



# Release Notes for Cisco Broadband Access Center 2.7.1

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**June 21, 2007**

These release notes describe new software features and fixes to software issues in Cisco Broadband Access Center, Release 2.7.1.

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## Introduction

Cisco Broadband Access Center, referred to as BAC throughout this document, automates the tasks of provisioning and managing customer premises equipment (CPE) in a broadband service-provider network. The application provides a simple and easy way to deploy high-speed data, voice technology, and home networking devices.

BAC can be scaled to suit networks of virtually any size, even those deploying millions of devices. It also offers high availability, made possible by its distributed architecture with centralized management.



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# System Components

The BAC product comprises:

- The Regional Distribution Unit (RDU), which is the primary server in a BAC deployment. Through its extensible architecture, the RDU supports the addition of new technologies and services.
- The Device Provisioning Engine (DPE), which handles all device interactions with the RDU. The DPE server is available as:
  - A software DPE that is installed on a Solaris SPARC computer.
  - A rack-mountable DPE-2115 appliance with the BAC software already installed on it.
- Cisco Network Registrar extension points, which are the link between BAC and Network Registrar. Network Registrar provides BAC with the DHCP and Domain Name System (DNS) functionality.
- The Key Distribution Center (KDC), which is a Kerberos server that authenticates PacketCable Media Terminal Adapters (MTAs).
- An administrator user interface from which you can monitor and manage BAC.
- A sample user interface, which you can use to demonstrate BAC power and flexibility.
- A Java provisioning application programming interface (API), which you use to integrate BAC into an existing operations support-system environment.

## Before Installing BAC 2.7.1

Review the following critical information before you begin to install BAC 2.7.1.

- [System Requirements, page 2](#)
- [Licensing Requirements, page 3](#)
- [Installation Notes, page 3](#)
- [Upgrade Notes, page 4](#)

## System Requirements

To successfully install BAC software on your system, you must meet these requirements:

- Operating System—You must have Solaris 8 or 9 running on your system.
- Network Registrar—You must have Network Registrar version 5.5.12 or later installed on the servers on which you are installing BAC extensions.



**Note** Cisco recommends that you install Network Registrar version 6.2.3.2 or later. Running BAC with a version earlier than 6.0.3 restricts you from using certain features available in this 2.7.1 release.

- Administrator User Interface—At a minimum, you must have Microsoft Internet Explorer 6.0 (Service Pack 2) or Netscape 4.7.
- API client
  - Ensure that you install Java 1.5 to support the API client in release 2.7.1. API clients in versions earlier than 2.7.1, however, support JRE versions earlier than 1.5.
  - Ensure that the files *bpr.jar* and *bacbase.jar* are available in the classpath.

For detailed information on system requirements, refer to the *Installation and Setup Guide for Cisco Broadband Access Center, 2.7.1*.

## Licensing Requirements

You must have a valid license key to successfully provision devices that use BAC. These licenses are specific to:

- The following BAC components:
  - DPE
  - KDC, if you configure your network to support voice technology.
- Each technology that you provision.



**Note** If you have not yet received your licenses, contact your Cisco representative.

## Installation Notes

Review the following notes before installing BAC 2.7.1.

- Ensure that your systems meets the requirements described in [System Requirements, page 2](#).
- Ensure that you download and install the recommended patches from the Sun Microsystems support site.
- Obtain a valid BAC license key for each technology that you provision. This includes the DPE and the KDC components. If you have not yet received your licenses, contact your Cisco representative.
- Verify the file-system block size of the directory in which you intend to install the BAC database and database transaction log files. For optimum performance and reliability of the BAC database, configure the file system or systems that contain the database files and database log files with an 8-KB or greater block size.
- Ensure that the file system in which you place database files is configured to support files larger than 2 GB.

For complete information on installation procedures, refer to the *Installation and Setup Guide for Cisco Broadband Access Center, 2.7.1*.

## Upgrade Notes

Review the following notes before upgrading to BAC 2.7.1 from a previous release.

- If you are upgrading from a BAC release earlier than Broadband Access Center for Cable (BACC) 2.6.2.x, you must first upgrade your system to BACC 2.6.2. You cannot upgrade directly to 2.7.1 from a version preceding 2.6.2.
- This release does not support the DPE-590 appliance. You can, however, upgrade the DPE-590 to BACC 2.7, which is compatible with a BAC 2.7.1 RDU.
- Before upgrading the new BAC version, you must back up the database files by running the **backupDb.sh** tool. For detailed information, refer to the *Cisco Broadband Access Center Administrator Guide, 2.7.1*.
- If you are upgrading from:
  - BAC 2.7.x, you do not need to migrate the RDU database.
  - BAC 2.6.2.x, you must migrate the RDU database. You can use the RDU database migration script to migrate your RDU database from BACC 2.6.2.x to BAC 2.7.1.
- You must upgrade to BAC 2.7.1 in the order specified below. Performing the upgrade in any other order results in errors during provisioning.

First complete the preliminary upgrade procedure, then upgrade the components in this order:

- a. RDU
- b. Solaris DPE
- c. Hardware DPE
- d. Network Registrar extensions
- e. KDC

For complete information on upgrading, refer to the *Cisco Broadband Access Center Installation Guide, 2.7.1*.

## New Features

This section briefly describes new or modified features found in the BAC 2.7.1 release.

### Logging of Batch Operations

In this release, the RDU has been enhanced to record additional messages when logging of informational messages is enabled. These messages expose batch-processing operations that were previously not logged. Messages related to batch processing have been enhanced to contain information on elapsed time and rate to provide an indicator of RDU load and performance.

### Enforcing Attribute Requirements for Configuration Generation

In the release, BAC extensions installed on Network Registrar have been enhanced to send requests to the RDU for device configuration only if the request meets the values required by the RDU. If the request does not specify the required value, Network Registrar extensions reject devices from triggering a request for configuration generation.

This feature supports a property containing a list of Network Registrar DHCP option names that must be present in the DHCP Discover to allow BAC extensions to send a request to the RDU for a device configuration.

## IP Lease Reservation

Although this feature was supported in previous BAC releases, in this release, this feature is supported only when Network Registrar, version 6.1.2.3 or later, is in use with the Regional CCM feature that is deployed.

The Lease Reservation feature in BAC 2.7.1 works only in scenarios involving a single Network Registrar DHCP server with no failover configured. This feature is not supported in cases involving failover DHCP servers.

## Automated Migration

The BAC 2.7.1 release supports the automatic migration of the RDU datastore from BACC 2.6.2.x and 2.7.

## Caveats

For information on the complete list of BAC bugs, see the *BAC271\_BugList.html* file in the *docs/* subdirectory of the BAC CD-ROM or at the BAC software download site on Cisco.com.

**Note**

To obtain more information about known problems, access the Cisco Software Bug Toolkit at <http://www.cisco.com/cgi-bin/Support/Bugtool/home.pl>.

You must have a valid Cisco Connection Online (CCO) account to access the software bug toolkit.

- [Table 1](#)—Describes the major bugs fixed in this release.
- [Table 2](#)—Describes the open bugs in this release.

## Fixed Bugs in BAC 2.7.1

[Table 1](#) lists major software issues fixed in this release of BAC.

**Table 1** *Bugs Fixed in BAC 2.7.1*

CDETS Number	Symptom/Condition/Workaround
CSCeg74679	<p>When you plug a computer into a different cable modem, the Behind Device field on the computer does not update with the MAC address of the new modem.</p> <p><b>Workaround:</b> Include the attribute <code>/cnrExtension/attributesToValidateOnBroadcast=relay-agent-remote-id</code> in the comma-separated list of properties in the <i>cnr_ep.properties</i> file. This properties file resides in the <i>BPR_HOME/cnr_ep/conf</i> directory.</p> <p>Also, ensure that you include this attribute in all Network Registrar DHCP servers on your network.</p>
CSCsb36948	The checkpoint algorithm fails to run, causing the number of outstanding database log files to increase to over 100, subsequently impacting performance.
CSCsb41429	Under heavy load, the RDU drops batch submissions from the API client without informing the client. When the API client does not specify a timeout, it is blocked forever.
CSCsb51941	The RDU reloads, generating the <code>java.lang.OutOfMemoryError: unable to create new native thread</code> in the native method <code>java.lang.Thread.start</code> .
CSCsc25046	The RDU may clear the results of new reliable batches before older results. This condition occurs because batch IDs are added to the end of the list of complete batches, instead of in the order of time, with older batches in the front.
CSCsc26431	Configuration generation for devices without device detection information fails, subsequently impacting RDU performance. This condition occurs when there is no value for the DHCP Option <code>relay-agent-remote-id</code> , without which the RDU cannot generate a configuration for a device.
CSCsc43493	The RDU log records an illegal attempt to start a transaction while removing a journal. This behavior occurs when the RDU is restarted even while it is loaded with batches containing device reset commands.
CSCsc51478	<p>The optimization algorithm used by the database flusher may become confused, causing RDU batch processing to drop to 8.5 batches a second, down from 200–300 batches a second.</p> <p><b>Workaround:</b> In releases earlier than 2.7.1, change the default maximum delay value for the flusher specified in the <i>BPR_HOME/rdu/conf/rdu.properties</i> file. Set the value of the <code>/db/flush/delay/max=25</code> property to 25 msec instead of the default 2000 msec.</p>
CSCsc53108	<p>The API client creates multiple connections to the RDU. This behavior occurs because connections to the RDU are keyed using the FQDN and IP address. If the FQDN or the IP address is changed or is different, the API may create multiple connections to the RDU.</p> <p>In this release, the connection key is the IP address, which reflects the actual TCP connection. If the DNS name changes, a new connection is not created. This change, however, means that if you use two different IP addresses, two connections will be made.</p>

**Table 1** Bugs Fixed in BAC 2.7.1 (continued)

CDETS Number	Symptom/Condition/Workaround
CSCsc77316	The log manager fails on RDU startup, with the RDU console log failing to record the Java error stack traceback.
CSCsd11745	<p>The class of service properties that the 2.7.x RDU supports for dynamic DOCSIS version selection differ from the properties that the 2.6.x custom extensions use for a similar feature.</p> <p>While 2.7.x releases use:</p> <ul style="list-style-type: none"> <li>• /cos/docsis/file/1.0</li> <li>• /cos/docsis/file/1.1</li> <li>• /cos/docsis/file/2.0</li> </ul> <p>2.6.x custom extensions use:</p> <ul style="list-style-type: none"> <li>• /cos/docsis10/file</li> <li>• /cos/docsis11/file</li> <li>• /cos/docsis20/file</li> </ul>
CSCsd13578	The exception that the RDU generates following a regeneration failure, involving a non-ASCII value for DHCP Option 60, does not contain enough information to diagnose the issue. This release resolves this issue by logging regeneration errors at the critical severity level.
CSCsd25756	With encryption for the MTA configuration file enabled via the <b>packetable registration encryption</b> command on the DPE CLI, the SNMPService does not send the configuration hash key as expected. Subsequently, the MTA is unable to process an encrypted file.
CSCsd47774	MIB support that defines management IP and access controls in SNMP v2 for Basic PacketCable deployments is not available. This release adds MIB support for Basic PacketCable deployments using <b>SNMP-COMMUNITY-MIB</b> and <b>SNMP-TARGET-MIB</b> .
CSCsd64677	The <b>Servers &gt; RDU &gt; View Regional Distribution Unit</b> page on the administrator user interface displays a negative value for Average Processing Time under PACE Statistics.
CSCsd96158	In a provisioning group with more than 2 million devices, the RDU generates an <b>OutOfMemoryError</b> during DPE synchronization.
CSCsd96162	<p>In a provisioning group with 2 million devices, the RDU does not respond to requests, sometimes for as long as 30 minutes. This behavior occurs if you are using the Java 1.4.1 garbage collector.</p> <p><b>Workaround:</b> Upgrade to Java 1.4.2 or later.</p>
CSCsd96170	When sending the results of a synchronization batch to a DPE, the RDU uses a small buffer with an initial size of 8 KB for batch results that could be larger than 32 MB. This behavior impacts RDU scalability.
CSCsd96177	The TFTP server fails to validate filenames. In this scenario, the TFTP server does not detect an invalid request and records unprintable characters in the log file.
CSCsd98792	<p>The default <i>oui.dat</i> file, which resides in the <i>BPR_HOME/rdu/conf</i> directory, does not reflect the most current vendor IDs of newer DOCSIS and PacketCable modems, specifically Arris and Motorola.</p> <p><b>Workaround:</b> Manually update the file.</p>

**Table 1** Bugs Fixed in BAC 2.7.1 (continued)

CDETS Number	Symptom/Condition/Workaround
CSCse02448	The DPE terminates with an <code>OutOfMemory</code> exception, thereby causing reregistration with the RDU. This error occurs due to memory leaks in the Java Native interface, in which memory resources are not relinquished after use.
CSCse13961	BAC may sporadically report incorrect PACE statistics.
CSCse13975	The PACE worker thread does not rename itself to include batch IDs to indicate which batches are being worked on in the thread dumps.
CSCse17566	When you click the view icon of a DOCSIS file, via the <b>Configuration &gt; External Files &gt; View External Files</b> page on the administrator user interface, the RDU logs an <code>ArrayIndexOutOfBoundsException</code> .
CSCse21846	The PACE connection API client fails to notice that the connection to the RDU has terminated and, subsequently, does not reconnect.
CSCse25930	When the wrong extension type is used for an extension point, the RDU goes into an unpredictable state. For example, if you set the DOCSIS configuration generation extension property to point to the custom disruption extension, the change is rejected—which is expected behavior. But because this configuration is invalid, it leaves internal caches in the RDU in the wrong state.
CSCse30095	The DPE times out while waiting to synchronize files with the RDU. This condition occurs when the RDU is required to synchronize several files in a large deployment. In this scenario, the DPE times out and resubmits file synchronization batches, causing the overall time for DPE synchronization to take several hours.
CSCse30121	When the RDU fails because of an internal error, it does not provide any information on the state of batch processing for diagnostic purposes.
CSCse31162	Log messages do not display the commands contained in batches.
CSCse42075	SNMP cloning was not scalable in previous BAC releases. This release enhances the implementation of SNMP cloning to be more reliable and scalable.
CSCsg18089	You cannot access privileged pages, such as <code>/adminui/CLogin.jsp</code> , <code>/adminui/PAUsr.jsp</code> , and <code>/adminui/PDUsr.jsp</code> , on the administrator user interface if you are not logged in to that web interface.
CSCsg72987	The DPE reports a <code>NullPointerException</code> when it receives a checksum error on authenticator while processing an AP Request (AP-REQ) from an eMTA.
CSCsg72998	The DPE reports an <code>IndexOutOfBoundsException</code> during an AP Request (AP-REQ) from an eMTA.

## Open Bugs in BAC 2.7.1

[Table 2](#) lists major open issues in this release of BAC.

**Table 2** *Bugs Open in BAC 2.7.1*

CDETS Number	Description	Workaround/Resolution
CSCef90805	You cannot delete a property using the <code>changeProperty</code> API call, and then add the property back in the same call.	Delete and add the property using separate API calls.
CSCeg61170	After upgrading from BACC 2.6.2 to BACC 2.7.1, the installation program sometimes overwrites the <code>rdt.properties</code> file, found in the <code>BPR_HOME/rdt/conf</code> directory. When this occurs, you lose properties related to logging and tracing.	After the upgrade is complete, manually configure logging and tracing using the <code>setLogLevel.sh</code> tool.
CSCeg87139	When the TFTP server receives a bad Ack for a previous data block but not for the one that was sent out last, it automatically resends the data block instead of waiting for the real Ack.	Currently, there is no workaround for this issue.
CSCeh03452	The syntax that the <code>runCfgUtil.sh</code> tool uses does not allow generation of options in cases of nested suboptions.  For example, when using DOCSIS 2.0 Option 41:  41. 41.1 41.1.1 30 41.1.2 10000000 41.1 41.1.1 30 41.1.2 20000000 41. 41.2 41.2.1 30 41.2.2 30000000	Break multiple suboptions into multiple groups. According to the DOCSIS 2.0 RF spec, this definition achieves the same result:  41. 41.1 41.1.1 30 41.1.2 10000000 41. 41.1 41.1.1 30 41.1.2 20000000 41. 41.2 41.2.1 30 41.2.2 30000000
CSCeh25095	You cannot upgrade the DPE or Network Registrar extension points using the <code>setup.bin</code> package. If you try to upgrade using <code>setup.bin</code> , no error message indicates this restriction.	Use the upgrade scripts supplied with BAC to upgrade these components.
CSCeh49666	The <code>/snmp/mibs/mibList</code> property expands the list of MIBs that are to be loaded at the RDU. This property, which is set in the <code>BPR_HOME/rdt/conf/rdt.properties</code> file, overrides the internal default MIB list in the RDU, causing configuration generation to fail.	Populate the value of the property to include the default MIB list and the custom lists.

**Table 2** Bugs Open in BAC 2.7.1 (continued)

CDETS Number	Description	Workaround/Resolution
CSCei01669	The BAC 2.7.1 installation package ( <i>setup.bin</i> ) fails to detect and upgrade the BACC 2.6.x KDC installed on the system.	Uninstall the 2.6.x KDC, then install the new 2.7.1 KDC.
CSCei31988	Upgrading the KDC from BACC 2.6.x to BAC 2.7.1 is unsuccessful, with the BAC process watchdog ( <i>bprAgent</i> ) failing to start the KDC.	Install the BAC 2.7.1 KDC from the installation program, instead of upgrading from an earlier version.
CSCsc22864	<p>The RDU server does not respond to API requests for extended periods of time, especially after the server is restarted or if network connectivity is interrupted.</p> <p>The behavior occurs when:</p> <ul style="list-style-type: none"> <li>• Many DPEs and Network Registrar extensions try to register with the RDU at the same time.</li> <li>• DPE servers are synchronizing files and the RDU contains many files.</li> </ul>	<p>Block DPE access to the RDU before restarting the RDU. After all the Network Registrar extensions have registered, unblock one DPE at a time, allowing each server to register and synchronize before you unblock the next one.</p> <p><b>Note</b> When you block a DPE from accessing the RDU, the DPE will not receive new or updated device configurations and files.</p>
CSCsd23070	When you run the uninstaller, the uninstallation program removes the soft links under the <i>BPR_HOME</i> directory, and the files and folders to which the soft link points.	Currently, there is no workaround for this issue.
<p><b>Note</b> The <i>BPR_HOME</i> directory is the root installation directory, the one in which you install the BAC components. The default home directory is <i>/opt/CSCObr</i>.</p>		
CSCse98518	When the DPE sends a <i>KRB_AP_ERR_SKEW</i> error to the MTA, to address the clock skew at the MTA, the MTA rejects the error message because it detects an incorrect checksum.	Currently, there is no workaround for this issue.
CSCsi69209	When you browse the last entry in a MIB via a get-next in the Adventnet MIBBrowser, no data is made available.	Restart the RDU process using the <b>/etc/init.d/bprAgent restart rdu</b> command.

**Table 2** Bugs Open in BAC 2.7.1 (continued)

CDETS Number	Description	Workaround/Resolution
CSCsj03649	<p>Device configuration is not automatically updated following certain system-wide configuration changes.</p> <p>When you change technology defaults or system properties, the Configuration Regeneration Service (CRS) does not regenerate configurations for all the devices that may be impacted.</p> <p>For example, changing the default DHCP Criteria for a CPE in system properties does not regenerate devices associated with the previous DHCP Criteria. Similarly, changing extension classes does not trigger the CRS to automatically regenerate a configuration for the device.</p> <p><b>Note</b> This condition does not occur when you change the default Class of Service and the default DHCP Criteria.</p>	<p>Use any one of the following workarounds:</p> <ol style="list-style-type: none"> <li>1. Trigger the CRS by submitting any change to the relevant Class of Service or DHCP Criteria objects.</li> <li>2. Avoid using policies on technology defaults and at the system level when you can set the same policy on Class of Service or DHCP Criteria objects.</li> <li>3. Submit batches via the API to regenerate specific sets of devices.</li> </ol>
CSCsj12710	<p>Errant eMTA generates invalid MAC address, resulting in an invalid USM Name being generated by the DPE PacketCable service.</p> <p>This condition may occur because of poor network conditions, coupled with corrupt eMTA firmware images.</p>	Isolate the eMTA generating the invalid MAC address.

## Related Documentation

These related guides support this release of the BAC product:

- *Cisco Broadband Access Center Administrator Guide, 2.7.1*
- *Installation and Setup Guide for Cisco Broadband Access Center, 2.7.1*
- *Cisco Broadband Access Center DPE CLI Reference, 2.7.1*
- To support the DPE-2115:
  - *DPE-2115 Recovery CD-ROM Release Notes*
  - *Installation and Setup Guide for the Cisco 1102 VLAN Policy Server*

[http://www.cisco.com/en/US/products/sw/secursw/ps2136/products\\_installation\\_and\\_configuration\\_guide\\_book09186a00801f0d02.html](http://www.cisco.com/en/US/products/sw/secursw/ps2136/products_installation_and_configuration_guide_book09186a00801f0d02.html)



**Caution**

Refer to the Cisco VLAN Policy Server guide only for port and connector identification, and to perform hardware installation. Do not attempt to perform any of the configuration instructions found in the VLAN Policy Server guide.

- *Release Notes for Cisco Network Registrar 6.2.3*
- *Cisco Network Registrar User's Guide, 6.2.1*
- *Cisco Network Registrar CLI Reference, 6.2.1*
- DOCSIS 2.0 Specification SP-RFIV2.0-I03-021218
- PacketCable MTA Device Provisioning Specification PKT-SP-PROV1.5-I02-050128
- CableHome CH-SP-CH1.0-I05-030801

## Notices

The following notices pertain to this software license.

### OpenSSL/Open SSL Project

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>).

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes software written by Tim Hudson (tjh@cryptsoft.com).

### License Issues

The OpenSSL toolkit stays under a dual license, i.e. both the conditions of the OpenSSL License and the original SSLeay license apply to the toolkit. See below for the actual license texts. Actually both licenses are BSD-style Open Source licenses. In case of any license issues related to OpenSSL please contact openssl-core@openssl.org.

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The implementation was written so as to conform with Netscapes SSL.

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