C H A P T E R **2**

Before Installing Broadband Access Center

This chapter describes the requirements and dependencies for installing Cisco BAC successfully.

This chapter describes:

BAC Components

The BAC component installation program prompts you to install either or both of the following components:

- Regional Distribution Unit (RDU).

    The RDU is the primary server in the BAC provisioning system. You should install the RDU on a Solaris 10 server that meets the requirements described in the Minimum Hardware Requirements, page 1-2.

    The RDU:

    – Generates instructions that direct responses from the provisioning group to various customer premises equipment (CPE).

    – Processes application programming interface (API) requests for all BAC functions.

    – Manages the BAC system.

> **Note** The installation program preloads the required data into the RDU database, and starts the RDU daemon through the BAC watchdog process. The SNMP agent and the administrator GUI are installed for the RDU.
> For details on configuring the SNMP agent, see the *Cisco Broadband Access Center DPE CLI Reference, Release 3.5*. For information on the BAC watchdog process and the administrator GUI, see the *Cisco Broadband Access Center Administrator's Guide, Release 3.5*.

- Device Provisioning Engine (DPE).

  The DPE is the major component of the provisioning group, handling all device interactions with the RDU.

  The DPE:

  – Caches instructions generated at the RDU.

  – Manages the CPE WAN Management Protocol (CWMP) and communicates with the TR-069 enabled devices.

  Note The installation program installs a CLI on your system to help configure the DPE. The BAC watchdog process and the SNMP agent are installed for the DPE also. For information on configuring the DPE and SNMP agent, see the *Cisco Broadband Access Center DPE CLI Reference, Release 3.5*.

Installation and Startup Process

To ensure a smooth installation and startup process, complete the following steps:

Step 1 Determine the computers and the servers on which you need to install the individual components of BAC.

Step 2 Verify the file system block size of the directory in which you intend to install the BAC database and the database transaction log files (see the Database Requirements, page 2-4).

Step 3 Review the installation checklist (see the Installation Checklist, page 2-6).

Step 4 Install the RDU. Ensure that you:

- Know the target location for the following directories:

  – Home Directory

  – Data Directory

  – Database Transaction Logs Directory

- Verify the existence of a text file called *log.txt*, which indicates that errors occurred during the installation process. This file is located under the *BPR_HOME* directory.

Step 5 Install a DPE. Ensure that you know the target location for the following directories:

- Home Directory

- Data Directory

  Note If you exit the BAC installation after the database is installed, you must uninstall the *BPR_HOME* and the *BPR_DATA* directories before you install BAC again.
  (For information on uninstallation, see the Uninstalling Broadband Access Center, page 5-1.)
  Also, stopping the installation mid-way does not generate the log file.

  If you rerun the installation without uninstalling the specified directories, you cannot change the location of the *BPR_DATA* or the *BPR_DBLOG* directories.

Step 6 After you install the RDU, ensure that you:

- Obtain a valid BAC license key for each technology that you provision, specifically for the CWMP and DPE component.

> ✎
> **Note**   If you have not received your licenses, contact your Cisco representative before you proceed further.

- Launch the BAC administrator user interface to verify if the RDU is running.

  - To launch the administrator user interface, enter the administrator's location by using this syntax:

    ```
    http://machine_name:port_number/
    ```

    where *machine_name* identifies the computer on which the RDU is running.

    > ✎
    > **Note**   To access the administrator user interface using HTTP over SSL/TLS, enter
    > ```
    > https://machine_name:port_number/
    > ```

    The server-side of the administrator application runs on a computer port. By default, this port number is set at 80 for HTTP and 443 for HTTP over SSL/TLS.

    The main login page appears.

  - Change the BAC administrator password.

    To change the password, enter the default username (**bacadmin**) and password (**changeme**). Click **Login**.

    The **Change Password** screen appears and prompts you to change the default password. Enter a new password, and click **Login**.

Step 7   Optionally, configure the syslog file for alerts (see the Configuring the Syslog Utility to Receive BAC Alerts, page 6-1).

> ✎
> **Note**   You can set up the syslog file on any BAC component server.

Step 8   After you install the DPE, ensure that you:

- Change the DPE login password and the enable password from the CLI.

  - To change the login password, access the CLI in the enabled mode, and enter:

    ```
    dpe# password password
    ```

    where *password* identifies the new DPE password.

  - To change the DPE enable password, enter the following command:

    ```
    dpe# enable password password
    ```

    where *password* identifies the local configured password currently in effect or, optionally, provides a new password. If this parameter is omitted, you are prompted for the password.

    For more information, see the *Cisco Broadband Access Center DPE CLI Reference, Release 3.5*.

- Configure the DPE from the CLI. For more information, refer to the *Cisco Broadband Access Center DPE CLI Reference, Release 3.5*.

Step 9   Optionally, configure the syslog file for alerts (see the Configuring the Syslog Utility to Receive BAC Alerts, page 6-1).

✎

Note   You can set up the syslog file on any BAC component server.

Database Requirements

Before you install BAC, check the following:

- File System Block Size, page 2-4.
- Support for Large Files, page 2-5.

File System Block Size

For optimum performance and reliability of the BAC database, configure the file system or systems that contain the database files and database transaction log files with an 8-KB block size or greater. If your system configuration does not support an 8-KB block size, then configure the block size in multiples of 8 KB; for example, 16 KB or 32 KB.

The installation program prompts you to specify a directory in which you prefer to install database files and database transaction log files; these directories are identified in BAC with system variables *BPR_DATA* and *BPR_DBLOG*, respectively.

To verify that a directory resides on a file system with a minimum 8-KB block size:

Step 1   Run the UNIX **mount** command without any parameters to determine on which file system device the directory resides. The default directory is */var/CSCObac*.

For example:

```
# mount
/var on /dev/dsk/c0t0d0s4 read/write/setuid/intr/largefiles/onerror=panic/dev=2200004 on
Mon Nov 26 08:07:53
```

In this example, the file system device is */dev/dsk/c0t0d0s4*.

Step 2   To determine the block size of the file system, use the **df** command.

For example:

```
# df -g /dev/dsk/c0t0d0s4
/var     (/dev/dsk/c0t0d0s4 )    8192 block size      1024 frag size
        961240 total blocks      851210 free blocks    755086 available    243712 total
files
        239730 free files       35651588 filesys id    ufs fstype        0x00000004
flag           255 filename length
```

In this example, the block size is 8192 bytes, which is 8 KB. The block size of the selected directory, therefore, is correct.

Support for Large Files

Ensure that the file system in which you place database files is configured to support files larger than 2 GB.

To verify large file support:

Step 1   Run the UNIX **mount** command without parameters.

Step 2   Note whether the intended file system contains the keyword **largefiles**.

For example:

```
# mount
/var on /dev/dsk/c0t0d0s4 read/write/setuid/intr/largefiles/onerror=panic/dev=2200004 on
Mon Nov 26 08:07:53
```

In this example, the output contains the keyword **largefiles**. This file system, therefore, can support files greater than 2 GB.

Required Port Information

Before you install BAC, determine the ports on which the BAC components, the RDU and the DPE, listen during communication with each other or with the CPE.

The installation program checks for the availability of all ports: both configurable and nonconfigurable.

If the port that you have specified is unavailable, the installation program displays a message; otherwise, the message similar to the following one appears:

```
Not a valid port number
```

In the case of a nonconfigurable port, the installation program notifies you and exits the program without making any changes to the system.

Table 2-1 lists the required external inbound ports and their default values.

Table 2-1   Default External Inbound Ports Used by BAC Components

Component	Default Port Number	Protocol	Configurable	Used by
RDU	161	UDP	No	SNMP Get
RDU	49187	TCP	Yes	DPE and API access
RDU	80	TCP	No	Admin Web UI HTTP
DPE	49186	UDP	Yes	CPE Prov Group locator
DPE	2323	TCP	Yes	DPE CLI

Table 2-1   Default External Inbound Ports Used by BAC Components (continued)

Component	Default Port Number	Protocol	Configurable	Used by
DPE	7547	TCP	Yes	TR-069 CWMP 1
DPE	7548	TCP	Yes	TR-069 CWMP 2
DPE	7549	TCP	Yes	HTTP File Service 1
DPE	7550	TCP	Yes	HTTP File Service 2

Table 2-2 lists the external outbound ports and their default values.

Table 2-2   Default External Outbound Ports Used by BAC Components

Component	Number	Protocol	Configurable	Used by
RDU	162	UDP	No	SNMP Traps
DPE	49186	UDP	Yes	CPE Prov Group locator
DPE	162	UDP	Yes	SNMP Traps

Table 2-3 lists the internal ports and their default values.

Table 2-3   Default Internal Ports Used by BAC Components

Component	Number	Protocol	Configurable	Used by
RDU	49887	TCP	Yes	Internal watchdog and SNMP agent communication
DPE	49887	TCP	Yes	Internal watchdog and SNMP agent communication
RDU	8001	SNMP (UDP)	Yes	SNMP Internal
DPE	8001	SNMP (UDP)	No	SNMP Internal

Installation Checklist

Before you run the installation program, use the following checklist to ensure your readiness. In addition, see the Installation Notes, page 3-1.

1. Verify the prerequisite system hardware and software requirements described in the Introduction, page 1-1.

2. Ensure that you have *root* access to the computers on which you intend to install BAC components.

3. Have your BAC license key or keys at hand. You need a valid license key for each technology that you want to provision with BAC, namely CWMP and the DPE.

4. Determine the home directory (*BPR_HOME*) on which you want to install the BAC component or components. The default directory is */opt/CSCObac*.

    Note   We recommend that you have at least 350 MB of disk space available for the home directory. For detailed information, see the Installation Notes, page 3-1.

5. For the RDU, determine where you want to install the data directory (*BPR_DATA*) and the database transaction logs (*BPR_DBLOG*). The default directory is */var/CSCObac*.

    Note   We recommend that you install the database transaction logs on a different physical disk than the home directory or the data directory. For detailed information, see the Installation Notes, page 3-1.

6. BAC servers use the same password for all the components in your network. This password is used as a token to authenticate communication between the different components of the BAC server. Enter the shared secret password used by the BAC components for the RDU in the network. The shared secret password is the same for all BAC servers in your network.

Note   To find a list of BAC installation parameters, see the Installation Worksheet, page B-1.