templates for Cisco uBR7200 series universal broadband router configuration are included as part of the post-installation script in the Cable Manager package. These predefined templates are categorized in two parts:

- Global (uBR specific)
- Local (cable interface specific) Cisco IOS commands

## Managing Cisco uBR7200 Series Universal Broadband Routers

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Each predefined template uniquely identifies the subsection of configuration commands for Cisco uBR7200 series universal broadband routers. The predefined templates are stored in the Cisco IP Manager run time directory as part of the installation process. The Cable Operator can select a template and the associated configuration (Cisco IOS) commands are displayed on Template Config builder window.

Configuration updates can be scheduled to reload the device configurations at specified intervals using the Element Reload window.

To start Cisco IP Manager:

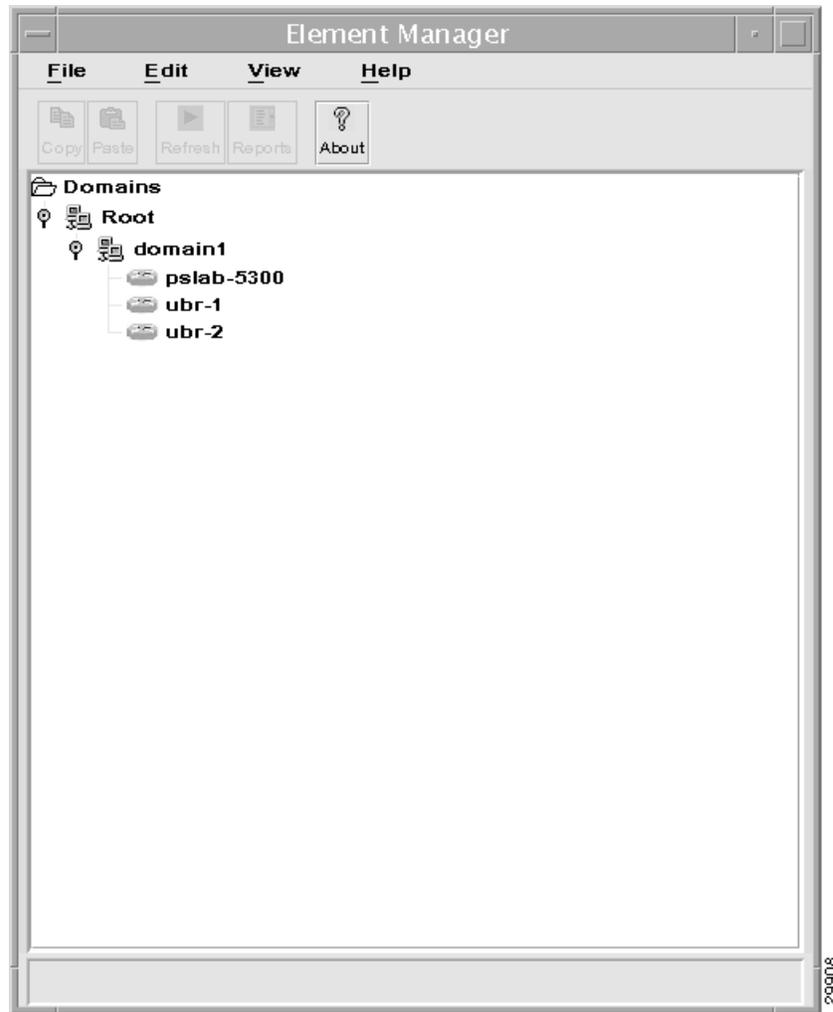
- Step 1** Start the Cisco IP Manager application. Cisco IP Manager runs independent of Cisco Cable Manager.
- Step 2** Enter the default login name and password. The default for both is *admin*.
- Step 3** In the Service Control panel window, click **Element Manager service**.
- Step 4** To create a new domain, click on the domain to display domain property window.
- Step 5** Select **NEM server** from the list.
- Step 6** At the NEM server page, enter the TFTP server and path name relative to /tftpboot directory, Telnet retry count and Timeout values. Click **OK** to set up the NEM server for the newly created domain.
- Step 7** Right-click the mouse on the domain and select **New**. Then select the Element command on the submenu.
- Step 8** Enter a name for the new Cisco uBR7200 series universal broadband router and click **OK**. This adds the Cisco uBR7200 series universal broadband router to the data tree in Element Manager window.
- Step 9** Right-click on the newly added Cisco uBR7200 series universal broadband router and select **Properties**.

The Device Properties dialog will be displayed, with the Property tab selected.

- Step 10** Select the Connection Method as **Console** (means Cisco IP Manager will communicate with this device console port through Communication Server). Enter the values for:
- Server IP Address—IP address of communication (terminal) server
  - Server User name—Login username of communication server (optional)
  - Server User password—Password of communication server (optional)
  - Port Number—Communication server port to which device is connected
  - Port Password—Password to access the port (optional)
  - User Name—Username assigned for the device
  - User password—User password assigned for the device
  - Enable password—Password to enter in privileged mode
- Step 11** Verify the connectivity.
- Step 12** Click **Template Manager service** from the Service Control Panel window, select **domain, uBR Element type** and import the appropriate templates to view Configuration commands at Template Config Builder window.
- Step 13** Enter the configuration value at the cell and download the configuration to the Cisco uBR7200 series universal broadband router. You can download the configuration to one or more devices.

Figure 3-3 shows a sample Cisco IP Manager screen with Cisco uBR7200 series universal broadband router domain and icons.

Figure 3-3 Cisco IP Manager Screen



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**Note** For more details about configuration template management, refer to the Cisco IP

Manager documentation.

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### Recording Configuration Settings

Cisco Cable Manager also allows you to specify and display the Cisco uBR7200 series universal broadband router configuration parameters for reference. These settings are required to use the Find/Ping modem feature, Flapping Modem report, and can be helpful to establish a Telnet session.

To specify configuration parameters for reference, select the desired Cisco uBR7200 series universal broadband router in an object map and from the right-click menu, select **Modify Configuration Settings**. The Modify Configuration Settings dialog box appears.

Figure 3-4 shows the Modify Configuration Settings dialog box.

Figure 3-4 Modify Configuration Settings Dialog Box



Specify the device settings for later reference and to enable the Find/Ping cable modem and Flapping Modem report features.

Table 3-2 describes fields in the Modify Configuration Settings dialog box.

Table 3-2 Modify Configuration Settings Dialog Box

Field	Description
TFTP Server Directory	The default TFTP boot directory.
Communication (Terminal) Server Port Number	The port number of the communications server used to remotely access the Cisco uBR7200 series universal broadband router.
Enable Password	The enable password of the Cisco uBR7200 series universal broadband router. This field is required for the Find/Ping cable modem and Flapping Modem report features.

**Table 3-2**      **Modify Configuration Settings Dialog Box**

<b>Field</b>	<b>Description</b>
Communication (Terminal) Server IP Address	The IP address of the communications server used to remotely access the Cisco uBR7200 series universal broadband router.
Communication (Terminal) Server Port Password	The password used to access the port on the communications server used to remotely access the Cisco uBR7200 series universal broadband router.
Line Password	The line password of the Cisco uBR7200 series universal broadband router. This field is required for the Find/Ping cable modem and Flapping Modem report features.
TFTP Server IP Address	The IP address of the TFTP server.

## Cisco uBR7200 Universal Broadband Router Performance Management

Cisco Cable Manager provides the following performance capabilities for Cisco uBR7200 series universal broadband routers and cable modems. Report data can be generated for all the routers deployed under a site, individual cable routers or individual cable modem. Report data can be exported in tab-delimited ASCII files. All reports can be run on-demand or on a scheduled basis.

Report data is available in predefined and customized reports. Predefined and customized report data is stored on a daily basis in `/opt/AV/performance/[date]` directories. If disk space becomes unavailable, these files may need to be archived to another location or deleted.

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**Note** For a list of the reports available for cable modems, see the “Managing Cable Modems” section on page 3-53.

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### Cisco uBR7200 Predefined Reports

Predefined reports display a preset group of performance parameters for a selected Cisco uBR7200 series universal broadband router or a group of routers.

## Managing Cisco uBR7200 Series Universal Broadband Routers

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The following predefined reports are available for cable router performance:

- Cisco uBR7200 power level—Shows the router containment path and downstream channel transmit and receive power.
- Cisco uBR7200 utilization—Shows received and transmitted data including multicast/broadcast packets, error rates, and other data for traffic analysis.

To display a predefined performance report, select the desired object and from the right-click menu, select **uBR Predefined Performance Report**. The uBR Predefined Performance Report Date and Time dialog box appears. (See Figure 3-5.)

**Figure 3-5** uBR Predefined Performance Report Date and Time Dialog Box

The screenshot shows a dialog box titled "uBR Predefined Performance Report Date and Time". It features a tree view on the left with a selected item. The main area is divided into two sections: "Start Date & Time" and "End Date & Time". Each section contains three date input fields (YYYY, MM, DD) and two time input fields (HH, MM). At the bottom, there are two buttons: "Run Power Report" and "Run Util Report". The status bar at the bottom indicates "HDNL" and "Status changed Tue Oct 26 12:08:52 2009".

Specify the desired dates and times, click **Save** (check mark) in the tool bar, and click **Run Report** for the desired report. The uBR Power Level Report dialog box appears with the selected report data. (See Figure 3-6.)

Figure 3-6 Power Level Report

ContainmentPath	Time	docsIfDownChannelPower	docsIfSigQUnerrored
Report for object 1 UBR-1.8.7.1			
/Manager/REGION-1/SITE-1/UBR-1.8.7.1/Cable3,0/downstream	Tue Dec 7 09:02:19 1999	0	0
	Apstream0 Tue Dec 7 09:02:21 1999		0
	Apstream1 Tue Dec 7 09:02:24 1999		0
	Apstream2 Tue Dec 7 09:02:21 1999		0
	Apstream3 Tue Dec 7 09:02:21 1999		0
	Apstream4 Tue Dec 7 09:02:21 1999		0
/Manager/REGION-1/SITE-1/UBR-1.8.7.1/Cable5,0/downstream	Tue Dec 7 09:17:19 1999	0	527396
	Apstream0 Tue Dec 7 09:17:21 1999		0
	Apstream1 Tue Dec 7 09:17:21 1999		0
	Apstream2 Tue Dec 7 09:17:21 1999		0
	Apstream3 Tue Dec 7 09:17:21 1999		0
	Apstream4 Tue Dec 7 09:17:21 1999		0
/Manager/REGION-1/SITE-1/UBR-1.8.7.1/Cable7,0/downstream	Tue Dec 7 09:32:19 1999	0	530951
	Apstream0 Tue Dec 7 09:32:20 1999		0
	Apstream1 Tue Dec 7 09:32:20 1999		0
	Apstream2 Tue Dec 7 09:32:20 1999		0
	Apstream3 Tue Dec 7 09:32:20 1999		0
	Apstream4 Tue Dec 7 09:32:20 1999		0

Table 3-3 describes the Power Level report fields.

Table 3-3 Power Level Report Fields

Field	Description
ContainmentPath	Cisco Cable Manager containment levels for the selected device.
Timestamp	Date and time data was generated.
docsIfDownChannelPower	At the Cisco uBR7200, the operational transmit power. At the cable modem, the received power level. This value may be zero at the cable modem if power level measurement is not supported. If the interface is down, this value may be either the configured value (Cisco uBR7200), the most current value (cable modem) or 0.
docsIfSigQUnerrored	Codewords received on this channel without error. This includes all codewords, whether or not they were part of frames destined for this device.

## Managing Cisco uBR7200 Series Universal Broadband Routers

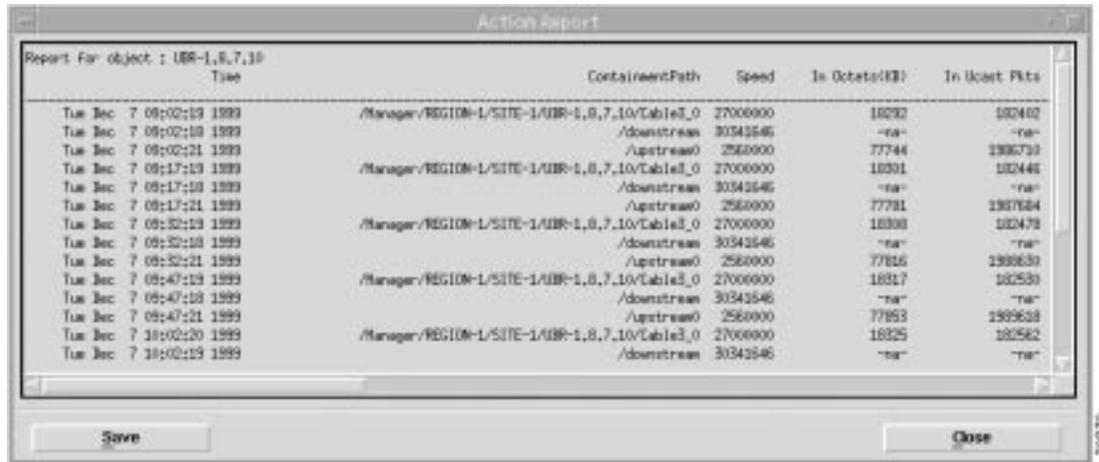
**Table 3-3 Power Level Report Fields (continued)**

Field	Description
docsIfSigQCorrecteds	Codewords received on this channel with correctable errors. This includes all codewords, whether or not they were part of frames destined for this device.
docsIfSigQUncorrectables	Codewords received on this channel with uncorrectable errors. This includes all codewords, whether or not they were part of frames destined for this device.
docsIfSigQSignalNoise	Signal/Noise ratio as perceived for this channel. Only meaningful in cable modems. Returns zero for Cable Modem Termination Systems.

Repeat this procedure for each uBR Predefined Performance Report you wish to run.

Figure 3-7 shows an example uBR Predefined Performance Report for utilization level.

**Figure 3-7 Utilization Level Report**



Report for object : UBR-1,8,7,10

Time	ContainerPath	Speed	In Octets(KB)	In Locst Pkts
Tue Dec 7 09:02:19 1999	/Manager/REGION-1/SITE-1/UBR-1,8,7,10/Table3_0	27000000	18292	182482
Tue Dec 7 09:02:19 1999	/downstream	30343546	-na-	-na-
Tue Dec 7 09:02:21 1999	/upstream0	2560000	7744	193679
Tue Dec 7 09:17:19 1999	/Manager/REGION-1/SITE-1/UBR-1,8,7,10/Table3_0	27000000	18301	182446
Tue Dec 7 09:17:19 1999	/downstream	30343546	-na-	-na-
Tue Dec 7 09:17:21 1999	/upstream0	2560000	7791	193784
Tue Dec 7 09:32:19 1999	/Manager/REGION-1/SITE-1/UBR-1,8,7,10/Table3_0	27000000	18308	182478
Tue Dec 7 09:32:19 1999	/downstream	30343546	-na-	-na-
Tue Dec 7 09:32:21 1999	/upstream0	2560000	7785	193839
Tue Dec 7 09:47:19 1999	/Manager/REGION-1/SITE-1/UBR-1,8,7,10/Table3_0	27000000	18317	182539
Tue Dec 7 09:47:19 1999	/downstream	30343546	-na-	-na-
Tue Dec 7 09:47:21 1999	/upstream0	2560000	7793	193928
Tue Dec 7 10:02:20 1999	/Manager/REGION-1/SITE-1/UBR-1,8,7,10/Table3_0	27000000	18325	182582
Tue Dec 7 10:02:19 1999	/downstream	30343546	-na-	-na-

Buttons: Save, Close

Table 3-4 describes the Utilization Level report the fields:

**Table 3-4 Utilization Level Report Fields**

Field	Description
Containment Path	Cisco Cable Manager containment levels for the selected device.
Timestamp	Date and time data was generated.
ifInOctets (KB)	Total number of octets received on the interface including framing characters.
ifInUcastPkts	Number of delivered packets that were not addressed to a multicast or broadcast address.
ifInNUcastPkts	Number of delivered packets that were addressed to a multicast or broadcast address.
inDiscards	Number of inbound packets that were discarded even though no errors were detected to prevent their delivery. Packets may have been discarded to free up buffer space.
ifInErrors	For packet-oriented interfaces, the number of inbound packets that contained errors that prevented them from being delivered. For character-oriented or fixed-length interfaces, the number of inbound transmission units that contained errors that prevented them from being delivered.
inUnknownProtos	For packet-oriented interfaces, the number of packets received via the interface discarded because of an unknown or unsupported protocol. For character-oriented or fixed-length interfaces that support protocol multiplexing, the number of transmission units received via the interface discarded because of an unknown or unsupported protocol. For any interface that does not support protocol multiplexing, this counter will always be 0. Discontinuities in the value of this counter can occur at reinitialization of Cisco Cable Manager, and at other system interruptions.
ifOutOctets	Total number of octets transmitted out of the interface, including framing characters. Discontinuities in the value of this counter can occur at re-initialization of Cisco Cable Manager, and at other system interruptions.
ifOutUcastPkts	Total number of packets that higher-level protocols requested be transmitted, but were not addressed to a multicast or broadcast address at this sub-layer, including those discarded or not sent. Discontinuities in the value of this counter can occur at reinitialization of Cisco Cable Manager, and at other system interruptions.

**Table 3-4 Utilization Level Report Fields (continued)**

<b>Field</b>	<b>Description</b>
ifOutNUCastPkts	Total number of packets that higher-level protocols requested be transmitted, but were addressed to a multicast or broadcast address at this sub-layer, including those that were discarded or not sent. Discontinuities in the value of this counter can occur at reinitialization of Cisco Cable Manager, and at other system interruptions.
ifOutDiscards	Number of outbound packets chosen to be discarded even though no errors were detected to prevent their being transmitted. One possible reason for discarding such a packet could be to free up buffer space. Discontinuities in the value of this counter can occur at reinitialization of Cisco Cable Manager, and at other system interruptions.
ifOutErrors	For packet-oriented interfaces, the number of outbound packets that could not be transmitted because of errors. For character-oriented or fixed-length interfaces, the number of outbound transmission units that could not be transmitted because of errors. Discontinuities in the value of this counter can occur at reinitialization of Cisco Cable Manager, and at other system interruptions.
ifInMulticastPkts	Number of packets, delivered by this sub-layer to a higher (sub)layer, which were addressed to a multicast address at this sublayer. For a MAC layer protocol, this includes both Group and Functional addresses. Discontinuities in the value of this counter can occur at reinitialization of Cisco Cable Manager, and at other system interruptions.
ifInBroadcastPkts	Number of packets, delivered by this sublayer to a higher (sub)layer, that were addressed to a broadcast address at this sublayer. Discontinuities in the value of this counter can occur at reinitialization of Cisco Cable Manager, and at other system interruptions.

**Table 3-4 Utilization Level Report Fields (continued)**

Field	Description
ifOutMulticastPkts	Total number of packets that higher-level protocols requested be transmitted, and that were addressed to a multicast address at this sublayer, including those that were discarded or not sent. For a MAC layer protocol, this includes both Group and Functional addresses. Discontinuities in the value of this counter can occur at reinitialization of Cisco Cable Manager, and at other system interruptions.
ifOutBroadcastPkts	Total number of packets that higher-level protocols requested be transmitted, and that were addressed to a broadcast address at this sublayer, including those that were discarded or not sent. Discontinuities in the value of this counter can occur at reinitialization of Cisco Cable Manager, and at other system interruptions.

### Cisco uBR7200 Customized Reports

Customized reports allow you to select a parameter from a list of available performance parameters and display data for the selected parameter. Data can be displayed for a selected Cisco uBR7200 series universal broadband router or for a group of routers by selecting a higher level. The following customized reports are available:

- Cisco uBR7200 series universal broadband router
- RF line card
- Downstream channels
- Upstream channels
- Port adapters

### Displaying Cisco uBR7200 Customized Reports

To display a customized performance report, select the desired cable router and from the right-click menu, select **Open UBR Customized Report**. The Customized Report dialog box appears with the selected report data.

Figure 3-8 shows the uBR Customized Performance Report. Data for the selected attribute appears in the display area. Select the type of data to be displayed from the list of monitored attributes. Use the three tabs at the top of the display area to specify the desired display format.

**Figure 3-8** uBR Customized Performance Report

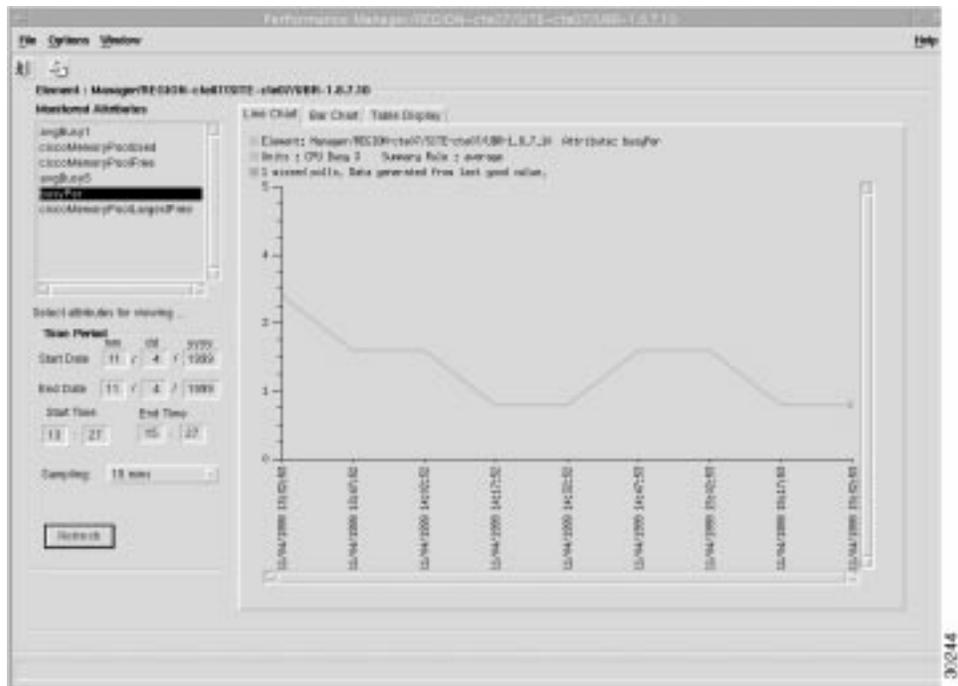


Table 3-5 summarizes the customized report parameters that are available for cable router performance.

**Table 3-5 uBR Customized Report Fields**

Field	Description
ciscoMemoryPoolLargestFree	Largest number of contiguous bytes from the memory pool that are currently unused on the managed device.
ciscoMemoryPoolFree	Number of bytes from the memory pool that are currently unused on the managed device.
ciscoMemory Pool Used	Number of bytes from the memory pool that are currently in use by applications on the managed device.
busyPer	Cumulative CPU usage percentage.
avgBusy1	Cumulative average of the CPU usage percentage over a 1-minute period. This variable, called by the scheduler every 5 seconds, computes the busy time in the last 5-second period, and the 5-minute exponentially delayed busy time.
avgBusy5	Cumulative average of the CPU usage percentage over a 5-minute period. This variable, called by the scheduler every 5 seconds, computes the busy time in the last 5-second period, and the 5-minute exponentially delayed busy time.

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**Note** Cisco uBR7200 series universal broadband router performance monitoring is also available through CiscoView.

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### Displaying RF Line Card Customized Reports

To display a customized performance report, select the desired RF line card and from the right-click menu, select **Open RF Line Card Customized Report**. The Customized Report dialog box appears with the selected report data.

Figure 3-9 shows the RF Line Card Customized Performance Report. Data for the selected attribute appears in the display area. Select the type of data to be displayed from the list of monitored attributes. Use the three tabs at the top of the display area to specify the desired display format.

Figure 3-9 RF Line Card Customized Performance Report

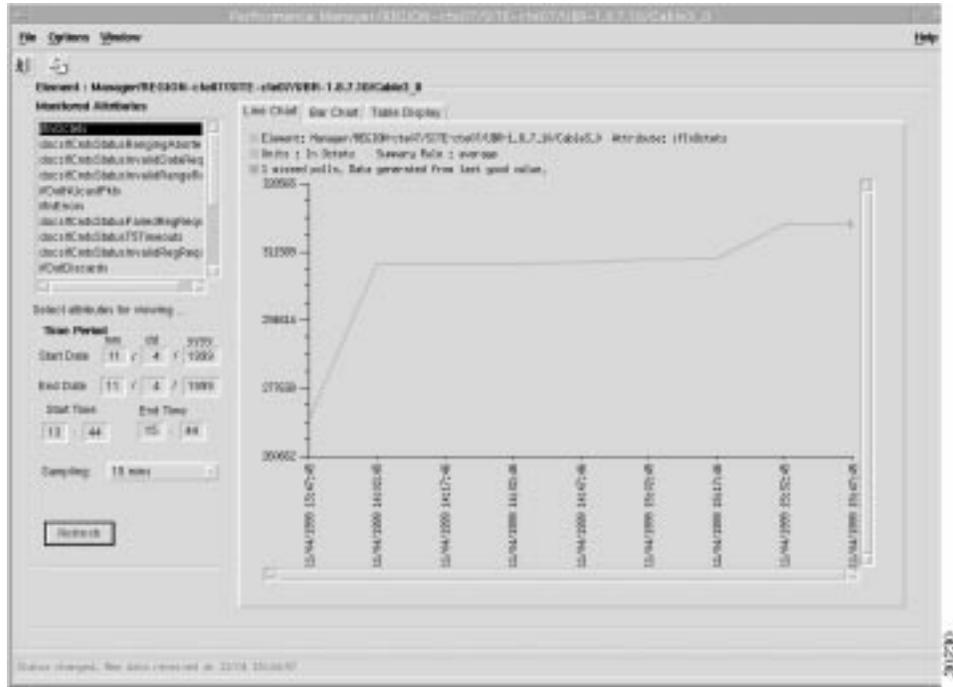


Table 3-6 summarizes the customized report parameters that are available for RF line card performance.

Table 3-6 RF Line Card Customized Report Fields

Field	Description
<code>ifSpeed</code>	Interface's current bandwidth in bits per second.
<code>docsIfCmtsStatusInvalidRegReqs</code>	Invalid registration requests received on this interface.
<code>ifInOctets</code>	Total number of octets received on the interface, including framing characters.

**Table 3-6 RF Line Card Customized Report Fields (continued)**

Field	Description
ifInDiscards	Number of inbound packets discarded even though no errors were detected. One possible reason for discarding a packet may be to free up buffer space.
ifInNUcastPkts	Number of packets delivered to a multicast or broadcast address.
docsIfCmtsStatusRangingAborted	Ranging attempts that were explicitly aborted by the Cisco uBR7200 series universal broadband router.
ifOutUcastPkts	Total number of packets requested be transmitted which were not addressed to a multicast or broadcast address, including packets that were discarded or not sent.
ifOutNUcastPkts	Total number of packets transmitted to a multicast or broadcast address, including packets that were discarded or not sent.
docsIfCmtsStatusInvalidRangeReqs	Invalid range requests received on this interface.
docsIfCmtsStatusT5Timeouts	Number of times counter T5 expired on this interface.
ifInUnknownProtos	For packet-oriented interfaces, the number of packets which were discarded because of an unknown or unsupported protocol. For character-oriented or fixed-length interfaces that support protocol multiplexing the number of transmission units received that were discarded because of an unknown or unsupported protocol. For any interface that does not support protocol multiplexing, this counter will always be 0.
ifInUcastPkts	Number of packets that were not addressed to a multicast or broadcast address.
docsIfCmtsStatusInvalidDataReq	Invalid data requests received on this interface.
docsIfCmtsStatusFailedRegReqs	Failed registration attempts (authentication failures and class of service failures) on this interface.
ifOutOctets	Total number of octets transmitted, including framing characters.

**Table 3-6 RF Line Card Customized Report Fields (continued)**

<b>Field</b>	<b>Description</b>
ifOutDiscards	Number of outbound packets discarded even though no errors had been detected to prevent their being transmitted. One possible reason for discarding such a packet may be to free up buffer space.
ifOutErrors	For packet-oriented interfaces, the number of outbound packets that could not be transmitted because of errors. For character-oriented or fixed-length interfaces, the number of outbound transmission units that could not be transmitted because of errors.
ifInErrors	For packet-oriented interfaces, the number of inbound packets that contained errors preventing them from being delivered. For character-oriented or fixed-length interfaces, the number of inbound transmission units that contained errors preventing them from being delivered

### Displaying Downstream Customized Reports

To display a customized performance report, select the desired downstream channel and from the right-click menu, select **Open Downstream Customized Report**. The Customized Report dialog box appears with the selected report data.

Figure 3-10 shows the Downstream Customized Performance Report. Data for the selected attribute appears in the display area. Select the type of data to be displayed from the list of monitored attributes. Use the three tabs at the top of the display area to specify the desired display format.

Figure 3-10 Downstream Customized Performance Report

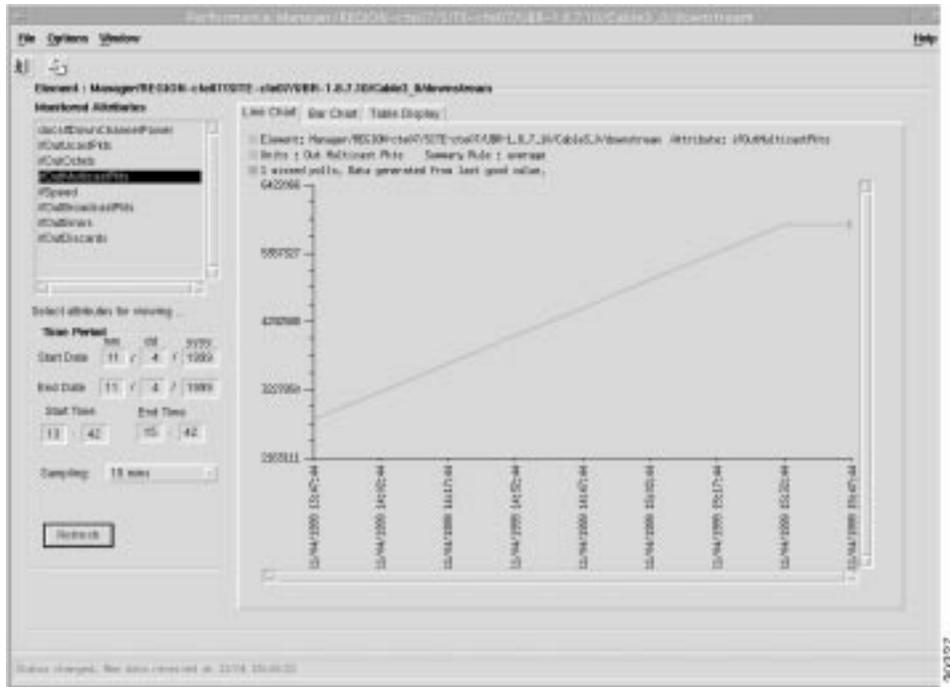


Table 3-7 summarizes the customized report parameters that are available for cable router performance.

**Table 3-7 Downstream Customized Report Fields**

<b>Field</b>	<b>Description</b>
ifOutUcastPkts	Total number of packets requested to be transmitted that were not addressed to a multicast or broadcast address, including packets that were discarded or not sent.
ifOutErrors	For packet-oriented interfaces, the number of outbound packets that could not be transmitted because of errors. For character-oriented or fixed-length interfaces, the number of outbound transmission units that could not be transmitted because of errors.
ifOutMulticastPkts	Total number of packets requested to be transmitted that were addressed to a multicast address, including those discarded or not sent. For a MAC-layer protocol, this includes both group and functional addresses.
ifOutDiscards	Number of outbound packets discarded even though no errors had been detected to prevent their being transmitted. One possible reason for discarding such a packet may be to free up buffer space.
ifOutBroadcastsPkts	Total number of packets requested to be transmitted and addressed to a broadcast address, including packets discarded or not sent.
ifSpeed	Estimate of the interface's current bandwidth in bits per second.
docsIfDownchannelPower	At the Cisco uBR7200 series universal broadband router, the operational transmit power. At the cable modem, the received power level or zero if power level measurement is not supported. If the interface is down, the configured value for Cisco uBR7200 series universal broadband router value, the most current value for cable modem, or 0.
ifOutOctets	Total number of octets transmitted, including framing characters.

### Displaying Upstream Customized Reports

To display a customized performance report, select the desired upstream channel and from the right-click menu, select **Open Upstream Customized Report**. The Customized Report dialog box appears with the selected report data.

Figure 3-11 shows the Upstream Customized Performance Report. Data for the selected attribute appears in the display area. Select the type of data to be displayed from the list of monitored attributes. Use the three tabs at the top of the display area to specify the desired display format.

**Figure 3-11 Upstream Customized Performance Report**

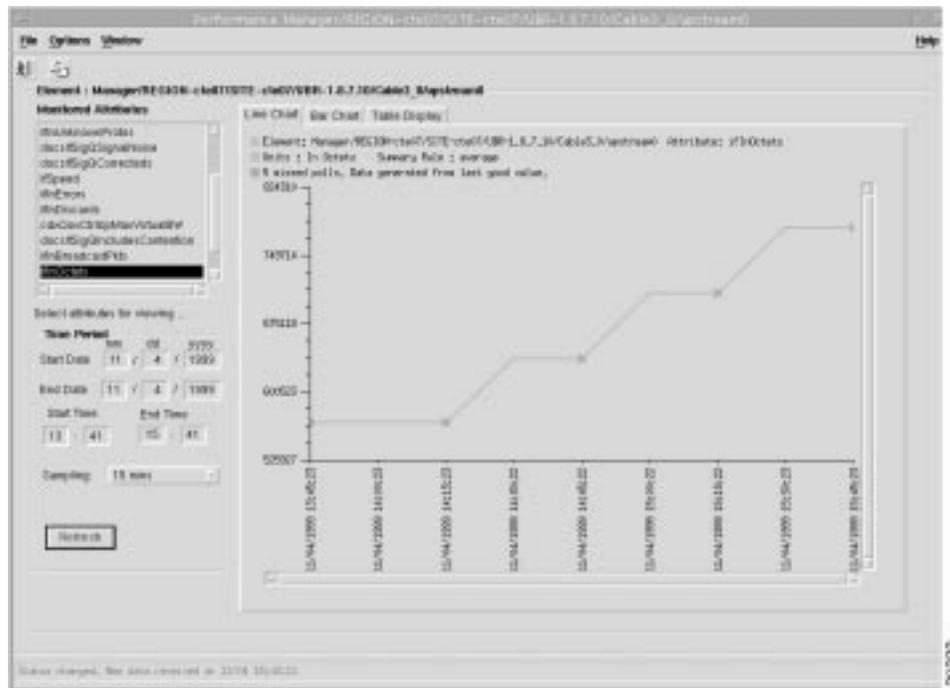


Table 3-8 summarizes the customized report parameters that are available for upstream channel performance.

**Table 3-8 Upstream Customized Report Fields**

<b>Field</b>	<b>Description</b>
ifSpeed	The interface's current bandwidth in bits per second.
cdxQosCtrlUpReservedBW	The current total reserved bandwidth in bits per second of this upstream interface. It is the sum of all cable modems' minimum guaranteed bandwidth in bits per second currently supported on this upstream.
ifInDiscards	Number of inbound packets that were discarded even though no errors had been detected to prevent delivery to a higher-layer protocol. One possible reason for discarding such a packet could be to free up buffer space. Discontinuities in the value of this counter can occur at reinitialization of the management system, and at other times.
docsIfSigQUnerroreds	Codewords received on this channel without error. This includes all codewords, whether or not they were part of frames destined for this device.
ifInUcastPkts	Number of packets, delivered by this sublayer to a higher (sub)layer, that were not addressed to a multicast or broadcast address at this sublayer. Discontinuities in the value of this counter can occur at reinitialization of the management system, and at other times.
ifInOctets	Total number of octets received on the interface, including framing characters.
cdxQosCtrlUpAdmissionRejects	Number of cable modem registration requests rejected on this upstream interface due to insufficient reserved bandwidth for serving the cable modem with minimum guaranteed bandwidth in its Quality of Service class.
ifInErrors	For packet-oriented interfaces, the number of inbound packets that contained errors preventing them from being delivered. For character-oriented or fixed-length interfaces, the number of inbound transmission units that contained errors preventing them from being delivered

**Table 3-8 Upstream Customized Report Fields (continued)**

Field	Description
docsIfSigQIncludesContention	True (1) indicates the Cisco uBR7200 series universal broadband router includes contention intervals in the counters in this table. False (2) indicates counters are not in this table or a cable modem is referenced.
ifInBroadcastsPkts	The number of packets delivered to a broadcast address.
cdxQosCtrlUpMaxVirtualBW	Maximum virtual bandwidth capacity of this upstream interface if the admission control is enabled. It is the raw bandwidth in bits per second times the percentage. If the admission control is disabled, then this value is zero.
ifInUnknownProtos	For packet-oriented interfaces, the number of packets discarded because of an unknown or unsupported protocol. For character-oriented or fixed-length interfaces that support protocol multiplexing, the number of transmission units received that were discarded because of an unknown or unsupported protocol. For any interface that does not support protocol multiplexing, this counter will always be 0.
docsIfSigQUncorrectables	Code words were received on this channel with uncorrectable errors. This includes all code words, whether or not they were part of frames destined for this device.
docsIfSigQSignalNoise	Signal/noise ratio for this channel.
ifInMulticastPkts	Number of packets delivered to a multicast address. For a MAC layer protocol, this includes both group and functional addresses.
docsifSigQCorrecteds	Code words received on this channel with correctable errors. This includes all code words, whether or not they were part of frames destined for this device.
docsIfSigQMicroreflections	Rough estimate of the total microreflections including in-channel response on this interface, measured in dBc below the signal level.

### Displaying Port Adapter Customized Reports

To display a customized performance report, select the desired port adapter and from the right-click menu, select **Open Port Adapter Customized Report**. The Customized Report dialog box appears with the selected report data.

Figure 3-12 shows the Port Adapter Customized Performance Report. Data for the selected attribute appears in the display area. Select the type of data to be displayed from the list of monitored attributes. Use the three tabs at the top of the display area to specify the desired display format.

Figure 3-12 Port Adapter Customized Performance Report

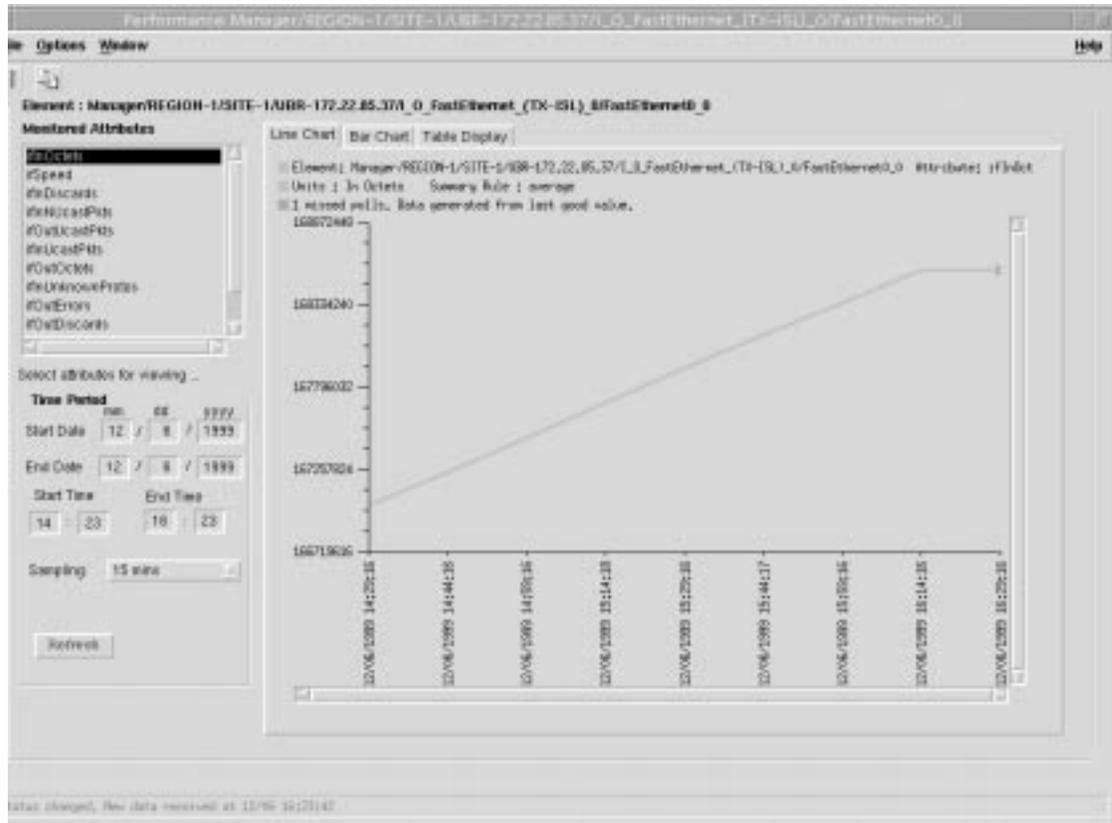


Table 3-9 summarizes the customized report parameters that are available for port adapter performance.

**Table 3-9 Port Adapter Customized Report Fields**

<b>Field</b>	<b>Description</b>
ifOutNUcastPkts	Total number of packets requested to be transmitted that were not addressed to a multicast or broadcast address, including packets that were discarded or not sent.
ifInErrors	For packet-oriented interfaces, the number of inbound packets that contained errors preventing them from being delivered. For character-oriented or fixed-length interfaces, the number of inbound transmission units that contained errors preventing them from being delivered
ifOutDiscards	Number of outbound packets discarded even though no errors had been detected to prevent their being transmitted. One possible reason for discarding such a packet may be to free up buffer space.
ifSpeed	Estimate of the interface's current bandwidth in bits per second.
ifInOctets	Total number of octets received on the interface, including framing characters.
ifInNUcastPkts	Number of packets, delivered to a multicast or broadcast address.
ifnUnknownProtos	For packet-oriented interfaces, the number of packets discarded because of an unknown or unsupported protocol. For character-oriented or fixed-length interfaces that support protocol multiplexing the number of transmission units received that were discarded because of an unknown or unsupported protocol. For any interface that does not support protocol multiplexing, this counter will always be 0.
ifInUcastPkts	Number of packets that were not addressed to a multicast or broadcast address.
ifInDiscards	Number of inbound packets discarded even though no errors were detected. One possible reason for discarding a packet may be to free up buffer space.
ifOutOctets	Total number of octets transmitted, including framing characters.

**Table 3-9 Port Adapter Customized Report Fields (continued)**

Field	Description
ifOutUcastPkts	Total number of packets requested to be transmitted that were not addressed to a multicast or broadcast address, including packets that were discarded or not sent.
ifOutErrors	For packet-oriented interfaces, the number of outbound packets that could not be transmitted because of errors. For character-oriented or fixed-length interfaces, the number of outbound transmission units that could not be transmitted because of errors.

### Purging Report Data

Cisco Cable Manager allows you to purge report data to avoid data storage limitations. Predefined and customized report data is stored on a daily basis in `/opt/AV/performance/[date]` directories. If disk space becomes unavailable, these files may need to be archived to another location or deleted.

### Saving Report Data

Cisco Cable Manager allows you to save report data. To save report data, click **Save**. Cisco Cable Manager saves the report data in a tab-delimited ASCII file in the specified directory.

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**Note** When specifying a directory, make sure a valid directory location is specified.

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### Exporting Report Data

Report data can be copied in tab-delimited format and added to spreadsheets and other applications. Predefined and customized report data is stored on a daily basis in `/opt/AV/performance/[date]` directories.

### Scheduling Reports

Cisco Cable Manager allows you to schedule when a reports is run. To schedule a report to run sometime in the future, click **Run Report** and specify the desired date and time.

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**Note** If the system becomes unavailable before a scheduled report is run, the report will need to be rescheduled.

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### Cisco uBR7200 Inventory Data

Cisco Cable Manager allows you to display inventory reports to manage the currently deployed Cisco uBR7200 series universal broadband routers. Inventory reports include the Cisco IOS releases of Cisco uBR7200 series universal broadband routers and cable modems along with data for the installed cable line cards, port adapters, upstream channels, and downstream channels.

To display an inventory report, select the desired Cisco uBR7200 series universal broadband router in a Map View or Object Tree and from the right-click menu, select **UBR Inventory Report**. The Inventory Report window appears with tabs for card information and environment data. Figure 3-13 shows an inventory report with card information.

Figure 3-13 uBR Inventory Report Dialog Box

The screenshot shows a dialog box titled "uBR Inventory Report Dialog Box" with a menu bar (File, Edit, Options, Navigation, Window) and a toolbar. The main content area is divided into two sections: "System" and "Chassis".

**System Section:**

- Name:** cbrt\_rnbg11111.com
- UpTime:** 12704437
- Location:** (empty field)
- Object-ID:** 8
- Contact:** (empty field)

**System Description:**

Cisco Internetwork Operating System Software  
IOS (M) T200 Software (uBR7200-P-M), Version 11.3(0)M1, EARLY DEPLOYMENT RE  
Copyright (c) 1986-1998 by Cisco Systems, Inc.  
Compiled Mon 02-May-98 20:49 by apsh

**Chassis Section:**

- Type:** uBR7204
- Last Change Update:** 3817
- Hot of Slot:** 7
- HW-Version:** (empty field)
- Chassis-ID/Serial-NO:** uBR
- processorFan:** 125829128
- ConfigRegister:** 0
- nvramSize:** 125816
- ConfigRegister0:** 0
- nvramUsed:** 2878
- chassisPartner:** cisco

**Chassis Description:**

System Description, Version 11.1(T)SCA, EARLY DEPLOYMENT RELEASE SOFTWARE  
Copyright (c) 1997 by Cisco Systems, Inc.

**Chassis Software:**

Cisco Internetwork Operating System Software  
IOS (M) T200 Software (uBR7200-SC01-M), Version 11.3(0)M1, EARLY DEPLD  
Copyright (c) 1986-1998 by Cisco Systems, Inc.  
Compiled Thu 23-Oct-96 12:33 by apsh

Table 3-10 describes the uBR Inventory Report dialog box data.

Table 3-10 System Data

Field	Description
Name	Administratively-assigned name for this device. By convention, this is the device's fully-qualified domain name.
SysUpTime	Time (in hundredths of a second) since the system was last reinitialized.
Location	Administratively-assigned physical location of this node (for example, telephone closet, third floor).

**Table 3-10 System Data (continued)**

Field	Description
Object-ID	The vendor's authoritative identification of the network management subsystem contained in the entity. This value is allocated within the SMI enterprises subtree (1.3.6.1.4.1) and provides an easy and unambiguous means for determining what kind of box is being managed. For example, if vendor Flintstones, Inc. was assigned the subtree 1.3.6.1.4.1.4242, it could assign the identifier 1.3.6.1.4.1.4242.1.1 to its "Fred Router."
Contact	Administratively-assigned contact information for this managed node.
SWversion	Cisco IOS release information.
Type	Type of device, such as Cisco uBR7246.
Last Change	Time when the interface entered its current operational state.
Uptime	Time (in hundredths of a second) since the Cisco Cable Manager the system was reinitialized.
No of Slots	Number of slots in this chassis or -1 if not applicable or undeterminable.
Hw version	Chassis hardware revision level, or blank if unavailable.
Chassis -ID (serial no)	The unique ID string. Defaults to chassis serial number if available, otherwise blank.
ProcessorRAM	Bytes of RAM available to CPU.
ConfigRegister	Value of configuration register.
NVRAMsize	Bytes of nonvolatile configuration memory.
ConfigRegisterNext	Value of configuration register at next reload.
NVRAMUsed	Bytes of nonvolatile configuration memory in use.
Chassis Partner	Used to determine if this is a partner variant of a product.
romversion	ROM monitor version.
romSysVersion	ROM system software version, or blank if unavailable.

**Table 3-11 Cisco uBR7200 Card Information**

Field	Description
CardType	Functional type of this card.
CardDescr	Administratively-assigned text description of this card.
CardSerial	Serial number of this card, or zero if unavailable.
HW-Version	Hardware revision level of this card or blank if unavailable.
SW-Version	Version of the firmware or microcode installed on this card or blank if unavailable.
SlotNumber	Slot number relative to the containing card or chassis, or -1 if not applicable or undeterminable.
OperStatus	The operational status of the card. Up indicates a card is recognized by the device and is enabled for operation. Down indicates the card is not recognized by the device, or it is not enabled for operation. Standby indicates the card is enabled and acting as a standby slave.
Card Slots	Number of slots on this card, 0 if no slots or not applicable, or -1 if undeterminable.

**Table 3-12 Environment Monitor Supply**

Field	Description
Power Supply (Description)	Textual description of the power supply.
Power-Supply (CurrentState)	The current state of the power supply.

**Table 3-13 Environment Monitor Temperature**

Field	Description
Description	Textual description of the temperature status.
Current Value (TempStatus)	Current temperature.

**Table 3-13 Environment Monitor Temperature (continued)**

<b>Field</b>	<b>Description</b>
Highest-Value (TempStatus)	Highest temperature recorded.
Status-Value (LastShutDown)	Temperature at the time of an emergency shutdown of the managed device. This value is stored in non-volatile RAM and is therefore able to survive the shutdown.
Current-State	The current operational state of the device.

**Table 3-14 Environmental Monitor Voltage**

<b>Field</b>	<b>Description</b>
Description	Textual description of the voltage status.
Current Value (Voltage Status)	Current voltage.
Lowest Value (Voltage Status)	Highest voltage recorded.
Highest-Value (VoltageStatus)	Lowest voltage recorded.
Status Value (LastShutDown)	Voltage at the time of an emergency shutdown of the managed device. This value is stored in nonvolatile RAM and hence is able to survive the shutdown.
Current-State	Current voltage state.

**Table 3-15 Flash Device**

<b>Field</b>	<b>Description</b>
Device-Size	Size of the Flash device.
Device-Name	Name of the device within the system. Flash operations get directed to a device based on this name. The system has a concept of a default device. This would be the primary or most used device in case of multiple devices. The system directs an operation to the default device whenever a device name is not specified. The device name is therefore mandatory except when the operation is being done on the default device or the system supports only a single Flash device. The device name will always be available for a removable device, even when the device has been removed.
Description	Description of a Flash device. The description is meant to explain of the Flash device and its purpose. Current values are: System Flash—For the primary Flash used to store full system images. Boot Flash—For the secondary Flash used to store bootstrap images. The device description will always be available for a removable device, even when the device has been removed.
DeviceRemovable	Indicates whether the Flash device is removable. Generally, only PCMCIA Flash cards are removable. Socketed Flashchips and Flash SIMM modules are not removable. Simply put, only those Flash devices that can be inserted or removed without opening the hardware casing are considered removable. Further, removable Flash devices are expected to have the necessary hardware support: On-line removal and insertion and Interrupt generation on removal or insertion.

**Table 3-16 Flash Files**

Field	Description
File Size	Size of the file in bytes. This size does not include the size of the file system file header.
Checksum	File checksum stored in the file header. This checksum is computed and stored when the file is written into Flash. It serves to validate the data written into Flash.
File Status	Current status of the file. A file is marked as having an invalid checksum if any checksum mismatch was detected while writing or reading the file. Incomplete files (files truncated either because of lack of free space, or a network download failure) are also written with a bad checksum and marked as invalid.
File Name	Flash file name as specified by the user copying in the file. The name should not include the colon (:) character as it is a special separator character used to delineate the device name, partition name, and the file name.

**Table 3-17 Memory Pool**

Field	Description
Pool Type	<p>Represents the different types of memory pools that may be present in a managed device. Memory pools can be roughly categorized into two groups, predefined pools and dynamic pools. The following pool types are currently predefined:</p> <ul style="list-style-type: none"><li>• Processor memory</li><li>• I/O memory</li><li>• PCI memory</li><li>• Fast memory</li><li>• Multibus memory</li></ul> <p>The processor pool is required to be supported by all devices. Support for other pool types is dependent on the device being managed.</p>
Name	A textual name assigned to the memory pool.

**Table 3-17 Memory Pool (continued)**

Field	Description
Alternate	Indicates whether or not this memory pool has an alternate pool configured. Alternate pools are used for fallback when the current pool runs out of memory. If this value is zero, this pool does not have an alternate.
Valid	Indicates whether or not the other fields contain accurate data. A value of false indicates an internal error condition and the other fields may contain inaccurate information (specifically, the reported values may be less than the actual values).
Used	Indicates the number of bytes from the memory pool currently in use by applications on the managed device.
Free	Indicates the number of bytes from the memory pool currently unused on the managed device. The sum of bytes in the Used pool and the bytes in the Free pool equals the total amount of memory in the pool.

## Managing Cable Modems

You can use Cisco Cable Manager to perform the following cable modem management:

- Fault management

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**Note** Cable modem fault management uses the Cisco EMF/EM features to display event messages and process events. See the “Fault Management” section on page 3-14 for an explanation of fault management.

---

- Configuration management
- Performance management
- Rehomeing cable modems

### Configuration Management

You can use Cisco Cable Manager to download Cisco IOS software images to a single cable modem or all registered cable modems associated with a specific upstream channel. The download cable modem software features is supported for Cisco uBR904, Cisco uBR924, and select Cisco partner cable modems that are DOCSIS 1.0 compliant.

One or a set of cable modems can be upgraded to a new software image and then reset/rebooted. The software download feature can be triggered on an on-demand or scheduled basis.

---

**Note** The Software Download Summary Report can be used to verify the current image on specified cable modems. See Figure 3-15 for an example of this summary report.

---

To download software to a cable modem(s), select the desired Cisco uBR7200 series universal broadband router, line card, or upstream channel that contains the desired cable modes or select an individual cable modem. From the right-click menu, select **Open SW Download --- Cable Modem**. The Software Download dialog box appears. Select the desired cable modem(s) and specified the desired settings. Click **Initiate Software Download**. In the Scheduler box, either click **OK** to perform the download or enter the desired date and time to perform the download at the specified period.

---

**Note** When multi-selecting cable modems, make sure all the selected cable modems are the same type (for example, all Cisco uBR924) and all the selected cable modems can use the specified TFTP server and Cisco IOS image.

---

Figure 3-14 shows the Software Download dialog box.

Figure 3-14 Software Download Dialog Box



Table 3-18 describes the Software Download dialog box fields.

Table 3-18 Software Download Dialog Box Description

Field	Description
Modems (RF) Cards	Lists the cable modems.
Upstream Ports	Lists the upstream connections to the current Cisco uBR7200 series universal broadband router.

## Managing Cable Modems

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**Table 3-18 Software Download Dialog Box Description (continued)**

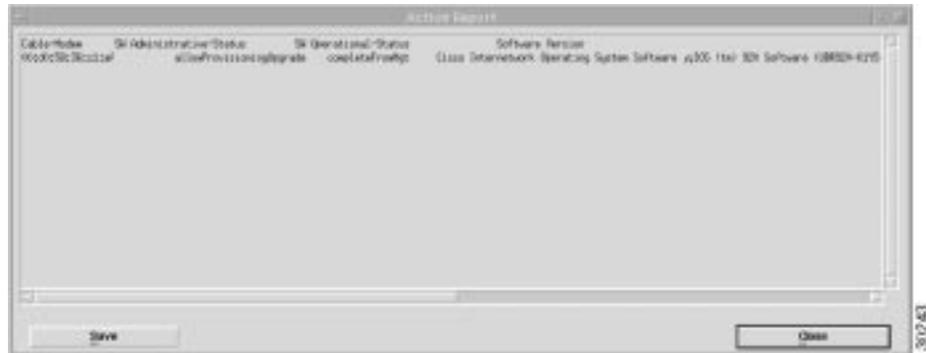
<b>Field</b>	<b>Description</b>
Cable Modem	Lists the cable modems connected to the current Cisco uBR7200 series universal broadband router. When multi-selecting cable modems, ensure all the selected modems are of the same type and can use the specified TFTP server and file. Cable modems of different types will not receive the downloaded file.
System	Current Cisco IOS image information for the selected cable modem(s).
TFTP Server	IP address of the TFTP server used by the selected cable modem(s).
File Name	Cisco IOS image name to be downloaded to the selected cable modem(s).
SW Upgrade Mode	Mode used to download software images and then reboot the cable modem after the image is downloaded.

From this dialog box, Cisco Cable Manager allows you to display a software download summary report.

To display the software download summary report, click **SW Download Summary Report**.

Figure 3-15 shows the Download Software Summary Report dialog box.

Figure 3-15 Download Software Summary Report



## Cable Modem Performance Management

Cisco Cable Manager provides performance report capabilities for cable modems. Report data can be generated for the cable modems assigned to a Cisco uBR7200 series universal broadband router or individual cable modems. Report data can be exported in tab-delimited ASCII files.

Report data is available in predefined and customized reports. Predefined and customized report data is stored on a daily basis in `/opt/AV/performance/[date]` directories. If disk space becomes unavailable, these files may need to be archived to another location or deleted.

### Cable Modem Predefined Reports

Cisco Cable Manager provides predefined cable modem performance reports to display a selected group of performance parameters for a selected cable modem or a group of cable modems.

The following predefined reports and parameters are available:

- Cable modem CPE parameters report
- Cable modem SID parameters report
- Cable modem usage report

## Managing Cable Modems

---

To display a cable modem predefined performance report, select the desired object that contains the cable modem(s) and from the right-click menu, select **Open CM Predefined Performance Report**. The date/time dialog box appears.

Figure 3-16 shows the Cable Modem Predefined Performance Report Date and Time dialog box.

**Figure 3-16 Cable Modem Predefined Performance Report Date and Time Dialog Box**

The screenshot shows a software dialog box titled "Cable Modem Predefined Performance Report Date and Time". It features a menu bar with "File", "Edit", "Options", "Navigation", "Windows", and "Actions". Below the menu bar is a toolbar with various icons. On the left side, there is a list of objects, with the first object selected. The main area of the dialog is divided into two sections: "Start Date & Time" and "End Date & Time". Each section contains three input fields: "Start Date (YYYY)", "Start Date (MM)", and "Start Date (DD)" for the start date, and "Start Time (HH)", "Start Time (MM)", and "Start Time (SS)" for the start time. Similarly, the "End Date & Time" section has "End Date (YYYY)", "End Date (MM)", "End Date (DD)", "End Time (HH)", "End Time (MM)", and "End Time (SS)" fields. At the bottom of the dialog, there are three buttons: "Run CPE Report", "Run SEI Report", and "Run Usage Report". The status bar at the bottom left displays "NORMAL" and the bottom right corner shows the number "802205".

Enter the desired date/time intervals, click **Save** in the toolbar, and click **Run Report**. The CM Predefined Performance Report dialog box appears.

Figure 3-17 shows the CM Predefined Performance Report dialog box.

Figure 3-17 Cable Modem CPE Predefined Performance Report

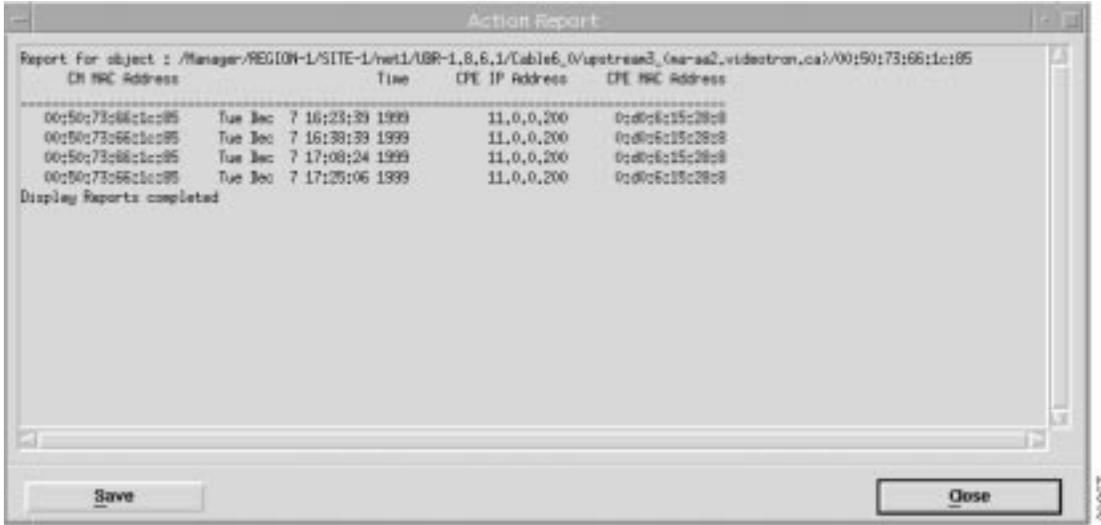


Table 3-19 describes the Cable Modem CPE Predefined report data.

Table 3-19 Cable Modem CPE Predefined Report Fields

Field	Description
Cable modem MAC address	Unique machine address of the cable modem.
Timestamp	Date and time of the current report.
CPE IP address	IP address(es) of the customer-provided equipment connected to the cable modem.
CPE MAC address	Unique machine address(es) of the customer-provided equipment connected to the cable modem.

**Note** CPE data are available for up to four supported CPE devices.

## Managing Cable Modems

Figure 3-18 shows the cable modem SID Predefined Performance Report dialog box.

**Figure 3-18 Cable Modem SID Predefined Performance Report**

Time	SID In Octets	SID In Packets	SID Out Octets	SID Out Packets	SID In Octets
3:21:15-3:21:30	285465	3498	255982	3031	295468
3:21:30-3:21:45	441372	4998	224898	6342	441372
3:21:45-3:22:00	830276	9876	252998	6254	810276
3:22:00-3:22:15	799904	7911	3421125	7355	799904
3:22:15-3:22:30	962252	8938	254568	8288	962252
3:22:30-3:22:45	1253354	12121	2664422	31367	1253354
3:22:45-3:23:00	2599988	25289	2798272	23460	2599988
3:23:00-3:23:15	3800088	32242	2882215	22988	3800088
Time	SID In Octets	SID In Packets	SID Out Octets	SID Out Packets	SID In Octets
4:00:00-3:00:20	1825275	12257	2292824	28119	1825275
4:01:00-3:00:20	2933966	14882	3072134	24812	2933966
4:02:00-3:00:20	2521122	15281	2925689	25660	2521122
4:03:00-3:00:20	2269179	16382	2524288	28622	2269179
4:04:00-3:00:20	2882121	12422	3348988	27987	2882121
4:05:00-3:00:20	2784952	18482	3441588	28781	2784952

Table 3-20 describes the Cable Modem SID Predefined report data.

**Table 3-20 Cable Modem SID Predefined Report Fields**

Field	Description
Cable modem MAC address	Unique machine address of the cable modem.
Timestamp	Date and time of the current report.
docsIfCmtsServiceInOctets	Total number of octets received on the interface, including framing characters.
docsIfCmtsServiceInPackets	Total number of packets received on the interface, including framing characters.
cdxIfCmtsServiceOutOctets	Total number of octets transmitted on the interface, including framing characters.
cdxIfCmtsServiceOutPackets	Total number of packets transmitted on the interface, including framing characters.

**Note** Service Identification (SID) parameters are available for up to four supported CPE devices.

Figure 3-19 shows the cable modem usage Predefined Performance Report dialog box.

**Figure 3-19 Cable Modem Usage Predefined Performance Report**

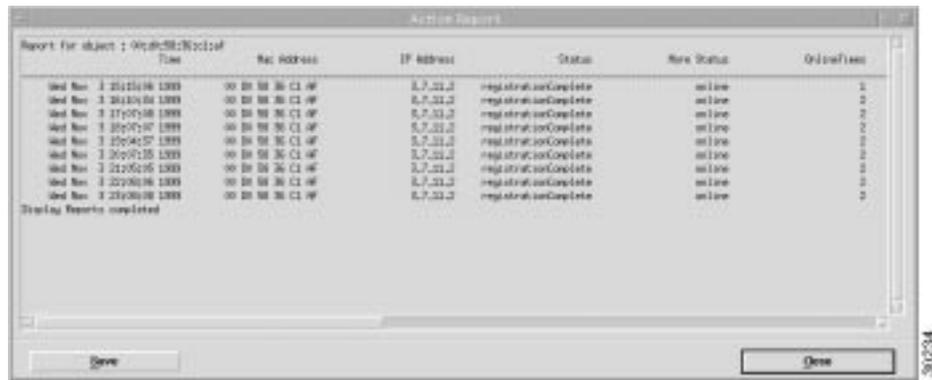


Table 3-21 describes the Cable Modem Usage report data.

**Table 3-21 Cable Modem Usage Report**

Field	Description
MAC address	Unique machine address of the cable modem.
Timestamp	Date and time data was generated.
Status index	An unique identifier this cable modem. This value should not change during CMTS uptime.
IP address	IP address assigned to the cable modem.
statusdownChannelIfIndex	Current status of the registration process.
statusUpChannelIfIndex	Additional registration status information.

**Table 3-21 Cable Modem Usage Report (continued)**

<b>Field</b>	<b>Description</b>
docsIfCmtsCmStatusRxPower	Receive power for upstream data from this cable modem. A value of zero indicates the receive power is unknown.
docsIfCmStatusValue	Current Cable Modem connectivity state: other(1), notReady(2), notSynchronized(3), phySynchronized(4), usParametersAcquired(5), rangingComplete(6), ipComplete(7), todEstablished(8), securityEstablished(9), paramTransferComplete(10), registrationComplete(11), operational(12), accessDenied(13).
cdxIfCmtsCmStatusOnlineTimes	Number of times the modem changes the connectivity state from offline to online over the time period from the modem's first ranging message received by CMTS until now.
cdxIfCmtsCmStatusPercentOnline	Percentage of time the modem stays online over the time period from the modem's first ranging message received by CMTS until now. The value for this object is 100 times bigger than the real percentage value. For example, 32.15% will be value 3215.
cdxIfCmtsCmStatusMinOnlineTime	Minimum period of time the modem stayed online over the time period from the modem's first ranging message received by CMTS until now.
cdxIfCmtsCmStatusAvgOnlineTime	Average period of time the modem stayed online over the time period from the modem's first ranging message received by CMTS until now.
cdxIfCmtsCmStatusMaxOnlineTime	Maximum period of time the modem stayed online over the time period from the modem's first ranging message received by CMTS until now.
cdxIfCmtsCmStatusMinOfflineTime	Minimum period of time the modem stayed offline over the time period from the modem's first ranging message received by CMTS until now.

**Table 3-21 Cable Modem Usage Report (continued)**

Field	Description
cdxIfCmtsCmStatusAvgOfflineTime	Average period of time the modem stayed offline over the time period from the modem's first ranging message received by CMTS until now.
cdxIfCmtsCmStatusMaxOfflineTime	Maximum period of time the modem stayed offline over the time period from the modem's first ranging message received by CMTS until now.
docsIfCmStatusTxPower	Transmit power for upstream data from this Cable Modem. A value of zero indicates the transmit power is unknown.
docsIfSigQUnerrored	Codewords received on this channel without error. This includes all codewords, whether or not they were part of frames destined for this device.
docsIfSigQCorrected	Codewords received on this channel with correctable errors. This includes all codewords, whether or not they were part of frames destined for this device.
docsIfSigQUncorrectables	Codewords received on this channel with uncorrectable errors. This includes all codewords, whether or not they were part of frames destined for this device.
docsIfSigQSignalNoise	Signal/Noise ratio as perceived for this channel. Only meaningful in Cable Modems. Returns zero for Cable Modem Termination Systems.

---

**Note** Cable modem performance monitoring is also available through CiscoView.

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### Cable Modem Customized Report

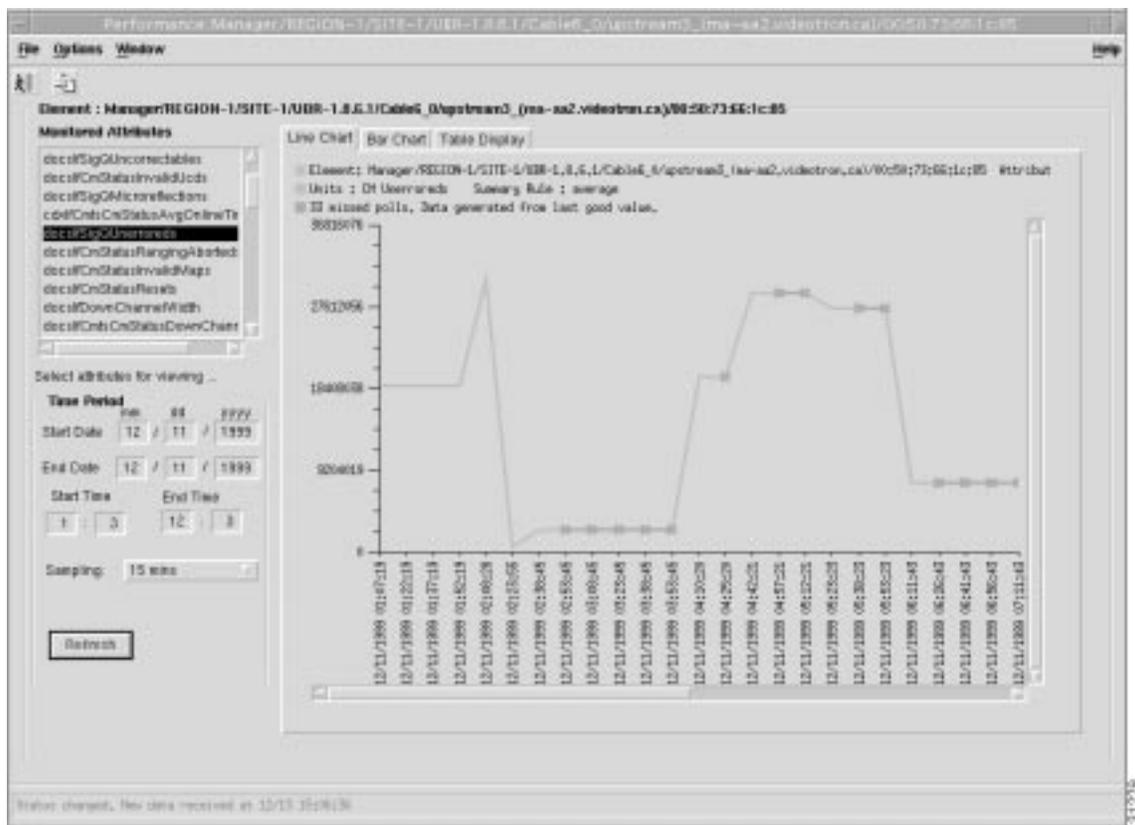
Customized reports allow you to select a parameter from a list of available performance parameters and display data for the selected parameter. Data can be displayed for a selected cable modem or a group of cable modems.

## Managing Cable Modems

To display a customized performance report for a cable modem, select the desired cable modem object and from the right-click menu, select **Open Cable Modem Customized Report**. The Customized Cable Modem Report dialog box appears.

Figure 3-20 shows the Cable Modem Customized Report dialog box.

Figure 3-20 Cable Modem Customized Report



Select the desired object from the Managed Attributes list and enter the desired dates and times. Table 3-22 describes the cable modem performance attributes.

**Table 3-22 Cable Modem Customized Report Fields**

<b>Field</b>	<b>Description</b>
docsIfDownChannelId	CMTS identification of the downstream channel within this particular MAC interface. If the interface is down, this is the most current value. If the downstream channel ID is unknown, this is 0.
docsIfDownChannelPower	At the Cisco uBR7200, the operational transmit power. At the cable modem, the received power level. This value may be zero at the cable modem if power level measurement is not supported. If the interface is down, this value may be either the configured value (Cisco uBR7200), the most current value (cable modem) or 0.
docsIfDownChannelFrequency	Center of the downstream frequency associated with this channel. This is the current tuner frequency. If a CMTS provides IF output, this value will be 0, unless this CMTS is in control of the final downstream RF frequency.
docsIfDownChannelWidth	Bandwidth of this downstream channel. Most implementations support a channel width of 6 MHz (North America) and/or 8 MHz (Europe).
docsIfDownChannelModulation	Modulation type associated with this downstream channel. If the interface is down, this is the configured value (CMTS), the most current value (cable modem), or the value of unknown(1).

**Table 3-22 Cable Modem Customized Report Fields (continued)**

Field	Description
docsIfDownChannelInterleave	<p>Forward Error Correction (FEC) interleaving used for this downstream channel. Values are:</p> <ul style="list-style-type: none"> <li>• taps8Increment16(3): protection 5.9/4.1 usec, latency .22/.15 msec</li> <li>• taps16Increment8(4): protection 12/8.2 usec, latency .48/.33 msec</li> <li>• taps32Increment4(5): protection 24/16 usec, latency .98/.68 msec</li> <li>• taps64Increment2(6): protection 47/33 usec, latency 2/1.4 msec</li> <li>• taps128Increment1(7): protection 95/66 usec, latency 4/2.8 msec</li> </ul> <p>If the interface is down, this object either returns the configured value (CMTS), the most current value (cable modem), or the value of unknown(1). A value of other(2) is returned if the interleave is known but not defined in the above list.</p>
docsIfCmStatusLostSyncs	<p>Number of times the cable modem lost synchronization with the downstream channel.</p>
docsIfSigQIncludesContention	<p>True (1) indicates this CMTS includes contention intervals in the counters in this table. Always false (2) for cable modems.</p>
docsIfSigQUnerrored	<p>Codewords received on this channel without error. This includes all codewords, whether or not they were part of frames destined for this device.</p>
docsIfSigQCorrecteds	<p>Codewords received on this channel with correctable errors. This includes all codewords, whether or not they were part of frames destined for this device.</p>

**Table 3-22 Cable Modem Customized Report Fields (continued)**

<b>Field</b>	<b>Description</b>
docsIfSigQUncorrectables	Codewords received on this channel with uncorrectable errors. This includes all codewords, whether or not they were part of frames destined for this device.
docsIfSigQMicroreflections	Total microreflections including in-channel response as perceived on this interface, measured in dBc below the signal level. This object is not assumed to return an absolutely accurate value, but should give a rough indication of microreflections received on this interface.
docsIfSigQSignalNoise	Signal/Noise ratio as perceived for this channel. Only meaningful for cable modems. Returns zero for CMTS.
docsIfCmStatusValue	Current Cable Modem connectivity state, as specified in the RF Interface Specification.
docsIfCmStatusResets	Number of times the cable modem reset or initialized this interface.
docsIfCmStatusInvalidMaps	Number of times the cable modem received invalid MAP messages.
docsIfCmStatusInvalidUcdfs	Number of times the cable modem received invalid UCD messages.
docsIfCmStatusInvalidRangingResp	Number of times the cable modem received invalid ranging response messages.
docsIfCmStatusInvalidRegistrationResp	Number of times the cable modem received invalid registration response messages.
docsIfCmStatusT1Timeouts	Number of times counter T1 expired in the cable modem.
docsIfCmStatusT2Timeouts	Number of times counter T2 expired in the cable modem.
docsIfCmStatusT3Timeouts	Number of times counter T3 expired in the cable modem.

## Managing Cable Modems

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**Table 3-22 Cable Modem Customized Report Fields (continued)**

Field	Description
docsIfCmStatusT4Timeouts	Number of times counter T4 expired in the cable modem.
docsIfCmStatusTxPower	Operational transmit power for the attached upstream channel.
docsIfCmStatusRangingAborted	Number of times the ranging process was aborted by the CMTS.

### Purging Report Data

Cisco Cable Manager allows you to purge report data to avoid data storage limitations. Predefined and customized report data is stored on a daily basis in `/opt/AV/performance/[date]` directories. If disk space becomes unavailable, these files may need to be archived to another location or deleted.

### Saving Report Data

Cisco Cable Manager allows you to save report data. To save report data, click **Save**. Cisco Cable Manager saves the report data in a tab-delimited ASCII file in the specified directory.

---

**Note** When specifying a directory, ensure a valid directory location is specified.

---

### Exporting Report Data

Report data can be copied in tab-delimited format and added to spreadsheets and other applications. Predefined and customized report data is stored on a daily basis in `/opt/AV/performance/[date]` directories.

### Scheduling Reports

Cisco Cable Manager allows you to schedule when a report is run. To schedule a report to run sometime in the future, click **Run Report** and specify the desired date and time.

---

**Note** If the system becomes unavailable before a scheduled report is run, the report will need to be rescheduled.

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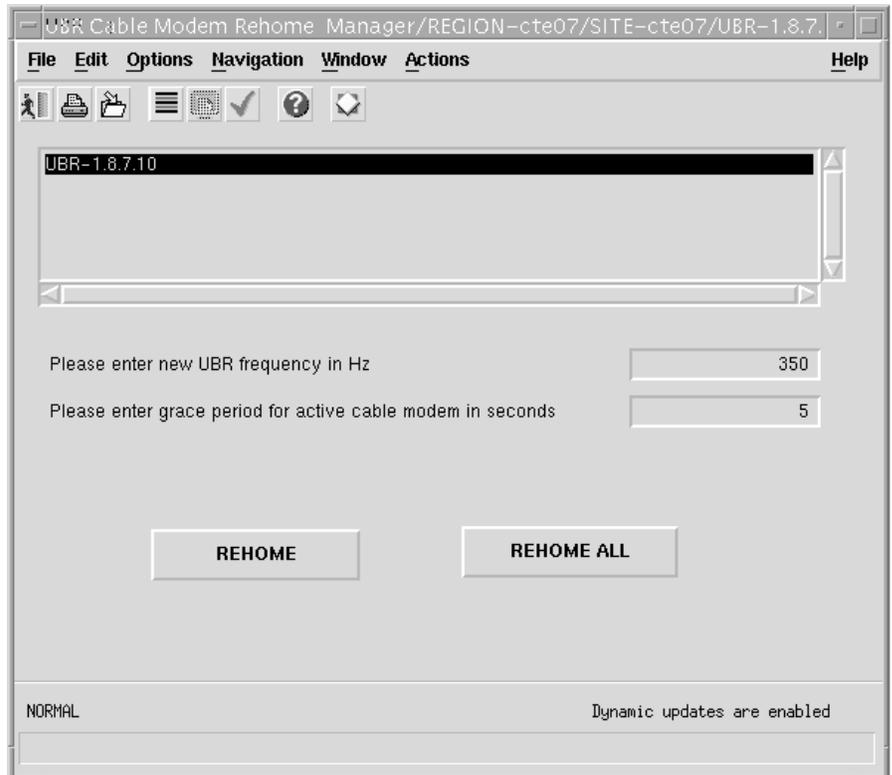
## Rehoming Cable Modems

Cisco Cable Manager allows you to rehome or reassign cable modems to their master or primary Cisco uBR7200 series universal broadband router after they have been transferred to a secondary Cisco uBR7200 series universal broadband router due to router failover.

To rehome cable modems, select the desired Cisco uBR7200 series universal broadband router that contains the cable modem and from the right-click menu, select **Open uBR Cable Modem Rehome**. The Cable Modem Rehome dialog box appears.

Figure 3-21 shows the Cable Modem Rehome dialog box.

Figure 3-21 Cable Modem Rehome Dialog Box



UBR-frequency is the downstream Radio Frequency to which the cable modem has to be rehomed.

Grace period for active cable modem is the time period in seconds that online cable modems can stay homed to the current Cisco uBR7200 series universal broadband router before they get rehomed.

Click **Rehome** and enter a date and time to rehome the modems to the primary Cisco uBR7200 series universal broadband router if the modem is not busy (no active dynamic SID) or a predetermined timeout has expired. The primary or master Cisco uBR7200 series universal broadband router information is based on the data stored in the LDAP server.

Click **Rehome All** and enter a date and time to rehome all cable modems under the selected Cisco uBR7200 to the current Cisco uBR7200. This type of rehome moves all the routers without referencing the data stored in the LDAP server.

## Monitoring Devices with CiscoView

CiscoView provides a graphical view of the Cisco uBR7200 series universal broadband router and cable modems so you can perform real-time fault and performance monitoring of the devices, cards, interfaces, and ports.

CiscoView displays the snapshot data and graph data of device-specific performance statistics and statuses. CiscoView currently supports the following real-time status data:

- uBR Mac status including capacities, sync interval, UCD interval, maximum service ID, insertion interval, invited ranging attempts.
- uBR upstream status including channel ID, frequency, channel width, modulation profile, slot size, Tx timing offset, ranging back off start window, ranging back off end window, Tx back off start window, and Tx back off end window.
- uBR downstream status including channel ID, frequency, channel width, modulation, interleave, power.
- uBR upstream modulation profiles.
- uBR QOS profiles including index, priority, maximum upstream bandwidth, minimum guaranteed upstream bandwidth, maximum downstream bandwidth, maximum number of mini-slots that may be requested for a single upstream transmission, and whether Baseline Privacy is enabled.
- CM Mac status including the MAC address of the CMTS that controls this CM, capabilities, ranging response time-out.

To launch CiscoView, select the desired device in a Map View or Object Tree and from the right-click menu, choose **Launch CiscoView**. The CiscoView application window appears with a chassis view of the selected device.

## Troubleshooting

This section contains two sections:

- Troubleshooting Cisco uBR7200 series universal broadband routers and cable modems
- Troubleshooting Cisco Cable Manager

## Troubleshooting Cisco uBR7200 Series Universal Broadband Routers and Cable Modems

Cisco Cable Manager provides the following tools for troubleshooting Cisco uBR7200 series universal broadband routers and cable modems:

- Flapping modem list
- Ping/Find connectivity tests

### Displaying Flapping Modems

Cisco Cable Manager displays a flapping modem list to provide early notification of potential cable modem failure and lost connectivity.

A polled cable modem is considered intermittent or flapping when any of the following occurs:

- Cable modem fails the registration process.
- CMTS receives a miss followed by a hit from the cable modem, an abnormal behavior during the keep alive messaging between the CMTS and the cable modem.
- Cable modem upstream transmit power is adjusted beyond the user-specified threshold.

Figure 3-22 shows the Flapping Modem List dialog box.

Figure 3-22 Flapping Modem List

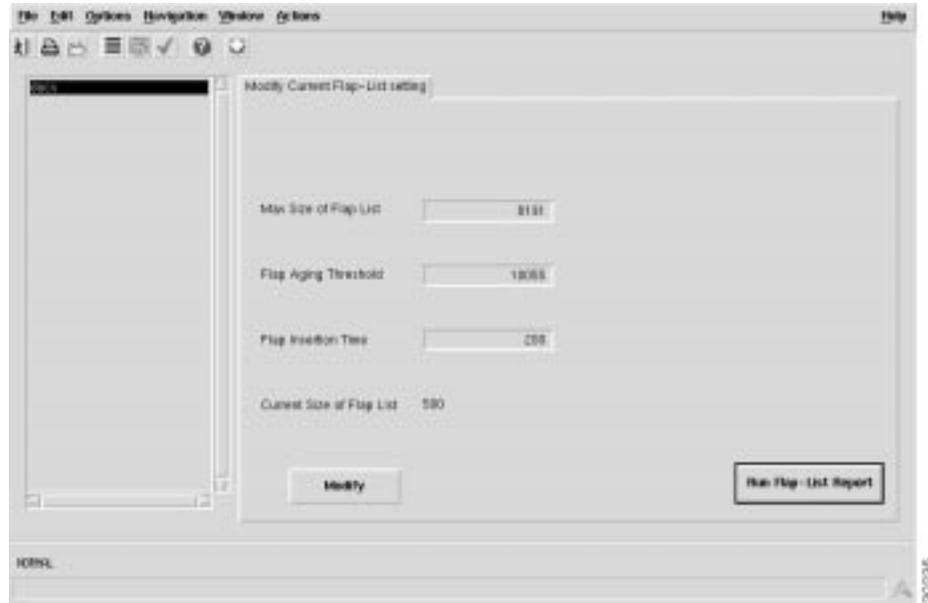


Table 3-23 describes the Flapping Modem List dialog box fields.

Table 3-23 Flapping Modem List Dialog Box Fields

Field	Description
Max Size of Flap List	Maximum number of cable modems that can appear in the Flap list before the oldest data is overwritten with new data.
Flap Aging Threshold	Interval in minutes during which the Flap list is refreshed.

**Table 3-23 Flapping Modem List Dialog Box Fields (continued)**

Field	Description
Flap Insertion Time	Timeout period in seconds for the cable modem registration process to complete. If the timeout period is reached before the registration process is complete, the cable modem is added to the Flap list.
Current Size of Flap List	Number of cable modems currently listed in the Flap list.

To modify the current Flap List settings, click **Modify**. To generate a Flap List, click **Run Flap-List Report**.

### Testing Cisco uBR7200 and Cable Modem Connectivity

For quick fault isolation, Cisco Cable Manager provides IP and MAC layer ping connectivity tests between the Cisco uBR7200 series universal broadband routers and the cable modems. When the **Find** feature is used, Cisco Cable Manager sends the command to the specified Cisco uBR7200 series universal broadband router. The Cisco uBR7200 series universal broadband router will find the cable modem containment path and object location and return them to Cisco Cable Manager. The **IP Ping** command initiates a Ping between the Cisco uBR7200 series universal broadband router and the cable modem and forwards the results back to Cisco Cable Manager to indicate the IP network connectivity.

To find or ping a cable modem, select the desired group of Cisco uBR7200 universal broadband routers and from the right-click menu, select **Find/Ping Cable Modem**. The Find/Ping Cable Modem dialog box appears.

---

**Note** The enable password and line password parameters for the related Cisco uBR7200 series universal broadband routers must be entered in the Modify Configuration Settings dialog box for the Find/Ping feature to be available. See the “Recording Configuration Settings” section on page 3-23.

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Figure 3-23 shows the Find/Ping Cable Modem dialog box.

Figure 3-23 Find/Ping Cable Modem Dialog Box

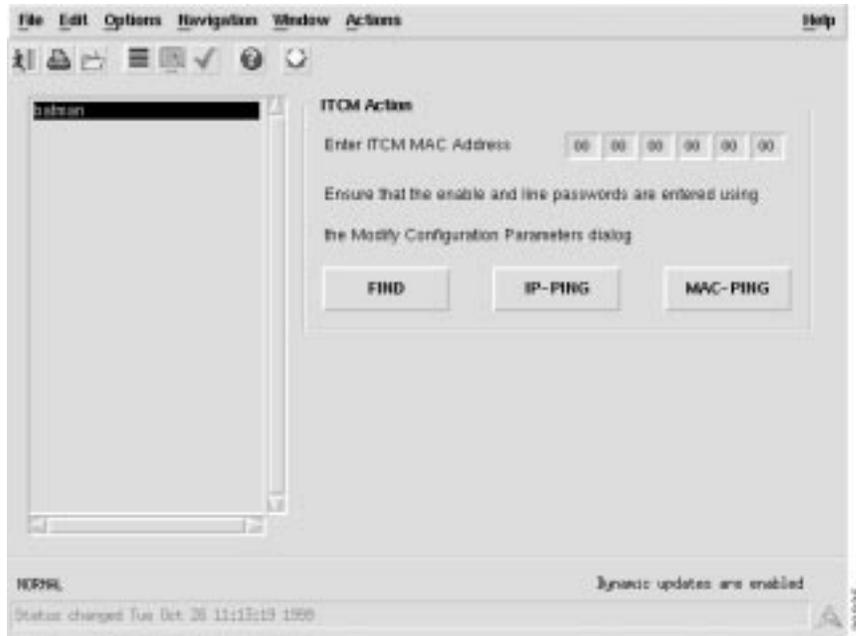


Table 3-24 describes the Find/Ping Cable Modem dialog box fields.

Table 3-24 Find/Ping Cable Modem Dialog Box Fields

Field	Description
Find	Displays the containment path and object location in Cisco Cable Manager.
IP Ping	Verifies IP network connectivity between the Cisco uBR7200 series universal broadband router and the cable modem. The results are returned to Cisco Cable Manager.
MAC Ping	Tests the connectivity between Cisco Cable Manager and the specified cable modem.

### Troubleshooting Cisco Cable Manager

To verify Cisco Cable Manager server performance and reliability, use the troubleshooting procedures described in this section.

#### Freeing Disk Space

If available disk space on the Cisco Cable Manager server is low or unavailable, verify that only the desired report data is stored on the server. Predefined and customized report data is stored on a daily basis in `/opt/AV/performance/[date]` directories. To free disk space, these files may need to be archived to another location or deleted.

#### Performing System Maintenance

Cisco EMF provides for backing up and restoring databases (typically found under `$/AVROOT/db/`). Backup and Restore are performed using the Cisco EMF script `av` located under `/opt/AV/bin/`. In order to perform a backup, bring up an X-session. Change to the directory `/opt/AV/bin` and run the `./av shell`.

This brings up a shell window that has all the necessary Cisco EMF paths set. Run `av backup`. This command will backup the databases under `$/AVROOT/db/` and locate them under `$/AVROOT/backup/` with a note on the date on which it was backed up.

To perform a Restore, enter the command `av restore`. This command prompts for the date in the form of `<mm-dd-yyyy>` and `-d <db1 [db2 ...]>` to represent the databases that need to be restored.

#### Displaying Log Files

The CEMF provides for logging information via log files located under the `$/AVROOT/logs/`. Of all the log files, the file named `cb1Ctrl.log` and `cb1Ctrl.old` are of primary importance. These log files are ASCII file that contain all Cisco Cable Manager application specific log messages.

By default, DEBUG entries are not included in these log files. In order to see log messages of DEBUG severity (this includes all other severities), a change needs to be made to the `loggercommon.include` file located in the `/opt/AV/config/init` directory. By default the `loggingLevelMask` is set to 10. Changing this setting to 15 causes all DEBUG level messages to be logged.

---

**Note** Changing the level to 15 will affect how quickly the log files get archived as `.old` files. Also, changes made to `loggercommon.include` file will not take effect until the `cbCtrl` process is restarted. Cisco recommends that the administrator stop the CEMF system and restart for the changes to take effect.

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The size of the `cbCtrl.log` file can also be controlled via the `cbCtrl.ini` file located in the `/opt/AV/config/init` directory. Add an entry in the `logger` section of `cbCtrl.ini` for the size of the log file specified in KBytes. Then stop and re-start CEMF.

An example of a section of the `cbCtrl.ini` for the `logger` section in order to specify a 5 MB `cbCtrl.log` file:

```
[logger]
#include "loggercommon.include"
loggingName = cbCtrl
maxLogfileSize = 5000
```

Whenever the `cbCtrl.log` file reaches its maximum size as specified in the control file, it is archived to a `cbCtrl.old` file and a new `cbCtrl.log` file is created.

The numerous other log files also available for troubleshooting. Log files are stored in the `/opt/AV/logs` directory.

From time to time, it is best to run the script `listCores` provided in `AVROOT/bin` (typically `/opt/AV/bin`). This report displays any core files affected by any malfunctioning processes. Whenever an affected core file is seen, please report it to Cisco customer support.

## Troubleshooting

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