



Managing Subscribers

The Cisco Broadband Access Center (BAC) software enables you to organize and manage subscribers to broadband aggregation services. A subscriber is the individual, company, or organization that receives network services.

[Table 8-1](#) lists the topics in this chapter.

Table 8-1 *Managing Subscribers Topics*

If you want to...	Go to the...
Learn about subscribers	“Overview of Subscriber Provisioning” section on page 8-2.
Create and delete subscriber accounts	“Organizing and Managing Subscribers” section on page 8-3.
Manage subscriber services	“Organizing and Managing Subscriber Services” section on page 8-5.
View subscriber events	“Viewing Subscriber Events” section on page 8-10.

Overview of Subscriber Provisioning

When you provision a broadband aggregation subscriber, you:

- Associate the subscriber with a service profile
- Select service features

Subscriber Service Profile

A subscriber service profile describes the tasks the router that is associated with the subscriber performs. For more detailed information about these tasks, see [“The Role or Roles of a Device on the Network” section on page 7-2](#).

A subscriber profile name consists of:

- The word subscriber
- The role name associated with the router
- Where applicable, the encapsulation method associated with the role

For example, SubscriberLACPPPoEoA, SubscriberPTAPPPoEoA, SubscriberLNS, and SubscriberRBE are all profile names.

Subscriber Service Feature

Each subscriber service profile contains subscriber service features. Service features set the attributes of the router subinterface that is associated with the subscriber. These include PVC characteristics, quality of service (QoS), and service class. The available service features are those you create from the Network Service tab. For more information, see [Chapter 5, “Managing Network Services.”](#)

BAC associates service profiles with service features to provision subscribers. BAC supports two categories of service features:

- Interface—Within a service profile, a virtual template defines interface parameters on a per-device basis:
 - PVC Range—Enables an aggregation router to quickly provision many PPP sessions. It specifies a range of PVCs, quality of service (QoS) requirements, protocol encapsulation, and so forth. Although the PVC range parameter is set during device configuration, you must still specify it during service provisioning so that you associate a subscriber with a connection endpoint.
 - Single PVC—Provisions a single PVC. Although the single PVC parameter is set during device configuration, you must still specify it during service provisioning, so that you associate a subscriber with a connection endpoint.
 - VLAN Range—Enables an aggregation router to quickly provision many virtual LANs (VLANs). It specifies a range of VLAN network addresses, QoS requirements, protocol encapsulation, and so forth. Although the VLAN range parameter is set during device configuration, you must still specify it during service provisioning so that you associate a subscriber with the appropriate VLAN.

- Single VLAN—Provisions a single VLAN. Although the VLAN ID is set during device configuration, you must still specify it during service provisioning.
- Fallout—Configures the device for PVC fallout; that is for the situation in which a subscriber wants to receive service from within a PVC range, but at a different QoS rate than is defined for the range.
- Subscriber service—By default, associates a subscriber with a AAA group profile. A group profile consists of attribute/value pairs. A service provider operator or a subscriber can overwrite the group profile with parameters that are specific to a subscriber. Subscriber service is not available in LAC and RBE environments.



Note Subscriber service requires that you add the RADIUS service feature when you provision devices. For more information, see the [“Setting Up RADIUS Service” section on page 7-10](#).

Organizing and Managing Subscribers

BAC enables network administrators to create subscribers and provision subscribers with services. You organize and manage subscribers within BAC first by creating subscriber accounts and then by adding services to accounts.

About Subscribers

When you create a subscriber, you specify the information listed in [Table 8-2](#).

Table 8-2 *Subscriber Fields*

Field	Description
Account number	The account number for the subscriber.
AAA Username	In broadband aggregation, the username that the subscriber uses for authentication; for example: <code>username@example.com</code> BAC stores this information in the Oracle database.
AAA Password	In broadband aggregation, the password that the subscriber uses for authentication. BAC stores this information in the Oracle database.
First Name	The first name of the subscriber.
MI	The middle initial of the subscriber.
Last Name	The last name of the subscriber.
Address	The street address of the subscriber. This attribute is optional.
City	The city where the subscriber is located. This attribute is optional.
State/Province	The state, province, or other governmental subdivision used in the subscriber’s mailing address. This attribute is optional.
Zip/Postal Code	The postal code assigned to the subscriber’s specific mail delivery area. This attribute is optional.
Phone	The telephone number of the subscriber. This attribute is optional.

Table 8-2 Subscriber Fields (continued)

Field	Description
Email	The e-mail address of the subscriber. This attribute is optional.
Description	A descriptive block of text about the subscriber. This attribute is optional.

To Create a Subscriber

When you create subscribers, you define basic customer account information as well as AAA server authentication information.

To create a subscriber, follow these steps:

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- Step 1** If necessary, click the **Subscribers** tab. By default, the system displays the Service Provider Inventory page in the main window.
 - Step 2** To change the display, click the **Subscriber Management** option in the subtask bar. The system displays the Subscriber List page in the main window.
 - Step 3** In the Object Selector, select the service provider or subscriber group for the subscriber. If necessary, expand the hierarchy to display the appropriate subscriber group.
 - Step 4** In the Subscriber List page, click **Create**. The system displays the Create Subscriber page.
 - Step 5** Enter the subscriber attributes, as defined in [Table 8-2](#).
 - Step 6** Click **Finish**.



Note The subscriber is unprovisioned at this step. To provision the subscriber, you need to add a service or services to the subscriber. To add a service to the subscriber, see the [“Organizing and Managing Subscriber Services”](#) section on page 8-5.

To Delete a Subscriber

To delete a subscriber, follow these steps:

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- Step 1** If necessary, click the **Subscribers** tab. By default, the system displays the Service Provider Inventory page in the main window.
 - Step 2** To change the display, click **Subscriber Management** option in the subtask bar. The system displays the Subscriber List page in the main window.
 - Step 3** In the Object Selector, select the service provider or subscriber group for the subscriber. If necessary, expand the hierarchy to display the appropriate subscriber group.
 - Step 4** In the Subscriber List page, select the subscriber whom you want to delete.
 - Step 5** Click **Delete**. The system displays a prompt asking you if you want to delete this group.
 - Step 6** Click **OK**.
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Organizing and Managing Subscriber Services

After you create a subscriber, you need to add a service or services to the subscriber. This involves

1. Selecting a service profile
2. Selecting either an interface or a service; or selecting both an interface and a service.

Selecting Service Profiles

The service profile you select determines whether you must configure an interface, a service, or both.

About Service Profiles

Table 8-3 lists the service profiles and what you configure for each.

Table 8-3 Service Profiles

If You Select This Service Profile...	You Configure...
SubscriberLACPPPoA	An interface
SubscriberLACPPPoEoA	An interface
SubscriberLACPPPoEoE	An interface
SubscriberLACPPPoEoVLAN	An interface
SubscriberLNS	A service
SubscriberPTAPPPoA	A service, or an interface, or both
SubscriberPTAPPPoEoA	A service, or an interface, or both
SubscriberPTAPPPoEoE	A service, or an interface, or both

Table 8-3 Service Profiles (continued)

If You Select This Service Profile...	You Configure...
SubscriberPTAPPPoEoVLAN	A service, or an interface, or both
SubscriberRBE	An interface

If you select one of the PTA services or LNS, you might also need to configure AAA service by associating a subscriber with a group. The group association defines the quality of service (QoS), access privileges, and the pool of IP addresses from which to select the subscriber's IP address.

The BAC server writes the data to a subscriber database using its Subscriber Access Management component. In the PTA and LNS aggregation scenarios, the BAC server also writes subscriber data to a RADIUS (Remote Authentication Dial-In User Service) server for authentication, authorization, and accounting (AAA). BAC supports the Cisco CNS Access Registrar RADIUS server and the Merit RADIUS server.

To Create a Subscriber Service Profile

Before you create a service profile or profiles, determine whether the profile requires that you configure an interface, a service, or both.

To add a service profile, follow these steps:

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- Step 1** If necessary, click the **Subscribers** tab. By default, the system displays the Service Provider Inventory page in the main window.
 - Step 2** To change the display, in the subtask bar, click the Subscriber Management option. The system displays the Subscriber List page in the main window.
 - Step 3** In the Object Selector, select the service provider or subscriber group for the subscriber. If necessary, expand the hierarchy to display the appropriate subscriber group.
 - Step 4** On the Subscriber List page, select the subscriber whom you want to provision.
 - Step 5** Click **Add Service**. The system displays the Subscriber Provisioning–Service Profile Selection page in the main window.
 - Step 6** Select a subscriber profile. For more information, see [Table 8-3](#).
 - Step 7** Click **Next**. The system displays the Subscriber Provisioning–Service Feature Selection page.
 - Step 8** Begin to configure subscriber interface and service features. The next sections of this chapter provide detailed procedures for configuring interfaces and service features.
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Selecting Interfaces

When you select an interface, you are selecting the access point to the network for the subscriber, setting PVC and VLAN ranges, and setting QoS characteristics.

About Interfaces


When you select an interface, you specify its properties using the fields listed in [Table 8-4](#). The system filters the attributes it displays based on the subscriber service profile you select. Based on your selection, the system displays the attributes appropriate to the service profile. For example, if the subscriber service profile associates the subscriber with an ATM interface, the attributes displayed are appropriate to that interface.

Table 8-4 Interface Fields

Field	Description
Select Device	Associates a subscriber with a router.
Subscriber-facing Subinterface Selector	Selects the subinterface on the router that becomes the subscriber's access point to the network.
PVC in Range	Determines whether the PVC associated with a subscriber must fall within a specified range. The value is either true or false. If the value is true, the PVC must fall within the range.
Range Name	Provides a unique name for the PVC range associated with the subscriber.
PVC Range	Numerically identifies the range of PVCs associated with the subscriber.
VPI/VCI	Defines the virtual path identifier and the virtual channel identifier within a PVC.
Encap Type	Sets the ATM encapsulation type. The value is either MUX or SNAP. The system displays this option <i>only</i> when the subscriber connects to the network over an ATM device using either a LACPPPoA or a PTAPPPoA profile.
QoS Type	Sets the quality of service (QoS) for the PVC associated with a subscriber. The possible values are: <ul style="list-style-type: none"> ubr—unspecified bit rate abr—available bit rate cbr—committed bit rate vbr-nrt—variable bit rate non-real time vbr-rt—variable bit rate real time
QoS Rate	Sets the rate of transmission for network traffic based on the QoS type of the subscriber.
Virtual Template Number	Identifies a virtual template, which is a list of Cisco IOS commands that provide generic configuration for virtual interfaces, that is associated with the subscriber. The system displays this option <i>only</i> when the subscriber connects to the network over an ATM device using either a LACPPPoA or a PTAPPPoA profile.

To Select an Interface

To select an interface, follow these steps:

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- Step 1** On the Subscriber Provisioning–Service Feature Selection page, check **Interface**.
-  **Tip** To select both an interface and a service feature, check **Select All**, if available.
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- Step 2** Click **Next**. The system displays the Subscriber Provisioning – Service Feature Data page
- Step 3** Enter the interface properties, as defined in [Table 8-4](#).
- Step 4** Click **Download Method** to select a method of download the running configuration. The system displays the Subscriber Provisioning - Device Configuration Download dialog box.
- Step 5** From the Download Method drop-down list box, select one of the following:
- Console—downloads the running configuration using the console port of the router.
 - Telnet—downloads the running configuration using a Telnet session.
 - HTTP—Downloads the configuration using the hypertext transfer protocol (HTTP).
 - Deployed—enables you to continue provisioning without downloading the running configuration.
 - File—creates a text file containing the running configuration.
- Step 6** If desired, click one of the following action buttons:
- **Reset Values**—Restores the default values.
 - **Config Preview**—Displays the configuration that BAC generates based on what you have entered.
 - **Show XML**—Displays the user interface components corresponding to the template variables for the service feature data that you have entered.
 - **Show Template**—Displays the provisioning template.
- Step 7** Click **Next** to download the subscriber configuration. The system displays a dialog box asking if you want to proceed with the downloading operation.
- Step 8** Click **Finish** to continue. The system redisplay the Subscriber List page in the main window. The status of the subscriber is provisioned.
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Selecting Service Features

Select a service feature to associate a subscriber with a router and set the class of service that the subscriber receives.

About Service Features


When you select a service, you set the specify the feature information using the fields listed in [Table 8-5](#).

Table 8-5 Service Feature Fields

Field	Description
Select Device	A text box that in which you associate a subscriber with a router. You can enter the fully distinguished name (FDN) of the device, or you can click the Select (...) button next to the text box to browse for the device. Note The device you select must have RADIUS service provisioned on it.
Service ID	Identifies the services available on the router. For example, you might select Gold. The service identifier corresponds to the service name that you define when you create a Service resource from the Network Services tab. For more information, see Chapter 5, “Managing Network Services.”

To Select a Service Feature

To select a service feature, follow these steps:

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- Step 1** On the Subscriber Provisioning–Service Feature Selection page, check **Service**.
-  **Tip** To select both an interface and a service feature, check **Select All**.
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- Step 2** Click **Next**.
- Step 3** Set the service feature as follows:
- In the Select Device field, enter the FDN for the device you want to associate with the subscriber; or, to browse for a device, click the **Select (...)** button. The system displays a popup selection window.
 - In the popup selection window, select a device, expanding the network hierarchy as needed, and click **Select**. The system redisplay the Subscriber Provisioning–Service Feature Data page.
 - To browse for a subinterface click the **Select (...)** button. The system displays a popup selection window.
 - In the popup selection window, select
 - Click **Download Method** to select a method of download the running configuration. The system displays the Subscriber Provisioning - Device Configuration Download dialog box.
 - From the Download Method drop-down list box, select one of the following:
 - Console—downloads the running configuration using the console port of the router.

- Telnet—downloads the running configuration using a Telnet session.
- HTTP—Downloads the configuration using HTTP.
- Deployed—enables you to continue provisioning without downloading the running configuration.
- File—creates a text file containing the running configuration.

Step 4 If desired, click one of the following action buttons:

- **Reset Values**—Restores the default values.
- **Config Preview**—Displays the configuration that BAC generates based on what you have entered.
- **Show XML**—Displays the user interface components corresponding to the template variables for the service feature data that you have entered.
- **Show Template**—Displays the provisioning template.

Step 5 Click **Next** to download the subscriber configuration. The system displays a dialog box asking if you want to proceed with the downloading operation.

Step 6 Click **Finish**.

Viewing Subscriber Events

BAC uses the Cisco CNS Notification Engine application to gather and report on network and device events and their impact on subscribers. Notification Engine is not bundled with BAC, so to take advantage of this capability, you must install it. For more information, see the *Broadband Access Center for Broadband Aggregation Installation and Configuration Guide* and the *CNS Notification Engine Installation and User Guide*.

With Notification Engine installed, you have access to its event browser. This browser has the ability to partition the way it displays events. This means that a service provider can view only those events within its domain. You can view the subscribers impacted by an event and query the status of a subscriber.

About Events

When you view events, you work with the fields defined in [Table 8-6](#).

Table 8-6 Event Browser Fields

Field	Description
Event Time	The time when the event was received by the Notification Engine server. If an event occurs in another time zone, the time is converted to your local time.
Severity	The severity of the event, with color-coding applied to events of differing severities: <ul style="list-style-type: none"> • Fatal/Critical (color-coded in red) • Major (color-coded in orange) • Minor (color-coded in yellow) • Information (color-coded in white) • Other/Unknown (color-coded in blue)
Event Status	The current status of the event.
Impacted Subscriber	The number of impacted subscribers
Source	The fully distinguished name (FDN) of the managed element that reported the event.
Description	A description of the event.
Repeat Count	The number of times the event has been reported.

To Display Events

To display events, follow these steps:

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- Step 1** Click the **Subscriber** tab. The system displays the Service Provider Inventory page in the content area of the main window.
- Step 2** To display subscriber events:
- In the subtask bar, click Subscriber Management. The system displays the Subscriber List page in the main window.
 - In the Object Selector, select the service provider or subscriber group for the subscriber. If necessary, expand the hierarchy to display the appropriate subscriber group.
 - On the Subscriber List page, select the subscriber who has an event that you want to view.
 - Click **View Events**. The system displays the Event Management page in the main window.

- Step 3** To view unresolved events that might affect your subscribers, click **View Active Events**; or, to view unresolved events and historical events, click **View All Events**.
- Step 4** Use the table of contents (TOC) on the left, to:
- Set your preference about how often events are refreshed and what column to use as the default for sorting events.
 - View details about a selected event.
 - Refresh events.
 - Reload events from you database
 - View more detail about impacted subscribers.
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