# Cisco Broadband Access Center 3.8 Release Notes

These release notes contain details on new software features, bug fixes, and documentation for Cisco Broadband Access Center (Cisco BAC), Release 3.8.

# Contents

# Introduction

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

With the high-performance capabilities of Cisco BAC, you can scale the product to suit networks of virtually any size, even those with millions of CPE. It also offers high availability, made possible by the product's distributed architecture and centralized management.

Cisco BAC enables you to provision and manage CPE by using the Broadband Forum's CPE WAN Management Protocol (CWMP), a standard defined in the TR-069 specification. Cisco BAC integrates the capabilities defined in TR-069 to increase operator efficiency and reduce network-management problems.

Cisco BAC supports devices based on the TR-069, TR-098, TR-104, TR-106, and TR-196 standards. These devices include Ethernet and ADSL gateway devices, wireless gateways, VoIP ATAs, DLC, and other devices that are compliant with CWMP. For details about the features supported in Cisco BAC 3.8, see New Features in Cisco BAC 3.8, page 3 section.

# System Components

Cisco BAC comprises:

- A Regional Distribution Unit (RDU) that is a software that you install on your server. The RDU is the primary server in a Cisco BAC deployment. Through its extensible architecture, the RDU supports the addition of new technologies and services.

- The Device Provisioning Engine (DPE) that is a software that you install on your server. The DPE server handles all device interactions for the RDU.

- An administrator user interface through which you can monitor and manage Cisco BAC.

- A Java provisioning application programming interface (API). You can use this to integrate Cisco BAC into an existing operations support-system environment. You can use the provisioning API to register devices in Cisco BAC, assign device configuration policies, run CWMP operations on the device, and configure the entire Cisco BAC provisioning system.

- Cisco Network Registrar extensions (CNR extensions), are the links between Cisco BAC and Cisco Network Registrar. You should install this component on all Cisco Network Registrar servers in your Cisco BAC environment. If you are deploying Cisco BAC in a failover environment, ensure that you install the extensions on the failover servers, as well.

- A STUN server that supports a UDP based Connection Request mechanism defined in TR069 Annex G to allow Cisco BAC to initiate a session with a CPE that is operating behind a NAT Gateway.

- The Cisco Access Register (CAR) extensions are the links between Cisco BAC and Cisco Access Registrar. You should install this component on all Cisco Access Registrar servers in your Cisco BAC environment. If you are deploying Cisco BAC in a fail-over environment, ensure that you also install the extensions on the fail-over servers.

# System Requirements

You must have the Solaris 10 or 11, or Linux 5.x or 6.1 operating system installed on your system to use the Cisco BAC software. For information on installation, see the *Cisco Broadband Access Center 3.8 Installation Guide*.

# Licensing Requirements

You require a valid license key to successfully provision devices that use Cisco BAC. These licenses are specific to the:

- CWMP technology
- DPE component
- Feature Pack Licensing

**Note** Feature Pack licensing is required only for Java based DPE Technology extensions. If you have not yet received your licenses, contact your Cisco representative.

# New Features in Cisco BAC 3.8

The new features of the Cisco BAC 3.8 are as follows:

## Non-Root User Support

This feature allows a non-root user to run Cisco BAC on Solaris or Linux server. The non-root users and associated groups should be created prior to the installation as these details are required during the installation. A non-root user can run all the Cisco BAC components, RDU, DPE, CNR extension points, CAR extension points, and STUN.

## Asynchronous Mode for Device Operation

Asynchronous mode facilitates the RDU to execute the asynchronous immediate operation without reserving a PACE thread for the complete operation. The TR-069 IPDevice operations GetParameterValues and GetParamValues RPC can be performed with this mode. This feature increases the RDU efficiency in serving more number of API operation requests.

# Scriptable DPE Extension Support

This feature introduces the Scriptable extension service which facilitates running the java scripts based DPE extensions. When the CPE boots and attempts to establish connection with the DPE, the extension scripts will be executed at the following extension points:

- **IPDevice/extensions/soapRequestSender** - The extension scripts configured are executed, when a request is received from the CPE.

- **IPDevice/extensions/soapResponseSender** - The extension scripts configured are executed, when a response is received from the CPE.

- **IPDevice/extensions/incomingEventViewer** - The extension scripts configured are executed, when the event (existing configuration) is received from the CPE.

- **IPDevice/extensions/outgoingEventViewer** - The extension scripts configured are executed, when the event (required configuration) is sent to the CPE.

These extensions can be configured in the device property hierarchy at Class of Service (CoS), Device, Group, Provisioning group level, and CWMP defaults.

For unregistered devices, the extensions can be configured from the Admin UI at CWMP default level.

These extension scripts are added in the RDU database from the Admin UI or from the API client. The following types of extension scripts are added in the RDU database:

- **DPE Extension scripts** - which provides the main provisioning logic.

- **Helper scripts** - which provides the utility functions, and can be shared by other scripts.

Once the extension scripts are added in the RDU database, the RDU pushes the scripts to the DPE cache. When the CPE boots, and attempts to establish a connection with the DPE, the DPE invokes the scriptable extension service and executes the extensions configured on the device property hierarchy.

This feature also provides the support to load and unload the extensions dynamically without restarting the DPE.

# TR-196 Support

This feature introduces the TR-196 support, which facilitates Cisco BAC to support the TR-196 data models or TR-196 provisioning logic. Cisco BAC template-based mechanism which helps in assigning configurations for devices, is enhanced to support the TR-196 devices in the service provider's network. Cisco BAC provides two additional parameter dictionary files to support the following TR196 data models:

- TR196 Amendment 1

- TR196 Issue 2 and TR-181 Issue 2 Amendment 2

This feature also provides Generally Available (GA) scriptable extensions targeting the residential 3G features of the TR196 data models. In Cisco BAC device property hierarchy, service providers can use the custom properties to configure the extensions and the TR196 data model to be used for any device.

TR-196 support provides the ability to configure additional contents of all extension events, that helps to stop querying the BAC RDU to lookup for additional data.

The support for discovering multiple object instances associated with a parameter, is also available for TR-196 devices.

# Multi-Instance Objects Support

This feature introduces support for discovering and updating the CPE parameters associated with multiple object instances, without specifying the actual instance number. The multi-instance object support in the template, adds the flexibility to apply the configuration on selective object instances.

The RDU functionality is also enhanced to instruct the DPE to discover the multi-instance objects for unregistered devices.

The multi-instance object support is available in the following BAC modules:

- Configuration Management
- Firmware Management
- Parameter Discovery
- Device Operation

Under Provisioning Group, the property **/provGroup/enable/instanceSorting,** when set to *True*, enables you to sort the discovered object instances. This property can be set from the Admin UI and API.

> **Note** This feature is functional, only when the RDU and all the DPEs are upgraded to Cisco BAC 3.8.

# SNMP Traps for Real-Time Device Faults

The fault management module of Cisco BAC facilitates CPEs to raise alarms and send events when any fault occurs. The fault management module can be enhanced to support SNMP trap facility. With the SNMP trap facility, the events received from the CPEs can be converted into SNMP traps and sent to the SNMP manager or Trap receiver.

# SNMP Trap for Cisco BAC Process Watchdog and Tomcat

The Cisco BAC process watchdog can be configured to send SNMP traps to the SNMP manager for all the critical conditions of Cisco BAC components. The critical conditions include:

- BAC process fails to start, restart, or stop
- BAC process stops unexpectedly
- Cisco BAC process watchdog fails to start or stop

# Other Features

This section describes the other new features of Cisco BAC 3.8.

## Device Export Does Not Escape New Line Character

This feature introduces support for exporting the device custom properties in a single line output. The custom properties are defined in multiple lines for a device. When you export the device properties using DeviceExport.sh script, the result is saved in .csv format. This script ignores the new line characters and form feed characters such as /r, HTML tags, and so on, to display the output in a single line.

## BAC API to Retrieve Property Hierarchy Value

This feature introduces a new getDetails API which retrieves the device properties from all levels in the property hierarchy. If you submit the request using * as input in the getDetails API all the properties from the device property hierarchy are retrieved.

The API client uses the Kiwi script for querying the device property hierarchy, using the immediate and on-connect mode.

## Regex Support for BAC Templates

Regular Expression (Regex) provides a conditional way to apply the firmware rules based on the Regex pattern match. Regex pattern is the criteria / range defined for an event. The value of the event returned from the CPE, and the condition specified for the event determine whether the firmware rule is applied to the CPE. The firmware rules are defined in the firmware template with the appropriate event, Regex pattern associated with the event, and the condition for applying the firmware rule.

The following conditions are specified for an event in a firmware rule:

- regexMatch - indicates that the firmware rule is applied, only when the value of the event returned from the CPE matches the specified Regex pattern.
- regexNoMatch - indicates that the firmware rule is applied, only when the value of the event returned from the CPE does not match the specified Regex pattern.

The Regex support is also available in the configuration templates prerequisites.

## IGD Prefix Support

In this release, TR-196 devices support Device or InternetGatewayDevice as the root object.

# Issues

This section lists issues that are either resolved in this release or are still open in Cisco BAC 3.8. For information on the complete list of Cisco BAC bugs, see the Cisco_Broadband_Access_Center_BugList_38.html file available in the Documentation folder.

> **Note** To obtain more information about known problems, access the Cisco Software Bug Toolkit at http://www.cisco.com/pcgi-bin/Support/Bugtool/home.pl. (You will be prompted to log into cisco.com).

# Resolved Issues

Table 1 lists the resolved bugs in the Cisco BAC 3.8 release.

*Table 1*        *Resolved Bugs*

| Bug ID | Description |
|---|---|
| CSCsd75830 | Both default DPE passwords causes a potential security problem |
| CSCsd93004 | DPE CLI for CWMP socket timeout |
| CSCsx48113 | Stack overflow when viewing groups page |
| CSCta06340 | Generic file assumes that file should be in XML format |
| CSCtc66425 | HTTP file service should close connection after transfer |
| CSCth03711 | Exception when process temp which include other temp that has expression |
| CSCth36104 | DPE's CWMP or HTTP service connection closures should be tracked |
| CSCti61992 | Device data has got some annoying entries |
| CSCtk83527 | Change in date format for FC-AP-FIRST-TIME-UP and FC-GPS-LOCKED |
| CSCtl81795 | Some strange log messages appear in dpe.log and rdu.log |
| CSCty19228 | Parameter files list in Display Live Data does not list all the files |
| CSCty21625 | Error when searching for device ID with spaces in between |
| CSCty48467 | DPE status is offline when there are too many device faults |
| CSCty84748 | BAC does not handle vendor specific fault codes in transfer complete message |
| CSCtz19988 | BAC should extend Custom Discover Parameter length to 1024 in the Admin UI |
| CSCtz45989 | BAC does not handle 9003 fault code from device |
| CSCtz55540 | Support of ComplexValue tag for TR069 PeriodicUploadTime parameter |
| CSCtz72726 | New configuration revision number is not updated in BAC when custom property is modified |
| CSCub31305 | Provision to configure CNR IPs should be available to issue lease query |
| CSCub32380 | DPE CLI returns fatal error - COMMAND HIERARCHY INVALID |
| CSCuc31231 | Checking centralized user/group for non-root user/group in Linux |
| CSCuc35699 | ChangeNodeTypeProperties API needs to be removed |
| CSCuc38195 | Disable HTTP SSL port 443 in RDU tomcat |
| CSCuc48073 | No warning message when deleting groups |
| CSCuc48095 | Groups related to device should not be allowed to be deleted |
| CSCud07275 | Primary-keys support in configuration template for replace-all and replace-augment |
| CSCud12216 | Unable to use VAR arguments in configuration template |
| CSCud23910 | Fault generated when sync-method=replace-all for the first level of multi-instance |
| CSCud89351 | GA flow enhancement |
| CSCue12778 | PLMNID should match with MCC or MCC/MNCs values |
| CSCue18033 | FAP ID is missing in the DPE real time alarm |
| CSCue34758 | GA Alarm handling improvements |

*Table 1*        *Resolved Bugs*

| Bug ID | Description |
|--------|-------------|
| CSCue37511 | TR196 femto changes for 2G and 3G neighbor count handling |
| CSCue37626 | The queued or expedited alarms should be converted to SNMP traps |
| CSCue37641 | Generate Clear alarm when current alarms is cleared. |
| CSCue42782 | GA Tampering Flow changes |
| CSCue52568 | BAC 3.5.3 CPEaaS extension porting into BAC 3.8 |
| CSCue56817 | GA changes for 2G and 3G neighbor count handling |
| CSCue65666 | GA Flow: Session not completed after device is Tampared |
| CSCue94171 | GA:Irrespective of method, all the REM data should be in location event |
| CSCuf59568 | Provisioning Status should not be set if enabling service  is not done |
| CSCuf84276 | Device details page could not be viewed |
| CSCug76549 | If there are no instances of {i} on the device then flow gets blocked |
| CSCug67960 | Whitelist value in ACCESS-ACCEPT pads 00 for IMSI  if length is < 8 |
| CSCug81796 | There should be an option to have the conditionals around the instances |

## Known Issues

Table 2 lists the open bugs in the Cisco BAC 3.8 release.

Click on the identifier to view the impact and workaround for the bugs. This information is displayed in the Bug Toolkit. You can track the status of the open bugs, using the Bug Toolkit.

*Table 2*        *Known Software Problems*

| Bug ID | Description |
|--------|-------------|
| CSCsy74948 | DPE allows to provision an interface even when the status is UP & NOT RUNNING |
| CSCte50497 | DPE incorrectly terminates file download session while transfer is in progress |
| CSCte84617 | DPE intermittent outage |
| CSCth82638 | BAC disables the radio when a wrong value is set for any parameter |
| CSCtj38045 | FC-LAST-LC-NWL flag shows 'matched' even though NWL mismatch occurred |
| CSCtr79432 | IPv6 lease query request in failover scenario, when primary is shutdown |
| CSCtx72777 | Firmware file could be deleted even if a reference exists |
| CSCty58071 | Wrong error message returned from proxy operation with wrong data type |
| CSCua85356 | Deleted helper scripts are not removed from script scope |
| CSCub34250 | NTPD should be listed as a requirement for installing BAC on Linux |
| CSCuc33227 | DPE CLI password reset option is unavailable |
| CSCuh08312 | RDU reboots during config template generation |
| CSCuh08359 | LQ destination address issue in DPE |

# Product Documentation

**Note** We sometimes update the printed and electronic documentation after original publication. Therefore, you should also review the documentation on http://www.cisco.com for any updates.

You can view the marketing and user documents for Cisco Broadband Access Center at:

http://www.cisco.com/en/US/products/sw/netmgtsw/ps529/tsd_products_support_series_home.html

The following document gives you the list of user documents for Cisco Broadband Access Center 3.8: http://www.cisco.com/en/US/docs/net_mgmt/broadband_access_center/3.8/documentation/overview/ Cisco_Broadband_Access_Center_Documentation_Overview_38.html

# Related Documentation

**Note** We sometimes update the printed and electronic documentation after original publication. Therefore, you should also review the documentation on Cisco.com for any updates.

The following document gives you the list of user documents for Cisco Prime Network Registrar 8.1:

http://www.cisco.com/en/US/docs/net_mgmt/prime/network_registrar/8.1/doc_overview/guide/ CPNR_8_1_Doc_Guide.html

The following document gives you the list of user documents for Cisco Access Registrar 5.0:

http://www.cisco.com/en/US/docs/net_mgmt/access_registrar/5.0/roadmap/guide/PrintPDF/ ardocgd.html

# Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation* at: http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html.

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