NORTEL NETWORKS BUSINESS COMMUNICATIONS MANAGER 3.5

Nortel Networks Sales Guide

CONTENTS

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INTRODUCTION

This sales guide is designed to help you access useful information when approaching a Nortel Networks Business Communications Manager* (BCM) sales opportunity. We have included the following sections:

- Solution/Product Overview

- Sales Opportunities

- Competitive Strategies

- Sales and Marketing Information

- Sales Tools

- Resources

This guide should be used in conjunction with BCM sales training materials and other resources, as required. We hope you find the information in the guide helpful in closing sales.

SOLUTION/PRODUCT OVERVIEW

Overview of BCM 3.5

The Nortel Networks BCM is a communications system that integrates sophisticated voice and data capabilities, VoIP gateway functions, and a full suite of business building applications. It provides customers with a choice of IP-enabled or pure-IP strategy by adding applications as their business needs evolve. BCM is one of the most sophisticated and reliable integrated voice and data solutions for enterprise branch offices and small and medium-sized businesses/organizations.

Originally introduced to the market in early 2000, BCM establishes voice processing, feature-rich business telephony applications and data-networking services in a single platform managed via a browser-based tool. As a single platform, it is a cost-effective solution that will grow with a customer's business. A key component of the Succession Enterprise Strategy is to deliver robust and reliable converged voice and data solutions and BCM is the market leader in the U.S. Converged Systems market (under 100 stations), according to Phillips InfoTech (Year 2002, CPE May 2003 PBIMedia-InfoTech Consulting, Inc.).

How BCM Works

BCM's approach to IP telephony literally transforms multiple networks into a single multi-service network while driving simplicity to the desktop. BCM Release 3.5 introduces over 50 new software features and over 6 new hardware components. Built on the award-winning capabilities of BCM 3.0, this release offers increased application performance and enhancements in the areas of core telephony, data, management and serviceability, targeted at the small and medium-sized business and enterprise branch. It extends enterprise communications with seamless Succession Call Server networking and delivers the following:

- Enhanced Messaging features, including centralized voicemail and Auto Attendant Park & Page
- Call Center enhancements
- IVR Park & Page
- H.323 interoperability enhancements
- SIP trunk support & data services
- T.38 Fax over IP
- Voice over IP enhancements
- Network Configuration Manager Release 3.0
- BCM management enhancements

- Integrated Universal T1
- Dual V.35 WAN
- Global market enhancements
- Serviceability enhancements
- Telephony feature enhancements
- Increased security
- Global Analog Trunk Module

The telephony components of BCM perform call processing and connect public switched telephone network (PSTN) lines to BCM telephones. Customers have the choice of using digital telephones, analog telephones, IP telephones or a combination – whatever best fits their needs. In addition, BCM provides a smooth migration path to IP trunking and multimedia applications enabled by IP as it makes sense for their business.

The call center and CTI applications available on BCM increase customer support and take advantage of the reach of the Internet, while Unified Messaging, which handles multimedia messages like voicemail, email and faxes, makes sure that employees never miss a customer call.

The data networking components connect BCM to the LAN and WAN. The Internet connects coworkers so that they can share files and emails to exchange information. Universal Internet access for all users includes access to corporate intranets and support for the VPN and remote connectivity. BCM supports VoIP trunks, enabling multisite customers to deploy private networks. Access is totally secure, even from a remote PC, due to the support of IPSec Client Termination and Branch Office Mode connections.
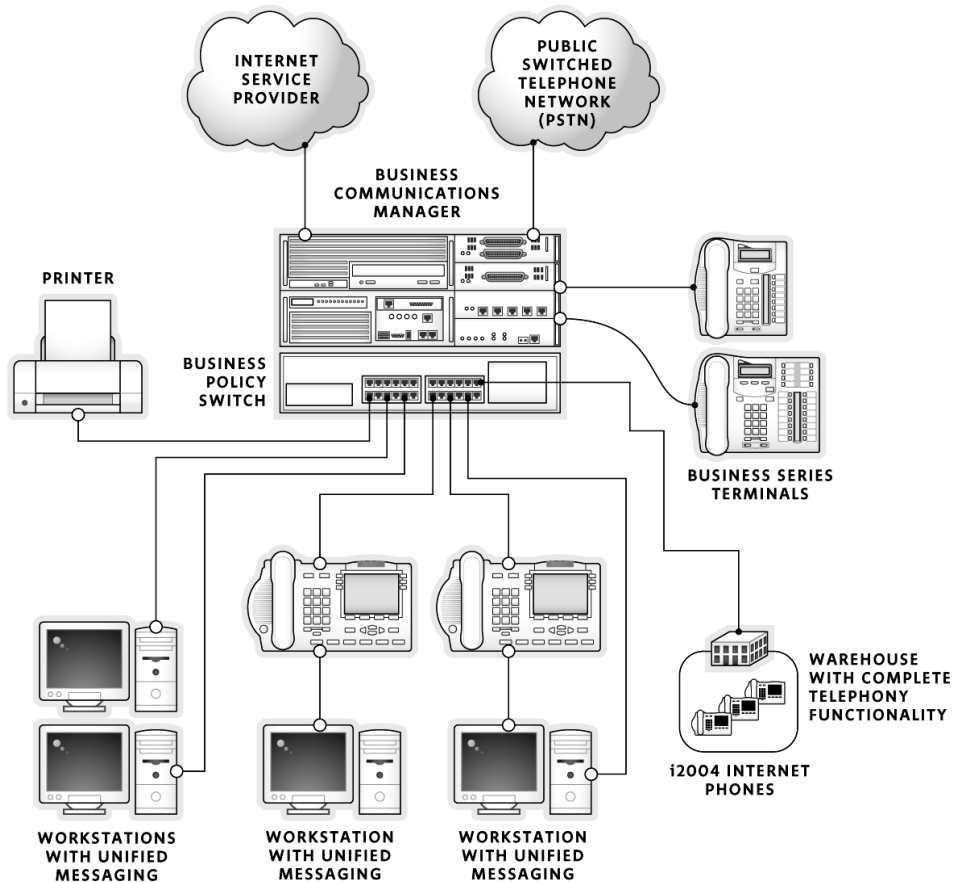
BCM simplifies network management. Network Configuration Manager (NCM) 3.0 is a multisite configuration tool. It provides the ability to apply programming changes to all, or a subset of, BCM systems within a network from a centralized location.
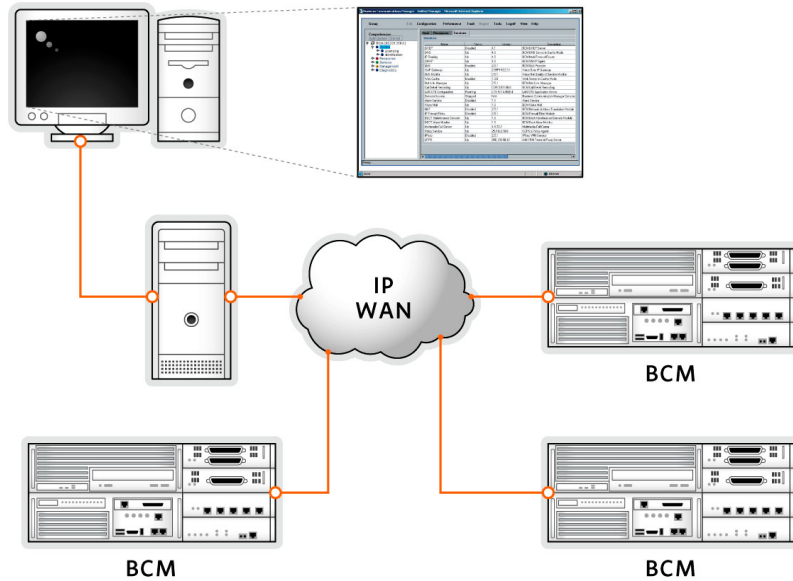
Unified Manager is used to manage individual BCM sites on a real-time basis. It takes advantage of wizards and templates to change network settings. The two managers simplify administration of BCM.
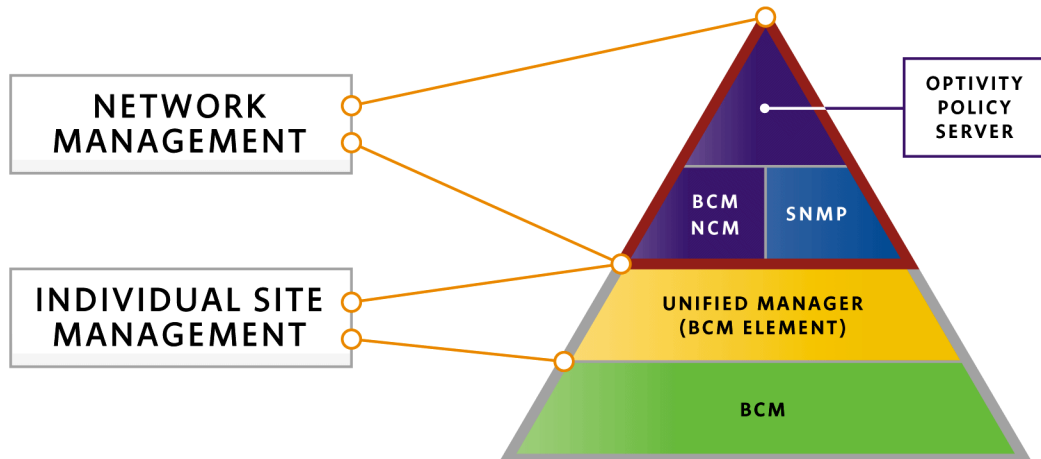
BCM 3.5 New Features

- **T7316E** – A full-featured, expandable, multi-line telephone, the T7316E provides a two-line, 16-character display supported by three context-sensitive soft keys. This device offers access to 24 memory buttons, 16 of which include multi-segment icons.

- **T24 KIM** – The T24 Key Indicator Module (KIM) is a 24-button module that attaches directly to the T7316E; together they form the Business Series Terminal (BST) Central Answering Position (CAP). This modular approach is extremely flexible and allows for easy configuration and expansion.

- **Network Configuration Manager (NCM) 3.0 Enhancements** – Network Configuration Manager 3.0 is a multisite management application that provides centralized configuration and system management capabilities for a multisite BCM network. With BCM 3.5, the NCM 3.0 software includes support of patch distribution, voicemail backup & restore, enhanced reporting and support for new BCM features. These new features maximize system performance and minimize downtime while simplifying administration.

- **Enhanced Applications** – BCM 3.5 includes several enhancements to Voice Messaging, Unified Messaging and Call Center features designed to improve customer service while reducing cost of operation. Centralized voicemail is now supported in a pure BCM or BCM/Norstar/M1/Succession 1000 network and an enhanced Auto Attendant now includes Holiday Schedule features and Park & Page. Unified Messaging enhancements include an increase of the current number of Unified Messaging clients from 100 to 200.

  Enhanced Call Center features such as Agent Help and Expected Wait Time improve the customer experience. IVR Park & Page puts a caller on hold and automatically pages the department the caller selected from the IVR. IVR voicemail integration allows IVR callers to be sent to a VM box then sent back into the IVR script. Both of these features have been introduced as part of BCM IVR 1.1, designed to simplify the creation of IVR applications.

Other New Features – the following feature enhancements are being released in BCM 3.5:

- BST Doorphone – enables office personnel to talk directly with visitors prior to allowing entry

- Enhanced cross-platform i2050 USB headset kit – brings greater flexibility to the i2050 Software Phone by adding dedicated buttons to the headset adaptor. Buttons include: answer, mute, hold, goodbye, and volume.

- Integrated IP Music on Hold – allows on-hold audio to be sourced from a local file transferred over a data connection, or from an external source

- Automatic hold during incoming page – lets each set automatically and immediately hold its active call when an incoming page is being presented to that set

- H.323 interoperability – with Meridian 1 IPT Gateway, Succession 1000, Norstar and RadVision ECS 3.0 Gatekeeper

- Codec renegotiation – reduces codec incompatibility between IP phones or IP gateways

- SIP trunk support and data services – supports trunk connections via SIP protocol between BCMs while maintaining QoS in a secure environment.

- BCM fault management – improves the reporting of events, event descriptions, and ID's to minimize duplication.

- SNMP Trap Dial-Out – allows a dial-out connection to be automatically established when a fault condition occurs

- Secure Dial-Back – enables the administrator to set up a dial-up connection for remote management

- T.38 Fax over IP – supports fax communications over the IP network to other BCMs or to a Meridian 1 head office

- Dual V.35 WAN card – is offered, along with CSU/V.35 and X.21/V.35 WAN versions

- Global analog trunk module – provides loop start and/or caller ID trunk support in North America, UK and Australia

- Brazil localization – including ISDN parameters and language translation – will be supported

- Alpha tagging – displays programmed system speed dial name for incoming calls, if the CLID number matches

- Tandem E.164 – this feature allows tandeming of Local, National, International and Special call types using MCDN protocol variant. This includes MCDN over PRI and MCDN over IP.

- Meridian 1 IP Trunk interoperability – enables BCMs to be deployed as branch office solutions, when networked back to an IP-enabled Meridian 1, so that they appear to be part of the same system

- Security enhancements – include Secure Socket Layer (SSL) encryption and other improvements that increase security and system performance, while reducing vulnerability to viruses and providing more restrictive file access permissions

- Field upgrades –from BCM 3.0 and 3.0.1 will be supported as part of Nortel Networks Evergreen strategy and upgrade time will be further reduced

- Other features – including program simplification for multiple Caller ID stations, increased system speed dials, increased channel capacity, automatically enabled call log, and an AnswerDN/Direct Station Select (DSS) capability on one telephone key. The BCM Monitor tool and Unified Manager help function are expanded to increase the serviceability of BCM.

Customer Benefits

As businesses look to balance their business goals and objectives with the evolution of telecommunications and computing, they are finding that convergence products must meet the following key requirements:

- Reliability

- Availability

- Streamline costs

- Increase revenues, expand customer base and improve customer service

- Simplify administration

- Future-proof networks.

Reliability

A business must be able to send and receive information (through phone calls, data, images, etc.) to and from customers and suppliers as quickly and reliably as possible. Our customers require highly reliable solutions so they can focus on their core business. And reliability and outstanding quality are what distinguishes Nortel Networks from other vendors. The Norstar system, for example, is among the most reliable and durable solutions available today – it delivers one of the lowest failure rates in the industry, with a tested Mean Time Between Failure (MTBF) rate of about 100 years.

Like Norstar, BCM is a robust and reliable communications solution. Its standards-based open architecture allows customers to work on a variety of platforms. BCM provides our customers with a choice of solutions and technology adoption at both an evolutionary and revolutionary pace so that they can incorporate new technology as they need it.

The BCM Media Services Card (MSC) provides reliable call processing and media processing of voice channels. The MSC contains media services processor expansion cards that provide digital signal processing (DSP) resource control for call processing. MSC call processing is not affected if the operating system (OS) malfunctions as it operates independently.

Availability

The increased use of the Internet now connects many businesses to their customers and other businesses 24 hours a day, 365 days a year. Integrated voice and data systems have to be available (i.e. allow continuous access to networks) and operating reliably to match these hours. Business applications and voice/data solutions allow unattended systems to carry on a company's business after office hours.

The DSP resources of the Media Services Card mentioned above, along with the system's central processing unit (CPU), provide redundant processing capability. The redundancy feature option provides dual, hot swappable power supplies along with dual chassis cooling fans and data protection with RAID hard-disk-drive mirroring. External uninterruptible power supplies connected to BCM can be used to handle power interruptions. APC UPS (uninterruptible power supply) integration enables a graceful

shutdown of the BCM in power fail situations and the ability to provide a warning message under shutdown conditions. The hardware platform's unique Design for Serviceability features minimize downtime.

BCM's PSTN fallback capability ensures voice quality and availability should the QoS on the WAN decline. NetLink Manager monitors the WAN and sets up a dialup connection should the corporate T1/FR link be lost.

Streamline Costs

As every business tries to optimize shareholder value, it looks to streamline costs while boosting productivity. Our customers want solutions to reduce their overall cost of ownership (up-front equipment costs, network service costs and maintenance and management costs) and increase employee productivity.

BCM integrates voice and data components into a single platform that can reduce costs by replacing individual components such as voicemail systems, automated attendant capabilities, computer telephony and remote access servers, multiplexers (MUX), CSU/DSU, routers, modems and DHCP servers. This next-generation platform integrates PBX/KSU, IP router, VoIP gateway and IP services, as well as voice applications, management software and servers, to provide a complete, unified, value-added solution.

Increase Revenues: Expand Customer Base and Improve Customer Service

Businesses want solutions that will allow them to take advantage of market opportunities compete more effectively and drive revenues. Expanding market reach and increasing the customer base works directly toward increasing revenues. And, in today's highly competitive business environment, customer service is more important than ever.

BCM has more than 150 powerful software features and applications pre-installed. These features and applications help deliver high-quality customer communications to allow for more time efficient communications, increasing the opportunities to expand the customer base. Some features work immediately, while other applications can be enabled and downloaded locally or remotely for implementation as business requirements evolve.

Simplify Administration

Many fear that by implementing IP telephony and creating an integrated voice and data network, they will exponentially increase the complexity of their network, and the resulting system will be unmanageable.

BCM can be configured and managed from any PC on the network using a Web-based tool called the Unified Manager. This integrated browser-based OA&M tool provides a simple, intuitive method of managing the system.

Multiple BCM systems within a network can be efficiently managed using the BCM Network Configuration Manager (NCM) tool. This powerful server/client software running at a central operations center allows programming changes to be distributed to all BCM systems or to groups of BCM systems within the network. Programming changes and patches can be scheduled for distribution at off-peak hours.

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Changes made to the BCM systems within a network include Auto Attendant and call center greetings, Auto Attendant schedules, Custom Call routes, IVR scripts and keycodes.

Administration is further eased by the strategic use of Meridian Customer Defined Networking (MCDN) and Q.SIG (Europe) voice networking to support networking between BCM nodes and a Meridian 1 hub system, for centralized PSTN trunking, a coordinated dialing plan and name and number ID delivery between network locations. The use of IP telephones greatly reduces the effort and cost previously associated with user moves, adds and changes.

BCM is compatible with the Meridian 1 Internet Telephony Gateway and Succession 1000 and can share the Meridian Mail* or CallPilot* Voice Mail of a Meridian 1/Succession 1000. A consistent interface is provided for all voicemail users, and the system uses the Unified Messaging client from CallPilot, which supports most of the popular email clients available today.

Future-Proof Networks

Potential customers are concerned about investment protection and their ability to strategically place themselves in a solid, viable position for the technologies of tomorrow. BCM is aligned with Nortel Networks Succession Enterprise Strategy, which guarantees a smooth migration path to pure IP solutions. When this migration strategy and vision towards IP is combined with the BCM architecture, and its ability to support numerous PSTN connections points (BRI, PRI, T-1, E-1 or analog), it is not difficult to demonstrate that this product delivers investment protection and long-term product and service viability. With the Succession Enterprise portfolio, Nortel Networks delivers Evergreen products with every new release. BCM 3.5 exemplifies the evergreen strategy providing a smooth, cost effective upgrade path from previous releases of BCM (i.e. 3.0, 3.0.1)

Key Applications

BCM applications are loaded onto the system when it is shipped. They integrate with the system and are easy to add as business needs evolve. Some of the applications are activated immediately upon installation, while others must be enabled using a software keycode (a password number provided to the installer).

Application	Description	Keycode Enabled	Try-and-Buy
Voice Messaging	Provides a full set of features, including an Automated Attendant, mailboxes to store voice messages and Custom Call Routing to provide callers with a series of voice prompts and call transfer options.	√	√
Unified Messaging	Saves employees the time spent retrieving email, voice mail and faxes from different locations as all messages are integrated into a single graphical interface for easy management.	√	√
eMobility	Provides wireless functionality to remain in communication with customers and coworkers; users can make and receive calls and access business features.	√	
Multimedia Call Centers	Enable real-time voice and Web chat communication to answer customer questions online and further strengthen customer relationships.	√	√
Interactive Voice Response (IVR)	Allows businesses to be accessible to their customers 24 hours a day, 365 days a year. Businesses can supply callers with access to a broad range of information simply by responding to a series of prompts via their touchtone phones.	√	√
Call Center, Professional Call Center and Call Center Reporting	Offer dynamic call handling and reporting applications that have been steadily enhanced with each new release. For instance, the number of queues, or skillsets, has been increased to 50 in Professional Call Center, and improvements in agent display information have been made to include dialed number identification service (DNIS), allowing the person in the queue to see the number of an incoming call.	√	√
Custom Call Routing (CCR)	Ensures that callers reach the right department or person with minimal input.	Standard – no keycode required	
Fax Messaging	Allows the user to receive, send and forward faxes in the same fashion as voice messages. Fax Overflow prevents customers from missing faxes by sending overflow faxes to a Fax Overflow mailbox, which stores the faxes until the fax machine is able to print them. Fax on Demand allows a user to retrieve documents stored in special mailboxes. Fax Suite provides Fax Messaging, Fax Overflow and Fax on Demand as a bundle.	√	√

Application	Description	Keycode Enabled	Try-and-Buy
LAN CTE	Allows customers to use the system as a TAPI Server. This means that any TAPI-compliant application running on a client PC can control telephones on the BCM system via TAPI.	√	√
Unified Manager	Manages the BCM at a single site. Unified Manager is a Java-enabled Web browser that provides a series of windows and menus that allow the user to navigate through the different areas of the application and program the system..	Standard – no keycode required	
Network Configuration Manager	Multisite management application that provides centralized configuration and system management capabilities for a multisite BCM network. Customers can significantly reduce network management costs by reducing the time it takes to make bulk programming changes, do backup and restore, distribute patches, etc.	√	√

Value Proposition

For both the multisite enterprise and the single site SMB, BCM 3.5 delivers a highly reliable, innovative, converged voice/data solution that enables a business to enhance profits by streamlining costs, increasing revenues, expanding market reach and improving customer service.

Product Availability

BCM 3.5 will be released for general customer availability in Q4 2003. BCM 3.5 is part of the Local Premises Solutions plan for a major BCM release once a year in the fall, with a minor release in the spring.

SALES OPPORTUNITIES

Market Overview

Industry analysts have determined that the voice market overall stabilized in 2002 (PBIMedia-InfoTech). The outlook for 2003 is mixed. Many end users continue to put off upgrading their phone systems due to tight capital expenditure budgets and uncertainty regarding the pace of recovery in the general economy. The first half of the year will likely be weak, as many end users are likely to defer purchase decisions until reevaluating economic conditions after the conclusion of the war in Iraq. The second half of the year should be significantly better. While overall market growth will not likely resume until 2004, some segments will fair better than others. Converged IP systems will continue their strong growth through 2007 with a growing shift among traditional PBX manufacturers into this market. Traditional PBX systems, however, will exhibit increasingly larger declines. Key/Hybrid system sales will stabilize over the next couple of years before declining again towards the end of the forecast period (2006-2007).

As the market migrates to IP telephony or converged solutions, service providers need to develop products that will differentiate themselves from the competition. By bundling voice and data services, a service provider can offer a "single stop" for a business' communications needs and position itself to deliver managed services offerings either today or in the future. Installation and maintenance of various systems is another important feature, as is product reliability and adherence to industry standards for ease of operability.

Nortel Networks Market Statement

For customers, the benefits of IP telephony include lower costs through network simplification; higher employee productivity; better customer service; more revenue; and greater profitability. Nortel Networks is an established worldwide market leader in IP Telephony, PBX, Portal Solutions, Optical, Multiservice WAN, ATM WAN and Frame Relay WAN. Nortel Networks has the proven experience, portfolio depth, and leadership that delivers real-world, mission-critical customer solutions. The Nortel Networks BCM, with its proven IP telephony technology, can boost business performance and accelerate business success today. BCM merges voice and data services in a unified system that meets business demands at the infrastructure, management and application level – delivering business-critical availability, application-optimized performance and lower lifecycle costs, including operations, capital per bit of capacity and bandwidth costs.

Target Customers/Market Segments

Nortel Networks has identified the following three primary customer profiles as key target markets:

- Standalone, single-site customers (up to 200 people) for voice and voice + applications

- Medium-sized, multisite businesses (up to 200 users per site) for voice, voice + applications and converged solutions

- Large enterprises with independent and/or integrated branch locations for converged solutions.

Target Customer Types Drill-down

		Standalone	**SMB – Multisite**	**Large Enterprise**
▪	Description	Single-site customer 20-40 employees 1 location	Leveraging local brand/company name presence 10-40 employees < 10 locations	Highly replicated/integrated branches 50-100 employees > 10 locations
▪	Example	Law office	Retail outlets	Financial institutions
▪	Business challenges	▪ Little or no in-house technical expertise ▪ Build strong customer relationships ▪ Need competitive advantage	▪ Consistent levels of customer service ▪ Require sound future investments ▪ Ordering/logistics come from head office	▪ Centralized purchase decisions ▪ Standardization of local applications ▪ Lack of distributed technical expertise
▪	Key technology needs	▪ Easy-to-use voice services ▪ Internet access ▪ Incoming voice traffic	▪ Internet access ▪ Inter-site voice traffic ▪ Incoming voice traffic	▪ Internet access ▪ Inter-site voice traffic ▪ QoS in LAN and WAN ▪ Remote management
▪	Major applications	▪ Voice services ▪ Limited data services	▪ eCommerce ▪ VoIP	▪ eCommerce ▪ IP telephone ▪ Wireless voice and data
▪	Buying criteria (Hot Buttons)	▪ Trusted partner ▪ Cost savings ▪ Future-proof	▪ Cost savings ▪ Reliability ▪ Future-proof	▪ Cost savings ▪ Simplified management ▪ Network and human resources efficiency
▪	Key solutions	▪ Voice Messaging ▪ Custom Call Routing ▪ Built-in Internet access	▪ Call Center ▪ IP trunks	▪ Voicemail (centralized or local) ▪ Wireless voice and data ▪ NCM

Customer Profiles—How to Sell

Targeted Selling Drill-down

Customer Type	Standalone	SMB – Multisite	Large Enterprises (franchises, replicated, highly integrated)
▪ Selling challenges	▪ Need clear explanations of technology ▪ Unclear of needs	▪ Usually multiple vendors; shop around ▪ Head office decision-making	▪ Distributed technical expertise ▪ Sites have voice separate from data
▪ Selling opportunities	▪ New system opportunity ▪ Want to make investment to become "connected" ▪ Growth potential	▪ Single platform – one vendor ▪ Want to make investment to become "involved" ▪ Growth potential	▪ Want seamless integration; looking for single service provider/solutions integrator ▪ Need to become truly "converged" ▪ Want to standardize all company's transactions
▪ Likely contact	Owner or IT contractor	Owner or IT contractor	IT experts across locations
▪ Likely decision-maker	Owner	Head office	Head office
▪ Benefits to focus on	▪ Increase revenue, expand customer base and improve customer service ▪ Future-proof networks ▪ Streamline costs	▪ Reliability and availability ▪ Streamline costs ▪ Increase revenue, expand customer base and improve customer service	▪ Streamline costs ▪ Simplify administration ▪ Availability ▪ Security
▪ Key sales messages	"The Nortel Networks BCM delivers a future-proof solution that will save you money by streamlining costs, and BCM 3.5 has evolved to support the latest voice capabilities that can be leveraged by new digital terminals."	▪ "The Nortel Networks BCM delivers a reliable solution that enables you to deliver a differentiated level of customer service. BCM can act as the host in a multisite BCM/Norstar network, providing powerful centralized voice messaging & attendant capabilities to all sites."	▪ "The Nortel Networks BCM delivers a best-in-class, complete, converged voice/data solution that lets you simplify how you do business while lowering your total cost of ownership. BCM provides support for VPNs, enabling security for data networking. NCM dramatically reduces the cost & effort of managing a large network of BCMs."

Customer Type	Standalone	SMB – Multisite	Large Enterprises (franchises, replicated, highly integrated)
▪ Upsell opportunities	▪ Unified Messaging ▪ FEM module	▪ IVR ▪ Unified Messaging	▪ IVR ▪ Multimedia Call Center ▪ i2050 Software Phone ▪ IPSec (VPN)

Identifying Prospects

The Nortel Networks BCM is the solution for small and medium-sized businesses and enterprises with multiple sites, franchises or branch offices (10-200 users) that want the cost advantages of an integrated voice and data solution.

Cost conscious and demanding, many of these businesses want:

- The opportunity to reduce network costs by using IP telephony

- An integrated solution that provides turnkey access to the Internet while protecting their investment in Norstar equipment.

Far-sighted and pragmatic, many of these businesses want:

- A solution that lets them migrate – at their speed – to a fully converged IP-based voice and data network

- An affordable, industrial-strength call center

- A mobile telephony solution that allows employees to be away from their desks, but not away from their phone.

Prospects for BCM include:

- *Standalone* – Customers who fall into this category are frequently start-up or small to medium-sized businesses with little or no technology expertise in-house. They tend to be price-sensitive and seek a trusted partner to help them make decisions on technology. Handling incoming voice traffic and Internet access are "core" requirements. They are seeking a competitive advantage in advanced customer service and eCommerce options, and are looking for a future-proof investment. Depending on the individual customer's business operations' requirements, the need for applications may run from the most basic (POTS) to relatively sophisticated implementations.

- *SMB Multisite* – Typically, the customers in this group are small to medium-sized businesses who have expanded to additional locations to leverage local brand/company name presence. They are small enough that significant inter-site voice traffic may be required for logistics and for the sharing of employee expertise. In many respects they are similar to the standalone customer in terms of price sensitivity and core/applications requirements. They want integration that will protect their investment for the future.

- *Franchises* – Customers in this segment are characterized by "loosely coupled" multiple locations. Purchase decisions are typically made locally, using purchasing procedures and based upon a list of recommended products from a corporate office. They typically have very little voice traffic between sites. Data networking is key and is used to support ordering/logistics from the corporate office. Support for virtual private networks (VPN) is often required. Internet access may only be required on centralized systems (where a single party owns a number of franchise locations).

- *Highly replicated* – The customers in this group are typically large enterprises with many branches/outlets. Purchase decisions are made centrally. A "cookie-cutter" approach is used for provisioning the branches; applications are typically localized. Branch systems are managed from a central location and their network design is relatively sophisticated. Concerns over cost control (from headquarters) and revenue generation (from branches/remote sites) frequently battle for priority. Voice is separate from data at the existing sites.

- *Highly integrated* – With these large enterprise customers, purchase decisions are made locally, but technical expertise is distributed across locations. Sophisticated voice and data networking is required for project collaboration and customer support. Centralized applications are desired to accommodate the needs of employees traveling from site to site for ease of use and standardization of capabilities.

STATIONS	STANDALONE	SMALL/ MEDIUM MULTISITE	LOOSELY COUPLED BRANCHES	HIGHLY REPLICATED BRANCHES	HIGHLY INTEGRATED BRANCHES	SINGLE DISTRIBUTED SYSTEM
	INCREASING TRANSPARENCY					
5-19	NORSTAR					REMOTE OFFICE 9150
20-60		BUSINESS COMMUNICATIONS MANAGER			OPTION 11C MINI	
60-200						
200-1000		SUCCESSION 1000				
1000-16000		MERIDIAN 1				

Qualifying Questions

- Have you wanted to adopt leading-edge technologies but felt compelled to rebuild your communications infrastructure from the bottom up?

- Have your plans to implement a call center been stymied by high costs or limited feature sets?

- Do you have requirements for an IVR/self-service application at the branch to support local callers and branch-specific customer data?

- Are you concerned about the business opportunities you've lost because you are not communicating with customers in a way that suits them?

- Are you seeking a solution that enables seamless communications with your customers and suppliers and still delivers on the promise of ease of management?

- Have you considered the potential cost savings by moving to an integrated voice and data network?

- Are you concerned about the cost of toll charges between your offices and telecommuting employees? Have you considered implementing IP telephony?

- Is maintaining the security and integrity of your communications network a concern?

Standalone Site

- Are you experiencing slow and inefficient Internet access?

- Is business growth driving need to either hire more staff or create more efficient processes?

- Are security issues a nagging concern?

- Do you have limited time to research solution alternatives?

- Do you like long-term relationships with a service provider?

SMB Multisite

- Are your network support costs increasing dramatically?

- Do you need to create standardized processes/customer treatment across locations?

- Are your inter-site communications costs high?

- Is there a lack of standardization of voice services or applications across locations?

- Are multi-vendor solutions creating interoperability challenges?

- Do you need to share resources and expertise across sites?

Franchises

- Are open standards required to support applications and data traffic (ordering and logistics) across sites?

- Is standardization of customer treatment across sites essential for business success?

- Is there a significant amount of repetitive voice contact re: phone inquiries on hours of operation, locations, pricing, services offered, etc?

Highly Replicated or Integrated Branches

- Is management of network services costs a critical concern?

- Is management of dispersed network equipment a struggle?

- Is standardization of customer treatment across sites essential for business success?

- Is interoperability of complex and mission critical applications a concern?

- Is the cost of new branch installations hurting your business model and deployment schedules?

Overcoming Objections

- *"I'm not sure that BCM is able to fit my growing business for the long-term."*

  Let's talk about your business' long-term plan. As your needs change, BCM is there with you, with flexible, future-proof solutions.

  - **Customizable for your unique business.** BCM allows you to customize your communications system: you decide on the right mix of voice applications and desktop solutions that work for your business. For example, BCMs deployed on a new customer premise can leverage Category 5/5e cabling throughout and to the desktop; reducing the need to run separate voice and data wiring. Additionally, BCM can provide traveling employees with secure remote access to CallPilot Unified Messaging for e-mail, voice mail, and fax.

  - **Set the pace for growth.** BCM lets you decide how fast to adopt new technology. BCM enables a gradual migration over to VoIP from your current phone system. Start with voice functionality and add data capabilities later; or choose to send messages over voice circuits, data circuits or both.

  - **BCM is there when you grow.** As your business expands to include new locations, BCM can help integrate your communications, with site-to-site data sharing, four-digit dialing using VoIP, a central file server at the home office with branch offices linked and more. BCM offers your business a truly scalable solution.

- *"Why should I consider IP telephony at this time?"*

  IP telephony is a technology whose time has come, and Nortel Networks is at the forefront of offering IP telephony in an affordable platform.

  - **Streamline your communication demands.** BCM empowers your business with a fully integrated solution – you don't need additional external devices like voicemail servers, PBXs and routers to reap the benefits of IP telephony.

  - **Cost-effective voice communications.** Multisite businesses can save dramatically with IP telephony. Calling a branch office is as easy as dialing a four-digit extension. IP telephony delivers toll-free telephone service between branch offices so you can send faxes and make calls without incurring long-distance charges.

  - **Technology that goes wherever business takes you.** IP telephony can go anywhere you need to go. IP phones will work anywhere on the network, even over a remote IP connection from home or on the road.

- *"Our resources are limited – we don't have the time or people to implement new hardware right now."*

  BCM is designed for growing businesses like yours. It is easy to implement, and easy to maintain, especially for those first-time network administrators.

  - **Web-based management.** Using the Unified Manager application, managing BCM is done from any Web-enabled workstation. Network administrators use a simple, intuitive interface from which to manage the network.

- **Software updates – instantly.** Via the browser, you can get your software updates quickly and conveniently.

- **Simplify your network and stop running around.** As an all-in-one platform, BCM will help you cut costs and save time running around managing different communication systems. With a simplified network infrastructure, your telephony, voice messaging and IP routing communications are all managed in one box.

- *"Can't I buy the Norstar and get the same features that BCM offers, but for a lower cost?"*

    BCM features many of the benefits of the Norstar and more. The value that BCM offers growing businesses is unparalleled.

    - **Dynamic support capabilities.** BCM can support a hybrid environment of digital telephony and/or IP telephony. For example, choose between the cordless T7406 for office space mobility or the full-featured i2004 for managers and excecutives.

    - **A streamlined solution that's value-added.** With data and telephony traffic being handled through a single infrastructure, BCM saves businesses money by eliminating the need to pull separate cables. Repair costs and updates to old technology that doesn't sync up to your business' changing needs is not an issue with BCM.

COMPETITIVE STRATEGIES

Competitive Landscape

Players that have introduced IP PBX products are approaching the market from a variety of starting points. Many traditional PBX providers offer both IP and IP-enabled PBXs. Data infrastructure companies such as Cisco and 3Com offer only one way to deploy: a full-blown IP PBX. Smaller start-ups such as Artisoft and Pingtel offer software-oriented options built around open industry standards such as Linux and SIP. Vendors with existing circuit-switched customers offer a range of migration options, including IP-enabled versions of their legacy systems.

3Com

3Com's IP PBX portfolio includes the NBX100 Communications Server and the Superstack 3 NBX Networked Telephony Solution. The 3Com NBX100 supports up to 200 total ports per location, and the Superstack 3 NBX supports up to 1,500 total ports. Both systems include a number of built-in call-processing features such as voice mail, automated attendant, hunt/call groups, call-detail reporting, CTI and PC-based visual voice mail. The systems are also compatible with a range of 3Com and third-party products including 3Com NBX Unified Communications. A number of partners in the NBX Solutions Providers Program offer call accounting software, conferencing tools, customized announcements, etc. 3Com also recently announced a joint venture with Huawei Technologies Limited in China. Another recent announcement from 3Com regarded the sale of Commworks to UTStarcom. However, as part of the deal, 3Com retained licensing rights to Commworks patents and suggested plans to use Commworks' IP softswitch as part of a high-end enterprise solution.

Alcatel

Recently, Alcatel introduced the Alcatel OmniPCX Enterprise targeted to networked organizations from large campuses to smaller sites and branch offices. This modular solution can serve locations as small as six to 10 users and grows seamlessly to up to 50,000 stations. The OmniPCX Enterprise is portrayed as an evolution of the OmniPCX 4400 phone switch, which includes native support for SIP and H.323. The new system supports the 500-plus OmniPCX features and provides a smooth evolution path for OmniPCX 4400 customers. At the heart of Alcatel's IP PBX architecture is the OmniPCX Enterprise Communications Server engine software designed to be hardware and operating system independent. The server software runs on both UNIX and Linux. Linux support enables the use of standard "off-the-shelf" appliance servers or integrated Alcatel blade servers. A suite of media gateways addresses a variety of configurations, providing the connections for non-IP endpoints such as existing telephones and PSTN trunks. An interesting aspect of Alcatel's approach to pricing is that software licenses are now transferable. Thus, if one site is downsizing, the licenses can be reused at another, fostering continued growth.

Last fall, Alcatel introduced three new IP phones. The Alcatel 4035 Advanced e-Reflexes IP Telephone is a high-end desktop instrument suitable for intensive call handling and group telephony usage. The Alcatel 4020 Premium e-Reflexes IP Telephone is designed for "team workers" such as office clerks, sales representatives and business managers. The Alcatel 4010 Easy e-Reflexes IP Telephone is a desk or wall-mountable two-line phone intended for basic call handling. All three phones are compliant with 802.3af, enabling powering via the LAN. The 4020IP and 4035IP phones also include an integrated 10/100 Base-T switch allowing for connection of a PC with priority management of voice and data traffic. Rather than release their own SIP-based phones, Alcatel has certified that its system works with Pingtel's Expressa SIP phone and Windows XP's Messenger SIP

client. The OmniPCX Enterprise also supports a web-based soft phone client that is written in XML and can be integrated into Microsoft Outlook or Lotus Notes.

The Alcatel 4980 softphone client application also includes group presence tools such as telephone "buddy" lists, direct text messaging and collaborative tools (chat, file sharing and whiteboards). The Alcatel OmniPCX Enterprise also includes embedded conferencing for up to 29 parties. The recently announced Alcatel 4645 Voice and Fax messaging solution integrates with the Alcatel OmniPCX Enterprise. The Alcatel 4645 is an entirely software-based solution that can run on an industry standard appliance server or Alcatel Communications Server. Later this year, Alcatel plans to introduce a Unified Communications Platform that includes unified messaging, personal routing, personal assistant and collaborative working services. The OmniTouch Contact Center product suite includes advanced voice with CTI. Multimedia interactions can be seamlessly integrated using Genesys solutions for e-mail and web.

Altigen

Altigen started by offering products that came with analog boards to which optional IP capabilities had been added, calling the resultant products Converged PBXs. Altigen's three initial products were the AltiServe Small Office (8-50 analog/IP users), AltiServe Office (25-100 analog/IP users) and AltiServe Office Plus (36-320 analog/IP users). Early this year, Altigen introduced two new IP PBX products built from the ground up as IP systems: the AltiServe1 IP and AltiServe 2 IP. Targeted to small and branch offices with eight to 50 users, the basic AltiServe 1 IP bundled offering consists of IP PBX hardware and software as well as eight Altigen-IP phones starting at $465 per station including the phones. AltiServe 2 is a turnkey hardware/software solution for between 12 and 600 users with list prices starting at $200 per user excluding the phones. The system's 12 port VoIP cards can be software upgraded to support up to 30 ports.

Both new systems include voice mail, auto-attendant, one number access and slots for analog cards to support devices such as fax machines. An interesting feature is the ability to record a two-way conversation to voice mail. The systems also support screen-pops for customer relationship management (CRM) that are compatible with Microsoft CRM as well as Goldmine, ACT and Outlook. This support extends beyond traditional CTI in that a small amount of database information (e.g., account number) can also be displayed on the phone itself. Altigen has also added support for Euro-ISDN, enabling the company to expand to the European market.

Artisoft

Artisoft's TeleVantage 5.0 software-based phone system is targeted to small and medium-sized businesses and corporate branch offices. TeleVantage runs on Windows 2000/NT Intel-based servers and can interface with any H.323, ADSI, IP or CLASS feature phone. The system can be scaled up to 192 trunks (T1, E1, ISDN PRI/BRI and VoIP) and 480 extensions. Among the features supported are intelligent call management, auto-attendant, follow-me, automatic call distribution (ACD) and messaging. Artisoft's package includes a Windows-based interface that provides users with PC-based call and message control. With its TeleVantage 5.0 release, Artisoft added the ability for multiple organizations to share one system, thus enabling use of the platform for tenant-type services. TeleVantage Call Center adds sophisticated call center features enabling web-based call centers and remote agents. TeleVantage Open Communications Alliance Program is designed to encourage development of third-party applications that work with Artisoft's open APIs (application programming interfaces). TeleVantage Small Office Edition is a turnkey bundled solution targeted to businesses with up to eight employees sharing four telephone lines. Toshiba is one of the major channels Artisoft uses for distribution of its product.

Avaya

Avaya offers IP Office, an all-in-one solution for smaller offices with two to 256 extensions. The system can be used as a traditional telephone system, an IP telephony system, as a data solution or some combination of all three. Voice features include voice mail, compact contact center, assisted call transfer, etc. IP Office also includes a number of data features such as Internet access, secure remote access, firewall and bandwidth management.

Avaya's 4600 series IP phone portfolio includes several phones providing a range of screen sizes and advanced features. At the bottom end is the 4602 IP telephone with two programmable call appearance/feature buttons, 10 fixed feature buttons and a small display. At the high end is the 4630 IP Screenphone, which includes full-color, touch-screen web access as well as a number of interesting features. In between are four phones with varying levels of functionality: the 4620, 4612, 4606 and 4624. Avaya has also developed a range of softphones, including one that works on the Pocket PC. Avaya's Global Services organization offers an array of professional services to help clients evolve to IP telephony. Among the IP telephony services are LAN/WAN, security and wireless assessments, project management and remote system management.

Cisco

Cisco Call Manager is the software-based call-processing component of Cisco's IP Communications, a suite of solutions that include IP telephony, unified communications, IP video/audio conferencing and customer contact enabled by Cisco AVVID (Architecture for Advanced Voice, Video and Integrated Data). Cisco Call Manager can be installed on Cisco's specific or select third-party servers. Of particular importance is Cisco's partnership with IBM, which bundles the Call Manager software with IBM hardware.
Cisco has also introduced the Cisco Integrated Communications System (ISC) 7750, targeted to businesses or enterprise branch offices with fewer than 1,000 employees. In January 2003, Cisco announced that the ISC 7750 now supports Cisco's Unity Unified Messaging 4.0 as well as Cisco Customer Response Solution 3.0 for sophisticated call centers with up to 50 users. Cisco is offering reduced pricing for a solutions bundle that includes Call Manager, Cisco Unity Voice Mail and Cisco Auto Attendant with an entry level price of $14,995 (phones not included).

Cisco's 7900 series of IP phones provides a range of instruments starting with the high-end Cisco IP Phones 7960G and 7940G. These two phones feature large, pixel-based displays and support for additional information services using Extensible Markup Language (XML). The Cisco 7902G, 7910G and 7910G+SW are basic instruments intended primarily for areas that require only basic features, such as lobbies, break rooms and hallways. The Cisco 7912G addresses the voice communication needs of a cubicle worker who conducts low to medium telephone traffic. In addition to these wired sets, Cisco also offer the 7920 Wireless IP Phone. The Cisco 7910G+SW includes a Cisco two-port switch, making it suitable for applications where basic phone functionality and a co-located Ethernet device such as a PC are desired. Cisco also offers new low-end phone, the Cisco IP Phone 7905 priced at $165. Cisco's Analog Telephone Adaptor (ATA) 186/188 is capable of supporting two analog devices, and the Cisco VG248 Analog Phone Gateway, which handles up to 48 analog phone lines.

Comdial

Comdial's FX II business phone system functions as a stand-alone system or as part of a network of distributed FX II cabinets. The FX II can grow from 24 to 560 total ports without requiring any equipment change outs. Up to 11 FX II systems can be networked using either a VoIP WAN or an ISDN PRI to support up to 4,000 phones. The FX II system supports standard analog and digital circuit-switched phones as well as Comdial's iPrimo IP phone on the same bus. The FX II Converged Telephony Platform also supports unified messaging, auto-attendant, voice mail and call center applications.

Ericsson

Ericsson's Web Switch 2000 is designed for small- to medium-sized businesses with up to 128 extensions supported by a single system. Integrated applications include Phone Manager (includes visual voice mail, an on-screen corporate directory and screen-based dialing) and OneBoxTM UM Lite (a unified messaging product that sends voice mail via e-mail). For the company operator, Ericsson has made Web switch compatible with its Dynamic Network Administration (D.N.A.) Operator Workstation (OWS). Ericsson's Distributed Call Manager (DCM) function facilitates the linking of multiple web switches into a single virtual system which Ericsson calls an NiPBX. The WebSwitch Extension Gateway uses a channel associated signaling (CAS) interface to Ericsson's MD110 to support up to 30 simultaneous conversations and enables customers to add local or remote IP extensions to their current circuit-switched system. The Web switch Phone Gateway provides remote location functionality, including the ability to connect existing analog devices and to connect to the local PSTN. The Web switch Trunk Gateway enables the interconnection of existing corporate PBXs using a corporate WAN (including features and services using QSIG). Ericsson also offers the Dialog 3413 IP phone.

Mitel

Mitel has four products in the IP PBX space: the 3300 Integrated Communications Platform (ICP), the 3100 ICP, the 3050 ICP and the 3340 Global Branch Office Solution. The 3300 ICP can support 30 to 30,000 users providing embedded voice mail, auto-attendant, ACD and 802.11 gateway in addition to over 500 telephony features. The system allows for full-feature transparency across multiple sites and also enables tight integration with non- Mitel PBXs using networking standards like QSIG and DPNSS. A recently announced survivability feature provides for continued communication across sites using ISDN lines in event of IP WAN link failure. The 3340 Global Branch Office Solution complements the 3300 ICP by providing survivable telephony to branch offices. The 3340 Branch Office Solution supports locations with fewer than 100 users with features similar to the 3300 ICP and provides for automatic reroute of calls to the PSTN if LAN/WAN connections are not available.

The other two platforms—the 3100 ICP and the 3350 ICP—support smaller implementations. The 3100 ICP supports up to 50 users with both LAN-based telephony and high-speed Internet access. Designed as a "plug-and-play" solution, the 3100 ICP can be connected to DSL or cable modems. The system includes embedded applications such as voice mail and auto-attendant, a computer network, a Layer 2 Ethernet switch, a router and two 56K dial-up modems, and remote access via remote access server connection or a VPN. The SIP-based 3050 ICP supports up to 10 users and a host of embedded applications including voice mail, auto-attendant, firewall, Internet gateway, etc. While only supporting up to 10 SIP phones per system, the 3050 ICP supports up to 50 IP devices including PCs and point of sale systems.

Mitel claims support for the broadest range of desktop devices in the industry with 13 different phone models including a wireless phone (made by Symbol) and IP conferencing units that use Mitel's patented beam-forming technology. The company's bottom-end phone, the 5001 IP Phone, costs under $100. Mitel has produced one of the most interesting IP phones to date, the 5230 IP Appliance. Mitel is also working with Citel on a module that allows customers to use existing 3Comm, Norstar and M1 terminals with Mitel's IP PBX products.

NEC

The smaller NEAX 2000 Internet Protocol Server (IPS) provides a rich set of both key and PBX features and is positioned as a solution for small and medium businesses. The maximum configuration supports up to 512 stations and 240 digital trunks. The NEAX IPS-DM supports the same features but is designed for IP networking while continuing to support analog and digital trunks for connection to the circuit-switched world. A key aspect of this system that NEC likes to highlight is the fact that IP devices use peer-to-peer connections across the LAN or WAN to communicate with other Dterm IP

telephones. This means the actual media stream does not flow through the box. Prime targets for NEC are the health care and hospitality industries.

Both systems support the NEC Dterm IP "phone set," which supports the same features as the NEC Dterm Series E digital phones. Each Dterm unit includes a small IP switch such that only one pair of wires is required to connect both the phone and the end user's PC to the LAN. NEC also offers the Dterm Series E IP adapter, which enables the customer to retain existing NEC phones. Finally, the Dterm SP20 Softphone enables VoIP calls via the user's PC. Another NEC offering is the NEC SN1604 Power Patch Panel, which provides power for up to 12 Dterm IP sets. NEC also offers a number of other products that complement its IP PBX line, including voice mail/UMS systems, data switches and a range of complementary applications.

Recently, NEC introduced an IP-enabled version of its Electra Elite IPK key system. The Electra Elite is a converged voice and data system that provides basic telephony functions from either a traditional circuit switched technology or VoIP, or both.

In addition to the Electra Elite, NEC also offers the Aspire system. This converged system provides peer to peer IP switching in a "hybrid" network with traditional digital/analog and IP/TDM/IP switching.

Shoreline

The Shoreline4 system uses a modular architecture that distributes call control as well as functions such as voice mail and automated attendant across remotely located voice switches rather than relying on a centralized server. The individual voice switches communicate on a peer-to-peer basis, which Shoreline claims eliminates any single point of failure. Shoreline offers several types of voice switches, each of which connects to the IP network using a 10/100Mbps Ethernet port. The ShoreGear-24 supports 24 analog ports, 8 universal telephone/trunk ports and 16 telephone ports and interfaces with standard analog trunks using loop or wink start signaling. The ShoreGear-T1 and ShoreGear-E1 support higher density trunking using T1/PRI and E1/PRI, respectively. The ShoreGear Teleworker provides four analog ports for remote workers.

While the voice switches are distributed, the solution provides a single image from a management perspective. At the heart of the system is Shoreline's Distributed Call Control software, which runs on VxWorks. The Shoreline platform includes TAPI for call centers and TAPI Wave for media play and record. The Shoreline system also includes as part of the bundle TAPI-compliant voice applications such as voice mail, automated attendant, ACD, call detail recording, unified messaging and desktop call control. In addition to two analog phones, Shoreline offers an IP phone: the Shoreline IP 100 business phone. Last November, in response to partner suggestions, Shoreline came out with a package targeted to small, single-site businesses with 100 or fewer phones. Single-Site Enterprise Solution includes one or more ShoreGear voice switches, Call Director and Personal Call Manager. A typical 38-user system would cost $22,240 ($585 per seat), and a typical 96-user system would cost $52,175 ($543 per seat).

Shoreline desktop applications:

Application	Description
Personal Call Manager	Includes Personal Productivity software that integrates voice mail, calendar and database contacts with Microsoft Outlook and provides users a Windows interface for call handling.
Operator Call Manager	Delivers information and control features that enable company operators, executive administrators and departmental receptionists to give callers a "high touch" level of personal attention.
Agent and Supervisor Call Manager	Enables ACD functions and call agent applications for workgroups and informal call centers. Also for formal call centers when used with CRM applications from a variety of vendors.
ShoreWare Director	A browser-based network management tool that provides a single interface across all applications for adding a new user. The user gets an extension, a mailbox, an auto-attendant profile and can be added to an ACD group. The system automatically sends an e-mail to the new user with instructions for downloading their desktop software.

Source: Probe Research, Inc.

Siemens

Siemens IP PBX software has been rebranded as HiPath ComScendo. The ComScendo software interoperates with the company's HiPath 3000, 4000 and 5000 products and will come bundled with those offerings. The HiPath 3000 Survivable Media Gateway (SMG) operates in three modes:
1. As a stand-alone small/medium enterprise system,
2. As a survivable media gateway for the HiPath 5000 and
3. In the same capacity with the future HiPath 4000.

The HiPath 5000 Real-time IP System (RSM) V4.0 supports up to 2,000 users and 64 nodes. Siemens has promised that future versions of the call control software will give users a choice of various server platforms such as UNIX, Windows or Linux. Siemens also offers two IP phones: the optiPoint 400 IP phone with SIP and H.323 support, and the optiPoint 600 IP/circuit-switched phone. Siemens has also released a new optiClient 130 softphone with additional capabilities such as drag and-drop name from directory to setup conference call. The company also offers a USB handset for use with the optiClient 130.

Vertical Networks

Vertical Networks' InstantOfficeTM system is targeted to enterprise branch offices, stores and small to medium-sized businesses with up to 192 employees. The InstantOffice 3000 series is designed for branch offices and the InstantOffice 6000 series is designed for small to medium-sized business headquarters and larger offices/stores. The main differences are that the InstantOffice 6000 series can support more trunks and additional mailboxes. Each series also supports a second model, the Enhanced 3500 and 6500, respectively, which both feature faster processors and more memory translating into better support for high-performance applications such as contact centers. Vertical Networks' new InstantOffice MultiSite Manager centralizes management consolidating reporting and enables central management of network-wide updates, upgrades and back-ups of voice and data applications.

(Competitive source: Probe Research, Inc.,*VOPM, Vol. 4, No. 1 – 2003*).

Strengths and Weaknesses Analysis

How to Exploit Competitors' Weaknesses

	Competitor Weakness	How to Exploit	Key Sales Message
Cisco	CallManager only supports basic networking capabilities between clusters.	The Nortel Networks BCM seamlessly integrates with existing solutions.	"Nortel Networks offers solutions with networking technology that seamlessly integrate with existing solutions."
	CallManager supports <100 features, which includes "dial tone."	BCM offers >400 features and "dial tone" is basic system functionality.	"Nortel Networks has leveraged 14 years of Norstar telephony capabilities into a robust VoIP platform to create a converged solution."
	OA&M must be administered per site, per redundant CallManager.	BCM Wizards, Unified Manager and Network Configuration Manager ease system deployment, enhance employee productivity and simplify tasks.	"Nortel Networks delivers tools that simplify system administration and enhance employee productivity, allowing you to further streamline costs."
	Customers are forced to a total Cisco IOS solution because Cisco has not adopted Open standards.	BCM is designed to work across any QoS capable infrastructure through open standards.	"The Nortel Networks 'open' approach allows choice in network infrastructure and a simple method to develop value-added applications."
	Cisco's one choice approach lacks the flexibility of IP telephony deployment to address multiple customer requirements.	BCM provides incremental migration to IP telephony with the Norstar Modular ICS. BCM can be configured for IP only or with PSTN digital or analog fallback. Succession 1000 offers a converged solution for the large enterprise business office.	"Nortel Networks recognizes that there are many different customer requirements; therefore we offer choice in IP telephony solutions."
Avaya	IP Office supports no PSTN fallback. A failure on the IP Media Processor board means any in-progress calls will be dropped as soon as the circuit fails forcing the user to re-establish communication.	BCM supports fallback to circuit switch. When the QoS does not meet or exceed the threshold, new calls are re-routed over alternate trunks until the network QoS improves.	"The Nortel Networks BCM provides reliability so that customers can focus on their core business."

	Competitor Weakness	How to Exploit	Key Sales Message
	Separate servers are required with the IP Office for unified messaging and call center, driving up the cost of their solution.	Voice messaging and call center applications are preloaded on the BCM and enabled via simple software keycodes. No additional hardware is required.	"BCM comes equipped with a complete suite of applications, any of which can be cost effectively enabled via a software keycode as you business needs evolve."
	Small to medium-sized businesses with existing, Merlin Legend digital MLX sets or Partner sets cannot make use of their terminal investments.	BCM allows for all M7000 series terminals and the newest BST to access digital station ports. Existing Norstar Modular ICS fiber Trunk and Station modules migrate with the Fiber Expansion Module.	"Nortel Networks recognizes the validity of a small business protected investment with BCM."
	The Access Point router from Avaya is an adjunct and not integrated into their "all-in-one-box" solution.	BCM supports wide area connections into the most sophisticated networks integrated router. A possible added investment for new site opportunities.	"Nortel Networks recognizes the validity of a small business protected investment with BCM."
	3rd party analysts rate IP Office's management capabilities as "relatively poor."	BCM offers intuitive tools to manage single or multiple BCMs, as well as superior monitoring capabilities, including SNMP support, event logging and alarms.	BCM was awarded Best in Test by this 3rd party lab and lauded for its "feature richness and superior management capabilities."
Vertical Networks	InstantOffice offers no solutions for the larger enterprise customers with multiple sites supporting a maximum of 36 users, 72 users or 192 users.	The Nortel Networks Enterprise VoIP portfolio, featuring Succession 1000, Meridian 1 IP-Enabled and BCM, covers the entire enterprise market space.	"With years of experience, Nortel Networks offers solutions for businesses of all sizes."
	InstantOffice supports analog, digital sets and the Polycom SoundPoint 1P 500 terminal.	BCM offers the user IP station sets with self-labeled buttons and soft keys for system integration, like the i2004. An IP soft client, the i2050 Software Phone is also available with BCM.	"Nortel Networks has the expertise and the planned migration path to offer a truly converged solution."
	The 3000 series chassis is limited to 2 digital trunk interfaces. One additional T-1 would require a forklift to the 6000 platform.	BCM supports a total of 3 T-1/PRIs for greater trunk capacity.	"The Nortel Networks BCM is a scalable solution that is ready to grow with our customers."

	Competitor Weakness	How to Exploit	Key Sales Message
	InstantOffice 3000/6000 does not offer fax capabilities such as: Fax Mail Messaging, Fax-On-Demand and Fax Overflow.	BCM Web caching offers LAN workstations shorter download and serves as a security feature. The BCM Unified Manager manages Web caching when BCM is used as a Web proxy.	"Nortel Networks recognizes the time, cost savings and security required by our customers."
	3000 series limits as many as 72 users to 6 simultaneous voicemail sessions. InstantOffice messaging is limited to voicemail with auto attendant.	BCM offers advanced fax applications that are beneficial when considering a Unified Messaging solution not available with InstantOffice.	"The Nortel Networks BCM provides a Unified Messaging solution which includes fax, voice and data."
	InstantOffice offers no advanced voice networking features like centralized messaging or centralized attendant.	With BCM and MCDN networking to a Meridian 1 PBX, a keycode activates features like Message Waiting Indication, Attendant Camp-On and Break-In across the network.	"Nortel Networks uses its expertise to provide customers with future-proof networks and choices."
	The Call Center CRQ solution is limited to 84 agents and is available as a software option on the 6000 series platform only.	BCM Professional expands to 250 configured agents. Our call center solutions are integrated, keycode enabled and administered through the Unified Manager Web browser.	"The Nortel Networks BCM solution provides simplified administration and scalability."
	A Cisco 1600 router blade must be purchased to get security and firewall features on the InstantOffice systems at an additional cost of $3000-$5000.	BCM provides integrated firewall and security measures like Network Address Translation (NAT), Basic and Stateful packet filtering, Point-to-Point Tunneling protocol, IPSec VPN support, HTTP, SOCKS, IPX-WINSOCK and DNS proxy.	"Nortel Networks brings years of experience to provide a reliable, secure solution."
	A WAN backup with dial-on-demand capability is not available with InstantOffice.	A WAN backup with dial-on-demand can be configured with BCM through an integrated V.90 modem and ISDN B-channels.	"The Nortel Networks BCM provides an integrated Net Link Manager that starts the backup link when the primary breaks, for always-up data communications."

	Competitor Weakness	How to Exploit	Key Sales Message
Mitel	Mitel cannot offer a complete converged solution as the 3100 ICP and the 3300 ICP are based on different system architectures so that migration from the 3100 ICP to the 3300 ICP requires a forklift upgrade.	BCM supports up to 200 stations (mix of digital and IP).	"The Nortel Networks BCM is a scalable solution that is ready to grow with our customers."
	3100 ICP only supports 48 55 total ports and does not support digital terminals.	BCM supports redundant power supply and fan assemblies.	"The Nortel Networks BCM provides reliability so that customers can focus on their core business."
	Mitel supports only 4 Virtual Ports and has 100 hours of storage.	BCM voice messaging supports a total of 1,000 mailboxes with a maximum of 32 total channels and 200 storage hours.	"BCM Voice Messaging provides far more extensive coverage for your business through simplified keycode upgrades."
	The 3100 ICP offers no call center capability.	BCM offers both basic and professional call center functionality for this market space.	"With the keycode option for professional call center, up to 80 agents in one chassis are supported, without additional hardware."
	The 3100 ICP does not support in-building wireless, unified messaging or national ISDN compatibility.	BCM supports all of these functions with the advanced applications of Companion, CallPilot and NISDN.	"Nortel Networks uses its expertise to provide customers with future-proof networks and choices."
	The 3100 ICP supports analog trunking as well as fractional T1 and IP trunking.	BCM supports a variety of PSTN touch points, including E-1, T-1, PRI, BRI and analog.	"Nortel Networks uses its expertise to provide customers with future-proof networks and choices."
	Mitel cannot offer customers an integrated IP toll-bypass solution today and has failed to provide their customers with a clear road map to migrate to IP technology.	Nortel Networks has set a clear migration path.	"Nortel Networks has leveraged 14 years of Norstar telephony capabilities into a robust VoIP platform to create a converged solution."
	Mitel has not announced how they will support QoS mechanisms such as DiffServ. Customers will have a hard time implementing Mitel's IP technology across LAN Subnets.	BCM supports QoS for LAN and WAN.	"Nortel Networks offers solutions with networking technology that seamlessly integrate with existing solutions."

	Competitor Weakness	How to Exploit	Key Sales Message
3Com	Provides first 4 ports, 200 mailboxes and 30 minutes of storage in the purchase of the NBX 100 chassis. When you upgrade, you must purchase by the port and storage hours up to a max of 12 ports and 80 storage hours.	BCM Voice Messaging supports a total of 1,000 mailboxes with a maximum of 32 total channels and 200 storage hours.	"BCM Voice Messaging provides far more extensive coverage for your business through simplified keycode upgrades."
	The NBX 100 supports <40 features.	BCM supports >400 PBX features including voicemail and call center.	"No other competitor offers the range or richness of features found in BCM."
	3Com cannot offer any network feature sets that are vital to voice/network design.	BCM has on-net and off-net routing, network queuing, routing controls, network hold, calling line ID over the network, network class of service, least cost routing over the network, network speed call lists, charge account codes over the network and executive override priority.	"Nortel Networks is the only manufacturer that can take multisite network capabilities and transport them over an IP network."
	The NBX Call Center software by Apropos is not integrated within the NBX 100 chassis, requiring its own server with analog or digital interface cards to connect with the NBX 100. NBX Call Center is positioned for 10 to 15 agents with no option to expand beyond 25 agents, 2 supervisors and one administrator.	BCM offers basic call center for this market space, with the keycode option for professional call center (up to 80 agents).	"Nortel Networks delivers cost savings by developing keycode options so no additional hardware is needed."
	The NBX 100 requires an additional device, such as OfficeConnect, to support up to 10 VPN tunnels.	BCM supports IPSec and PPTP (Point-to-Point Tunneling Protocol) for VPN capabilities between sites.	"The Nortel Networks BCM provides VPN capabilities that ensure the security and the availability of communications between sites."

SALES AND MARKETING INFORMATION

BCM takes advantage of today's technology with the powerful components it offers. The BCM components are:

- Base units, BCM200 & BCM400 with 2 10/100 Base T Ethernet ports, 20G HD, V.90 modem, power supply (optional redundancy)

- Media Bay Modules (MBM)

- Media Services Card (MSC) – field replaceable

- Business Series Terminals (BST)

- IP Terminals.

Data Capabilities

BCM provides a combination of routing services:

- IP routing— via static routing, RIP, RIP2 and Open Shortest Path First (OSPF)

- Basic and stateful packet filtering— security when passing packets

- Five proxy firewall systems (HTTP, SOCKS, IPX-WINSOCK, NAT, PAT and DNS).

BCM also provides a number of services that enhance IP routing and IPX support via the local area network (LAN) segment:

- Network address translation (NAT) — allows address allocation that provides for routing stability and network scalability.

- DHCP— provides automatic assignment of IP addresses. BCM has a built-in DHCP Relay Agent to allow pass through of DHCP traffic to and from LAN connected devices.

- DNS — maps easy-to-remember names to IP addresses and Web caching allows multiple users to share information downloaded from the Internet.

Technical Specifications

BCM Specifications

Parameter	Specification
BCM Base Unit	▪ Intel® Celeron® 1.2 Ghz, CPU (BCM400) ▪ Intel Celeron 800MHz, CPU (BCM200) ▪ 256 MB SDRAM ▪ 20 GB hard drive ▪ 2 PCI slots ▪ 300 watt power supply on the base unit (350 watt power supply on the redundant unit)
VoIP support	▪ 60 simultaneous IP trunk gateway sessions ▪ Up to 90 IP clients ▪ Quality of Service Monitor (QMON) with fallback to PSTN on call setup
VPN support	▪ 16 secure IPSec server-to-server tunnels ▪ 16 secure IPSec Client tunnels ▪ 10 secure PPTP tunnels ▪ Connectivity to another BCM or to a Nortel Networks Contivity Extranet Switch ▪ 128-bit Triple DES, 56-bit DES, 40-bit DES encryptions ▪ SHA1, MD5 Authentication ▪ (Authentication Header protocol, AH)
Fax Messaging	▪ Fax Answering ▪ Fax Attendant Overflow ▪ Fax Messaging ▪ Fax on Demand ▪ T.38 Fax over IP
Basic Call Center support	▪ 2 skillsets ▪ 20 configured agents ▪ 20 Agent IDs ▪ 10 active agents ▪ 15 lines can be configured ▪ Wallboard support (with optional Reporting)
Professional Call Center support	▪ 50 skillsets ▪ 250 configured agents ▪ 250 Agent IDs ▪ 20, expandable to 80, active agents ▪ 100 lines can be configured ▪ Wallboard support

Parameter	Specification
System management	- Remote administration and configuration via IP network - Wizard-based procedures: configure system, add users, renumber DNs, edit user-telephony templates - Optivity Discovery and Launch - Keycode management and administration - Monitor events and alarms - Automated backup and restore routines
IVR support	IVR runtime engine keycoded option preinstalled on the hard drive; application custom-developed using Periphonics tools
Data networking	2 LAN ports 1 WAN interface with 1 T1 & 1 V.35 - V.90 modem card (North America only) - Dual V.35 WAN card as installed upgrade

Compatibility

Telephony support	- Nortel Networks T7100,T7208, T7316E/KIM, Doorphone - North America standard analog telephone
Mobile Telephony support	- T7406 Cordless - Companion C3050 and C3060 - NetVision® Phone from Symbol Technologies - NetVision Data Phone from Symbol Technologies
IP telephones	- Nortel Networks i2002 Internet Telephone - Nortel Networks i2004 Internet Telephone - Nortel Networks i2050 Software Phone
Voice mail	- Built in BCM CallPilot (keycode enabled) - CallPilot 150 2.0 or Norstar Voice Mail of a Norstar MICS - Meridian Mail/CallPilot Voice Mail on a Meridian1 or Succession 1000/1000M
Gateway	Meridian 1 Internet Telephone Gateway
BCM 3.5 H.323 Interoperability	- Meridian ITG release 2.x.24 and 2.x.25 (delete) - Meridian 1 IPT 3.0 - Succession 1000 Release 2.0 and Release 3.0 - Succession 1000M - RadVision ECS 3.0 Gatekeeper
Analog support	Analog Terminal Adapter (ATA-2)
Teleconference support	Nortel Networks Audio Conferencing Unit (NACU)

SALES TOOLS

Training

All existing courses for BCM, both sales and technical, have been updated to include 3.5 content. Global Knowledge, a Nortel Networks training partner, is introducing a new approach in training to reduce travel requirements on our Partners. With the use of Virtual Labs, participants can schedule lab time with Global Knowledge, giving them hands-on access to a BCM in a multi-site configuration. All equipment is set up to take the participant through common steps to configure BCMs.

Note: Nortel Networks training agreement with Global Knowledge extends to technical training only. Sales training is provided by Nortel Networks.

Accreditation

There are no incremental accreditation requirements for BCM 3.5. It is assumed that all Partners currently selling BCM have met all of the accreditation requirements for BCM 3.0. Any new Partners must meet all requirements for competency, demo equipment and technical support prior to being granted official access to the product. You can find detailed accreditation criteria for BCM on the Partner Information Center Website as well as in the Competency and Development module of the Knowledge Transfer Kit.

Documentation and Sales Collateral

The Knowledge Transfer Kit is a key communications vehicle for project information. The Knowledge Transfer Kit provides project details from Order Management, Technical Support, Installation and Maintenance to Sales and Marketing information. The fourteen individual templates that make up the BCM 3.5 Knowledge Transfer Kit are:

Product Inclusion Decision

- Business case

Marketing Support Readiness

- Sales and Marketing Package

Offer Readiness

- Demo/Sales Kit

- Competency Development

Transaction Readiness

- Sales Eng/Order Configuration

- Product Catalog

- Order Management

- Repair/Warranty and Return

Supply and Service Readiness

- Installation and Maintenance

- Technical Support

- Value-Added Services

- Lab Standards

- Product Documentation (such as white papers)

- Trial Information

Pre-sales Support

Please talk to your representative or visit the Nortel Networks Website at www.nortelnetworks.com/bcm.

RESOURCES

Glossary of Terms

Address — A unique identifier assigned to networks and stations that allows each device to receive and reply to messages.

Application — A computer program that performs a wide range of tasks as specified by the user. Examples of application programs are word processing packages, spreadsheet packages and accounting packages.

Asynchronous — A method of transmission where the time intervals between characters are not required to be equal and signals are sourced from independent clocks with different frequencies and phase relationships. Start and stop bits may be added to coordinate character transfer.

Base Station — A Companion component that is mounted on walls and ceilings to provide a radio link to an office or other area where Companion portable telephones are used. Each Base Station houses two radios that allow portables to send and receive calls through the BCM server.

Business Series Terminals

T7100 telephone

The Business Series Terminals T7100 telephone has a single-line display and one memory button without an indicator.

T7208 telephone

The Business Series Terminals T7208 telephone has a single-line display and eight memory buttons with indicators.

T7316 telephone

The Business Series Terminals T7316 telephone has a two-line display with three display buttons, 16 memory buttons with indicators, and 8 memory buttons without indicators.

T7316E telephone

The Business Series Terminals T7316E is a full-featured, expandable, multi-line telephone that has a two-line, 16-character-per-line display that is menu driven and supported by three context-sensitive soft keys. The T7316E provides access to 24 memory buttons, 16 of which include multi-segment icons for fast and precise decision-making. It is designed for high call volume positions requiring access to extensive system features. Typical users include supervisors, managers, executives and other business professionals.

BST Central Answering Position (T7316E+T24)

The Business Series Terminals Central Answering Position is an expandable desktop telephone that allows administrative assistants and emergency contact centers the ability to centralize and efficiently distribute calls. By attaching the T24 Key Indicator Module directly to the T7316E, office administrators and emergency contact centers can transform the pace and efficiency of their operations while maintaining exceptional customer service standards.

BCM Doorphone

The new BCM Doorphone (supported on BCM 3.5 and Norstar 6.1) allows office personnel to talk directly to visitors prior to their entering a business. And it lets them engage in a two-way conversation.

Class of Service (COS) — The set of features and lines available to the user for a call. The restriction filters and remote access packages assigned to the telephone in lines programming determine the Class of Service for a call. Entering a six-digit Class of Service password can change the Class of Service for a call. (Internal users cannot change their access to features with a COS password, only their restriction filters.)

Destination code — A two- to seven-digit number that the system interprets and then translates into the digits that you want dialed out. Both the code and its associated dialed digits are assigned under Routing service in Services programming.

Differentiated Services (DiffServ) — DiffServ is an implementation methodology for QoS service for IP networks. DiffServ is a rule-based methodology intended to improve network performance. Instead of applying faster, more advanced technology, networks are managed by appropriate network policies. With DiffServ there is a cost associated with higher quality services and a risk with lower quality services.

Directory number (DN) — A unique number that is automatically assigned to each telephone or data terminal. The DN, also referred to as an internal number, is often used to identify a telephone when settings are assigned during programming.

Domain name— The domain name is used to organize Internet names into manageable groups, such as nortelnetworks.com.

Domain Name Server (DNS) — The domain name system or domain name server is the system in the Internet that maps names of objects, most usually host names, into IP numbers or other resource record values. The namespace of the Internet is divided into domains, and the responsibility for managing names within each domain is delegated, typically to systems within each domain.

Driver (Device) — A program that allows hardware peripheral, such as a NIC, to communicate with the BCM server.

Dynamic Host Configuration Protocol (DHCP)— DHCP is a protocol that lets network administrators centrally manage and automate the assignment of IP addresses in an organization's network. Using the Internet's set of protocols (TCP/IP), each machine that can connect to the Internet needs a unique IP address. When an organization sets up its computer users with a connection to the Internet, an IP address must be assigned to each machine. Without DHCP, the IP address must be entered manually at each computer and, if computers move to another location in another part of the network, a new IP address must be entered. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

Ethernet — A widely used Local Area Network (LAN) protocol that is the original Carrier Sense Multiple Access/Collision Detect (CSMA/CD) LAN that lets PCs and/or Business Communication Manager servers listen for pauses before they communicate. Ethernet LANs use coaxial cable or twisted-pair wiring for connecting computers.

FAX — FAX works with BCM Voice Messaging, offering a caller the capability of sending a fax document to a mailbox as easily as sending a voice message.

FTP — The file transfer protocol (FTP) allows a user on one host to access and transfer files to and from another host over a network. On the Internet, FTP refers to a tool for accessing linked files.

Filtering — Filtering is the process of examining a data packet on the network to determine the destination of the data and whether the packet should be passed along on the local LAN, copied to another LAN, or dropped.

H.323 — H.323 is the standard for using IP to send voice and video within intranets and on the public Internet.

Hardware— The physical components of the BCM system.

Hypertext Transfer Protocol (HTTP) — HTTP is the set of rules for exchanging text, graphic images, sound, video and other multimedia files on the World Wide Web.

Install — To set up for operation. For example, hardware is installed by attaching it to the appropriate connectors or sockets either inside or outside the BCM server.

Integrated Services Digital Network (ISDN) — A digital telephone service that allows for a combination voice and data connection over a single, high-speed connection. ISDN service can operate over the same copper twisted-pair telephone line as analog telephone service.

Interface — An information interchange path that allows communication between computer parts.

Internet — A global TCP/IP network linking millions of computers for communications purposes.

IP — The Internet Protocol (IP) is the protocol that supports data being sent from one computer to another on the Internet. Each computer on the Internet has at least one address that uniquely identifies it from all other computers on the Internet. When you send or receive data, the message gets divided

into units called packets. Each of these packets contains both the sender's Internet address and the receiver's address.

IP is a connectionless protocol, which means that there is no established connection between the end points that are communicating. Each packet that travels through the Internet is treated as an independent unit of data without any relation to any other unit of data. In the Open Systems Interconnection (OSI) communication model, IP is in layer 3, the Networking Layer.

IP address — The Internet Protocol address is a unique identifier that allows communication over the Internet to be directed to the appropriate destination. Every computer on the Internet must have a unique IP address. IP addresses are allocated by an ISP in the following format: nnn.nnn.nnn.nnn, where nnn is a numeric value from 0 to 255. IP addressing might be referred to as being static (fixed) or dynamic.

Least cost routing — See Routing service.

Local Area Network (LAN) — A LAN is a network of interconnected workstations sharing the resources of a single processor or server within a relatively small geographic area.

Mailbox — A storage place for voice messages on BCM Voice Messaging.

Meridian Customer Defined Network (MCDN) — Meridian Customer Defined Networking (MCDN) is a Nortel Networks proprietary ISDN-PRI signaling protocol used to interface a BCM to another BCM, a Meridian 1 system or a Norstar system. MCDN is used to network voice-switching capabilities only and, on the BCM, provides networking features such as Calling Party Name Display, Network Messaging Services and Message Waiting Indication. (Additional networking features are supported between Meridian 1 systems.)

Message — A feature that allows you to send a message to another system user. The Message feature also lets you know if you have any messages waiting and maintains a Message Waiting List to keep a record of your internal messages and your (external) voicemail messages.

Microprocessor — A chip that is the center of all activity inside the BCM server. The microprocessor controls all logical and arithmetic operations for the computer and is responsible for executing program commands. It is also referred to as the Central Processing Unit (CPU).

Modem — A communications device that allows data to be exchanged between computers over telephone lines. Electronic processes called modulation and demodulation perform the exchange. The modem changes (modulates) the data into tones to send to another modem and also converts (demodulates) tones when receiving from another modem.

Network— Two or more computers linked together electronically to share programs and exchange data. Joining computers over a network requires adding specialized hardware and software to each computer.

Network device — A network device is a hardware entity characterized by its use as a communications component within a networking infrastructure.

Network Interface Card (NIC) — An adapter card containing the hardware necessary to connect a BCM server to a local area network. Personal computers and workstations on local area networks (LANs) typically contain a network interface card specifically designed for the LAN transmission technology, such as Ethernet or Token Ring. Network interface cards provide a dedicated, full-time connection to a network.

Operating system — The disk-based software that manages the operation of the BCM server. An operating system controls the flow of information between the computer hardware. Windows® NT is the operating system that manages the BCM server.

Packet — A packet is the unit of data that is routed between an origin and a destination on the Internet or any other packet-switched network. When any file (email message, HTML file, GIF file, URL request and so forth) is sent from one place to another on the Internet, the Transmission Control Protocol (TCP) layer of TCP/IP divides the file into pieces of an efficient size for routing. Each of these packets is separately numbered and includes the Internet address of the destination. The individual packets for a given file may travel different routes through the Internet. When the packets have all arrived, they are reassembled into the original file.
A packet-switching scheme is an efficient way to handle transmissions on a connectionless network such as the Internet. An alternative scheme, circuit switching, is used for networks allocated for voice connections. In circuit switching, lines in the network are shared among many users as with packet switching, but each connection requires the dedication of a particular path for the duration of the connection.
Packet and datagram are similar in meaning. A protocol similar to TCP, the User Datagram Protocol (UDP) uses the term datagram.

Point-to-point protocol (PPP) — PPP is a protocol for communication between two computers using a serial interface, typically a personal computer connects to a server by a phone line. For example, your Internet server provider may provide you with a PPP connection so that the provider's server can respond to your requests, pass them on to the Internet, and forward your requested Internet responses back to you.
PPP is a full-duplex protocol that can be used on various physical media, including twisted pair or fiber optic lines or satellite transmission. It uses a variation of High Speed Data Link Control (HDLC) for packet encapsulation.
PPP can process synchronous as well as asynchronous communication. PPP can share a line with other users and it has error detection.

Port — A connector on the BCM server that allows data exchanges with other devices, such as a printer or mouse.

Primary Rate Interface (PRI) — An ISDN interface, which uses twenty-three B channels and a D channel (23B+D).

Private branch exchange (PBX) — A PBX is a telephone system within an enterprise that switches calls between enterprise users on local lines while allowing all users to share a certain number of external phone lines. The main purpose of a PBX is to save the cost of requiring a line for each user to

the telephone company's central office. The PBX is owned and operated by the enterprise rather than the telephone company.

Private network — A telephone network consisting of owned or leased telephone lines used to connect different offices of an organization independently of the public network.

Public network — The regular telephone network that connects most homes and businesses.

Quality of Service (QoS) — On the Internet and in other networks, QoS is the idea that transmission rates, error rates, and other characteristics can be measured, improved, and, to some extent, guaranteed in advance. QoS is of particular concern for the continuous transmission of high-bandwidth video and multimedia information.
Using the Internet's Resource Reservation Protocol (RSVP), packets passing through a gateway host can be expedited based on policy and reservation criteria arranged in advance. Using ATM, which also lets a company or user preselect a level of quality in terms of service, QoS can be measured and guaranteed in terms of the average delay at a gateway, the variation in delay in a group of cells (cells are 53-byte transmission units), cell losses, and the transmission error rate. In BCM, QoS is provided over IP. QoS is guaranteed for outgoing traffic until it reaches the next hop.

RAM (Random Access Memory) — Computer memory that stores data temporarily. RAM stores the data used by the microprocessor as it executes instructions. The contents of RAM are erased each time the BCM server is turned off or restarted.

Relaying — Relaying is the process of moving data along a path determined by a routing process. The data is relayed between a source and a destination.

Remote monitoring — A feature that lets an off-site technician with a PC call in and troubleshoot your system through the built-in modem.

Router — A router is a device that forwards traffic between networks, based on network layer information and routing tables. A router decides which path network traffic follows using routing protocols to gain information about the network and algorithms to choose the best route based on a routing matrix.

Routing — The path a message takes from its point of origin to its destination on a network or the Internet.

Routing Information Protocol (RIP) — RIP enables routers in the same autonomous system to exchange routing information by means of periodic updates. RIP is a widely used protocol for managing routing information within a self-contained network such as a corporate local area network (LAN) or an interconnected group of such LANs.
Using RIP, a gateway host (with a router) sends its entire routing table (which lists all the other hosts is has on record) to its closest neighbor host every 30 seconds. The neighbor host passes the information to its next neighbor and so on until all hosts within the network have the same routing path information, a state known as network convergence. RIP uses a hop count as a way to determine network distance. Each host with a router in the network uses the routing table information to

determine the next host to route a packet to for a specified destination.

RIP is considered an effective solution for small homogeneous networks. For larger, more complicated networks, the transmission of RIPs of the entire routing table every 30 seconds may put a heavy amount of extra traffic in the network. The major alternative to RIP is the Open Shortest Path First Protocol (OSPF).

Routing service — A programming section that allows outgoing calls to be directed automatically based on the numbers a caller dials. For BCM servers linked in a network, routing can create a transparent or coordinated dialing plan. It can also be used to direct calls to the least expensive lines according to a Services schedule (sometimes called least cost routing).

Serial port — A port that sends and receives data one bit at a time. This port can be used to connect the BCM server to a printer, external modem or mouse. Serial port connectors have nine pins and are designated by software with the letters COM and a single digit, such as COM1.

Simple Network Management Protocol (SNMP) — SNMP is the protocol governing network management and the monitoring of network devices and their functions.

Software keycodes — All BCM applications are loaded onto the system when it is shipped. Some of the BCM applications are standard and work immediately after the system is installed. Other applications are optional and must be enabled using software keycodes that the customer must purchase in order to upgrade to those features.

Station — An individual telephone.

Station Auxiliary Power Supply (SAPS) — A device which provides power to a telephone that is connected more than 300 m (975 ft.) and less than 1200 m (3900 ft.) from the server, or to a CAP module.

Station Media Bay Module — A computer module that provides access to telephone lines. The 16-port Digital Station Media Bay Module (DSM 16) allows the connection of 16 digital telephone sets to the system. The 32-port Digital Station Media Bay Module (DSM 32) allows the connection of 32 digital telephone sets to the system. The Analog Station Media Bay Module (ASM 8) allows the connection of analog station sets to the system.

T-1 — Digital carrier system or line that carries data at 1.544 Mbps.

T24 KIM — The T24 Key Indicator Module (KIM) is a 24-button module that attaches directly to the T7316E; together they form the Business Series Terminal (BST) Central Answering Position (CAP). This modular approach is extremely flexible and allows for easy configuration and expansion.

Telephony Application Program Interface (TAPI) — The Telephony Application Program Interface (TAPI) is a standard program interface that lets you and your computer communicate over telephones or videophones to people or phone-connected resources elsewhere in the world.

Transmission Control Protocol/Internet Protocol (TCP/IP) — A language governing communication among all computers on the Internet. TCP protocol checks packets of information for errors, submits requests for re-transmission in the event of errors and returns multiple packets of a message into the proper original sequence when the message reaches its destination. IP dictates how packets are sent out over networks and has a packet addressing method that lets any computer on the Internet forward a packet to any other computer that is a step or more closer to the packet's recipient.

Trunk — The physical connection between the BCM system and the outside world using either the public telephone system or a private network.

Trunk Media Bay Module — A computer module that provides access to telecommunications trunks. The Digital Trunk Media Bay Module (DTM) provides the connection between a standard digital PSTN T1 or PRI line and the Enterprise Edge system. The Caller ID Trunk Media Bay Module (CTM) provides the ability to access four analog Caller ID PSTN lines. The Basic Rate Interface Media Bay Module (EE-BRIM S/T) connects up to four BRI S/T ISDN lines to the BCM system.

Voice over IP (VoIP) — A set of facilities for managing the delivery of voice information using the Internet Protocol (IP). In general, this means sending voice information in digital form in discrete packets rather than in the traditional circuit-committed protocols of the public switched telephone network (PSTN). VoIP and Internet telephony avoid the tolls charged by ordinary telephone service. In addition to IP, VoIP uses the real-time protocol (RTP) to help ensure that packets get delivered in a timely way. Quality of Service (QoS) is difficult to guarantee with public networks. Users can program the telephone numbers required to access up to five different Voice Message Centers. You can also program which of the five centers is to be accessed by each specific line. Using VoIP, an enterprise positions a VoIP device at a gateway. The gateway receives packetized voice transmissions from users within the company and then routes them to other parts of its intranet (local area or wide area network) or, using a T-1 or E-1 interface, sends them over the public switched telephone network.

Wide Area Network (WAN) — A collection of computers or BCM servers connected or networked to each other over long distances, typically using common carrier facilities.

Web cache — A server or collection of servers that store copies of Internet content. The Web cache server can be either located on the LAN, where the clients it serves are also located, or it can be embedded within the enterprise WAN or at the client's Internet Service Provider (ISP).

Frequently Asked Questions

1. Which applications are standard with BCM 3.5 and which require a software keycode?

   Standard Features

   - Call processing/telephony features
   - Over 150 telephony features, e.g., Transfer, Call Forwarding, Conference
   - Analog trunking with Caller ID, BRI, PRI, T1 trunks
   - Auto Attendant
   - Desktop Assistant Pro Administration Edition
   - i2050 Software Phone Diagnostic Tool

   Data Services

   - IP Routing (Static, RIP1/2, OSPF)
   - DiffServ Queuing
   - DHCP (Server and Relay Agent)
   - NAT/PAT
   - Static and Stateful Packet Filtering
   - HTTP and DNS Proxy
   - COPS-PR Support

   Features Requiring Keycodes

   - i2050 Software Phone (configurations greater than 16 require an application license) IP seat license is always required
   - i2002 Telephone (IP seat license required)
   - i2004 Telephone (IP seat license required)
   - Symbol NetVision and NetVision Data Phones (IP seat license required)

   - CallPilot VPIM/AMIS Message Networking Software
   - BCM MCDN & Q.SIG Voice Networking
   - BCM DPNSS Voice Networking
   - BCM LAN CTE
   - BCM VoIP Gateways (IP trunks)

   - CallPilot Unified Messaging
   - CallPilot Voice Messaging
   - CallPilot Fax Messaging
   - CallPilot Fax Overflow Software

- CallPilot Fax on Demand Software

- CallPilot Fax Suite Software

- Nortel Networks Call Center (Basic, Professional and Multimedia)

- Call Center Agent Keycodes may also be required on a per agent basis (to expand Professional Call Center > 20 agents)

- BCM 3.5 IPSec Software

- BCM 3.5 PPPoE Software

- Network Configuration Manager 2.0 Client/Server Software

- Interactive Voice Response (IVR) Runtime Engine

2. What does BCM Release 3.5 deliver?

BCM Release 3.5 builds on the capabilities of previous releases and delivers the following:

- Enhanced Messaging features, including centralized voicemail

- Call Center enhancements

- H.323 interoperability

- SIP trunk support & data services

- T.38 Fax over IP

- Voice over IP enhancements

- Network Configuration Manager 3.0

- BCM Management enhancements

- Integrated Universal T1

- Dual V.35 WAN

- Global market enhancements

- Serviceability enhancements

- Increased security

- Telephony feature enhancements

3. Is there a way to administer multiple BCMs via a single GUI interface for all moves, adds and changes?

Yes. Using Network Configuration Manager (NCM), an administrator can launch Unified Manager for individual programming sessions with any BCM connected within the same domain and perform bulk programming changes. NCM on Release 3.5 delivers a significantly enhanced level of capability and includes support of patch distribution, voicemail backup and restore, enhanced reporting and support for new BCM features.

4. How does Interactive Voice Response (IVR) work on BCM?

   Interactive Voice Response (IVR) on BCM is a self-service application designed to allow businesses to be accessible to their customers 24 hours a day, 365 days a year. Businesses can supply callers with access to a broad range of information simply by responding to a series of prompts via their touchtone phones. BCM 3.5 provides an integrated IVR runtime engine that sits on top of an application layer and interprets the IVR applications. IVR applications developed using Portal Solutions' PeriProducer or PeriPro application builder environment can be installed on the BCM in the field and run on the BCM-IVR. IVR Park & Page, new to BCM 3.5, puts a caller on hold and automatically pages the department the caller selected from the IVR.

5. How does BCM 3.5 address Quality of Service?

   The radically different nature of voice and data traffic places differing demands on the network they are transmitted across. Data traffic requires lots of bandwidth and is tolerant of delays and network latency. Voice traffic requires only modest bandwidth but is very sensitive to network delays and latency.

   To ensure the highest quality for voice services on the network, BCM uses:

   - PSTN fallback if the IP network goes down or is unable to support call quality
   - DiffServ for prioritizing voice and data packets
   - Media Path Management
   - The BayStack* 460-24T-PWR Switch to support QoS for IP telephones

6. Are any hardware changes required to upgrade from BCM 3.0 to Release 3.5?

   No. The BCM 3.5 upgrade kit provides a CD-ROM that allows users with BCM 3.0 and BCM 3.0.1 to upgrade their systems to Release 3.5. User programming and data will be preserved during the upgrade. The upgrade kit includes installation instructions. Client operating systems supported for running the upgrade from desktops include Microsoft® Windows® 2000, Windows XP and Windows NT 4.0. (Windows 95/98/ME are not supported.)

7. How do try-and-buy keycodes work?

   These keycodes allow the user to try advanced applications before buying them. Users can activate a number of BCM applications on a "try-and-buy" basis for 60 days in order to evaluate these business performance-enhancing applications, free of charge, before having to make a commitment to purchase them. For more information, go to https://app12.nortelnetworks.com/cgi-bin/partnerPage.cgi?curOid=12460&filename=/communications/publications/smb/collateral/2002/2002_1515.pdf

8. What is IPSec Client Termination?

    BCM 3.5 supports IPSec Client Termination in addition to Branch Office Mode (server-to-server) connections supported in BCM Release 3.0. IPSec Client Termination allows a Contivity Extranet Client to connect to the BCM from a remote PC, giving totally secure access to a private network from the remote PC. The Contivity Extranet features supported include:

    - Idle Timeout
    - Perfect Forward Secrecy
    - Rekey Timeout
    - Rekey Datacount
    - Automatically added Static Routes.

9. Is VoIP on BCM 3.5 compatible with Meridian systems?

    Yes. BCM 3.5 has been designed for H.323 Voice over IP interoperability and compatibility with Meridian ITG releases 2.x.24, 2.x.25, and Succession 3.0 (1000/1000M).

10. Have serviceability and reliability been improved with BCM 3.5?

    Yes. The service and support offerings for BCM 3.5 do not significantly depart in a quantitative manner from those of BCM 3.0, but they are qualitatively enhanced. BCM 3.5 is primarily a software upgrade that incorporates a number of serviceability, reliability, flexibility and manageability enhancements. BCM has become easier to install, support and service in 3.5, further evolving the award-winning BCM platform.

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