



## What Do Customers Care About in Terms of a Unified Communications Solution?

- Controlling costs, protecting investment in existing equipment, and lowering total cost of ownership (TCO)
- Reliability and redundancy of branch or small office
- Enabling more effective, efficient communication and collaboration
- Security
- Ease of administration, effective use of limited staff resources
- Scalability and growth

## What Are the Strengths of Cisco Unified Communications?

Cisco® Unified Communications offers a new way to communicate. This comprehensive IP communications system of voice, video, data, and mobility products and applications enables more effective, more secure, and more personal communications that directly affect both sales and profitability. It is part of an integrated solution that includes network infrastructure, security, mobility, network management products, lifecycle services, flexible deployment and outsourced management options, end-user and partner financing packages, and third-party communications applications.

Cisco Unified Communications helps businesses improve efficiency, strengthen security, enhance customer relationships, control costs, maintain profitability, and respond to a rapidly changing business environment. Cisco Unified Communications is a critical component of the Cisco Smart Business Roadmap, which is specifically designed to provide small and medium-sized businesses (SMBs) with a structured, planned evolution path to help them take advantage of today's business opportunities and maximize the long-term potential of their technology investments.

Cisco Unified Communications can scale to support up to 240 Cisco Unified IP, SIP, or Wireless IP Phones. It allows migration from a distributed call-processing model to centralized call processing with Cisco Unified Communications Manager at the headquarters and Cisco Unified Survivable Remote Site Telephony (SRST) at the branch office. Businesses can convert Cisco Unified Communications Manager Express licenses to SRST licenses at no extra charge. IP phones, branch office routers, and switches can be reused in a centralized deployment.

Because Cisco Unified Communications Manager Express builds on Cisco IOS® Software, a wide range of Cisco IOS Software features can be used, including security services, quality of service (QoS), and robust routing protocols.

Cisco Unified IP, SIP, and Wireless IP Phones obtain voice VLAN information directly from Cisco Catalyst® Express 500 Series Switches or from switching modules integrated into Cisco integrated services routers. Administrative overhead is reduced, and moves, adds, and changes become less cumbersome.

### Cisco Offense and Nortel Traps

**Cisco Offense:** There is great benefit in running the Cisco Unified Communications on top of a Cisco data infrastructure.

**Amplification:** By running Cisco Unified Communications Manager Express and Cisco Unity® Express on top of a world-class data networking platform, customers are able to take advantage of all the routing, QoS, and security features and applications available on the platforms and in Cisco IOS Software, such as IP Security (IPsec) VPNs, Cisco IOS Software security services, intrusion detection, content engine, switching, Auto-QoS, management features, Cisco Discovery Protocol, and a wide range of trunk connectivity features.

**Cisco Offense:** Cisco customers can migrate from a distributed Cisco Unified Communications Manager Express call-processing model to a centralized Cisco Unified Communications Manager and Cisco Unified SRST call-processing model with investment protection for all IP phones and data networking equipment—at no cost. Are Nortel customers able to do that?

**Response:** No. Nortel customers must pay a license fee to upgrade the Business Communication Manager (BCM) to run in a centralized deployment model.

**Cisco Offense:** Cisco Unified Communications Manager Express supports up to 240 IP phones. Can Nortel support that many?

**Response:** No. Nortel BCM models support a maximum of 90 IP phones; this number rapidly decreases when you add additional features such as voicemail ports.

**Cisco Offense:** Cisco Unified Communications Manager Express supports a dynamic QoS mechanism that prioritizes voice traffic over data traffic. Does the Nortel BCM do that?

**Response:** No. Nortel does not support all traditional QoS mechanisms.

**Nortel Claim:** Nortel's BCM-based IP communications solution is a powerful, single-box, all-in-one solution.

**Cisco Response:** False. The BCM does not have a switching module. It cannot provide Ethernet connectivity or power to IP phones. The BCM supports only limited WAN connectivity— Frame Relay and Point-to-Point Protocol (PPP). Its routing engine is weak.

**Nortel Claim:** The Cisco branch router telephony features are not nearly as comprehensive as the BCM's.

**Cisco Response:** Cisco is steadily and rapidly introducing new features to Cisco Unified Communications Manager Express to counter this claim. But the majority of customer-required features are indeed available now.



**Nortel Claim:** The Cisco Unified Communications Manager Express solution does not support as many voice applications as does the BCM, such as contact center, interactive voice response (IVR), and computer telephony integration (CTI).

**Cisco Response:** Nortel has very few reference accounts in which the BCM is doing both data networking and telephony, let alone in which the BCM is doing data networking, telephony, and one or more voice applications.

## Top Seven Questions Technical/Voice Decision Makers Should Ask When Considering the BCM

**Q.** I need to maintain network connectivity with the BCM during configuration. Outages must be minimized. Can the BCM guarantee this?

**A.** No. Several types of configuration changes require a reboot to take effect. For example, practically all Frame Relay–related configuration changes require a reboot. And a reboot takes approximately five full minutes.

**Q.** I need the flexibility and freedom to add and subtract features on the BCM as the need arises. Is this always possible with the BCM?

**A.** No. With the BCM, certain feature additions are one-way— meaning they cannot be removed. For example, applying support for Novell’s Internetwork Packet Exchange (IPX) protocol is a one-way feature addition. Removing IPX support resets the entire BCM configuration to factory defaults. Applying the Survivable Remote Gateway (SRG) key code is another example.

**Q.** Remote management of branch office equipment is always a problem for me. Does the BCM simplify my life in this area?

**A.** No. To the contrary, the BCM adds to the difficulty. With a Cisco branch office solution, physically handling the hardware for routine configurations is never neces-

sary. But with the BCM, the architecture of the box requires physically manipulating the hardware dip switches on its Media Bay Module.

**Q.** I need several VLANs per site. Does the BCM allow for this?

**A.** No. The BCM 200/400 has two 10/100 Ethernet ports in a fixed configuration. None can be added. The BCM 50, with no expansion chassis, allows for three 10/100 ports but only one subnet. With two expansion chassis in use, the BCM 50 has only one Ethernet port for customer use. The BCM 50/200/400 does not support 802.1q.

**Q.** Does the Nortel BCM implement QoS for voice and video in an industry-standard fashion?

**A.** No. The BCM marks call-setup traffic, voice media streams, and routine telephony keepalive packets with the same IP precedence. This is nonstandard practice and poor design in that these packets should not compete with one another. Nor does it allow for the proper insertion of IP-based video packets.

**Q.** Besides packet marking, are there other shortcomings with BCM QoS?

**A.** Yes. The BCM Call Admission Control (CAC) mechanism, QoS Monitor, requires 4.7 Kbps per peer gateway BCM. Consider a typical hub-and-spoke Layer 2/3 network topology, consisting of a BCM hub and 10 spoke-attached BCMs. The nature of the BCM QoS Monitor requires a full mesh—all-to-all connectivity. Thus, each BCM must define the other 10 as remote gateways, requiring 47 Kbps on each spoke link just for the QoS Monitor.

**Q.** Besides packet marking and the BCM’s QoS Monitor, does BCM QoS have other shortcomings?

**A.** Yes. There is no support for industry-standard H.323 Gatekeeper bandwidth management. Thus, there is no good way to implement CAC with other Nortel IP

telephony platforms, such as Communication Server and Succession.

## Other Technical Limitations

- Even when equipped with dual power supplies, the BCM 400 has only a single power feed (cord). The single cord powers both supplies, thereby transferring the single point of failure to the upstream power source.
- The BCM does not support Gigabit Ethernet.
- Although Nortel markets the BCM as a Web cache device, this capability is nowhere near the capability of a Cisco cache engine. The BCM Web cache is more properly described as a proxy server. Workstations on the local LAN must be reconfigured to point at the BCM for Web access.
- Although Nortel markets the BCM as a domain name server (DNS), the BCM DNS implementation is only that of a DNS cache. That is, it has pointers only to upstream name servers; it cannot be configured with its own forward- or reverse-lookup host-name-to-IP-address translations.
- Neither compressed Real-Time Protocol (cRTP) nor Frame Relay Forum 12 (FRF:12) is supported on the BCM.
- The BCM 50 has no support for IP music on hold or WLAN.
- Only two telephony features are available in SRG local mode: call transfer and last number redial.

## Nortel BCM Overview and Hardware

Nortel Networks markets its Business Communication Manager (BCM) as a compact, all-in-one platform delivering telephony and integrated voice applications and data services. Suitable for an enterprise branch office, SMB network, or standalone deployment, these units can provide full-featured telephony, data and voice over IP (VoIP) networking, voicemail, contact center, IVR, CTI,

and more. BCM continues the Nortel Norstar lineage. As such, it is a natural successor product for Norstar installations.

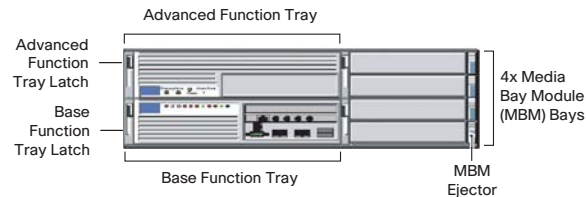
There are three BCM models: the BCM 50, BCM 200, and BCM 400. The original BCM 1000 (Enterprise Edge 1000) is no longer manufactured. The BCM 200 and BCM 400 use Windows NT Embedded as their OS. The BCM 50, introduced in May 2005, runs Nortel Corporate Linux. Nortel markets the BCM 400 as appropriate for 16 to 200 users, the BCM 200 for 10 to 24 users, and the BCM 50 for 3 to 10 users. These are soft numbers; model deployment really depends on site requirements.

The three BCM models can be deployed in native mode, in which the full suite of applications is available, while the BCM 200 and BCM 400 can also be deployed with the SRG software load (Nortel's answer to SRST), which disables some of the box's features. SRG ports the branch office (Media Gateway 1000B) solution of a communication server environment to a BCM. BCM supports Nortel's traditional digital telephone sets, analog sets/fax, and IP telephones, but when configured with the SRG software load, digital sets are not supported. SRG is also available for the BCM 50.

The BCM 200 and BCM 400 are similar in design and have two routed Ethernet 10/100 ports and a 20-GB hard drive. Both offer Redundant Array of Independent Disks (RAID) redundancy and WAN ports as options. The BCM 400 has greater digital signal processor (DSP) capacity and scaling options. The BCM 400, depicted in Figure 1, has four Media Bay Module slots; the BCM 200 has two. The BCM 50, depicted in Figure 2, has three switched 10/100 Ethernet ports for customer use and a 40-GB hard drive. The BCM 50 supports Media Bay Modules via a cabled expansion chassis. Media Bay Modules connect analog/digital stations, public switched telephone network (PSTN) trunks, and other specialized applications, such as Digital Enhance Cordless

Technology (DECT) gear connectivity and a digital drop-insert multiplexer.

**Figure 1.** The BCM 400



**Figure 2.** The BCM 50



## BCM Data Services

The BCM data services are as follows:

- **IP access/configuration**—The BCM HTTP-based GUI is the primary tool for this purpose: the Unified Manager on the BCM 200 and BCM 400 and Element Manager on the BCM 50. Global, BCM-specific management tools are available but expensive.
- **IP routing**—The BCM 200 and BCM 400 support routing between LAN and WAN interfaces. Open Shortest Path First (OSPF), Routing Information Protocol (RIP), RIPv2, and static routes can be configured. The Windows NT-based router is not suitable for high-volume LAN/WAN deployments. The BCM 50 has no WAN connectivity options, although the BCM 50a and BCM 50e models add an integrated VPN router with asymmetric DSL (ADSL) and Ethernet uplinks, respectively.

- **Point-to-Point Protocol over Ethernet (PPPoE)**—Can be installed as an optional component of the BCM.
- **IPX routing**—Can be installed as an optional component of the BCM.
- **VoIP**—The BCM naturally supports Nortel digital telephones. It also supports Nortel's 2001, 2002, and 2004 IP telephones and the 2050 IP soft phone. Support for the 2007 IP phone is also available. VoIP extends beyond the local setting to include VoIP trunks using H.323 or Session Initiation Protocol (SIP). For VoIP, the BCM can be networked with other BCMs or in a Communication Server (Succession)/BCM configuration. IP networked music on hold is supported. Hybrid environments are supported, with a mix of IP and non-IP phone sets.
- **DNS**—The BCM functions as a caching-only name server.
- **Web Proxy Caching Server**—This feature is configurable.
- **Dynamic Host Configuration Protocol (DHCP)**—The BCM supports relay and server modes, with IP phone provisions.
- **Network Address Translation (NAT), Network Time Protocol (NTP), and VPNs**—All are supported by the BCM.

## BCM Voice Services

BCM CallPilot includes the following features:

- **Voicemail**—1000 mailboxes; 99 group lists.
- **Automated attendant**—Some message selection and call routing.
- **Custom call routing**—More message selection and call routing. Callers can hear an information mailbox message; leave a message in a mailbox; transfer to an (entered) extension, paging system,



external number, or operator; have their call parked and a page generated; go to a submenu; use the company directory; or switch languages.

- **Message networking**—Voice Profile for Internet Mail (VPIM) and Audio Messaging Interchange Specification (AMIS).
- **CallPilot Fax**—Robust set of features. BCM Call Center has two configurations: Basic and Professional. 2/50 skillsets; 20/250 agents; 10/80 active agents; and 15/100 active calls. The BCM 50 supports only Basic Call Center.

## BCM Call Detail Recording

BCM Call Detail Recording consists of the following components:

- **BCM Personal Call Manager**—Telephone Application Programming Interface (TAPI) application for phone.
- **BCM Interactive Voice Response**—Not supported on the BCM 50.