Cisco Broadband Access Center 4.2

Product Overview

Cisco® Broadband Access Center (BAC) is a distributed and highly scalable application allowing for automated flow-through provisioning of subscriber services and management of subscriber devices. Cisco BAC provides a centralized and automated platform for service providers to control and configure residential home gateways and the IP devices behind the gateways.

Cisco BAC automatically recognizes devices, assigns the appropriate class of service, dynamically creates and generates device configuration files, and activates subscribers. Cisco BAC provides a single device management platform to support multiple technologies including DOCSIS® and PacketCable™.

As service provider infrastructure increases rapidly in size and complexity, management systems that simplify the task of operating the network and its services become more essential. Cisco BAC addresses this need by automating the configuration and provisioning of subscriber devices based on the service provider's business policies. Cisco BAC allows service providers to implement either one 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 automatically assigns the appropriate service level and activates them.
- Autoprovisioning: When subscribers self-register for a service, subscriber devices are captured and recorded in the provisioning application. Upon completion Cisco BAC configures the device and activates the service.

Key Features and Benefits

- Reliability: Cisco BAC provides high reliability and high availability, supporting autonomous headends, multiple distributed device provisioning engines (DPEs), each of which includes its own data-caching repository, a Trivial File Transfer Protocol (TFTP) server, and a time-of-day (ToD) server. During central server outages or communication problems, Cisco BAC provides continued service to existing registered subscribers.
- Scalability and performance: Cisco BAC can support up to 60 million devices in distributed deployments. Cisco BAC uses multiple distributed device management and caching engines to balance processing of device requests. A single DPE can support as many as 2 million devices. These DPEs can be combined in groups to provide redundancy, load sharing, and disaster recovery. The regional distribution unit (RDU) is a central component used to manage service requests and modifications. A single RDU server in conjunction with the appropriate number of DPE groups can support as many as 60 million devices with a sustained rate of hundreds of thousands of new devices a day.
- Integration with current systems: Cisco BAC integrates with existing service provider systems, such as billing systems, operations support systems (OSSs), and other customer management systems, through a Java provisioning API.

- Extendable technology support: Cisco BAC supports DOCSIS cable modems and set-top boxes for high-speed data provisioning, PacketCable voice provisioning of media termination adapters (MTAs) and DOCSIS cable modems. It also can be extended to support other Dynamic Host Configuration Protocol (DHCP)-based devices, including non-DOCSIS cable modems.

Table 1 outlines the features and benefits of Cisco BAC.

Table 1. Cisco Broadband Access Center Features and Benefits

Feature	Benefit
Full support for Linux and Cisco Unified Computing System (UCS) (New!)	Red Hat Enterprise Linux 5 and Cisco UCS support is now extended to all components of BAC product including RDU and KDC. This feature completes Red Hat Enterprise Linux 5 and Cisco UCS support for BAC.
Integrated Kerberos Protocol server (KDC) for PacketCable voice service provisioning	Provides a single platform with all the necessary security components for PacketCable provisioning
Linux and Cisco Unified Computing System (UCS) support for provisioning group	Red Hat Enterprise Linux 5 and Cisco UCS support for provisioning group components - DPE, Cisco Network Registrar (CNR) DHCP, and Cisco CNR DNS.
DOCSIS 3.0 and IPv6 support	DOCSIS 3.0 channel-bonding allows increased data speed for subscribers. Support for IPv4 and IPv6 cable modems and IPv4/IPv6 mixed device environment.
Distributed architecture with high availability and disaster recovery	Offers true scalability, failover, and high reliability to manage a growing subscriber base while helping to ensure minimum subscriber service disruption. Allows a simple way to extend provisioning to additional subscribers and new markets; dramatically simplifies capacity upgrade and maintenance costs and complexity. Distributed provisioning engines allow you to put them in different datacenters for disaster recovery.
Java-based provisioning API	Provides easy integration to customer OSS, billing, or workflow and mediation software
Scripting Interface with templates	Templates offer an easy way for reducing the number of configuration files and decreasing operational costs. The BAC scripting interface provides more flexibility for managing templates parameters and an automated way for deploying templates.
Technology extensions	Provides an easy means to extend this single platform to provision new devices and technologies to meet changing network and subscriber requirements
PacketCable compliant	Supports PacketCable 1.0, 1.1, and 1.5 for complete end-to-end IP voice service provisioning and meets all PacketCable security specifications
Dynamic DOCSIS file generation	Offers a means to build unique DOCSIS files for individual subscriber devices to meet needs of tiered service provisioning and true IP voice requirements
Safe failover	High uptime and service reliability through DPE and DHCP failover as well as TFTP redundancy

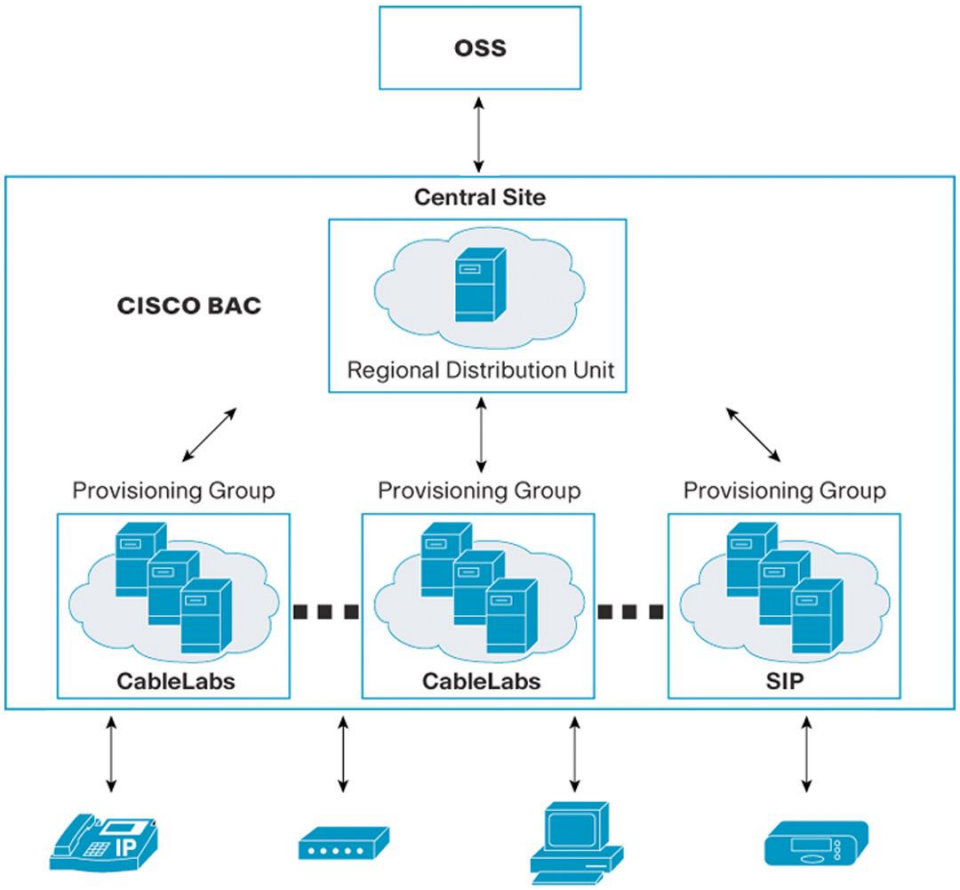
Product Specifications

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

- Provisioning API: A flow-through provisioning interface used to integrate the Cisco BAC 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.
- RDU: The primary server in the Cisco BAC system. It 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 device configurations and that also contains TFTP and ToD servers. The Cisco DPE manages:
  - Last-step, device-configuration, file handling
  - Communication of the configuration files through an embedded TFTP server
  - Embedded ToD server
  - Integration with Cisco Network Registrar (CNR)
  - Cached-device configuration and provisioning information
- Cisco Network Registrar (CNR): A software product that includes the protocol servers to provide IP addresses, configuration parameters, and Domain Name System (DNS) names to devices, based on network and service policies. Cisco BAC relies upon the CNR DHCP server for IP address assignment, DNS, device detection, and load distribution among Cisco DPE servers.

Figure 1. Cisco BAC Architecture



Platform Support and System Requirements

Cisco Broadband Access Center runs on Red Hat Linux and Cisco Unified Computing System servers. BAC also supports Oracle Solaris on the SPARC platform.

For More Information

For additional product information, visit http://www.cisco.com/en/US/products/sw/netmgtsw/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.**

Printed in USA C78-667855-00 07/11