



BCM450 Installation Checklist and Quick Start Guide

BCM 5.0

Business Communications Manager

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Chapter 1

Getting started

IMPORTANT!

Print this chapter to record the progress of the BCM450 system installation and configuration. Use the tables and checklists to guide you through the installation process.

About this guide

The *BCM450 Installation Checklist and Quick Start Guide* describes how to install and configure Business Communications Manager 450 (BCM450) systems running BCM 5.0 software.

Purpose

The procedures described in this guide relate to the BCM450 hardware. This guide provides task-based information about installing the hardware components and performing basic configuration tasks. For more detailed configuration information, see the appropriate technical documentation.

Audience

This guide is directed to experienced installers responsible for installing and configuring BCM450 systems.

For more information about installing and configuring a BCM450 system, see *Nortel Business Communications Manager 450 Maintenance* (NN40170-503) and *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

Precautions

Nortel recommends that you read this entire document before starting the described procedures.

Observe the general safety precautions against personal injury and equipment damage outlined in the *Regional Installation Safety Manual* (ISM) at all times.

Before starting the procedures presented in this document, arrange all materials, tools, and test equipment at the work location to minimize fatigue and inconvenience.



The value next to the clock icon indicates the average time that it takes to complete the procedure.

Installation and configuration summary

The table [Installation and configuration checklist](#) on page 10 provides the tasks to install and configure a BCM450 system.

Table 1 Installation and configuration checklist (Sheet 1 of 2)




		Task	Reference	Comments
	5 min	Review the BCM450 system hardware and configuration tools.	System overview on page 15	
	2 min	Verify that you have the tools, materials, and data required.	Tools and system information on page 12	
	15 min	Complete the checklists before installing the BCM450 system.	Checklists on page 13	
	12 min	Install the BCM450 main unit: <ul style="list-style-type: none"> • Rack-mount • Wall-mount • Desk-mount 	Main unit and expansion cabinet installation on page 19	
	9 min	(Optional) Install the BCM450 expansion cabinet: <ul style="list-style-type: none"> • Rack-mount • Wall-mount • Desk-mount 	Expansion cabinet installation on page 23	
	3 min	Apply power to the BCM450 system.	Power-supply connection on page 24	
	1 min (per MBM)	Configure the MBMs with Element Manager.	MBM configuration on page 39	
	4 min	(Optional) Install MBMs in the BCM450 main unit or expansion cabinet.	Media bay module installation on page 25	
	1 min	Connect the telephony connector.	Media bay module installation on page 25	
	15 min	Connect the MBM wiring.	Media bay module installation on page 25	
	5 min	Connect the BCM450 system to the LAN.	BCM450 main unit LAN connection on page 30	
	5 min	Determine DHCP server configuration and IP address (use default or change).	DHCP server configuration and IP address on page 30	
	9 min	Install telephony hardware.	Telephone installation on page 31	
	15 min	Download Element Manager.	BCM Web page downloads on page 34	
	1 min	(Optional) Download the Startup Profile template.	BCM Web page downloads on page 34	

Table 1 Installation and configuration checklist (Sheet 2 of 2)

<input checked="" type="checkbox"/>		Task	Reference	Comments
	10 min	Apply the keycode.	Software keycode on page 35	
	15 min	Configure the required BCM450 system parameters (Element Manager or Startup Profile).	System parameters on page 35	
	N/A	(Optional) Complete the configuration by customizing other parameters.	Additional parameters on page 41	

Note: The stated times vary depending on the number and type of items installed.

Default values

Use the table [Default IP addresses](#) on page 11 and the table [Default user names and passwords](#) on page 11 to view and record changes to the default BCM450 system information.

Table 2 Default IP addresses

Port	IP address (subnet mask)	New IP address
OAM port (see Note)	192.168.1.2 (255.255.255.252)	Cannot be changed.
BCM450 LAN	192.168.2.2 (255.255.254.0)	

Note: DHCP is enabled on the OAM port and assigns the following IP address to the DHCP enabled computer: **10.10.11.2**

Table 3 Default user names and passwords

Tool	User ID User name	Password	New password
Element Manager	nnadmin	PlsChgMe!	
BCM450 Web page (http:// [IP address])	nnadmin	PlsChgMe!	
Telset Administration and telephony configuration (F9*8 and F**Config)	SETNNA (738662)	CONFIG (266344)	
Telset Administration voice mail (Feature 983)	SETNNA (738662)	CONFIG (266344)	
Telset Administration initialize voice mail (Feature 983)	–	CONFIG (266344)	

Tools and system information

Use the table [Tools](#) on page 12 and the table [System information](#) on page 12 to record values and comments about tools and system information.

Table 4 Tools

Description	Value	Comments
Laptop (or PC) with: <ul style="list-style-type: none"> Windows XP, or Windows Vista, Windows Server 2003, Windows Server 2008, or Citrix Presentation Server 4.0 minimum 256 MB, recommended 512 MB 150 MB free disk space 		
Mounting hardware rack-mount brackets, wall-mount bracket, or rubber feet; an optional plywood backboard 3/4 in. (2 cm) thick for wall-mount installations		
Phillips #2 screwdriver		
Common screwdriver		
Pliers		
Antistatic ground strap		
Connecting tool		
25-pair cable with RJ-21 connector		
Cat 5 Ethernet cable with RJ-45 connectors		
Surge protector		

Table 5 System information (Sheet 1 of 2)

Description	Value	Comments
System name		
Date and Time (NTP/Trunk/Manual)		
Time zone		
Initial IP address and netmask for each network interface		
Default next-hop router (default gateway)		
DHCP server		
DNS domain name		
Primary (and optional secondary) DNS servers IP		
Profile/region		
Telephony Startup template (DID/PBX)		
Start DN		
Fractional T1 channel numbers		

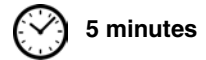
Table 5 System information (Sheet 2 of 2)

Description	Value	Comments
Frame relay DLCI/CIR (if applicable)		
SNMP agent (security, version)		
SNMP manager IP address		
SNMP community string		

Checklists

Before installing the BCM450 hardware, complete the following checklists. For more information, see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

General checklist



- Determine the location for the main unit (and optional expansion cabinet), telephones, and other equipment based on spacing and electrical requirements.
- Order the required trunks from the central office.
- Ensure that you have all the equipment and supplies you need to install the system.
- Ensure that the system complies with the environmental requirements.
- Ensure that the system complies with the electrical requirements.
- Ensure that the system complies with the site telephony-wiring requirements.

Main unit components checklist



Check that you have the following components, and inspect the components for any damage:

- one main unit
- one power supply cable (two if installing a BCM450 unit with a redundant power supply)
- four rubber feet
- one cable tie
- a documentation CD
- BCM450 Installation Checklist and Quick Start Guide* (NN40170-302)

Expansion cabinet and media bay modules components checklist (optional)



5 minutes

Check that you have the following components, and inspect the components for any damage:

- one expansion cabinet
- one power supply cable
- one expansion cable (shielded Ethernet cable)
- four rubber feet
- the correct media bay modules (MBM)

Chapter 2

System overview

You require the following hardware components and configuration tools to install and configure your BCM450 system:

- [Main units](#) on page 15
- [Expansion cabinets and media bay modules](#) on page 16
- [Additional hardware](#) on page 17
- [Nortel Business Element Manager](#) on page 17
- [Startup Profile](#) on page 18

For more information, see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

Main units

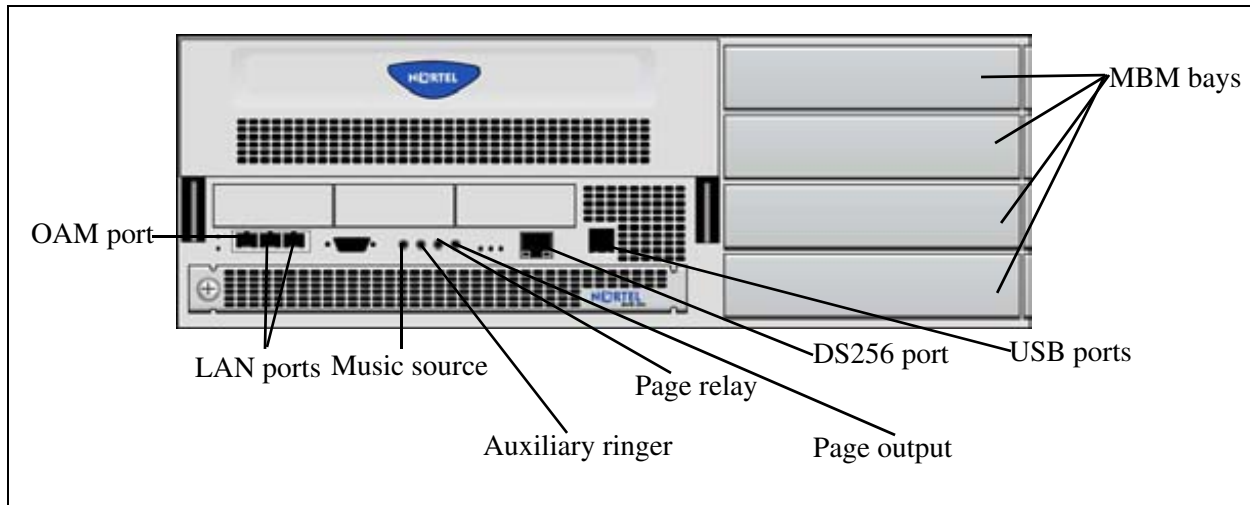
The main hardware component in the BCM450 system is the main unit.

Standard main unit

[Table 6 "Main unit description"](#) (page 15) describes the standard main unit, and the figure [Main unit ports and connectors](#) on page 16 shows a standard main unit.

Table 6 Main unit description

Standard main units	Description
BCM450 main unit (with telephony only)	The BCM450 main unit provides call-processing and simple data networking functions. It includes four media bay module (MBM) bays, and four connections for auxiliary equipment (auxiliary ringer, page relay, page output, and music source) The BCM450 main unit does not include a router, but it includes 3 LAN ports: one is the local OAM port for technicians, and the other two are for basic LAN connectivity.

Figure 1 Main unit ports and connectors

Expansion cabinets and media bay modules

The BCM450 system can include an expansion cabinet. The expansion cabinet is designed to accommodate up to six additional MBMs to connect additional telephony equipment to the system. The MBMs connect with external devices to implement various trunks and stations.

[Table 7 "Trunk, station, and combination MBMs" \(page 16\)](#) lists the trunk MBMs and station MBMs that are supported on the main unit and expansion cabinet.

Table 7 Trunk, station, and combination MBMs

Trunk MBMs	Station MBMs	Combination MBMs	Other
ADID4/ADID8	ASM8/ASM8+ (up to 2 on the main unit, 4 on the expansion cabinet)	4x16	FEM (main unit only)
BRIM	DSM16/DSM16+/ DSM32/DSM32+	G4x16/G8x16	
DTM	GASM (up to 2 on the main unit, 4 on the expansion cabinet)		
GATM4/GATM8			

Additional hardware

In addition to the main unit, expansion unit, and MBMs, the BCM450 system includes the additional hardware listed in [Table 8 "BCM450 hardware descriptions" \(page 17\)](#).

Table 8 BCM450 hardware descriptions

Hardware	Description
Wall-mount bracket	A bracket designed for mounting a BCM450 unit (main unit or expansion unit) to a wall.
Power supply adapter cord	The power-supply adapter cord is for international (non-North American) BCM450 users. It connects to the power supply on one end and to the (C-14) BCM450 power bar on the other end. You require one power-supply adapter cord for each power supply you want to connect to the power bar.
Compact Expansion Card (CEC)	An optional internal component that increases the capacity of the BCM450 system.
Uninterruptable power supply (UPS) (if applicable)	An uninterruptable power supply (UPS) is an optional device that maintains continuous operation during power interruption or failure conditions. The UPS provides power-source monitoring and battery-backup activation so that critical BCM450 functionality is maintained. BCM450 supports American Power Conversion (APC) UPS devices that use a USB control interface. The UPS control software configures various operational settings.

Nortel Business Element Manager

The primary management application for configuring and administering the BCM450 system is Nortel Business Element Manager. Element Manager is a client-based management application that runs on a Windows computer. With Element Manager, you can connect to the BCM450 system devices over an IP network and configure, administer, and monitor BCM450 system devices.

You can use the latest Element Manager version to manage all previous BCM systems that use Element Manager. You need only one instance of Element Manager on your computer.

The Element Manager requirements are:

- Operating System: Windows XP, Windows Vista, Windows Server 2003, Windows Server 2008, Citrix Presentation Server 4.0

BCM applications for BCM 5.0 support the following Vista versions: Microsoft Vista Business, Windows Vista Ultimate, and Windows Vista Enterprise. Both 32-bit and 64-bit versions of Windows Vista are supported except for the limitations identified in *Nortel Business Communications Manager 450—System Overview* (NN40170-103).

- RAM: minimum 256 MB, recommended 512 MB
- free space: 75 MB

Startup Profile

You can use the Startup Profile to customize a template with common BCM450 system parameters. Then you can use this template to easily configure a single system or multiple systems.

You create the Startup Profile using the Startup Profile template (a Microsoft Excel template), and then use a USB storage device to transfer the Startup Profile data to the BCM450 main unit.

Loading the Startup Profile adds about 5 minutes to the time for the BCM450 system to boot.

To use the Startup Profile template, you need:

- a computer with a USB port
- Microsoft Excel 2000 or later
- the Nortel BCM450 Startup Profile template (Microsoft Excel template)
- a portable USB storage device compatible with USB 1.1 or USB 2.0 (formatted for FAT32)

Chapter 3

Hardware installation

See the following procedures to install the BCM450 hardware:

- [Main unit and expansion cabinet installation](#) on page 19
- [Compact Expansion Card installation](#) on page 23
- [Media bay module installation](#) on page 25
- [Expansion cabinet installation](#) on page 23
- [Power-supply connection](#) on page 24
- [Media bay module installation](#) on page 25
- [BCM450 main unit LAN connection](#) on page 30
- [DHCP server configuration and IP address](#) on page 30
- [Telephone installation](#) on page 31

Main unit and expansion cabinet installation

You typically install the main unit and expansion cabinets in the same manner. Make sure you install the expansion cabinets close enough to the main unit so you can connect the supplied 5 m (16 ft) expansion cable between the expansion cabinet and main unit.

Nortel provides three methods of installing the BCM450 units:

- rack-mount
- wall-mount
- desktop-mount



Caution: To keep the BCM450 system operating at the optimal internal temperature, keep the top, sides, and rear clear of obstructions and away from the exhaust of other equipment.

Do not place any objects on top of a main unit.

For more information, see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

Rack-mount installation

You can install a BCM main unit in a standard 19-inch equipment rack along with your other networking and telecommunications equipment. The BCM expansion cabinet installs in a similar manner to the main units.



Caution:

When you install the main unit in a rack, do not stack units directly on top of one another in the rack.

Fasten each unit to the rack with the appropriate mounting brackets. Mounting brackets cannot support multiple units.

For desk-mount installations, do not place anything directly on top of the BCM main unit.

Use the following procedures to install a BCM450 unit in a rack:

- [To attach the rack-mount brackets](#) on page 20
- [To mount the main unit in an equipment rack](#) on page 20

To attach the rack-mount brackets



5 minutes

- 1 Place the BCM450 main unit on a flat, clean surface.
- 2 Align the screw holes between the BCM450 main unit and the right rack-mount bracket.
- 3 Fasten the bracket to the BCM450 main unit using four screws.



Caution: Use only the screws supplied with the rack-mount bracket. Do not replace the screws. Other screws can damage the unit.

- 4 Align the screw holes between the BCM450 main unit and the left rack-mount bracket.
- 5 Fasten the bracket to the main unit using four screws.



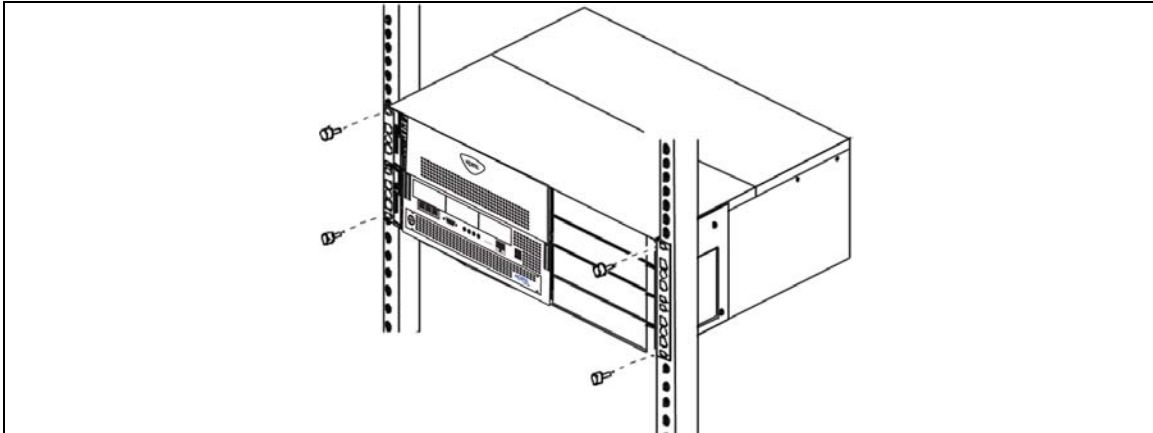
Note: The expansion cabinet rack-mount bracket has an additional set of holes so that you can install the brackets so that the expansion cabinet sits flush with the BCM main unit in an equipment rack.

To mount the main unit in an equipment rack



7 minutes

- 1 Determine the location in the rack where you want to install the main unit.
- 2 Position the main unit in the rack. Have an assistant hold the main unit.
- 3 Align the holes in the rack-mount bracket with the holes in the equipment rack rails.
- 4 Fasten the rack-mount brackets to the rack using the four supplied screws See [Figure 2 "Attach the unit to an equipment rack"](#).

Figure 2 Attach the unit to an equipment rack

Wall-mount installation

To install a BCM450 unit (main unit or expansion cabinet) on a wall, you need a wall-mount bracket for each unit.

Use the following procedures to install a BCM450 unit on a wall:

- [To install the BCM450 on a wall](#) on page 21

To install the BCM450 on a wall



6 minutes

- 1 Place the wall-mount bracket on the backboard (or wall) and mark the location of the screw holes. Use a bubble level to ensure that the wall-mount bracket is level with the plywood backboard.



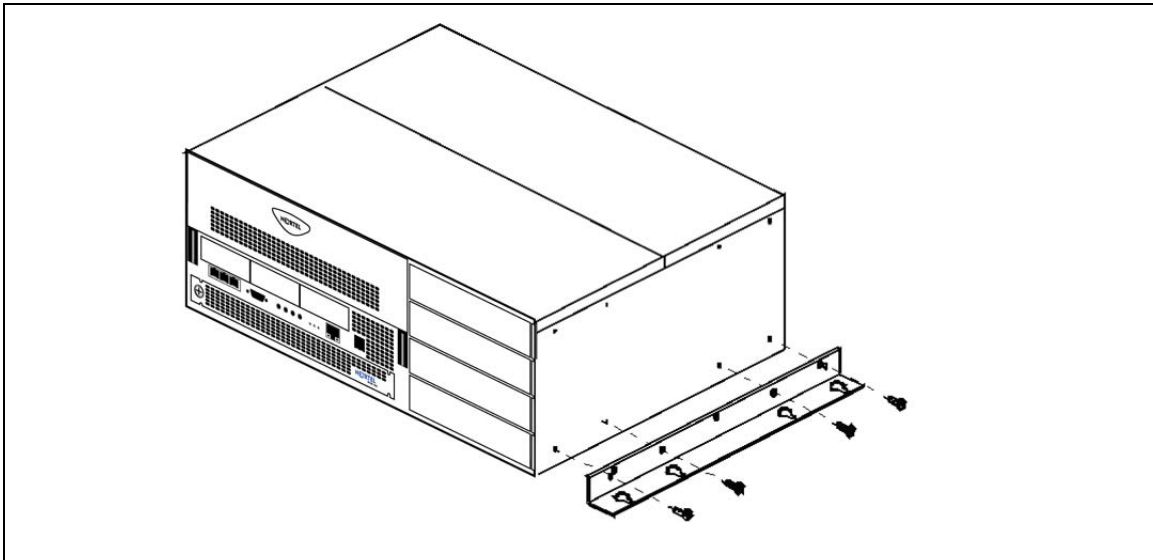
Note: If the backboard for the BCM450 main unit has enough room for the expansion cabinet, you do not require a second backboard.

- 2 Install four #10 x 2.5 cm (#10 x 1 in.) round-head screws in the backboard. Leave approximately 0.5 cm (0.25 in.) of each screw exposed from the backboard (or wall).
- 3 Hang the wall-mount bracket on the installed screws.
- 4 Use a level to ensure the wall-mount bracket is level.
- 5 Remove the wall-mount bracket from the backboard.
- 6 Align the screw holes on one side of the BCM450 main unit with the wall-mount bracket.
- 7 Fasten the wall-mount brackets securely to the BCM450 main unit using the screws provided.



Caution: Use only the screws supplied with the wall-mount bracket kit (NTAB3422E5). Do not replace the screws. Other screws can damage the unit.

Figure 3 Wall-mount bracket



- 8 Hang the BCM450 main unit on the backboard screws. Make sure the main unit is level. Ensure the wood screw heads seat fully into the wall-mount bracket slots.
- 9 Tighten the wood screws against the wall-mount bracket.

Desktop-mount installation

Follow this procedure to install a BCM450 unit (main unit or expansion cabinet) on a desktop or other flat surface.

To install a BCM450 unit on a desktop or flat surface



4 minutes



Caution: Do not place anything directly on top of the BCM450 main unit or expansion cabinet.

- 1 Attach four rubber feet to the corners on the bottom of the main unit.
- 2 Position the main unit on the table or shelf.
- 3 Position the BCM450 unit on a table or shelf. Make sure you leave enough space around the unit for ventilation and access to the cables.

Compact Expansion Card installation

You can install the optional Compact Expansion Card (CEC) in the main unit. The CEC provides the following functionality:

- Up to Four TI C6424 600 MHz DSPs.
- 2MBx16 DDR2 for each DSPs
- Process voice services up to 240 Digital Trunk gateways
- Process up to 96 G.729 IP trunks per each CEC card

To install the CEC



5 minutes

- 1 Remove the Base Function Tray.
- 2 Remove the CEC faceplate (the right-most slot) by applying pressure to the bottom of the faceplate from the inside of the Base Function tray. Once the bottom has come loose, remove the faceplate from the front.
- 3 Screw the four metal standoffs (included) into the main board of the base function tray.
- 4 Slide the CEC into position from the back of the base function tray, so that the CEC protrudes slightly from the front faceplate of the base function tray.
- 5 Align the connectors on the card and on the main board of the base function tray and push down. Ensure that the card is connected securely to the main board.
- 6 Use the four supplied screws to fasten the card to the standoffs.
- 7 Reinstall the Base Function Tray.

Expansion cabinet installation

After installing an MBM, or MBMs, in the expansion cabinet, install the expansion cabinet in the same manner as the main unit (in a rack, on a wall, or on a flat surface).

For more information, see *Nortel Business Communications Manager 450 Installation—System*.(NN40170-303)



Warning: The timing in the BCM system is critical. Use the correct length cable as supplied with the expansion cabinet. The system will not work properly if you connect the BCM expansion cabinet using a cable that varies in length.

To install a BCM450 expansion unit

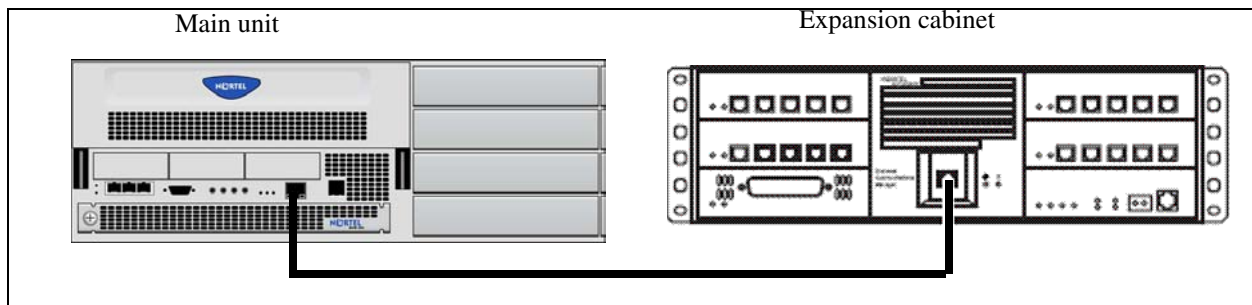


9 minutes

- 1 Mount the expansion unit the same way as the main unit. Refer to [Main unit and expansion cabinet installation](#) on page 19.
- 2 Locate the DS256 cable (NTAB3086E6) that was supplied with the expansion unit.
- 3 Plug one end of the DS256 cable into the DS256 port on the expansion unit.
- 4 Plug the other end of the cable into the DS256 connector on the faceplate of the BCM450 main unit

Refer to [Figure 4 "How to connect an expansion cabinet to a main unit"](#).

Figure 4 How to connect an expansion cabinet to a main unit



Power-supply connection

Use the power-supply cable supplied with each BCM450 unit.

Connect the power supply to your BCM450 system by one of the following methods:

- [To connect the power supply without a UPS](#) on page 25
- “To connect the power supply using a UPS” – see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303). For more information, see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

To connect the power supply without a UPS



3 minutes

- 1 Plug one end of the power-supply cable into the BCM450 power supply.
- 2 Plug the other end of the power-supply cable into the AC power source (wall outlet).
The BCM450 system boots.



Note: To use the Startup Profile for initial configuration of the BCM50 system, save the Startup Profile on your USB storage device, and insert the USB storage device in the USB port of the main unit before connecting the power. See [To download the Startup Profile template](#) on page 34.

- 3 If you have a redundant power supply, plug one end of the power-supply cable into the BCM450 redundant power supply.
- 4 Plug the other end of the power-supply cable into the AC power source (wall outlet).



Warning: Leakage currents

You must reconnect the power cords to a grounded outlet before connecting the telephony and data networking cables.

Media bay module installation

Install the expansion in the same manner as the main unit, and then install media bay modules (MBM) in the expansion cabinet or the main unit. If you are installing the MBM in the main unit, the MBM dip switches must remain in their default factory position. If you are installing the MBM in the expansion cabinet, you must change them to the correct setting for your configuration. You can use Element Manager to make any required modifications to the MBM settings.

The BCM450 main unit accommodates a maximum of four MBMs. If your BCM450 system requires more than four MBMs, you must connect an expansion cabinet to the BCM450 main unit.

For more information, see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

To verify the MBM switches



2 minutes

- 1 Verify that the 6-pin dip switch is set to on for all MBMs that have the 6-pin dip switch, if the MBM is being installed in the main unit. Verify that the DIP switches are set according to Element Manager if the MBM is being installed in the expansion cabinet. MBMs being installed in the expansion cabinet must first be configured through Element Manager. For more information on setting MBM DIP switches for the expansion cabinet, see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

Note: If you are installing an FEM in the main unit, ensure all DIP switches are set to on. All six LEDs should be lit when the system is returned to operation.

- 2 To install a global analog trunk module (GATM) in an expansion cabinet:
 - a For the dip switches on the left side, at the rear of the module, set all the switches to on.
 - b For the dip switches on the right side, at the rear of the module (country profile switches), set all the switches to off. The GATM automatically downloads the country profiles.
- 3 To install a global analog station module 8 (GASM8) in an expansion cabinet:
 - a For the dip switches on the left side, at the rear of the module, set all the switches to on.
 - b For the dip switches on the right side, at the rear of the module, set the switches according to [Table 9 "GASM8 dip switch settings \(switches 1–3\)" \(page 26\)](#) and [Table 10 "GASM8 regional dip switch settings \(switches 4–8\)" \(page 26\)](#).

Table 9 GASM8 dip switch settings (switches 1–3)

Switch	Description	Setting
Switch 1	Firmware download capability	OFF—Standard mode (firmware downloading not supported) ON—Enhanced mode (firmware downloading supported)
Switch 2	To download the firmware from the BCM450 (for enhanced mode only)	OFF—if you want the GASM8 to download the firmware when the firmware version in the BCM450 is different than the version in the GASM8 (default) ON—if you want the GASM8 to download the firmware in the event of a BCM450 cold start
Switch 3	Enable/disable echo cancellation	OFF—Enables echo cancellation (default) ON—Disables echo cancellation

Table 10 GASM8 regional dip switch settings (switches 4–8)

Switches 4 to 8 select the region for the GASM8 as follows:					
	Switch 4	Switch 5	Switch 6	Switch 7	Switch 8
North America	OFF	OFF	OFF	OFF	OFF
United Kingdom	OFF	OFF	OFF	OFF	ON
Australia	OFF	OFF	OFF	ON	OFF
Poland	OFF	OFF	OFF	ON	ON

Note: When switch 1 is ON (enhanced mode), an available regional profile will be downloaded and override the regional dip switch settings.

To install an MBM



1 minute

- 1 Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.
- 2 With the face of the MBM toward you, insert the MBM into an available MBM bay on the main unit or the expansion cabinet.
- 3 Push the MBM completely into the MBM bay. You hear a click when the MBM is firmly seated in the bay.

- 4 Repeat steps 2 and 3 for each additional MBM you wish to install.

The MBM must be configured for it to function. For information about configuring an MBM, see [To configure the MBMs](#) on page 40. If installing a GASM module into the main unit or expansion cabinet, you must reboot the BCM450 system for the module to function properly. If you are installing an MBM in the main unit, the MBM must be installed before it can be configured. If you are installing an MBM in the expansion cabinet, configure it first, then install it in the appropriate MBM bay.

MBM wiring



15 minutes

Telephone lines connect to the expansion unit through the connectors on the MBM.

For more information, see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).



Danger: Electrical shock hazards

Electrical shock hazards from the telecommunications network and ac mains are possible with this equipment. To minimize risk to service personnel and users, the BCM450 system must be connected to an outlet with a third-wire ground. In addition, install blank faceplates in all unused slots. The covers on all units must be in place at the completion of any servicing.



Warning: Electrical shock warning

The MBMs were safety approved for installation into the expansion unit. The installer and user are responsible for ensuring that installation of the hardware does not compromise existing safety approvals.

BEFORE YOU OPEN the main unit or expansion unit, unplug the network telecommunication cables and disconnect the unit from the ac power source.

Station modules: Connect the ports on these modules only to approved digital telephones and peripherals with the proper cables on a protected internal wiring system.

Do not connect any telephones to wiring that runs outside the building.

Read and follow the installation instructions carefully.

**Warning: Use only qualified persons to service the system.**

The installation and service of this unit must be performed by service personnel with the appropriate training and experience. Service personnel must be aware of the hazards of working with telephony equipment and wiring. They must be experienced in techniques that minimize any danger of shock or equipment damage.

Leakage currents

Service personnel must be alert to the possibility of high leakage currents becoming available on metal system surfaces during power-line fault events on network lines. These leakage currents normally flow safely to protective earth ground through the power cord. However, if the ac power is unplugged prior to disconnecting the cables from the BCM450 units, this hazard can occur.

System shutdown: You must disconnect the telephony and data networking cables from the system before disconnecting the power cord from a grounded outlet.

System startup: You must reconnect the power cords to a grounded outlet before reconnecting the telephony and data-networking cables.

To connect telephone lines to DTM, BRIM, or 4x16 MBMs

- 1 Obtain a telephone cable with a modular plug that matches the MBM to which you are connecting:
 - RJ-48C—for DTM
 - RJ-45—for BRIM
 - RJ-11—for 4x16
- 2 Plug the modular cable into the jack in the front of the MBM.
- 3 Connect the other end of the cable to the telephone company demarcation blocks of the building.
- 4 To connect telephone lines to another MBM, repeat steps 1 to 3 to for each additional line.



Warning: If the network ISDN is a U-loop, the BRIM must be connected only to an NT1 provided by the service provider. The NT1 must provide a Telecommunication Network Voltage (TNV) to Safety Extra Low Voltage (SELV) barrier.



Note: Do not attempt to plug digital equipment into the auxiliary (AUX) jacks on the front of 4x16 MBM.

- 5 Select the appropriate option for your system:
 - If your system includes a 4x16 MBM, go to [Connect extensions to the expansion unit](#) on page 29 for instruction about wiring the extensions for this MBM.
 - Repeat this procedure to add more telephone lines or proceed to [Connect extensions to the expansion unit](#) on page 29 to add extensions.

To connect analog telephone lines to the GATM4, GATM8, G4x16, or G8x16

- 1 Obtain a 25-pair cable with an RJ-21 connector on one end.
- 2 Plug the RJ-21 connector of the cable into the RJ-21 connector on the front of the MBM.
Use the lower RJ-21 connector on the G4x16 and G8x16 MBMs to connect analog lines.
- 3 Select the appropriate option to secure the RJ-21 connector to the MBM:
 - With a straight RJ-21 connector, use the two supplied screws on the sides of the connector to secure it.
 - With a right-angle RJ-21 connector, use the supplied screw on the left side of the connector to secure the left side of the connector. To secure the right side of the connector, use the supplied cable tie to fasten the 25-pair cable to the anchor on the MBM.
- 4 Connect the other end of the cable to the telephone company demarcation blocks of the building.

Connect extensions to the expansion unit

Extensions connect to the expansion unit through the connectors on the MBM installed in the expansion unit.

To connect extensions to DSM16, DSM32, ASM8, 4x16, G4x16, or G8x16 MBMs

- 1 Obtain a 25-pair cable with an RJ-21 connector on one end.
- 2 Plug the RJ-21 connector of the cable into the RJ-21 connector on the front of the MBM.
Use the upper RJ-21 connector on the G4x16 and G8x16 MBMs to connect digital extensions.
- 3 Select the appropriate option to secure the RJ-21 connector to the MBM:
 - With a straight RJ-21 connector, use the two supplied screws on the sides of the connector to secure it.
 - With a right-angle RJ-21 connector, use the supplied screw on the left side of the connector to secure the left side of the connector. To secure the right side of the connector, use the supplied cable tie to fasten the 25-pair cable to the anchor on the MBM.
- 4 Connect the other end of the cable to the local connecting blocks.
- 5 To connect extensions to a DSM32, repeat steps 1 to 4 for the second RJ-21 connector.

BCM450 main unit LAN connection

For more information, see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).



Warning: The DHCP server on the main unit is enabled (IP Phones only) by default. If your network already contains a DHCP server, disable the DHCP server on the main unit.

To connect a BCM450 system to the LAN



5 minutes

- 1 Connect one end of a standard Ethernet cable to your LAN.
- 2 Plug the other end of the Ethernet cable into the LAN port on the BCM450 main unit.
- 3 If you want to use the internal BCM450 network switch to connect another IP device to the LAN, connect an Ethernet cable between the IP device and one of the additional LAN ports on the BCM450 system.

If you wish to connect more than one device to the BCM450 main unit, you must connect a Layer 2 switch using the procedure above. After the Layer 2 device is connected, connect the devices to the BCM450 through the Layer 2 switch.

If you cannot connect your BCM450 system to the LAN, you can access the system by connecting through the OAM port. See [To connect to the system using the OAM port](#) on page 33.

DHCP server configuration and IP address

By default, the main unit is configured with a dynamic IP address, which means the unit requests an IP configuration from a DHCP server.

The BCM450 main unit can have two DHCP server configurations:

- [If an external DHCP server is not present](#) on page 30
- [If an external DHCP server is present](#) on page 31

For more information, see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

If an external DHCP server is not present

If an external DHCP server is not present, the main unit uses the following default IP configuration:

IP address:	192.168.2.2
Subnet mask:	255.255.254.0
Gateway:	192.168.1.1

The DHCP server on the main unit supplies IP configuration information for all IP devices (PCs and IP Phones). It also supplies specific connection information to the IP Phones.

If an external DHCP server is present



Warning: The DHCP server on the main unit is enabled by default. If your network already contains a DHCP server, disable the DHCP server on the main unit.

If an external DHCP is present, the BCM450 system uses the IP configuration supplied by the external DHCP server.

In this case, the DHCP server on the main unit supplies only IP Phones with IP configuration information. It does not supply any other devices with IP settings. This means that the administrator does not need to set up the external DHCP server to supply configuration settings to the IP Phones.

The DHCP server on the main unit must configure a range of IP addresses to supply to the IP Phones.

For example:

If the external DHCP server supplies the IP address 177.218.21.45 (subnet mask is 255.255.255.0) to the BCM450, the BCM450 DHCP server reserves the range 177.218.21.200–177.218.21.254.

You can use Element Manager to verify and change this default range.

The administrator must ensure that this range agrees with the network configuration. The range is not used by the external DHCP server.

Telephone installation

The BCM450 system supports many types of telephony devices (telephones). For more information about the supported telephones, see *Nortel Business Communications Manager 5.0 Installation—Devices* (NN40170-304).

For more information about installing telephones, see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

To install telephones



9 minutes/telephone

- 1 Open the box for each telephone, and verify that you have the following components:
 - telephone set
 - power supply and power-supply cable (if applicable)
 - telephone cable
 - installation instructions
- 2 Visually inspect the components for any damage.

- 3** Install the telephones as shown in the included installation instructions.
- 4** Label the telephone with customer-supplied information. Note the location, wall-jack identifier, and phone number for punch downs and BCM450 software commissioning.

Chapter 4

System configuration

The initial configuration defines your BCM450 system to the network. It also gives the system a unique identity and initial parameters. Then you can continue with the specific configurations for your system.

This chapter provides information on the following topics:

- [Connect to the system](#) on page 33
- [BCM Web page downloads](#) on page 34
- [Software keycode](#) on page 35
- [System parameters](#) on page 35
- [DHCP server configuration](#) on page 39
- [MBM configuration](#) on page 39
- [Additional parameters](#) on page 41

For more information about installing the BCM450 system (such as wiring charts and cable diagrams), see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

Connect to the system

If you can use the default IP address, you can connect the BCM450 system to the LAN. Then you can configure the BCM450 system, through Element Manager, from any PC connected to the LAN.

If you can connect through a LAN connection, proceed to [BCM Web page downloads](#) on page 34.



Warning: Before using the default address on your network, check with your system administrator. If this address conflicts with the LAN settings, you can cause network damage if you connect to the network without changing the IP address.

If you must change the IP address (due to a conflict with your network), you can connect to the BCM450 through the OAM port. See [To connect to the system using the OAM port](#) on page 33.

For more information, see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303)

To connect to the system using the OAM port

- 1 Connect one end of the Ethernet cable to the OAM port on the main unit.
- 2 Connect the other end of the Ethernet cable to the Ethernet port on your computer.

The DHCP-enabled computer is assigned IP address 192.168.1.2.

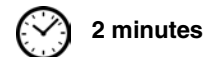
BCM Web page downloads

After you connect your computer to the BCM450 system, either through the OAM port or through a LAN connection, download Element Manager from the Administrator Applications area of the BCM Web page.

You can use the latest Element Manager version (for BCM450 Release 5.0) to manage all previous BCM systems that require Element Manager. You need only one instance of Element Manager on your computer.

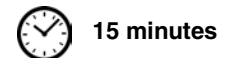
For more information, see *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

To access the BCM Web page



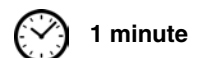
- 1 Open a Web browser and enter the BCM450 system IP address (default is 192.168.2.2).
The Enter Network Password dialog box appears.
- 2 Enter the username and password. Defaults are:
Username: **nnadmin**
Password: **PlsChgMe!**
- 3 Click **OK**.
The Welcome to BCM Web page appears.

To download and install Element Manager



- 1 Access the BCM Web page. See "[To access the BCM Web page](#)".
- 2 On the **Welcome to BCM** Web page, click **Administrator Applications**.
The Administrator Applications page appears.
- 3 On the **Administrator Applications** page, click **Business Element Manager**.
The Element Manager pane appears.
- 4 Read the information on this pane.
- 5 Click **Download Element Manager** on the right side of the screen, and follow the instructions to download.
- 6 After you download Element Manager, double-click the application and follow the installation instructions.

To download the Startup Profile template



- 1 Access the BCM Web page. See "[To access the BCM Web page](#)".
- 2 On the **Welcome to BCM** Web page, click **Administrator Applications**.
The Administrator Applications page appears.

- 3 On the **Administrator Applications** page, click **Startup Profile template**.
The Startup Profile template pane appears.
- 4 Read the information on this pane.
- 5 Click **Download Startup Profile template** on the right side of the screen, and follow the instructions to download.

Software keycode

You require a keycode to enable software features on your BCM450 system. You receive only one keycode whether you purchase one feature or a bundle of features. You can load a keycode using Element Manager, Startup Profile, or Telset Administration.

To generate a keycode, you require an authorization code for each feature you purchase.

For example, if you require one feature, you receive one authorization code and you generate one keycode. If you purchase four features, you receive four authorization codes, but you generate only one keycode.

To generate a keycode through the Nortel Keycode Retrieval System (KRS), you require:

- Username and password for the KRS (<http://www.nortel.com/support/tools/krs/index.html>)
- BCM450 authorization code for each feature
- BCM450 system ID

For more information about keycodes, see *Keycode Installation Guide* (NN40010-301).

System parameters

This section provides information about configuring the basic BCM450 system parameters (see the table [BCM450 system parameters](#) on page 35). You can configure the basic parameters using the Startup Profile template or Element Manager. After configuring the basic parameters, you can use Element Manager to configure more advanced parameters.

For more information, see *Nortel Business Communications Manager 450 Maintenance* (NN40170-503).

Table 11 BCM450 system parameters (Sheet 1 of 3)

Parameters	Element Manager	Startup Profile	Telset Administration
Keycode	Configuration > System > Keycodes	Keycode	N/A
IP address: <ul style="list-style-type: none"> • Obtain dynamically • IP address • IP subnet mask • Default gateway 	Configuration > System > IP Subsystem	IP Address	Feature 9*8 > IP Address

Table 11 BCM450 system parameters (Sheet 2 of 3)

Parameters	Element Manager	Startup Profile	Telset Administration
Modem: <ul style="list-style-type: none"> • Enable/disable modem 	Configuration > Resources > Dial Up Interfaces	Modem	Feature 9*8 > Modem
System: <ul style="list-style-type: none"> • Region 	Administration > Utilities > Reset > Cold Reset Telephony Services	System	Feature **PROFILE
Telephony startup: <ul style="list-style-type: none"> • Template • Start DN 	Administration > Utilities > Reset > Cold Reset Telephony Services	Telephony Startup	Feature **STARTUP
User account: <ul style="list-style-type: none"> • Telset user ID (numeric) • Telset password (numeric) 	Configuration > Administrator Access > Accounts and Privileges > View by Accounts tab	UserAccount	Feature 9*8 > User Accounts
System: <ul style="list-style-type: none"> • System name 	Configuration > System > Identification	System	N/A
System: <ul style="list-style-type: none"> • System ID 	Configuration > System > Keycodes (System ID - it is set automatically and cannot be changed)	System	N/A
Time: <ul style="list-style-type: none"> • Date and Time source • NTP server address • Date and time • Time zone 	Configuration > System > Date and Time	Time	N/A
DHCP server: <ul style="list-style-type: none"> • Enable/disable server • IP domain name • Primary DNS • Secondary DNS • Default gateway 	Configuration > Data Services > DHCP Server > General Settings tab	DHCP Server	N/A
IP Phones: <ul style="list-style-type: none"> • Enable registration • Enable global pwd • Global pwd • Auto-assign DNs • Advertisement logo 	Configuration > Resources > Telephony Resources	IP Telephones	N/A
SNMP Agent: <ul style="list-style-type: none"> • Enable/disable SNMP agent • Minimum required security • SNMP version support 	Configuration > Administrator Access > SNMP > General tab	SNMP Agent	N/A

Table 11 BCM450 system parameters (Sheet 3 of 3)

Parameters	Element Manager	Startup Profile	Telset Administration
SNMP community: <ul style="list-style-type: none"> Community string Type of access 	Configuration > Administrator Access > SNMP > Community Strings tab	SNMP Community	N/A
SNMP manager: <ul style="list-style-type: none"> Manager IP address 	Configuration > Administrator Access > SNMP > General tab	SNMP Manager	N/A
User account: <ul style="list-style-type: none"> User ID Group Description Callback number 	Configuration > Administrator Access > Accounts and Privileges > View by Accounts tab	User Account	N/A

To configure the system using Element Manager



15 minutes

- 1 Open Element Manager.
- 2 In the **Element Navigation Panel**, select **Network Elements > New Network Element > Business Communications Manager**.
- 3 Enter the BCM450 system IP address in the dialog box (default is 192.168.2.2).
- 4 Enter the following username and password:
Username: **nnadmin**
Password: **PlsChgMe!**
- 5 Click **Ok**.
- 6 In the **Element Navigation Panel**, expand the **Network Elements** folder. Click on the IP address of the BCM that you wish to connect to.
- 7 The Connection Information page will load. Enter the User ID and Password.
- 8 Click **Connect** on the menu bar.

Element Manager connects to the BCM450 system.
- 9 Configure the required parameters. See [Table 11 "BCM450 system parameters"](#).

For more information about configuring the system, see the online Help within Element Manager.

To configure the system using the Startup Profile (optional)



15 minutes



Note: The Startup Profile template uses macros to perform certain functions. You must set your Excel macro security level to medium or low to enable the macros:

- From the Tools menu, select **Macros** and then select **Security**.
- Select **Medium** or **Low**.
- Exit from Excel.
- Open the Startup Profile template (in Excel).
- Enable macros if prompted.

- 1 On a computer with a USB port and Microsoft Excel, open the Startup Profile template.

If you do not have a copy of the Startup Profile template, see [To download the Startup Profile template](#) on page 34.

Refer to the **Usage Instructions** tab for instructions about using the Startup Profile template.

- 2 Click the **StartupProfileTemplate** tab to begin entering information in the Startup Profile template.
- 3 In the Startup Profile template, enter your BCM450 system ID in the System ID field.
The system ID is on the box of the main unit and on the main unit itself. If you enter the wrong system ID, the Startup Profile does not function with your system.
- 4 Click the large button at the top of the Startup Profile template to save a version of the Startup Profile (.sps file) and a version of the Startup Profile editor (Excel spreadsheet) on your computer.

The filenames for the Startup Profile editor and the Startup Profile consist of the system ID followed by the appropriate extension.



Note: Never edit the Startup Profile (.sps file) directly; always use the Startup Profile editor to make changes.

- 5 In the Startup Profile editor, enter the remaining information that you want loaded onto the BCM450 system.

The Startup Profile editor contains explanations of the various parameters. Click the cell where you want to enter information, and the Help text appears.

You can specify which parameters to load onto your system by selecting **Apply** for the parameters you want to load. If you do not want to load certain parameters, select **Ignore**.

- 6 After you enter all the information, click the large button at the top of the Startup Profile template to save a version of the Startup Profile (.sps file) and a version of the Startup Profile editor (Excel spreadsheet) on your computer.

- 7 Exit from Microsoft Excel.
- 8 Insert the USB storage device into the bottom USB port of the computer.
- 9 Copy the Startup Profile (.sps file) to the root directory of the USB storage device.
- 10 If you want to load your keycode using the Startup Profile, copy the keycode file to the root directory of the USB storage device.

The name of the keycode file on the USB storage device must exactly match the filename you entered in the Startup Profile editor.
- 11 Remove the USB storage device from the USB port of the computer.

The Startup Profile is now stored on the USB storage device.
- 12 Insert the USB storage device into the USB port of the BCM450 main unit before you power up the system.



Warning: Do not use the Startup Profile on a functional BCM450 system because the parameter values in the Startup Profile replace those on the system.

For more information about the Startup Profile, see the *Nortel Business Communications Manager 450 Maintenance* (NN40170-503) or *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

DHCP server configuration

Use the following procedure to configure DHCP server settings for your system.

To configure DHCP server settings



5 minutes

- 1 From the **Configuration** tab, click the **Data Services** folder to expand it.
- 2 Select **DHCP Server**.
- 3 Select the **General Settings** tab.
- 4 Configure the attributes for your system.

MBM configuration

You must configure the MBMs to function with your BCM450 system.

For more information, see *Nortel Business Communications Manager 450 Maintenance* (NN40170-503) or *Nortel Business Communications Manager 450 Installation—System* (NN40170-303).

To configure the MBMs



1 minute/MBM

- 1 Open Element Manager and connect to your BCM450 system.
- 2 From the **Configuration** tab, click the **Resources** folder to expand it.
- 3 Select **Telephony Resources** from the Resources folder. See [Figure 5 "Telephony Resources page"](#).

Figure 5 Telephony Resources page

The screenshot shows the 'Telephony Resources' configuration page. On the left is a 'Task Navigation Panel' with a tree view containing 'System', 'Administrator Access', 'Resources', 'Application Resources', 'Media Gateways', 'Port Ranges', 'Telephony Resources', 'Dial Up Interfaces', 'Telephony', 'Data Services', and 'Applications'. The 'Telephony Resources' folder is selected. The main area is titled 'Telephony Resources' and contains a 'Modules' table and a 'Details for Module: Expansion 1' section.

Location	Module type	Bus	State	Devices	Low	High	Total	Busy
Internal	IP Sets	1	N/A	Sets	N/A	N/A	11	0
Internal	IP Trunks	N/A	N/A	Lines	1	12	12	0
Internal	BRI Loop	3	Enabled	Lines	61	64	4	0
Internal	Sets	4	Enabled	Sets	N/A	N/A	2	0
Expansion 1	DTM-PRI	5	Disabled	Lines	65	94	30	0
Expansion 2	4x16 Combo	7	N/A	N/A	N/A	N/A	N/A	N/A

The 'Details for Module: Expansion 1' section has tabs for 'Trunk Module Parameters', 'Trunk Port Details', and 'Provision Lines'. The 'Trunk Module Parameters' tab is active, showing:

- Trunk type: PRI
- Protocol: Euro
- Clock source: Secondary external
- Overlap receiving:
- E1 Parameters: CRC4

- 4 In the **Modules** section, select the row of the MBM that you want to configure.
- 5 Double-click the **Module type** field to display the list of MBM types.
- 6 Select the type of MBM that you installed in the expansion cabinet.
- 7 Click **Configure**.
- 8 Enter the **Start DN**, **Public Received Digits/OLI**, **Private Received Digits/OLI**, **Start Line** (depending on MBM type) and select **Assign Target Lines** check box if required (default is clear).
- 9 If you are installing an MBM in the expansion cabinet, the suggested DIP switch settings appear in the **DIP switch** field.
- 10 Repeat steps 4 to 9 to enable the second MBM.

You can set other parameters for the MBMs depending on the type of MBM you installed.

Additional parameters

You can also customize the following parameters:

- Security policies—see *Nortel Business Communications Manager Administration and Security* (NN40170-603)
- Modem settings—see *Nortel Business Communications Manager Configuration—Telephony* (NN40170-502)
- Software updates—see *Nortel Business Communications Manager Administration and Security* (NN40170-603)
- Voice mail—for information about using the Web-based interface to configure your voice mail system, see the *CallPilot Manager Set Up and Operation Guide* (NN40090-300); or for information about using Telset Administration to configure your voice mail system, see the *CallPilot Telephone Administration Guide* (NN40090-500)
- Backup and restore—see *Nortel Business Communications Manager Administration and Security* (NN40170-603)

