

Cisco Broadband Access Center for Telco and Wireless 3.5

Product Overview

Cisco® Broadband Access Center for Telco and Wireless (BAC-TW) 3.5 is a distributed, scalable application allowing for automated flow-through provisioning of subscriber services and management of subscriber devices. Cisco BAC-TW provides a centralized and automated platform for service providers to control, monitor, troubleshoot, and configure residential home gateways and other IP devices such as femtocell devices and set-top boxes that implement the Broadband Forum's TR-069 standard.

In the Broadband Forum's management architecture, BAC-TW acts as an autoconfiguration and communicates with devices using the CPE WAN Management Protocol (CWMP). BAC-TW is fully compliant with TR-069 amendment 1, including support for the Request Download and Factory Reset optional methods as well as any vendor remote procedure calls (RPCs). BAC-TW has user-defined data dictionaries that allow it to support any device attribute. Dictionaries for TR-069 (home gateways with or without modems, wireless, LAN ports), TR-098 (home gateways with quality of service [QoS]), and TR-104 (voice over IP [VoIP]) attributes are supplied.

In addition to the autoconfiguration server functionality, BAC-TW provides device inventory, supports troubleshooting and device diagnostics, and includes a file server for firmware upgrades.

BAC-TW has a Java northbound API that is consistent with WT-131. In addition it provides extension APIs that can affect its behavior dynamically as it interacts with a device.

Cisco BAC-TW automatically recognizes devices, assigns the appropriate class of service, and dynamically creates and generates device configurations. A flexible template language facilitates defining the configuration of a device in terms of which device attributes are to be monitored and set to which values. The templates can refer to user-defined properties, which can apply to individual devices or groups of devices. Groups can be either user defined or built in, for example, all devices of the same type, class of service, or subscriber. This provides a scalable mechanism for customizing subscriber services. The same language and properties are used to define rules for triggering firmware upgrades. Bulk changes can be triggered by simply altering a user-defined property or class of service definition.

As service provider infrastructures increase rapidly in size and complexity, management systems that simplify the task of operating the network and its services become more essential. Cisco BAC-TW addresses this need by automating the configuration and provisioning of subscriber devices based on the service provider's business policies. Cisco BAC-TW allows service providers to implement either or both of the following workflow models:

- **Preprovisioning:** Devices are assigned to subscribers and recorded in advance in the provisioning application. When subscribers plug them in, Cisco BAC-TW automatically assigns the appropriate service level and activates them.
- **Autoprovisioning:** When subscribers self-register for service, subscriber devices are captured and recorded in the provisioning application. Subscribers are required to register for service before Cisco BAC-TW configures the device and activates the service.

Cisco BAC-TW is a fast, secure, and scalable system for provisioning tiered services on devices. It is designed for:

- **Reliability:** BAC-TW provides high reliability and high availability, supporting a central management server and multiple distributed device provisioning engines (DPEs), each of which includes its own data-caching repository, CWMP services for device interaction, and HTTP servers for file download. During central server outages or communication problems, Cisco BAC-TW provides continued service to existing registered subscribers.
- **Scalability and performance:** Cisco BAC-TW can scale to support up to 8 million devices in distributed deployments. Cisco BAC-TW uses multiple distributed device management and caching engines to balance processing of device requests. A single DPE can support as many as half a million devices. These DPEs can be combined in groups to provide redundancy and load sharing. Cisco BAC-TW includes a central management component called a regional distribution unit (RDU) to manage service requests and modifications. A single RDU server in conjunction with the appropriate number of DPE groups can support as many as 8 million devices with a sustained rate of hundreds of thousands of device interactions per day.
- **Integration with current systems:** Cisco BAC-TW integrates with existing service provider systems, such as billing systems, operations support systems (OSSs), and other customer management systems, through a Java provisioning API. It can also notify interested applications of certain events within the system through an event-notification registration procedure.

Key Features and Benefits

Table 1 outlines the features and benefits of Cisco BAC-TW.

Table 1. Cisco Broadband Access Center Features and Benefits

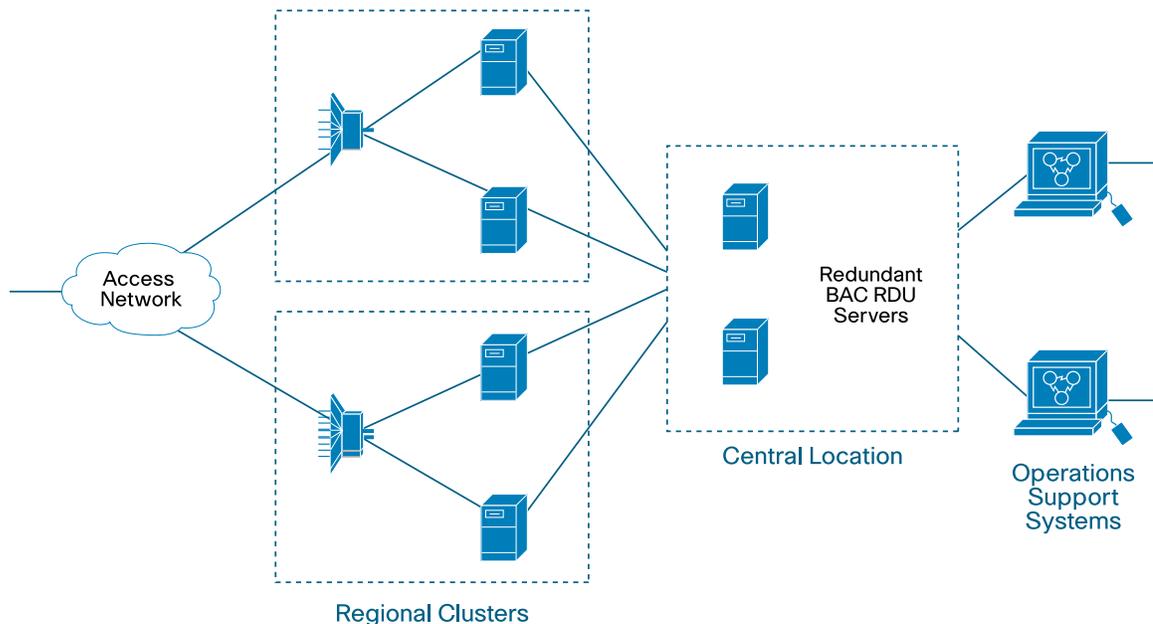
Feature	Benefit
Embedded high-performance database, optimized for device provisioning	Helps ensure high-performance service request management and device provisioning and minimum service delay; no additional external database needed
Java-based provisioning API	Provides easy integration to customer OSS, billing, or workflow and mediation software
Distributed device management servers	Offers true scalability with a simple way to extend provisioning to additional subscribers and new markets; dramatically simplifies capacity upgrade and maintenance costs and complexity
Distributed architecture	Offers true scalability, failover, and high reliability and provides an easy way to manage a growing subscriber base while helping to ensure minimum subscriber service disruption
HTTP file server	The delivery of firmware files is centrally managed and scales with the BAC-TW distributed architecture.
Connection request support	BAC-TW can initiate device interactions for real-time use cases such as diagnostics. Features such as generation of random, one-time connection request passwords allow this to be very secure.
SSL 3.0 and TLS 1.0; Session termination optionally on a Cisco Application Control Engine appliance or module; basic and digest HTTP authentication	BAC-TW supports a wide range of choices for securing the communication between itself and the managed devices. It can fit into a wide variety of deployment scenarios, including those where communication to the device is over unsecured infrastructure. The scaling of BAC-TW advantages remain even with encrypted communication.
Extensive troubleshooting support	<ul style="list-style-type: none"> • BAC-TW can recognize chatty devices that interact very frequently and throttle their interactions. • A history of device interactions is kept, and any devices with errors can easily be seen. • Detailed device interaction logging can be enabled on individual devices.
Safe failover	High uptime and service reliability through DPE redundancy

Product Specifications

BAC-TW uses a distributed architecture for provisioning services on devices. Figure 1 illustrates the components of the Cisco BAC-TW solution, which include the following:

- **Provisioning API:** A flow-through provisioning interface used to integrate the Cisco BAC-TW system with service providers' client programs, such as workflow applications and billing systems. Integration is implemented through a Java client library that service providers' client programs use to drive tiered-service selection and to trigger device activation on their networks. The client library reduces the need to develop integration code and facilitates integration with web-based user interfaces.

Figure 1. Cisco BAC-TW Deployment Blueprint



- **RDU:** The primary server in the Cisco BAC-TW system, the regional distribution unit performs the following functions:
 - Manages the generation of all configurations
 - Maintains the authoritative database
 - Represents the central point through which all API requests must pass
 - Supports external clients, OSSs, and other provisioning functions through the provisioning API
- **DPE:** The Cisco DPE server that manages devices directly. The DPEs are grouped in regional clusters for redundancy. Multiple clusters facilitate BAC-TW scalability. The Cisco DPE manages the following:
 - Communication with devices over CWMP
 - Firmware download over HTTP/HTTPS
 - Caching of device instructions that indicate how BAC-TW will interact with a device when the devices starts a CWMP session with BAC-TW

Platform Support and System Requirements

The Cisco BAC-TW RDU and DPE components are supported on SPARC servers running the Sun Solaris 10 operating systems. A typical recommended configuration of the Cisco BAC-TW RDU installation is a Sun T5120 class workstation with 16 GB of RAM. This supports up to 8 million devices.

For More Information

For additional product information, visit <http://www.cisco.com/en/US/products/sw/netmgts/ps529/index.html> or contact your local account representative.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

CCDE, CCSI, CCENT, Cisco Eos, Cisco HealthPresence, the Cisco logo, Cisco Lumin, Cisco Nexus, Cisco Nurse Connect, Cisco Stackpower, Cisco StadiumVision, Cisco TelePresence, Cisco WebEx, DCE, and Welcome to the Human Network are trademarks; Changing the Way We Work, Live, Play, and Learn and Cisco Store are service marks; and Access Registrar, Aironet, AsyncOS, Bringing the Meeting To You, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, CCVP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Collaboration Without Limitation, EtherFast, EtherSwitch, Event Center, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, iQuick Study, IronPort, the IronPort logo, LightStream, Linksys, MediaTone, MeetingPlace, MeetingPlace Chime Sound, MGX, Networkers, Networking Academy, Network Registrar, PCNow, PIX, PowerPanels, ProConnect, ScriptShare, SenderBase, SMARTnet, Spectrum Expert, StackWise, The Fastest Way to Increase Your Internet Quotient, TransPath, WebEx, and the WebEx logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0903R)