



BCM 4.0 for BCM1000 Installation and Maintenance Guide Addendum

BCM 4.0 Business Communications Manager

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Chapter 1

About this document

The purpose of this addendum is to provide updates to the *BCM1000 Installation and Maintenance Guide* (N0008587 01) for the release of BCM 4.0 software.

For information on upgrading to BCM 4.0 software, refer to the *Upgrade Guide* for BCM 4.0.

How to use this addendum

To perform installation and maintenance of a BCM1000 system running BCM 4.0 software, use the *BCM1000 Installation and Maintenance Guide* (N0008587 01) for BCM 3.7 as the main document. Then refer to this addendum for updates and changes to the installation and maintenance information for BCM 4.0 software.

What's new in BCM 4.0

The primary changes from BCM 3.7 to BCM 4.0 are:

- **Operating system:** A Linux operating system (OS) replaces Windows NT® Embedded for BCM 4.0 systems.
- **Element Manager:** Element Manager replaces Unified Manager as the primary BCM management tool. Use Element Manager to configure a BCM 4.0 system; Unified Manager does not function with a BCM 4.0 system. If you need to configure a pre-BCM 4.0 system (for example, BCM 3.6/3.7), then you must use Unified Manager; Element Manager does not function with a pre-BCM 4.0 system.
- **New IP Phone support:** BCM 4.0 supports the following new IP Phones: 1120, 1140, 2007, 2033, WLAN handset 2212, and the IP Phone KEM.
- **Administrator account:** In a BCM 4.0 system, the default administrator account is **nnadmin**, instead of ee_admin, and the password is **PlsChgMe!**.
- **Keycode functionality:** You no longer require a keycode for each feature; you now require only one keycode to enable software features on the BCM 4.0 system. The single keycode is generated from multiple feature selections using the Nortel keycode retrieval system (KRS).
- **Market profiles and software loads:** In BCM 4.0, there are only three software loads (instead of the five for BCM 3.7); T1 CT2 and E1 CALA are removed. If the BCM 3.6/3.7 system was running a T1 CT2+ load then it is upgraded with a T1 Etiquette load and if it was running an E1 CALA load, then it is upgraded with an E1 Global load. These changes are automatically implemented as part of the upgrade process; no user intervention is required.
- **Telset administration:** BCM 4.0 supports Telset administration (see *BCM 4.0 Telset Administration Guide*).
- **USB support:** BCM 4.0 adds support for USB ports on the BCM200/400 systems (not supported on BCM1000). This support includes file loading and UPS connection through the USB port.

- **UPS support over USB:** UPS connectivity through the USB port is supported in BCM 4.0 for the BCM200/400 system for graceful shutdown (not supported on BCM1000).
- **Multimedia Contact Center:** All custom files (html and txt) are case sensitive and must match the format shown in default interface folder in CallPilot Manager after upgrading to BCM 4.0. All custom interfaces created in BCM 3.6/3.7 are also case sensitive and must match the format shown in CallPilot Manager after upgrading to BCM 4.0.



Note: The Startup Profile is not available for BCM1000 systems.

Chapter 2

Documentation updates for BCM 4.0

This section provides updates to the *BCM1000 Installation and Maintenance Guide* (N0008587 01).

General changes

The following changes apply throughout the document, even if not specifically identified:

- Replace references to Unified Manager with Element Manager. Any related procedures are documented, since Element Manager functions differently than Unified Manager.
- The *Programming Operations Guide* for BCM 3.7 does not exist in BCM 4.0. The content can be found in the *BCM 4.0 Administration Guide* and the *BCM 4.0 Networking Configuration Guide*.

You can also refer to the online Help within Element Manager for information on using Element Manager to configure and maintain your system.

- The Quick Start wizard (available in BCM 3.7) is not supported in BCM 4.0. The initial configuration of the system is done using Element Manager.

Page 3, Preface

This chapter should be replaced with the chapter, [“Getting started” on page 21](#).

Page 22, Data networking components

The sentence, “Modem card (North American systems only) — a V.90 modem that sends and receives data using the public telephone system,”

should be, “Modem card (North American systems only) — a (V.90 or V.92) modem that sends and receives data using the public telephone system.”

Page 23, MSC IP call processing hardware

The first bullet should be replaced with the following information.

- DS30 buses are internal communication paths controlled by the MSC. Each DS30 bus provides a possible 32 signaling channels (B1 and B2) and 32 media channels. In BCM 3.0 software, the B2 channels were reconfigured as B1 channels for station modules. As a result, DS30 02 to 07 were configured to support 32 telephones on each bus configured with DSM16+, DSM32+ modules set to double density. The ASM 8 module could also be supported on all four offsets as of that software release.

Page 33, Chapter 2, Telephony hardware

The following information should be deleted.

BCM 3.0 software introduced the concept of Full Double Density (FDD) and Partial Double Density (PDD). On the default system, DS30 02 to 05 were defaulted to FDD, which provides 32 new ports for connecting digital telephones. To use the FDD feature, DSM16+, DSM32+ media bay modules are configured to double density. DS30 06 and 07 default to PDD, but can be configured to FDD.



Warning: Changing DS30 06 and 07 to FDD

Once you change DS30 06 and 07 to FDD, Companion telephones can no longer be supported. This change cannot be reversed.

Page 44, Analog station modules and analog devices

Table 6, Analog engineering specifications, should be replaced with the table below:

Table 6 ATA2, ASM8, ASM8+, GASM, and GASI analog device specifications (Sheet 1 of 2)

| Specification | ATA2 | ASM8 | ASM8+ | GASM8 | GASI |
|---|--|--|--|--|--|
| Ringing frequency (North America) | 20 Hz \pm 1 Hz | 20 Hz \pm 1 Hz | 20 Hz \pm 1 Hz | 20 Hz \pm 1 Hz | 20 Hz \pm 1 Hz |
| Ringing frequency (Europe) | 25 Hz \pm 1 Hz | 25 Hz \pm 1 Hz | 25 Hz \pm 1 Hz | 25 Hz \pm 1 Hz | 25 Hz \pm 1 Hz |
| Ringing voltage (North America) | 80 V rms \pm 10% | 55 V rms \pm 10% | 65 V rms \pm 10% | 65 V rms \pm 10% | 65 V rms \pm 10% |
| Ringing voltage (Europe) | 75 V rms +/- 10% | N/A | 65 V rms \pm 10% | 65 V rms \pm 10% | 65 V rms \pm 10% |
| Loop current | 20 mA minimum | 20 mA minimum | 20 mA minimum | 20 mA minimum | 20 mA minimum |
| Battery feed voltage | -48 V dc \pm 10% | -48 V dc \pm 10% | -29 V dc \pm 10% | -48 V dc \pm 10% | -48 V dc \pm 10% |
| FIC code | OL13ABC | N/A | N/A | N/A | N/A |
| Ringer equivalency number | 3 | 1 | 2 | 2 | 2 |
| ATA2 to BCM loop resistance (cable only) | 135 ohms (800 m of 0.5-mm wire or 2600 ft of 24 AWG wire) | N/A | N/A | N/A | N/A |
| Analog loop resistance on terminal side for voice applications (cable only) | 1300 ohms (7200 m of 0.5-mm wire or 26000 ft of 24 AWG wire) | 250 ohms (1538 m of 0.5-mm wire or 5000 ft of 24 AWG wire) | 200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24 AWG wire) | 200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24 AWG wire) | 200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24 AWG wire) |
| Analog loop resistance on terminal side for data applications (cable only) | 200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24 AWG wire) | 250 ohms (1538 m of 0.5-mm wire or 5000 ft of 24 AWG wire) | 200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24 AWG wire) | 200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24 AWG wire) | 200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24 AWG wire) |

Table 6 ATA2, ASM8, ASM8+, GASM, and GASI analog device specifications (Sheet 2 of 2)

| Specification | ATA2 | ASM8 | ASM8+ | GASM8 | GASI |
|------------------------------------|--|--|--|--|--|
| Input impedance at tip and ring | 600 ohms | 600 ohms | 600 ohms | 600 ohms | 600 ohms |
| Return loss | > 20 dB for 200 to 3400 Hz (when terminated with 600 ohms) | > 20 dB for 200 to 3400 Hz (when terminated with 600 ohms) | > 20 dB for 200 to 3400 Hz (when terminated with 600 ohms) | > 20 dB for 200 to 3400 Hz (when terminated with 600 ohms) | > 20 dB for 200 to 3400 Hz (when terminated with 600 ohms) |
| Insertion loss on an internal call | ATA2 to BCM loss 3.0 dB \pm 0.5 dB | ATA2 to BCM loss 3.0 dB \pm 0.5 dB | ATA2 to BCM loss 3.0 dB \pm 0.5 dB | ATA2 to BCM loss 3.0 dB \pm 0.5 dB | ATA2 to BCM loss 3.0 dB \pm 0.5 dB |
| Insertion loss on an external call | ATA2 to BCM loss 2.2 dB \pm 1.0 dB; BCM to ATA2 loss 0.5 dB \pm 1.0 dB | ASM to BCM loss 3.0 dB \pm 1.0 dB; BCM to ASM loss 0.5 dB \pm 1.0 dB | ASM to BCM loss 3.0 dB \pm 1.0 dB; BCM to ASM loss 0.5 dB \pm 1.0 dB | ASM to BCM loss 3.0 dB \pm 1.0 dB; BCM to ASM loss 0.5 dB \pm 1.0 dB | ASM to BCM loss 3.0 dB \pm 1.0 dB; BCM to ASM loss 0.5 dB \pm 1.0 dB |
| MWI type (see Note) | Stutter tone | Stutter tone | Stutter tone/ / Voltage MWI (CO: 120 V) | Stutter tone/ Reverse polarity/ Voltage MWI (CO: 120 V) | Stutter Tone/ Reverse polarity/ Voltage MWI (PBX: 90 V) |
| Disconnect supervision types | N/A | N/A | OSI EIA/TIA 464 section 4.5.10.2.4/ 4.5.10.2.5.1 | OSI EIA/TIA 464 section 4.5.10.2.4/ 4.5.10.2.5.1 | N/A |

Note: The MWI type depends on the country profile, and the MWI voltage shown is a maximum value.

Page 52, Legacy mobility equipment

This section should be removed.

The listed equipment, NetVision, Companion, and DECT, is not supported in BCM 4.0 (DECT is still supported in European markets).

Page 55, Chapter 3, Auxiliary equipment

The first two paragraphs should be removed and replaced with the following information:

You require a personal computer to run Element Manager. You use Element Manager to configure and manage the BCM system through a connection between your computer and the BCM system (either through the LAN or using an Ethernet crossover cable). To work with Element Manager, you require the correct version of Element Manager installed on your computer.

The computer you will use to run Element Manager must meet the following requirements:

- Operating system: Windows 98SE, Windows 2000, Windows XP
- RAM: minimum 256 MB (512 MB recommended)
- Disk space: 150 MB
- Browser: Internet Explorer (IE) 5.5 or IE 6.0 (recommended)

- Element Manager access is also supported through a Citrix server

For information on downloading and installing Element Manager, refer to [“Using Element Manager to set the basic parameters”](#) on page 45.

Page 64, Explaining double density

The paragraph at the top of page 64 should be deleted, since Companion is not supported and PDD is not required.

Default BCM 3.0 and newer systems are configured as Partial Double Density (PDD) systems, in that they maintain DS30 06 and 07 in the original configuration of 16 DNs per bus. This accommodates those systems which use Companion. The system can be set to Full Double Density (FDD) at system startup or once the system is setup. When the system is set to FDD, DS30 06 and 07 allow access to the second set of DNs, and they are no longer available for Companion operation.

Page 64, Setting offsets

The following paragraph should be changed as follows:

For station modules, each bus supports 16 telephones or telephony devices for station modules that support single density, or which are set to single density in the case of the DSM16+ and DSM32+, ~~or on DS30 06 and 07 if the system remains set to Partial Double Density (PDD).~~ On each bus that supports double density, DSM16+ and DSM32+ modules set to double density have access to eight telephones per offset, for a total of 32 telephones per DS30 bus if the offsets are fully loaded.

Page 69, Environment checklist

The fourth bullet should be replaced with the following:

- within the temperature ranges of 0°C and 40°C (32°F and 104°F)

Page 70, Electrical requirements

The second bullet should be replaced with the following:

- The supplied power must be 100/240 V AC, 50/60 Hz, and 10 A minimum service with a third-wire safety ground. The third-wire safety ground provides shock protection and prevents electromagnetic interference.

Page 88, Double density example

Figure 38 should be deleted.

Page 110, Shutting down the system

The procedure about how to shut down the system should be replaced with the following section.

Performing a system shutdown

If there is a need to perform maintenance, the system may already be powered down. If this is the case, proceed to [“To shutdown the system hardware” on page 16](#).

If the system is still operating, perform the following procedures:

- [“To shut down the system software” on page 15](#)
- [“To shutdown the system hardware” on page 16](#)

To shut down the system software

- 1 Check for a recent backup of the BCM system programming.
- 2 If there is no recent backup, use Element Manager to back up the system data. For information about backing up the system data, refer to the *BCM 4.0 Administration Guide*.
- 3 In Element Manager, from the **Administration** tab, click the **Utilities** folder to expand it.
- 4 From the Utilities folder, select **Reset**.
- 5 Click **Shutdown System** to prepare the system for power disconnect.

This action will stop all services. All Element Manager sessions will be disconnected from the system. The BCM system can be restored to service only by powering the BCM system off and back on again.

- 6 Click **Ok**.

The progress update dialog box appears and the BCM system begins the shutdown process.

When the shutdown process is complete, the final warning dialog box appears, and the LEDs enter the flashing state.

- 7 Click **Ok** to disconnect Element Manager.

When the shutdown Element Manager is disconnected, the system gives an audible beep. The LEDs remain in the flashing state until the hardware is shutdown (see [“To shutdown the system hardware” on page 16](#)).

If the system hardware is not shutdown within about 15 minutes, it automatically boots up again.

To shutdown the system hardware



Warning: Remove all of the connections to the BCM system before you power down the system.

Failure to disconnect lines before you power down the system can cause damage to the system.

- 1 Remove the DS256 cables from the front of the BCM main unit and, if present, the expansion unit. This includes the data connections on the MSC.

Mark the cables to ensure correct reconnection.



Warning: You must disconnect power from the main unit after you have performed an Element Manager shutdown. The main unit cannot start operating again until after power has been disconnected and then reconnected.

- 2 Turn off the power switch located at the back of the BCM main unit and expansion unit.
- 3 Disconnect the BCM main unit and expansion unit power cords from the AC outlet.
- 4 Ensure you have room to access the part you are working on. Remove the BCM main unit from the rack, if necessary.

Pages 126–131, Setting initial system configurations

This section should be removed. The initial system configuration will be done after the rest of the equipment is installed.

Pages 131, Entering the software keycodes

This section should be removed. The keycode feature is discussed in another section of the addendum.

Pages 144-146, Telephone port and DN cross-reference

The Note on page 144 should be modified as follows.



Note: The following table is based on a system with three-digit DNs, with a start DN of 221. If your system has longer DNs, the system automatically adds a repeat of the first digit for each additional DN length unit. i.e. 221 becomes 2221. Also, note on the tables below that DN numbering differs between systems that were upgraded from BCM 2.5 software and systems that were new with BCM 3.0 or newer software.

In Tables 37 and 38 on page 145 and 146 respectively, the references to PDD should be deleted.

Pages 160–161, New chapters

The following chapters should be inserted between Chapter 13, “Installing optional telephony equipment” and Chapter 14, “Troubleshooting.” These chapters are located at the back of this addendum (the chapters should be viewed in the order given):

- [“Initializing the system” on page 29](#)
- [“Configuring the BCM system” on page 35](#)
- [“Using Telset Administration to set the basic parameters” on page 39](#)
- [“Using Element Manager to set the basic parameters” on page 45](#)
- [“Completing the initial installation \(optional\)” on page 57](#)

Pages 168–169, Shutting down the system software *and* Shutting down the system hardware

These sections should be replaced with the information in this section, [“Page 110, Shutting down the system” on page 15](#).

Page 171, Software restart

This procedure should be changed to:

If you did not shut down the system, restart the software:

- 1 In Element Manager, from the **Administration** tab, click the **Utilities** folder to expand it.
- 2 From the Utilities folder, select **Reset**.
- 3 Click **Reboot BCM System** to reboot the system.



Warning: When you restart the system, all IP clients, voice mail, and VoIP ports are not available until the system services restart.

If you have a mirrored disk system, once the services restart, the system automatically ensures the mirrored disk is updated.

Page 179, Initializing the hard disk (single-disk system BCM 2.5/2.5.1)

This section should be removed.

Page 182, Initializing the hard disk (single-disk system BCM 3.0)

This section should be removed.

Page 184, Initializing the hard disk (single-disk system BCM 3.01 and newer systems)

This section should be removed and replaced with the following information.

Initializing the hard disk

The BCM system is normally initialized prior to shipment. However, if you have to replace the hard disk in a standard single-disk system, use this procedure to initialize the BCM software.

After initialization, you must restore the configuration data to the BCM. Use the backup and restore utility (BRU) to restore configuration data. Nortel recommends that you maintain a current configuration backup. If you do not have a current backup, enter the configuration data manually.



Note: When you replace a hard disk, IP configuration data is lost. The BCM system IP address defaults to 10.10.10.1.

Perform the following procedures after you replace the hard disk and the system has booted up.

To initialize the hard disk in a single disk configuration

- 1 Ensure the Power (LED 1), Temp (LED 9), and Fan (LED 10) LEDs on the BCM main unit are lit.
- 2 Connect to the BCM system.
- 3 Do one of the following:
 - Manually reenter configuration data.
 - Restore system and data information (except Telephony and Registry) from your backup data. For information on how to restore data to your system from a backup, refer to the *BCM 4.0 Administration Guide*.



Note: Perform a backup only on similar software versions.

Page 196, Controlling and monitoring mirroring operations

This section should be replaced with the following information:

You can monitor and control disk mirroring through a control screen in Element Manager.

Under **Administration > System Status > Disk mirroring**, you can access a screen that allows you to control the mirroring operation from your desktop, as well as display the status of the hard disks. Refer to [Table 1](#) for a list of the fields and a description of their function.

Table 1 Disk mirroring settings

| Tab | Field | Functions | Description |
|-------------------------|-----------------------|--|--|
| Settings | Version | Read-only field | Shows the current version of mirroring firmware. |
| | Operation Mode | Primary Master | Mirror mode is disabled. The Primary disk is the operating disk. |
| | | Mirror Master | Mirror mode is disabled. The Mirrored disk is now the operating disk. |
| | | Mirror Mode | The system is in Mirror mode. |
| | Ultra UDMA | Auto | The interface speed to the hard disk is set automatically. This is the default. |
| | | Mode | The interface speed to the hard disk is set to a specific timing. Note: Changing the speed from auto could significantly affect system performance. |
| | Beep Timing | Disable | The failure tone is disabled. |
| | | Continuous | The audible tone will beep continuously if a failure occurs. |
| | | XX seconds/minutes Default: BEEP_30Seconds. | The audible tone will beep for the period chosen if a failure occurs. |
| Status | DuplWin Dll version | <current version number> N/A | Shows the version or N/A if no version is found. |
| | Primary Master Status | Good, Bad, or N/A | Indicates the current status of the primary hard disk. |
| | Mirror Master Status | Good, Bad, or N/A | Indicates the current status of the secondary hard disk. |
| | Initialization Status | Started, Finished, Failed, Shutdown, or N/A | Indicates current status of the initialization process. |
| Configuration menu item | Set Buzzer ON | | If turned on, you can control the module buzzer remotely. |
| | Set Buzzer OFF | | If turned off, the module buzzer can only be controlled from the front of the controller. |
| Report menu item | Status Screen | | Launches a new browser window that displays mirroring summary. The summary shows which hard disks are installed, where they are placed, and which is the active hard disk. |
| | Drive Status | | Displays a status bar to indicate process of mirroring. |
| View | | Refresh | Use this to update the status screen. |

Page 229, Determining the status of a telephone

The procedure, “To find out the status of a set,” should be modified as follows.

To find out the status of a set

- 1 Open Element Manager and connect to your BCM system.
- 2 From the **Configuration** tab, click the **Telephony** folder to expand it.
- 3 From the Telephony folder, select **Sets**.
- 4 From the Sets subfolder, select **Active Sets**.
- 5 In the Active Sets panel, select the desired telephone.
- 6 Use the various tabs and the Details panel to view the status of the telephone.

Page 230, Moving telephones

The sentence, “You can move a Business Communications Manager digital telephone to a new location within the system without losing its programmed settings if the telephone has been enabled with **Set relocation** in system programming under Feature programming,”

should be, “You can move a BCM digital telephone to a new location within the system without losing its programmed settings if the system has been enabled with **Set relocation** (Configuration > Telephony > Global Settings > Feature Settings).”

Page 233, Appendix A, Defining region-based defaults

This appendix should be removed and replaced with the chapter, “[Market profile attributes](#)” on [page 61](#).

Page 254, Set DNs and port numbers

In Table 64 on page 254, the references to PDD should be deleted.

Appendix A

Getting started

About this guide

The *BCM 4.0 for BCM1000 Installation and Maintenance Guide Addendum* describes how to install, configure, and maintain the BCM200 and BCM400 hardware running Business Communications Manager (BCM) 4.0 software.

The concepts, operations, and tasks described in this guide relate to the hardware of the BCM system. This guide provides task-based information on how to install the hardware components and perform basic configuration tasks.

Use Element Manager, Startup Profile, and Telset Administration to configure various BCM parameters.

In brief, the information in this guide explains:

- Installing hardware components
- Starting and initializing the system hardware
- Replacing components
- Testing the system

Audience

The *BCM 4.0 for BCM1000 Installation and Maintenance Guide Addendum* is directed to installers responsible for installing, configuring, and maintaining BCM 4.0 systems.

To use this guide, you must:

- be an authorized BCM 4.0 installer or administrator within your organization
- know basic Nortel BCM terminology
- be knowledgeable about telephony and IP networking technology

Acronyms

The following is a list of acronyms used in this guide.

Table 1 Acronyms (Sheet 1 of 3)

| Acronym | Description |
|---------|---------------------------|
| ACU | Audio conference unit |
| AIS | Alarm indication system |
| APC | American Power Conversion |

Table 1 Acronyms (Sheet 2 of 3)

| Acronym | Description |
|----------------|---|
| ASM | Analog station module (analog station media bay module) |
| ATA | Analog terminal adapter |
| BCM | Business Communications Manager |
| BRIM | Basic rate interface module (basic rate interface media bay module) |
| CAP | Central answering position |
| CFA | Carrier failure alarm |
| CLID | Calling line identification |
| CO | Central office |
| CSU | Channel service unit |
| CTM | Caller ID trunk module (caller ID trunk media bay module) |
| DDIM | Digital drop and insert MUX |
| DECT | Digital enhanced cordless telecommunications |
| DIMM | Dual in-line memory module |
| DMC | Digital mobility controller |
| DSM | Digital station module (digital station media bay module) |
| DSP | Digital signal processor |
| DSU | Data service unit |
| DTE | Data terminal equipment |
| DTM | Digital trunk module (digital trunk media bay module) |
| FEM | Fiber expansion module |
| FRU | Field replaceable unit |
| GASM | Global analog station module (global analog station media bay module) |
| GATM | Global analog trunk module (global analog trunk media bay module) |
| KEM | Key expansion module |
| KIM | Key indicator module |
| KRS | Keycode retrieval system (Nortel keycode retrieval system) |
| LAN | Local area network |
| LIU | Line isolation unit |
| MBM | Media bay module |
| MSC | Media services card |
| MWI | Message waiting indication |
| NIC | Network interface card |
| ONS | on-premise station |
| OSI | Open switch interval |
| PCI | Peripheral component interface |
| PEC | Processor expansion card |
| PSTN | Public switched telephone network |

Table 1 Acronyms (Sheet 3 of 3)

| Acronym | Description |
|---------|--------------------------------------|
| PSU | Power supply unit |
| QoS | Quality of service |
| RAI | Remote alarm indication |
| RAID | Redundant array of independent disks |
| REN | Ringer equivalence number |
| RFO | Redundant feature option |
| RPS | Redundant power supply |
| SAPS | Station auxiliary power supply |
| SELV | Safety extra low voltage |
| SSD | System status display |
| UPS | Uninterruptable power supply |
| USB | Universal serial bus |
| VMWI | Visual message waiting indicator |
| VoIP | Voice over Internet protocol |
| WAN | Wide area network |

Symbols and conventions used in this guide

These symbols are used to highlight critical information for the BCM system.



Caution: Alerts you to conditions where you can damage the equipment.



Danger: Alerts you to conditions where you can get an electrical shock.



Warning: Alerts you to conditions where you can cause the system to fail or work improperly.



Note: Alerts you to important information.



Tip: Alerts you to additional information that can help you perform a task.



Security Note: Indicates a point of system security where a default should be changed, or where the administrator needs to make a decision about the level of security required for the system.



Warning: Alerts you to ground yourself with an antistatic grounding strap before performing the maintenance procedure.



Warning: Alerts you to remove the BCM main unit and expansion unit power cords from the AC outlet before performing any maintenance procedure.

These conventions and symbols are used to represent the Business Series Terminal display and dialpad.

| Convention | Example | Used for |
|---|--------------------|---|
| Word in a special font (shown in the top line of the display) | P _{swd} : | Command line prompts on display telephones. |
| Underlined word in capital letters (shown in the bottom line of a two-line display telephone) | <u>PLAY</u> | Display option. Available on two-line display telephones. Press the button directly below the option on the display to proceed. |
| Dialpad buttons | # | Buttons you press on the dialpad to select a particular option. |

These text conventions are used in this guide to indicate the information described:

| Convention | Description |
|--------------------------|---|
| bold Courier text | Indicates command names and options and text that you must enter. Example: Use the info command. Example: Enter show ip {alerts routes} . |
| <i>italic text</i> | Indicates book titles. |
| plain Courier text | Indicates command syntax and system output (for example, prompts and system messages). Example: Set Trap Monitor Filters |

| Convention | Description |
|-------------------------------------|--|
| FEATURE HOLD RELEASE | Indicates that you press the button with the coordinating icon on whichever set you are using. |

Related publications

This section provides a list of additional documents referred to in this guide. There are two types of publication: [Technical Documents](#) on page 25 and [User Guides](#) on page 26.

Technical Documents

System Installation

Upgrade Guide (N0060597)

BCM 4.0 Installation Checklist and Quick Start Guide (N0060602)

BCM1000 BCM 3.7 Installation and Maintenance Guide (N0008587 01)

BCM 4.0 for BCM1000 Installation and Maintenance Guide Addendum (N0060603)

Keycode Installation Guide (N0060625)

System Programming

BCM 4.0 Administration Guide (N0060598)

BCM 4.0 Device Configuration Guide (N0060600)

BCM 4.0 Networking Configuration Guide (N0060606)

BCM 4.0 Telset Administration Guide (N0060610)

Telephones and Peripherals

BCM 4.0 Telephony Device Installation Guide (N0060609)

Digital Mobility

DECT Deployment and Demonstration Tool

Digital Mobility System Installation and Configuration Guide (N0000623)

T7406 Cordless Handset Installation Guide (P0606142)

IP Telephony

WLAN IP Telephony Installation and Configuration Guide (N0060634)

Call Pilot

CallPilot Manager Set Up and Operation Guide (N0027247)

CallPilot Telephone Administration Guide (N0060618)

User Guides

There are no references to specific user guides.

How to get help

This section explains how to get help for Nortel products and services.

Getting Help from the Nortel Web site

The best way to get technical support for Nortel products is from the Nortel Technical Support Web site:

<http://www.nortel.com/support>

This site provides quick access to software, documentation, bulletins, and tools to address issues with Nortel products. More specifically, the site enables you to:

- download software, documentation, and product bulletins
- search the Technical Support Web site and the Nortel Knowledge Base for answers to technical issues
- sign up for automatic notification of new software and documentation for Nortel equipment
- open and manage technical support cases

Getting Help over the phone from a Nortel Solutions Center

If you don't find the information you require on the Nortel Technical Support Web site, and have a Nortel support contract, you can also get help over the phone from a Nortel Solutions Center.

In North America, call 1-800-4NORTEL (1-800-466-7835).

Outside North America, go to the following Web site to obtain the phone number for your region:

<http://www.nortel.com/callus>

Getting Help from a specialist by using an Express Routing Code

To access some Nortel Technical Solutions Centers, you can use an Express Routing Code (ERC) to quickly route your call to a specialist in your Nortel product or service. To locate the ERC for your product or service, go to:

<http://www.nortel.com/erc>

Getting Help through a Nortel distributor or reseller

If you purchased a service contract for your Nortel product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller.

Appendix B

Initializing the system

After you start the BCM system, you are ready to set the initial configuration parameters.

The initial configuration defines your BCM system to the network. It also gives the system a unique identity and initial parameters. From that point, you can continue with the specific configurations for your system, which are described in the *BCM 4.0 Administration Guide* and the other user guides for each optional application you choose to add to your system.

Data parameter requirements

Obtain the following parameter values from an Internet service provider (ISP) or corporate network administrator.

- initial IP address and netmask for each network interface
- primary (and optional secondary) DNS servers
- default next-hop router
- fractional T1 channel numbers (if you are using fractional TI)
- system name
- WAN link protocol
- frame relay DLCI/CIR (if applicable)
- V.90 or V.92 modem settings (North America only)

Using the default BCM system IP address

All BCM systems are shipped with this default address:

- IP address: 10.10.10.1
- Subnet: 255.255.255.0

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

You can also connect to the BCM system using an Ethernet crossover cable (see [“Using the Ethernet crossover cable” on page 30](#)) or through the serial port ([“Connecting through the serial port” on page 31](#)).



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), connect to the BCM system using an Ethernet crossover cable (see “Using the Ethernet crossover cable” on page 30), through the serial port (see “Connecting through the serial port” on page 31), or change the IP address using Telset Administration.

Using the Ethernet crossover cable

You use an Ethernet crossover cable connected to a computer with a network card to connect your computer to the LAN card in the BCM main unit. With this connection, you can use Element Manager to configure the BCM system when you are unable to immediately connect your system to the LAN card or your system does not have a network connection.

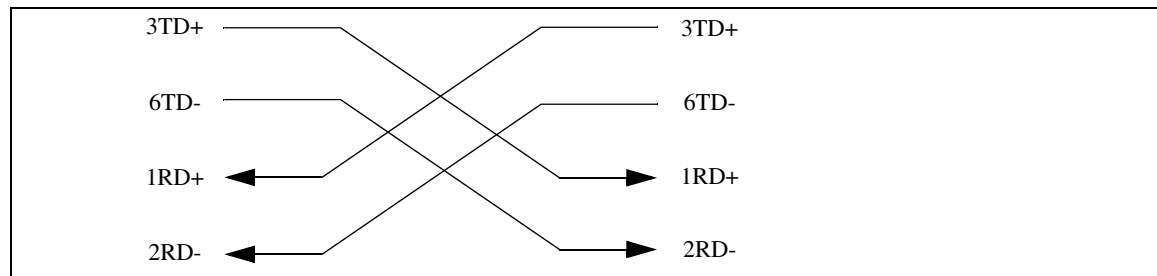
You use this type of connection in these situations:

- The computer you are using does not have access to the BCM system through the network.
- The BCM system is not connected to a LAN or WAN.
- You have to change the IP address and netmask for the BCM system before you connect it to the network.

Setting the crossover connections

To connect to the BCM system using an Ethernet crossover cable, you need a computer equipped with a 10/100 Base T network interface card and TCP/IP protocol. Figure 1 shows the connections required.

Figure 1 Ethernet crossover cable



Connecting through Ethernet crossover cable

Use the following two procedures to connect the Ethernet crossover cable and configure your computer to connect to the BCM system.

To connect the Ethernet crossover cable

- 1 Shut down the computer.
- 2 Attach one end of the Ethernet crossover cable to the LAN card on the BCM main unit.
- 3 Connect the other end of the cable to the network interface card on your computer.

- 4 Start the computer.

To configure your computer



Note: The steps below may differ slightly depending on the operating system of your computer. The task in this section is to specify the IP address and subnet mask for the computer.

- 1 From the **Start** menu, choose **Settings** then choose **Control Panel**.
- 2 Double-click the **Network** icon.
- 3 Select your TCP/IP adapter, and then click the **Properties** button.
- 4 Click the **IP Address** tab.
- 5 Click the **Specify an IP address** option.
- 6 In the **IP Address** field, enter the IP address of the BCM system (if using the default IP address, enter 10.10.10.2).
- 7 In the **Subnet Mask** field, enter the subnet mask of the BCM system (if using the default, enter 255.255.255.0).
- 8 Click **OK**.
- 9 Click **OK**.

Your computer is now configured to connect to the BCM system.

Connecting through the serial port

You can also connect to the BCM system through the serial port using a null modem cable. You can then change the IP address of the BCM system and perform other basic configuration tasks. You can use Element Manager to perform more detailed configuration of your system.

You must use a null modem cable connection to the BCM main unit if the default IP address is not compatible with your LAN or WAN network.

Required equipment:

- null modem cable
- VT100-compatible terminal or a computer that has a terminal program such as Hyperterminal



Warning: Your terminal must be VT100-compatible and must support the VT100 National Character set. If the terminal does not support the National Character set, the text displays incorrectly.

You can enable or disable the serial port through Element Manager. This functionality is helpful for diagnostics and to make the system more secure. By default the serial port is enabled.

Null modem cable setup

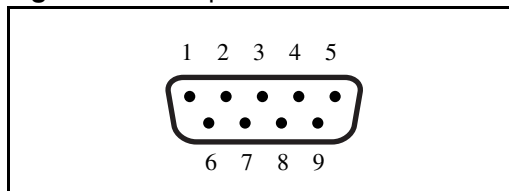
Table 3 and Figure 2 show the correct wiring for the BCM serial port of the null modem cable.

Table 3 Serial port pinout

| Pin | Signal | Pin | Signal |
|-----|---------------------------|-----|-----------------------|
| 1 | Data Carrier Detect (DCD) | 6 | Data Set Ready (DSR) |
| 2 | * Serial data in (RX) | 7 | Request to Send (RTS) |
| 3 | * Serial data out (TX) | 8 | Clear to Send (CTS) |
| 4 | Data Terminal Ready (DTR) | 9 | Ring Indicator (RI) |
| 5 | * Ground | | |

* required connections

Figure 2 Serial pinout



Transmission parameters:

- 9600 bits per second
- 8 data bits
- no parity
- 1 stop bit
- hardware flow control



Note: For instructions about how to set the transmission parameters, refer to the terminal or terminal emulation program documentation. The BCM system supports carriage return.

To display the configuration menus

- 1 Attach the null modem cable to the serial port on the BCM main unit.



Note: The location of the transmit (TX) and receive (RX) pins on your terminal can vary. Refer to your terminal or computer documentation to confirm pin locations.

- 2 Attach the other end of the null modem cable to the serial port on the terminal or computer.
- 3 Ensure that the BCM main unit and your terminal or computer are turned on.
- 4 Access the BCM main unit using one of the following methods:

- a If using a terminal emulation program (Hyperterminal), attach a configuration computer to the BCM main unit serial port (recommended method).
 - b If you are accessing the BCM main unit through your local area network through SSH (secure socket shell), use the default IP address 10.10.10.1.
- 5 When prompted for a **User ID**, type:
nnadmin
 - 6 When prompted for a **Domain**, press <ENTER>.
 - 7 When prompted for a **Password**, type:
PlsChgMe!
 - 8 The Configuration main menu screen appears. Refer to [Figure 3](#).

Figure 3 Configuration main menu screen

```

root@BCM95: /CLI
-----
..... BUSINESS COMMUNICATION MANAGER 4.0 .....
-----

                QUICK CONFIGURATION

=====
1-->System name                :BCM95
2-->LAN1 IP address settings(static/DHCP) :Static
3-->LAN1 IP address            :172.17.3.95
4-->LAN1 IP subnet mask       :255.255.240.0
5-->Default gateway           :172.17.1.1
6-->Logout
7-->Reboot BCM System(does not restart telephony)

=====

***** Change Here *****

ENTER-
      1-->System name                2-->LAN1 IP address settings
      3-->LAN1 IP address            4-->LAN1 IP subnet mask
      5-->Default gateway           6-->Logout/Exit
      7-->Reboot
Make Selection [1 2 3 4 5 6 7 ] : █

```



Note: If the Initialization Menu screen appears instead of the Main Menu shown above, your BCM system is not initialized correctly.

- 9 Enter the number of the parameter you want to configure.



Warning: Changing this information on an existing system completely erases the telephony programming and disables the telephony system. It also reboots the BCM system.

Software keycode

You require a keycode to enable software features on the BCM system. You receive only one keycode whether you purchase one feature or a bundle of features.

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

For example, if you have one feature, you receive one authorization code and you will generate one keycode. If you purchase four features, you receive four authorization codes, however, you will still 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/servsup/krs>)
- BCM 4.0 feature authorization code for each feature
- BCM 4.0 system ID

You can apply a keycode file using:

- Telsat Administration (see [“To enter the keycodes” on page 40](#))
- Element Manager (see [“To enter a keycode” on page 47](#))

For more information on keycodes, refer to the *Keycode Installation Guide*.

Regenerating a keycode after system replacement

If you replace your media services card (MSC), you must regenerate your keycode file to reflect the new system identification. Apply the keycode file after you perform your system data restore. For more information, refer to the *Keycode Installation Guide*.

Next step

After connecting to the BCM system, proceed to [“Configuring the BCM system” on page 35](#).

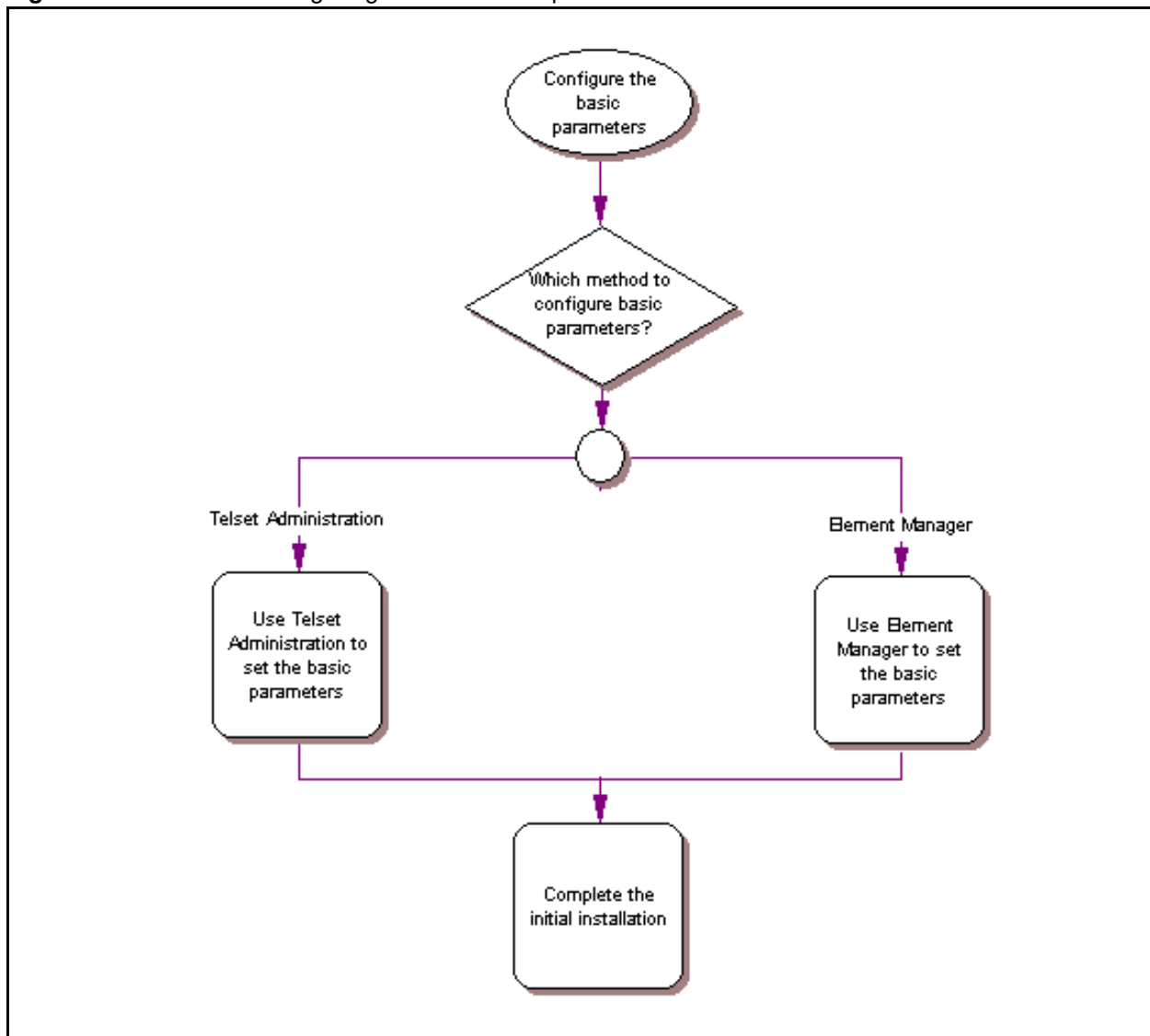
Appendix C

Configuring the BCM system

This section provides information on configuring the basic BCM parameters. You can configure more advanced parameters using Element Manager or Telset Administration after the BCM system is operational.

Figure 4 shows an overview of configuring the basic BCM parameters.

Figure 4 Overview of configuring the basic BCM parameters



For simplicity, the task of configuring the basic BCM parameters is divided into two parts:

- [“Initial parameters overview” on page 36](#)
- [“Startup parameters overview” on page 37](#)

Initial parameters overview

The initial parameters are the required parameters that can be configured using Telset Administration or Element Manager. See [Table 4](#) for a list of the initial parameters.

Table 4 Initial parameters

| Parameters | Telset Administration | Element Manager |
|--|-----------------------------|---|
| Keycode | Feature 9*8 > Feature codes | Configuration > System > Keycodes |
| IP address: <ul style="list-style-type: none"> • Obtain dynamically • IP address • IP subnet mask | Feature 9*8 > IP Address | Configuration > Resources > Network Interface |
| Modem: <ul style="list-style-type: none"> • Enable/disable modem | Feature 9*8 > Modem | Configuration > Resources > Network Interface |
| System: <ul style="list-style-type: none"> • Region | Feature **PROFILE | Administration > Utilities > Reset > Cold Reset Telephony Services |
| Telephony startup: <ul style="list-style-type: none"> • Template • Start DN | Feature **STARTUP | Administration > Utilities > Reset > Cold Reset Telephony Services |
| Voice mail: <ul style="list-style-type: none"> • Attendant DN • UI style • Language • From Line • To Line • Number of rings | Feature 983 | Configuration > Applications > Voice Messaging/Contact Center |
| User account: <ul style="list-style-type: none"> • Telset user ID (numeric) • Telset password (numeric) | Feature 9*8 > User Accounts | Configuration > Administrator Access > Accounts and Privileges > View by Accounts tab |

Startup parameters overview

The startup parameters are the remaining required parameters that cannot be configured using Telset Administration. These parameters must be configured using Element Manager. See [Table 5](#) for a list of the startup parameters.

Table 5 Startup parameters

| Parameters | Telset Administration | Element Manager |
|---|-----------------------|--|
| System: <ul style="list-style-type: none"> System name | N/A | Configuration > System > Identification (ID set automatically) |
| System: <ul style="list-style-type: none"> System ID | N/A | Configuration > System > Keycodes (View ID - it is set automatically and cannot be changed) |
| Time: <ul style="list-style-type: none"> Date and Time source NTP server address Date and time Time zone | N/A | Configuration > System > Date and Time |
| DHCP server: <ul style="list-style-type: none"> Enable/disable server IP domain name Primary DNS Secondary DNS Default gateway | N/A | Configuration > Data Services > DHCP Server > Subnets tab |
| IP Phones: <ul style="list-style-type: none"> Enable registration Enable global pwd Global pwd Auto-assign DNS Advertisement logo | N/A | Configuration > Resources > Telephony Resources |
| SNMP Agent: <ul style="list-style-type: none"> Enable/disable SNMP agent Minimum security SNMP version support | N/A | Configuration > Administrator Access > SNMP > General tab |
| SNMP community: <ul style="list-style-type: none"> Community string Type of access | N/A | Configuration > Administrator Access > SNMP > Community strings tab |
| SNMP manager: <ul style="list-style-type: none"> Manager IP address | N/A | Configuration > Administrator Access > SNMP > General tab |
| User account: <ul style="list-style-type: none"> User ID Group Description Callback number | N/A | Configuration > Administrator Access > View by Accounts tab |

Appendix D

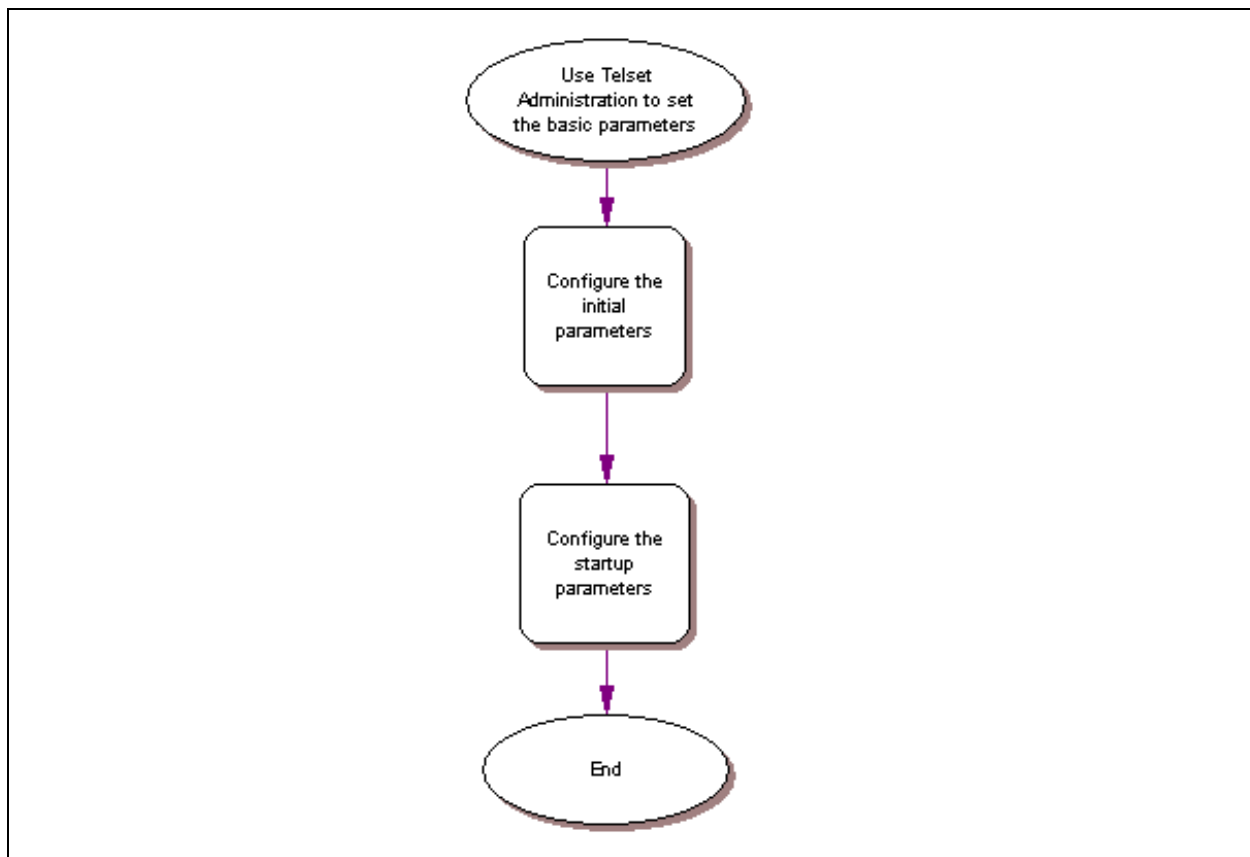
Using Telset Administration to set the basic parameters

Telset Administration allows you to use a digital telephone with a two-line display to set the BCM configuration parameters. You cannot set all the basic parameters using Telset Administration. Therefore, after configuring the initial parameters, you must use Element Manager to set the startup parameters. Refer to [“Configuring the startup parameters” on page 50](#).

Refer to the *BCM 4.0 Telset Administration Guide* for more information on Telset Administration.

[Figure 5](#) shows an overview of using Telset Administration to set the basic parameters.

Figure 5 Overview of using Telset Administration



Configuring the initial parameters

Use the following procedures to configure the initial parameters for the BCM using Telset Administration:

- “To enter the keycodes”
- “To configure the IP address”
- “To configure the modem” on page 41
- “To select the region” on page 41
- “To select the telephony startup template and start DN” on page 42
- “To initialize voice mail” on page 42
- “To create Telset user accounts” on page 42

To enter the keycodes

1 Select Feature 9*8 from a two-line display telephone.

2 Enter the following user ID and password:

User ID: **SETNNA**

Password: **CONFIG**

The numerical values of the user ID and password are 738662 and 266344, respectively.

3 Press **NEXT** to scroll through the menu and select **Feature Codes**.

4 Press **OK**.

5 Press **NEXT** to scroll through the list and do one of the following:

a If you want to enter keycodes to activate features, select **Feature List**.

- Press **SHOW** to view the available features.
- Use the soft keys to activate features for your system.

b If you want to modify existing keycodes, select **Keycode**.

- Press **SHOW** to view the keycodes.
- Use the soft keys to modify existing keycodes for your system.

Refer to the *Keycode Installation Guide* for details on how to retrieve and enter the keycodes for your system.

To configure the IP address

1 Select Feature 9*8 from a two-line display telephone.

2 Enter the following user ID and password:

User ID: **SETNNA**

Password: **CONFIG**

The numerical values of the user ID and password are 738662 and 266344, respectively.

3 Press **NEXT** to scroll through the menu and select **IP Address**.

- 4 Press **OK**.
- 5 Press **CHNGE** to modify the IP settings. The display screen shows if DHCP is enabled or disabled.
- 6 Do one of the following:
 - a If DHCP is currently enabled:
 - Press **DIS** to disable DHCP. You have the option to modify the IP Address, Subnet Mask, and Default Gateway. However, these settings have no effect as long as the system is disabled.
 - Press **IP** to modify the following IP settings:
 - IP Address
 - Subnet Mask
 - Default Gateway
 - b If DHCP is currently disabled:
 - Press **ENL** to enable DHCP. The system must reboot to enable DHCP.
 - Press **IP** to modify the IP settings. You have the option to modify the IP Address, Subnet Mask, and Default Gateway. However, these settings have no effect as long as the system is disabled.
- 7 Press **Back** to reboot the system.

To configure the modem

- 1 Select Feature 9*8 from a two-line display telephone.
- 2 Enter the following user ID and password:
User ID: **SETNNA**
Password: **CONFIG**

The numerical values of the user ID and password are 738662 and 266344, respectively.
- 3 Press **NEXT** to scroll through the menu and select **Modem**.
- 4 Press **OK**. The display screen shows if the modem is enabled or disabled.
- 5 Do one of the following:
 - a If the modem is disabled, press **ENL** to enable the modem.
 - b If the modem is enabled, press **DIS** to disable the modem.

For more information on modem configuration refer to the *BCM 4.0 Networking Configuration Guide*.

To select the region

You set the region using Feature ****PROFILE** from a two-line display telephone.

Refer to the *BCM 4.0 Telset Administration Guide* for information on using Telset Administration to set this parameter.

To select the telephony startup template and start DN

You set the template and start DN using Feature ****STARTUP** from a two-line display telephone.



Note: You can only set these parameters for only 15 minutes after system bootup.

Refer to the *BCM 4.0 Telset Administration Guide* for information on using Telset Administration to set this parameter.

Other telephony startup parameters are configured using Feature ****CONFIG**. Refer to the *BCM 4.0 Telset Administration Guide* for more information.

To initialize voice mail

You initialize your voice mail system using Feature 983 from a two-line display telephone.

Refer to the *CallPilot Telephone Administration Guide* for information on using Telset Administration to initialize your voice mail system.

To create Telset user accounts



Note: You can only create Telset accounts using Telset Administration. To create Element Manager accounts, you must use Element Manager.

- 1 Select Feature 9*8 from a two-line display telephone.
- 2 Enter the following user ID and password:
User ID: **SETNNA**
Password: **CONFIG**

The numerical values of the user ID and password are 738662 and 266344, respectively.
- 3 Press **NEXT** to scroll through the menu and select **User Accounts**.
- 4 Press **OK**. The Accounts screen appears.
- 5 Press **NEXT** to scroll through the list of available accounts to create.
- 6 Press **CHNGE** to change the status of the current account.
- 7 Press **CRT** to create the account.

If you see the **DEL** command instead of the **CRT** command, then the account is already created.
- 8 Press **BACK**. The Accounts screen appears.
- 9 Press **NEXT**. The password screen appears.
- 10 Press **CHNGE** to change the password.
- 11 Press **NEXT** to scroll through the list of available accounts.

12 Press **CHNGE** to change the password for the selected account.

13 Enter the new password for the account.

14 Enter the new password again to confirm it.

Refer to [“To create user accounts” on page 55](#) for more information on creating user accounts using Element Manager.

Next step

After you configure the initial parameters using Telset Administration, you must configure the startup parameters using Element Manager. Refer to [“Configuring the startup parameters” on page 50](#) for more information.

Appendix E

Using Element Manager to set the basic parameters

The Element Manager application provides a computer-based client interface that can connect to devices over an IP network and display the programming interface for that device.

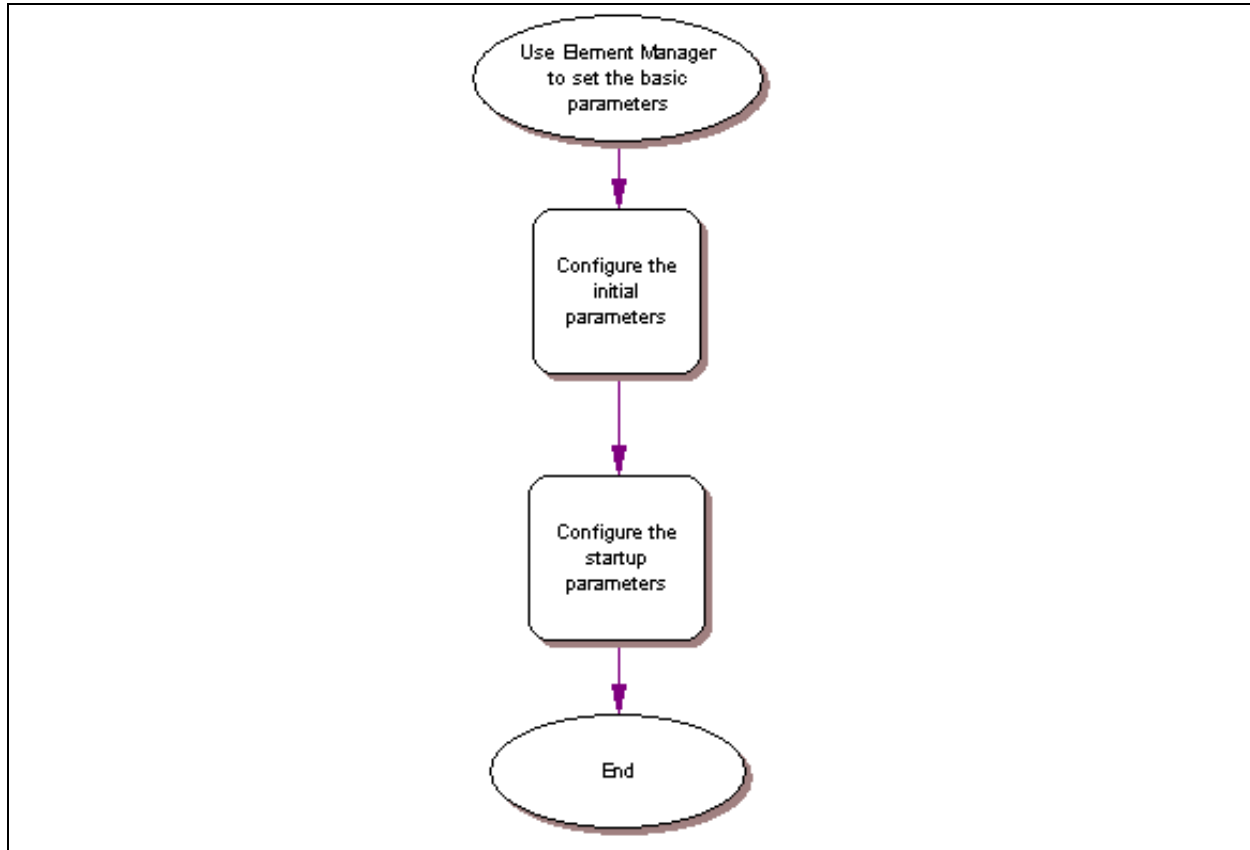
Through Element Manager, you can configure all of the basic parameters, which include:

- “Configuring the initial parameters” on page 47
- “Configuring the startup parameters” on page 50

Refer to the *BCM 4.0 Administration Guide* for more information on how to use Element Manager.

Figure 6 shows an overview of using Element Manager to set the basic parameters.

Figure 6 Overview of using Element Manager



Prerequisites

Element Manager has the following system requirements:

- Windows: Windows 98 SE, Windows 2000, Windows XP
- RAM: minimum 256 MB, recommended 512 MB
- free space: 150 MB
- BCM Element Manager access is also supported through a Citrix server

Accessing the BCM system

After your computer is connected to the BCM system, either through an Ethernet crossover cable or through a LAN connection, you can download BCM Element Manager from the Administrator Applications area of the BCM web page.

To access the BCM web page

- 1 Open a web browser and enter the BCM system IP address.
The Enter Network Password dialog box opens.
- 2 Enter the username and password (defaults are shown below):
Username: **nnadmin**
Password: **PlsChgMe!**
- 3 Click **OK**.
The Welcome to BCM web page opens.

To download and install Element Manager

- 1 On the **Welcome to BCM** web page, click **Administrator Applications**.
The Administrator Applications page opens.
- 2 On the **Administrator Applications** page, click **BCM Element Manager**.
The BCM Element Manager panel opens.
- 3 Read the information on this panel.
- 4 Click **Download Element Manager** on the right side of the screen.
- 5 After BCM Element Manager has finished downloading, double-click the application and follow the instructions to install.

To connect to the BCM system

- 1 Open BCM Element Manager.
- 2 From the **Network** menu, select **New Network Element**, and then select **Business Communications Manager**.
- 3 Enter the BCM system IP address, the username, and password (the default is are shown below):

IP address: **10.10.10.1**

Username: **nnadmin**

Password: **PlsChgMe!**

- 4 Click **OK**.
- 5 From the **Network Elements** folder, select the BCM system IP address.
- 6 Make sure that the correct username and password are entered.
- 7 Click **Connect**.

You are now connected to the BCM system.

For more information on using BCM Element Manager, refer to the online Help within BCM Element Manager.

Configuring the initial parameters

Use the following procedures to configure the initial parameters for the BCM using Element Manager:

- [“To enter a keycode”](#)
- [“To configure the LAN IP address”](#)
- [“To configure the modem” on page 48](#)
- [“To configure the startup template for telephony services” on page 49](#)
- [“To initialize voice mail” on page 49](#)

To enter a keycode

- 1 From the **Configuration** tab, click the **System** folder to expand it.
- 2 Select **Keycodes**. The Keycodes panel opens.
- 3 Click **Connect to Nortel Keycode Retrieval System**. The Open dialog box opens.
- 4 Select the keycode file for your system and click **Open**.

Refer to the *Keycode Installation Guide* for details on how to retrieve and enter the keycodes for your system.

To configure the LAN IP address

- 1 From the **Configuration** tab, click the **Resources** folder to expand it.
- 2 Select **Network Interfaces**.
- 3 Select the **Interfaces** tab. It is normally selected by default.
- 4 Select the LAN interface to configure.
- 5 From the Details panel, select the **IP Settings** tab.
- 6 From the IP Address Specification area, click **Modify**. The Modify IP Settings dialog box opens.
- 7 Configure the IP Settings attributes (see [Table 6](#)).

Table 6 Modify IP Settings attributes

| Attribute | Description |
|---|---|
| Obtain IP address dynamically | If this is selected, the BCM system attempts to take IP address information from a DHCP server. If this is not selected, you must enter values for static IP address, IP subnet mask, and Default gateway. |
| IP address | The IP address of the BCM system. |
| IP subnet mask | The subnet mask used by the BCM system. |
| Note: If any of the attributes are modified, then the Element Manager session is disconnected. | |

- 8 Click **Ok**.

To configure the modem

- 1 From the **Configuration** tab, click the **Resources** folder to expand it.
- 2 Select **Network Interfaces**.
- 3 Select the **Global Settings** tab.
- 4 Select the regional profile from the **Modem Region** dropdown list for your region.
- 5 Select the **Enable modem** checkbox to enable the modem.

For more information on modem configuration, refer to the *BCM 4.0 Networking Configuration Guide*.

To configure the startup template for telephony services



Note: This procedure erases all the telephony programming that is currently on the BCM system.

- 1 From the **Administration** tab, click the **Utilities** folder to expand it.
- 2 Select **Reset**.
- 3 Click **Cold Reset Telephony Services**. The Cold Reset Telephony dialog box opens.
- 4 Configure the Cold Reset Telephony attributes (see [Table 7](#)).

Table 7 Cold Reset Telephony attributes

| Attribute | Description |
|--------------------|--|
| Region | Specify the startup region. |
| Template | Specify the startup template. |
| Start DN | Specify the startup DN. The default is 221. |
| Force MSC Download | Select the checkbox to enable a forced download of the modified information. |

- 5 Click **Ok**.

To initialize voice mail

- 1 From the **Configuration** tab, click **Applications** folder to expand it.
- 2 Select **Voice Messaging/Contact Center**.
- 3 Click **Launch CallPilot Manager**. The Quick Install Wizard form opens.
If your voice mail system is already initialized, you will not see the Quick Install Wizard. Instead you will see the CallPilot Manager: Main Menu web page.
- 4 Configure the attributes on the Quick Install Wizard form (see [Table 8](#)).

Table 8 Quick Install Wizard attributes

| Attribute | Description |
|------------------|---|
| Attendant DN | Enter the extension number of the attendant or operator assigned to CallPilot. |
| Primary UI Style | Select the mailbox user interface used as a default for the mailboxes. If you select NVM, the mailbox user interface uses Norstar voice mail voice and text prompts. If you select CallPilot, the mailbox user interface uses CallPilot voice and text prompts. |
| Primary Language | Select the language used as the primary language for the mailboxes. |
| From Line | Enter the line number of the first line in the range of lines you want CallPilot to answer. CallPilot answers the range of lines between this line and the line you enter in the To Line box. |

Table 8 Quick Install Wizard attributes

| Attribute | Description |
|-----------------|--|
| To Line | Enter the line number of the last line in the range of lines you want CallPilot to answer. |
| Number of rings | Enter the number of rings you want CallPilot to wait before answering lines. |

5 Click **Install**.

Configuring the startup parameters

Use the following procedures to configure the startup parameters for the BCM system using Element Manager:

- [“To enter a name for your system”](#)
- [“To configure the date and time settings”](#)
- [“To configure DHCP server settings”](#)
- [“To configure IP Phones” on page 52](#)
- [“To configure SNMP settings” on page 53](#)
- [“To configure SNMP community strings” on page 54](#)
- [“To configure the SNMP manager list” on page 54](#)
- [“To create user accounts” on page 55](#)

To enter a name for your system

- 1 From the **Configuration** tab, click the **System** folder to expand it.
- 2 Select **Identification** from the System folder.
- 3 Enter a name for your system in the System name field.

To configure the date and time settings

- 1 From the **Configuration** tab, click the **System** folder to expand it.
- 2 Select **Date and Time**. The Date and Time panel opens.

3 Configure the Date and Time attributes (see Table 9).

Table 9 Date and Time attributes

| Attribute | Description |
|----------------------|---|
| Date and Time source | Set to NTP if the system uses a network server to determine the correct time and date. Set to Trunk if you want to receive time and date settings from PSTN (if available). Set to Manual if you want to be able to manually configure the time and date for your system. |
| NTP server | If Date and Time source is set to NTP, then enter an address for the server. |
| Date and time | Use the drop-down calendar to select the correct date and time. |
| Time zone | Select the time zone for this system. |

To configure DHCP server settings

- 1 From the **Configuration** tab, click the **Data Services** folder to expand it.
- 2 Select **DHCP Server**.
- 3 Select the **DHCP Settings** tab.
- 4 Configure the **DHCP mode** attribute. Select either DHCP Server or DHCP Relay Agent from the dropdown list.
- 5 Click the **Subnets** tab and select the **LAN1** heading.
The details panel for **LAN1** appears.
- 6 Select the **General Settings** tab.
- 7 Configure the attributes according to the following table.

Table 10 Subnets: General Settings attributes (Sheet 1 of 2)

| Attribute | Description |
|--------------------------|---|
| IP domain name | The domain name of the network. |
| Primary DNS IP address | Allows you to specify the IP addresses of the primary DNS server in a valid dot format. BCM automatically assigns the value for this parameter. If the IP address or subnet mask for the corresponding LAN interface changes, this value is overwritten. Use caution when changing this value. |
| Secondary DNS IP address | Allows you to specify the IP addresses of the secondary DNS server in a valid dot format. BCM automatically assigns the value for this parameter. If the IP address or subnet mask for the corresponding LAN interface changes, this value is overwritten. Use caution when changing this value. |
| WINS server address | Allows you to specify the IP address of the WINS server. BCM automatically assigns the value for this parameter. If the IP address or subnet mask for the corresponding LAN interface changes, this value is overwritten. Use caution when changing this value. |

Table 10 Subnets: General Settings attributes (Sheet 2 of 2)

| Attribute | Description |
|-----------------|---|
| WINS node type | Allows you to specify a client's WINS node type. The BCM system automatically sets this value to H-node on all DHCP clients. This setting configures the DHCP client PCs to use P-node name resolution before resorting to B-node name resolution. This is efficient when a WINS server is configured for the network. The BCM system also includes a WINS server. Note: Use caution if you change this attribute. |
| Default gateway | Allows you to specify the IP address of the default next-hop router. BCM automatically assigns the value for this parameter. If the IP address or subnet mask for the corresponding LAN interface changes, this value is overwritten. Use caution when changing this value. |
| Lease time | Allows you to specify the time, in seconds, for an address assignment until the client's lease expires. The default is 259200 seconds (72 hours). |

8 Click the **IP Terminal DHCP Options** tab.

9 Configure the DHCP server attributes (see [Table 11](#)).

Table 11 DHCP server: IP Terminal DHCP Options attributes

| Attribute | Description |
|------------------------------------|---|
| VLAN identifiers (comma-delimited) | Allows you to specify the Virtual LAN (VLAN) ID numbers that are given to the IP telephones. |
| TFTP Server | Allows you to specify the IP address of the TFTP server that is used by WLAN IP telephones. If your system does not have WLAN IP telephones, leave this box empty. Enter the IP address in a valid dot format. |
| WLAN IP Telephony Manager 2245 | Allows you to specify the IP address of the SVP server that is used by WLAN IP telephones. If your system does not have WLAN IP telephones, leave this box empty. Enter the IP address in a valid dot format. |

To configure IP Phones

- 1** From the **Configuration** tab, click the **Resources** folder to expand it.
- 2** Select **Telephony Resources**.
- 3** From the Actual type column, select **IP & App Sets**.

The Details for Module area displays in the lower pane with the IP Terminal Global Settings tab as the default.

4 Configure the IP Terminal Global Settings attributes (see Table 12).

Table 12 IP Terminal Global Settings attributes

| Attribute | Description |
|-------------------------------------|--|
| Enable registration | Select this check box to allow new IP clients to register with the system. WARNING: Remember to clear this check box when you have finished registering the new telephones. |
| Enable global registration password | If you want to require the installer to enter a password when IP telephones are configured and registered to the system, select this box. If this box is not selected (disabled), a valid Terset user ID and password is required to register IP phones. |
| Global password | If the Enable Global Registration Password check box is selected, enter the password the installer enters on the IP telephone to connect to the system. If this check box is left clear, no password prompt occurs during registration. |
| Auto-assign DNs | If this check box is selected, the system assigns an available DN as an IP terminal requests registration. It does not prompt the installer to enter a set DN. If this check box is clear, the installer receives a prompt to enter the assigned DN during the programming session. |
| Advertisement/Logo | Any information in this field appears on the display of all IP telephones. For example, your company name or slogan (24 characters in length). |



Tip: To automatically configure IP Phones with DNs assigned:

- 1) Select the Enable registration check box.
- 2) Select the Enable global registration password check box.
- 3) Leave the Global password field blank.
- 4) Select the Auto-assign DNs check box.

After the IP Phones are operational, clear the Enable registration check box.

You can configure other attributes on the IP Terminal Global Settings tab depending on the requirements for your system.

To configure SNMP settings

- 1 From the **Configuration** tab, click the **Administrator Access** folder to expand it.
- 2 Select **SNMP** from the Administrator Access folder.
- 3 Select the **General** tab. It is normally selected by default.
- 4 Click **Modify** in the SNMP Settings area. The Modify SNMP Settings dialog box opens.

- 5 Configure the attributes for Modify SNMP Settings (see [Table 13](#)).

Table 13 Modify SNMP Settings attributes

| Attribute | Description |
|---------------------------|---|
| Enable SNMP Agent | Select whether to enable or disable the SNMP agent by selecting (or not selecting) the check box. |
| Minimum required security | Select the minimum required security for SNMP from the drop-down list. |
| SNMP Version Support | Select the SMNP version support from the drop-down list. |

- 6 Click **Ok**.

To configure SNMP community strings

- 1 From the **Configuration** tab, click the **Administrator Access** folder to expand it.
- 2 Select **SNMP** from the Administrator Access folder.
- 3 Select the **Community Strings** tab.
- 4 Click **Add...** The Add Community String dialog box opens.
- 5 Configure the Add Community String attributes (see [Table 14](#)).

Table 14 Add Community String attributes

| Attribute | Description |
|------------------|--|
| Community string | Enter the entry name used as a key to uniquely identify an individual community entry on the SNMP agent. |
| Type of access | Specify the read and write access for this community. Available options are Read Only and Read/Write. |

- 6 Click **Ok**.
- 7 Repeat steps 4 to 6 to add more community strings.

To configure the SNMP manager list

Use the SNMP manager list to specify IP addresses that are allowed to connect to the SNMP agent.

- 1 From the **Configuration** tab, click the **Administrator Access** folder to expand it.
- 2 Select **SNMP** from the Administrator Access folder.
- 3 Select the **General** tab. It is normally selected by default.
- 4 Click **Add...** in the SNMP Manager List area. The Add Manager dialog box opens.
- 5 Enter the IP address in the Manager IP Address field.
- 6 Click **Ok**.
- 7 Repeat steps 4 to 6 to add another manager IP address.

To create user accounts

- 1 From the **Configuration** tab, click the **Administrator Access** folder to expand it.
- 2 Select **Accounts and Privileges** from the Administrator Access folder.
- 3 Select the **View by Accounts** tab.
- 4 Click **Add...** to add a user account. The Add Account dialog box opens.
- 5 Configure the Add Account attributes (see [Table 15](#)).

Table 15 Add Account attributes

| Attribute | Description |
|---------------------------------|---|
| Description | Enter a description for this account. |
| User ID | Enter a descriptive name for the user or the user function. |
| Password | Enter a password for this account. |
| Telset user ID (numeric) | If the user performs administration through the Telset interface, enter a number for the user ID. |
| Telset password (numeric) | Enter a password for the Telset User ID. |
| Modem Callback Number | If Callback is required, enter the number to which the system calls back in order to verify the dial-up user access. |
| Modem Callback Passcode | This is the code the system uses to confirm the callback is legitimate. |
| ISDN Callback Number | If ISDN Callback is required, enter the number to which the system calls back in order to verify the dial-up user access. |
| ISDN Callback Passcode | This is the code the system uses to confirm that the ISDN callback is legitimate. |
| Change Password On Login | Select this checkbox to force the user to change the password upon first login. |
| Change Password On Login Telset | Select this checkbox to force the user to change the Telset password upon first login. |

- 6 Click **Ok**.
- 7 Repeat steps 4 to 6 to create more user accounts.

Next step

After you set the basic parameters, proceed to [“Completing the initial installation \(optional\)” on page 57](#).

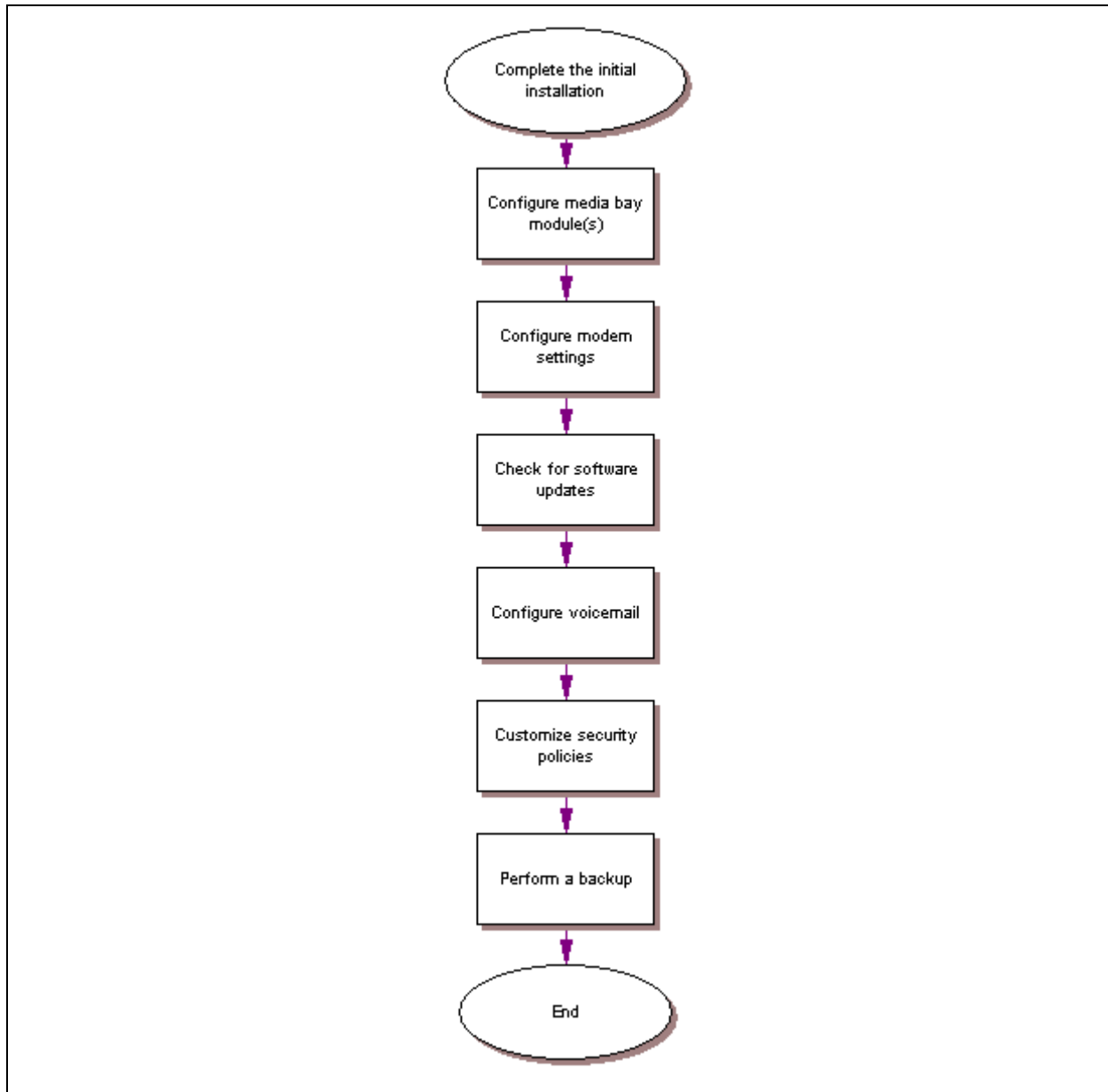
Appendix F

Completing the initial installation (optional)

This section provides information on completing the initial installation of your BCM system. These options are described for informative purposes and do not have to be completed.

Figure 7 shows an overview of completing the initial installation.

Figure 7 Overview of completing the initial installation



After the basic configuration is completed, you can further customize your system by using the following configuration options:

- “Configuring the media bay module”
- “Configuring modem settings” on page 59
- “Checking for software updates” on page 59
- “Configuring voice mail” on page 59
- “Customizing security policies” on page 59
- “Performing a backup” on page 59

Configuring the media bay module

For information on installing a media bay module (MBM) and setting the dip switches, refer to *BCM 3.7 for BCM1000 Installation and Maintenance Guide*.

To configure the MBM

- 1 Open BCM Element Manager and connect to your BCM system.
- 2 From the **Configuration** tab, click the **Resources** folder to expand it.
- 3 From the Resources folder, select **Telephony Resources** (see [Figure 8](#)).

Figure 8 Telephony Resources page

| Bus | Prog Type | Actual Type | Dip Sw | State | Devices | Low | Hi |
|-----|----------------|---------------|--------|------------|---------|-----|-----|
| 0 | N/A | IP Trunks | N/A | N/A | Lines | | 1 |
| 1 | N/A | IP & App Sets | N/A | Enabled | Sets | | N/A |
| 2 | Trunk Mod | None | N/A | Unequipped | Lines | | N/A |
| 2.0 | Stn Mod ASM | None | xxx111 | N/A | Lines | | 211 |
| 3 | Trunk Mod | None | N/A | Unequipped | Lines | | N/A |
| 3.0 | BRI-ST4 | None | x11110 | N/A | Lines | | 301 |
| 3.1 | Loop | None | x10110 | N/A | Lines | | 189 |

- 4 In the **Modules** section, select the row of the MBM that you want to configure.
- 5 Double-click the **Prog Type** field to display the drop-down list.
- 6 Select the type of MBM that you installed in that location.
- 7 Click **Enable**.
- 8 Repeat steps 4 to 7 to enable each MBM in your system.

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

Configuring modem settings

Your system modem is either enabled or disabled, depending on the configuration you chose during your basic configuration. If you plan on using the modem for management tasks, you can customize its settings, including dial-in and dial-out settings, depending on your specific needs.

Refer to the *BCM 4.0 Networking Configuration Guide* for information on configuring the modem.

Checking for software updates

Nortel frequently updates the BCM software. Therefore, a standard part of any installation is to ensure your system has the latest version of the software.

Refer to the *BCM 4.0 Administration Guide* for information on checking for and installing software updates.

Configuring voice mail

Your voice mail system was initialized during the basic configuration of your BCM system. You must still configure your voice mail to take advantage of the many feature available.

If you need to perform further configuration tasks, refer to the documentation for your voice mail system.

Refer to the *CallPilot Manager Set Up and Operation Guide* for information on using the web-based interface to configure your voice mail system, or refer to the *CallPilot Telephone Administration Guide* for information on using Telset Administration to configure your voice mail system.

Customizing security policies

You configured a system password and security settings during the basic configuration of your BCM system. Depending on your needs, you can choose to perform further configuration of the security policies.

Refer to the *BCM 4.0 Administration Guide* for information on customizing the security policies.

Performing a backup

You can perform a backup of your BCM system at regular intervals, including after initial installation. This ensures that you have a copy of your system data available to restore the system, if needed.

Refer to the *BCM 4.0 Administration Guide* for information on performing a backup and restore of your system.

Appendix G

Market profile attributes

This section describes some of the differences in the market profile attributes. These attributes are based on the market profile that you select when you configure the system. Each market profile is designed using a set of system attributes that provide specific functionality for the geographical area in which the system is deployed.

This section covers the following main topics:

- “Media bay module availability” on page 61
- “FEM MBM–Norstar trunk cartridge combinations” on page 62
- “Time zones and language information” on page 63
- “Core parameters for market profiles” on page 65
- “Global analog trunk parameters” on page 78
- “GASM8 parameters” on page 81
- “ISDN line services” on page 84
- “Analog and digital trunk types” on page 85

Media bay module availability

Some of the media bay modules (MBM) are customized for a specific region and are not available to all market profiles. Table 16 provides a list of market profiles and MBMs available within each market profile.

The symbols in the chart are defined as follows:

- ✓ indicates full support. The MBM is available and is localized in the market profile.
- * indicates that functionality and support is limited. The MBM is available in the market profile, but is not localized.

Table 16 Media bay module availability by market profile (Sheet 1 of 2)

| Market profile | DSM16(+)/ DSM32 (+) | ASM/ ASM8 | ASM8+ | GASM8 | CTM4/ CTM8 | GATM4/ GATM8 | 4x16 | BRI | DTM |
|----------------|------------------------|--------------|-------|-------|---------------|-----------------|------|-----|-----|
| Australia | ✓ | | * | ✓ | | ✓ | | ✓ | ✓ |
| Brazil | ✓ | | | | | ✓ | | ✓ | ✓ |
| CALA | ✓ | | | | * | * | * | ✓ | ✓ |
| Canada | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Caribbean | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Denmark | ✓ | | | | | | | ✓ | ✓ |
| France | ✓ | | | | | | | ✓ | ✓ |

Table 16 Media bay module availability by market profile (Sheet 2 of 2)

| Market profile | DSM16(+)/ DSM32 (+) | ASM/ ASM8 | ASM8+ | GASM8 | CTM4/ CTM8 | GATM4/ GATM8 | 4x16 | BRI | DTM |
|----------------|------------------------|--------------|-------|-------|---------------|-----------------|------|-----|-----|
| Germany | ✓ | | | | | | | ✓ | ✓ |
| Global | ✓ | * | * | * | * | * | * | ✓ | ✓ |
| Holland | ✓ | | | | | | | ✓ | ✓ |
| Hong Kong | ✓ | * | * | * | * | * | | ✓ | ✓ |
| Italy | ✓ | | | | | | | ✓ | ✓ |
| Mexico | ✓ | | | * | | ✓ | | ✓ | ✓ |
| New Zealand | ✓ | | * | * | | * | | ✓ | ✓ |
| North America | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Norway | ✓ | | | | | | | ✓ | ✓ |
| Poland | ✓ | * | * | ✓ | | ✓ | | ✓ | ✓ |
| PRC | ✓ | | | | * | * | | ✓ | ✓ |
| Spain | ✓ | | | | | | | ✓ | ✓ |
| Sweden | ✓ | | | | | | | ✓ | ✓ |
| Switzerland | ✓ | | | | | | | ✓ | ✓ |
| Taiwan | ✓ | | | | * | ✓ | | ✓ | ✓ |
| United Kingdom | ✓ | * | * | ✓ | | ✓ | | ✓ | ✓ |

FEM MBM–Norstar trunk cartridge combinations

Norstar trunk cartridges can be connected to the BCM system using the fiber expansion module (FEM). The following table provides a cross-reference between market profiles and the Norstar trunk cartridges you can connect to the FEM.

Table 17 Norstar trunk cartridge availability, by market profile (Sheet 1 of 2)

| Market profile | BRI S/T 2/4 | BRI U2/4 | Analog DID | Analog E&M | Analog CLID | Country-specific analog trunk card |
|----------------|-------------|----------|------------|------------|-------------|------------------------------------|
| Australia | ✓ | | | | | ✓ |
| Brazil | ✓ | | | | | |
| CALA | ✓ | ✓ | | ✓ | ✓ | |
| Canada | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Caribbean | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Denmark | ✓ | | | | | |

Table 17 Norstar trunk cartridge availability, by market profile (Sheet 2 of 2)

| Market profile | BRI S/T 2/4 | BRI U2/4 | Analog DID | Analog E&M | Analog CLID | Country-specific analog trunk card |
|----------------|-------------|----------|------------|------------|-------------|------------------------------------|
| France | ✓ | | | | | ✓ |
| Germany | ✓ | | | | | ✓ |
| Global | ✓ | | | ✓ | ✓ | |
| Holland | ✓ | | | | | ✓ |
| Hong Kong | ✓ | | ✓ | ✓ | ✓ | |
| Italy | ✓ | | | | | |
| Mexico | ✓ | ✓ | | ✓ | ✓ | |
| New Zealand | ✓ | | | | | ✓ |
| North America | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Norway | ✓ | | | | | |
| Poland | ✓ | | | | | ✓ |
| PRC | ✓ | | | ✓ | ✓ | |
| Spain | ✓ | | | | | |
| Sweden | ✓ | | | | | |
| Switzerland | ✓ | | | | | |
| Taiwan | ✓ | | ✓ | ✓ | ✓ | |
| United Kingdom | ✓ | | | | | ✓ |

Time zones and language information

This section provides information about time and date format and language support for Central America and South America.

Time and date format based on language

Time zones are based on the actual time zone where the BCM system is located. You can choose a compatible time zone from the Time Zone list in Element Manager. If your exact location is not on the list, choose the location with the time zone closest to you. Note that some time zones are individualized because they do not switch from Standard Time to Daylight Saving Time (for example, Saskatchewan).

The format of the time and date changes are based on the prime language of the market profile. [Table 18](#) provides a list of formats based on language or country.

Table 18 Time/date formats based on language

| Language/country | Time/date format |
|-----------------------|------------------|
| Danish | 2001-01-01 13:57 |
| Dutch | 1 Jan 01 13:57 |
| EuroFrench | 1 jan 13:57 |
| EuroSpanish Brazil | 1 Ene 13:57 |
| German | 1 Jan 13:57 |
| Italian | 1 Gen 13:57 |
| NA English | Jan 1 1:57 pm |
| NA French | 2001-01-01 13:57 |
| NA Spanish | Ene 1 1:57 pm |
| Norwegian | 1 Jan 13:57 |
| Swedish | 2001-01-01 13:57 |
| Turkish | 1 Ock 13:57 |
| UK English | 1 Jan 1:57 pm |

Language support for South America and Central America

[Table 19](#) shows the language support for South American and Central American countries.

Table 19 South/Central America language support

| Language | Country |
|-------------------|--|
| English | <ul style="list-style-type: none"> • Anguilla • Antigua • Aruba • Bahamas • Barbados • Belize • Bermuda • Cayman Islands • Curacao • Dominica • Grenada • Guyana • Montserrat • St. Kitts • St. Lucia • St. Maarten • St. Thomas • St. Vincent • Suriname • Turks and Caicos • Trinidad • USVI |
| French | <ul style="list-style-type: none"> • Haiti |
| Spanish | <ul style="list-style-type: none"> • Argentina • Bolivia • Chile • Columbia • Costa Rica • Dominican Republic • El Salvador • Ecuador • Guatemala • Honduras • Jamaica • Mexico • Nicaragua • Panama • Paraguay • Puerto Rico • Peru • Uruguay • Venezuela |
| Portuguese | <ul style="list-style-type: none"> • Brazil |

Caller ID display formats

The Caller ID function is supported on telephones that provide a display window. Caller ID formats consist of the name and number of the calling party.

The North America market profile supports the following format: 5554775 (613).

All other market profiles display the numbers in a continuous string of a maximum of 14 characters: 6135554775.

Core parameters for market profiles

The core parameters for the available market profiles are provided in the following tables (market profiles are listed in alphabetical order):

- Australia, Brazil, CALA, Canada, Caribbean, and Denmark (see [Table 20](#))
- France, Germany, Global, Holland, Hong Kong, and Italy (see [Table 21 on page 68](#))
- Mexico, New Zealand, North America, Norway, Poland, and PRC (see [Table 22 on page 71](#))
- Spain, Sweden, Switzerland, Taiwan, and United Kingdom (see [Table 23 on page 74](#))

Table 20 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 1 of 4)

| Functionality | Attribute | Market profile | | | | | |
|---------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|--|--|-------------------------------|
| | | Australia | Brazil | CALA | Canada | Caribbean | Denmark |
| Access codes | Direct dial digit | 9 | 9 | 0 | 0 | 0 | 0 |
| | Dest code for default route | 0 | 0 | 9 | 9 | 9 | 9 |
| Protocols | Digital trunking protocols | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS | ISDN | ISDN | ISDN DASS2 DPNSS |
| | BRI trunk protocol variants | ETSI-403 ETSI-QSIG | ETSI-403 ETSI-QSIG | ETSI-403 ETSI-QSIG | NI-2 | NI-2 | ETSI-403 ETSI-QSIG |
| | BRI S-loop protocol variant | ETSI-102 | ETSI-102 | ETSI-102 | NI-2 | NI-2 | ETSI-102 |
| | PRI trunk protocol variants | ETSI-403 ETSI-QSIG MCDN | ETSI-403 ETSI-QSIG MCDN | ETSI-403 ETSI-QSIG MCDN | NI-2 DMS100 DMS250 4ESS MCDN | NI-2 DMS100 DMS250 4ESS MCDN | ETSI-403 ETSI-QSIG MCDN |
| | Global analog trunk versions | GATM | GATM | GATM | GATM | GATM | N/A |

Table 20 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 2 of 4)

| Functionality | Attribute | Market profile | | | | | |
|----------------------------|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | Australia | Brazil | CALA | Canada | Caribbean | Denmark |
| Telephony feature settings | Conference tone supported | Yes | Yes | Yes | No | Yes | No |
| | Held line reminder | After 30 seconds | Off | Off | Off | Off | Off |
| | Delay ring transfer | After 15 rings | After 4 rings | After 4 rings | After 4 rings | After 4 rings | After 4 rings |
| | Transfer callback timeout | After 15 rings | After 4 rings | After 4 rings | After 4 rings | After 4 rings | After 4 rings |
| | Network callback | 30 | 30 | 30 | N/A | 30 | 30 |
| | Host delay (ms) | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| | Link time (ms) | | 300 | 600 | 600 | 600 | 600 |
| | Target line if busy setting | Busy | Prime | Prime | Prime | Prime | Prime |
| System settings | Companding law | A-law | A-law | A-law | mu-law | mu-law | A-law |
| | DTI carrier type | E1 | E1 | E1 | T1 | T1 | E1 |
| | Number of rings in a cycle | 2 | 1 | 1 | 1 | 1 | 1 |
| | M7000 set supported | Yes | Yes | Yes | No | Yes | Yes |
| Hunt groups | Default delay | 4 ring cycles | 4 ring cycles | 4 ring cycles | 4 ring cycles | 4 ring cycles | 4 ring cycles |
| | Queue timeout | 60 sec | 60 sec | 60 sec | 60 sec | 60 sec | 60 sec |
| | If busy | Busy tone | Busy tone | Busy tone | Busy tone | Busy tone | Busy tone |
| | Mode | Sequential | Broadcast | Broadcast | Broadcast | Broadcast | Broadcast |
| Service times | Night | Start 17:00 End 08:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 |
| | Evening | Start 00:00 End 00:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 |
| | Lunch | Start 00:00 End 00:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 |

Table 20 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 3 of 4)

| Functionality | Attribute | Market profile | | | | | |
|--------------------------|------------------------------|------------------------|--|--|--|--|--|
| | | Australia | Brazil | CALA | Canada | Caribbean | Denmark |
| Service modes | Ringing service mode | Off | Off | Off | Off | Off | Off |
| | Ringing service trunk ans | Yes | Yes | Yes | Yes | Yes | Yes |
| | Restriction service mode | Off | Off | Off | Off | Off | Off |
| | Restriction global overrides | 000 131440 | 190 | N/A | N/A | N/A | N/A |
| | Restriction filter 01 | 0(013), 1(13, 1800) | 0, 1(1800, 1877, 1888), 911(911), 9411, 976, 1976, 1***976, 1900, 1***900, 5551212 | 0, 1(1800, 1877, 1888), 911(911), 9411, 976, 1976, 1***976, 1900, 1***900, 5551212 | 0, 1(1800, 1877, 1888), 911(911), 9411, 976, 1976, 1***976, 1900, 1***900, 5551212 | 0, 1(1800, 1877, 1888), 911(911), 9411, 976, 1976, 1***976, 1900, 1***900, 5551212 | N/A |
| | Restriction filter 05 | 00, 1(13, 11, 1800) | N/A | N/A | N/A | N/A | N/A |
| | Restriction filter 06 | * | N/A | N/A | N/A | N/A | N/A |
| | Routing service mode | Off | Off | Off | Off | Off | Off |
| Routing service overflow | No | No | No | No | No | No | |
| Public DN | Public DN lengths | Default(7) | Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3) | Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3) | Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3) | Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3) | Default(8), 00(17), 1(3), 16(5), 17(4), 18(4) |
| Public OLI | Unknown number length | N/A | Variable | Variable | N/A | N/A | Variable |
| | Local number length | 8 | Variable | Variable | 7 | 7 | Variable |
| | National number length | 9 | Variable | Variable | 10 | 10 | Variable |
| Set capabilities | Handsfree | Auto | Auto | Auto | Auto | Auto | Auto |
| | Pickup group | 1 | None | None | None | None | None |
| | Allow redirect | Enabled | Disabled | Disabled | Disabled | Disabled | Disabled |
| | Call forward delay | Disabled (4) | Disabled (4) | Disabled (4) | Disabled (4) | Disabled (4) | Disabled (4) |

Table 20 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 4 of 4)

| Functionality | Attribute | Market profile | | | | | |
|---|-----------------------------|---------------------|----------------------------------|------------------------------|------------------------------|------------------------------|---|
| | | Australia | Brazil | CALA | Canada | Caribbean | Denmark |
| Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value. | | | | | | | |
| Dial tone detection | | Enabled | Enabled | Enabled | Enabled | Enabled | Enabled |
| Set preferences | Language (first is default) | UK English VICAP | Portuguese English Spanish | Spanish English French | English French Spanish | English French Spanish | Danish English Norwegian Swedish |
| ONN blocking | Analog VSC (tone) | 1831 | None | None | None | None | None |
| | Analog VSC (pulse) | 1831 | None | None | None | None | None |
| | BRI VSC | None | None | None | None | None | None |
| | BRI per loop | SuprsBit | SuprsBit | SuprsBit | SuprsBit | SuprsBit | SuprsBit |
| Release reason | Release text | Simple | Simple | None | None | None | Simple |
| | Release code | On | On | Off | Off | Off | On |
| DTMF parameters | Tone duration | 80 msec | 120 msec | 120 msec | 120 msec | 120 msec | 120 msec |
| | Pause time | 3.5 msec | 1.5 msec | 1.5 msec | 1.5 msec | 1.5 msec | 1.5 msec |
| | Interdigit time | 100 msec | 80 msec | 80 msec | 80 msec | 80 msec | 80 msec |

Table 21 France, Germany, Global, Holland, Hong Kong, and Italy parameters (Sheet 1 of 4)

| Functionality | Attribute | Market profile | | | | | |
|---------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------|-------------------------------|
| | | France | Germany | Global | Holland | Hong Kong | Italy |
| Access codes | Direct dial digit | 9 | 9 | 0 | 0 | 0 | 9 |
| | Dest code for default route | 0 | 0 | 9 | 9 | 9 | 0 |
| Protocols | Digital trunking protocols | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS |
| | BRI trunk protocol variants | ETSI-403 ETSI-QSIG | ETSI-403 ETSI-QSIG | ETSI-403 ETSI-QSIG | ETSI-403 ETSI-QSIG | HKTA2015 | ETSI-102 ETSI-QSIG |
| | BRI S-loop protocol variant | ETSI-102 | ETSI-102 | ETSI-102 | ETSI-102 | ETSI-102 | ETSI-102 |
| | PRI trunk protocol variants | ETSI-403 ETSI-QSIG MCDN | ETSI-403 ETSI-QSIG MCDN | ETSI-403 ETSI-QSIG MCDN | ETSI-403 ETSI-QSIG MCDN | HKTA2015 MCDN | ETSI-403 ETSI-QSIG MCDN |
| | Global analog trunk versions | N/A | N/A | GATM | N/A | GATM | N/A |

Table 21 France, Germany, Global, Holland, Hong Kong, and Italy parameters (Sheet 2 of 4)

| Functionality | Attribute | Market profile | | | | | |
|----------------------------|-----------------------------|---------------------------|---------------------------|--------------------------|--------------------------|--------------------------|---------------------------|
| | | France | Germany | Global | Holland | Hong Kong | Italy |
| Telephony feature settings | Conference tone supported | No | Yes | No | No | No | Yes |
| | Held line reminder | Off | Off | Off | Off | Off | Off |
| | Delay ring transfer | After 4 rings | After 4 rings | After 4 rings | After 4 rings | After 4 rings | After 4 rings |
| | Transfer callback timeout | After 4 rings | After 4 rings | After 4 rings | After 4 rings | After 4 rings | After 4 rings |
| | Network callback | 30 | 30 | 30 | 30 | N/A | 30 |
| | Host delay (ms) | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| | Link time (ms) | N/A | N/A | 600 | 600 | 600 | N/A |
| | Target line if busy setting | PBX > Busy DID > Prime | PBX > Busy DID > Prime | Prime | Prime | Prime | PBX > Busy DID > Prime |
| System settings | Companding law | A-law | A-law | A-law | A-law | mu-law | A-law |
| | DTI carrier type | E1 | E1 | E1 | E1 | T1 | E1 |
| | Number of rings in a cycle | 2 | 2 | 1 | 1 | 1 | 2 |
| | M7000 set supported | Yes | Yes | Yes | Yes | No | Yes |
| Hunt groups | Default delay | 4 ring cycles | 4 ring cycles | 4 ring cycles | 4 ring cycles | 4 ring cycles | 4 ring cycles |
| | Queue timeout | 60 sec | 60 sec | 60 sec | 60 sec | 60 sec | 60 sec |
| | If busy | Busy tone | Busy tone | Busy tone | Busy tone | Busy tone | Busy tone |
| | Mode | Sequential | Sequential | Broadcast | Broadcast | Broadcast | Sequential |
| Service times | Night | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 |
| | Evening | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 |
| | Lunch | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 |

Table 21 France, Germany, Global, Holland, Hong Kong, and Italy parameters (Sheet 3 of 4)

| Functionality | Attribute | Market profile | | | | | |
|--------------------------|------------------------------|----------------|--------------|--|--------------|---|--------------|
| | | France | Germany | Global | Holland | Hong Kong | Italy |
| Service modes | Ringing service mode | Manual | Manual | Off | Off | Off | Manual |
| | Ringing service trunk ans | Yes | Yes | Yes | Yes | Yes | Yes |
| | Restriction service mode | Off | Off | Off | Off | Off | Off |
| | Restriction global overrides | N/A | N/A | N/A | N/A | N/A | N/A |
| | Restriction filter 01 | N/A | N/A | 0, 1(1800, 1877, 1888), 911(911), 9411, 976, 1976, 1***976, 1900, 1***900, 5551212 | N/A | 00***, 170, 172, 173, 1747, 1760, 1761, 1766, 1770, 1771, 1772, 1775, 1778, 1783, 1788, 900 | N/A |
| | Restriction filter 05 | N/A | N/A | N/A | N/A | N/A | N/A |
| | Restriction filter 06 | N/A | N/A | N/A | N/A | N/A | N/A |
| | Routing service mode | Off | Off | Off | Off | Off | Off |
| Routing service overflow | No | No | No | No | No | No | |
| Public DN | Public DN lengths | Default(25) | Default(25) | Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3) | Default(7) | Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3) | Default(25) |
| Public OLI | Unknown number length | Variable | Variable | Variable | Variable | Variable | Variable |
| | Local number length | Variable | Variable | Variable | Variable | Variable | Variable |
| | National number length | Variable | Variable | Variable | Variable | Variable | Variable |
| Set capabilities | Handsfree | Auto | Auto | Auto | Auto | Auto | Auto |
| | Pickup group | None | None | None | None | None | None |
| | Allow redirect | Disabled | Disabled | Disabled | Disabled | Disabled | Disabled |
| | Call forward delay | Disabled (4) | Disabled (4) | Disabled (4) | Disabled (4) | Disabled (4) | Disabled (4) |

Table 21 France, Germany, Global, Holland, Hong Kong, and Italy parameters (Sheet 4 of 4)

| Functionality | Attribute | Market profile | | | | | |
|---|-----------------------------|-----------------------|-------------------|---|--------------------------------|------------------------------|--------------------|
| | | France | Germany | Global | Holland | Hong Kong | Italy |
| Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value. | | | | | | | |
| Dial tone detection | | Enabled | Enabled | Enabled | Enabled | Enabled | Enabled |
| Set preferences | Language (first is default) | EuroFrench English | German English | English French Spanish Turkish | Dutch English EuroFrench | English French Spanish | Italian English |
| ONN blocking | Analog VSC (tone) | None | None | None | None | None | None |
| | Analog VSC (pulse) | None | None | None | None | None | None |
| | BRI VSC | None | None | None | None | None | None |
| | BRI per loop | SuprsBit | SuprsBit | SuprsBit | SuprsBit | SuprsBit | SuprsBit |
| Release reason | Release text | Simple | Detailed | Simple | Simple | None | Simple |
| | Release code | On | Off | On | On | Off | On |
| DTMF parameters | Tone duration | 120 msec | 120 msec | 120 msec | 120 msec | 120 msec | 120 msec |
| | Pause time | 3.5 msec | 3.5 msec | 1.5 msec | 1.5 msec | 1.5 msec | 3.5 msec |
| | Interdigit time | 100 msec | 100 msec | 80 msec | 80 msec | 80 msec | 100 msec |

Table 22 Mexico, New Zealand, North America, Norway, Poland, and PRC parameters (Sheet 1 of 4)

| Functionality | Attribute | Market profile | | | | | |
|---------------|-----------------------------|----------------|-------------|---------------|--------|--------|-----|
| | | Mexico | New Zealand | North America | Norway | Poland | PRC |
| Access codes | Direct dial digit | 0 | 0 | 0 | 9 | 0 | 0 |
| | Dest code for default route | 9 | 9 | 9 | 0 | 9 | 9 |

Table 22 Mexico, New Zealand, North America, Norway, Poland, and PRC parameters (Sheet 2 of 4)

| Functionality | Attribute | Market profile | | | | | |
|----------------------------|------------------------------|-------------------------------|-------------------------------|--|-------------------------------|-------------------------------|-------------------------------|
| | | Mexico | New Zealand | North America | Norway | Poland | PRC |
| Protocols | Digital trunking protocols | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS | ISDN | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS |
| | BRI trunk protocol variants | ETSI-403 ETSI-QSIG | ETSI-403 ETSI-QSIG | NI-2 | ETSI-403 ETSI-QSIG | ETSI-403 ETSI-QSIG | ETSI-403 ETSI-QSIG |
| | BRI S-loop protocol variant | ETSI-102 | ETSI-102 + BTNR191 | NI-2 | ETSI-102 | ETSI-102 | ETSI-102 |
| | PRI trunk protocol variants | ETSI-403 ETSI-QSIG MCDN | ETSI-403 ETSI-QSIG MCDN | NI-2 DMS100 DMS250 4ESS MCDN | ETSI-403 ETSI-QSIG MCDN | ETSI-403 ETSI-QSIG MCDN | ETSI-403 ETSI-QSIG MCDN |
| | Global analog trunk versions | GATM | N/A | GATM | N/A | GATM | GATM |
| Telephony feature settings | Conference tone supported | No | Yes | No | No | Yes | No |
| | Held line reminder | Off | Immediate | Off | Off | After 30 seconds | Off |
| | Delay ring transfer | After 4 rings | After 4 rings | After 4 rings | After 4 rings | After 15 rings | After 4 rings |
| | Transfer callback timeout | After 4 rings | After 4 rings | After 4 rings | After 4 rings | After 15 rings | After 4 rings |
| | Network callback | 30 | 30 | N/A | 30 | 30 | 30 |
| | Host delay (ms) | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| | Link time (ms) | 600 | N/A | 600 | N/A | | 600 |
| | Target line if busy setting | Prime | PBX > Busy DID > Prime | Prime | PBX > Busy DID > Prime | Busy | Prime |
| System settings | Companding law | A-law | A-law | mu-law | A-law | A-law | A-law |
| | DTI carrier type | E1 | E1 | T1 | E1 | E1 | E1 |
| | Number of rings in a cycle | 1 | 2 | 1 | 2 | 2 | 1 |
| | M7000 set supported | Yes | Yes | No | Yes | Yes | Yes |
| Hunt groups | Default delay | 4 ring cycles | 4 ring cycles | 4 ring cycles | 4 ring cycles | 4 ring cycles | 4 ring cycles |
| | Queue timeout | 60 sec | 60 sec | 60 sec | 60 sec | 60 sec | 60 sec |
| | If busy | Busy tone | Busy tone | Busy tone | Busy tone | Busy tone | Busy tone |
| | Mode | Broadcast | Sequential | Broadcast | Sequential | Sequential | Broadcast |

Table 22 Mexico, New Zealand, North America, Norway, Poland, and PRC parameters (Sheet 3 of 4)

| Functionality | Attribute | Market profile | | | | | |
|--------------------------|------------------------------|--|--|--|--------------------------|--------------------------|---|
| | | Mexico | New Zealand | North America | Norway | Poland | PRC |
| Service times | Night | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 08:00 | Start 23:00 End 07:00 |
| | Evening | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 00:00 End 00:00 | Start 17:00 End 23:00 |
| | Lunch | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 00:00 End 00:00 | Start 12:00 End 13:00 |
| Service modes | Ringing service mode | Off | Manual | Off | Manual | Off | Off |
| | Ringing service trunk ans | Yes | Yes | Yes | Yes | Yes | Yes |
| | Restriction service mode | Off | Off | Off | Off | Off | Off |
| | Restriction global overrides | N/A | 999 112 | N/A | N/A | 112 990 | N/A |
| | Restriction filter 01 | 0, 1(1800, 1877, 1888), 911(911), 9411, 976, 1976, 1***976, 1900, 1***900, 5551212 | 0(0800), 1 | 0, 1(1800, 1877, 1888), 911(911), 9411, 976, 1976, 1***976, 1900, 1***900, 5551212 | N/A | N/A | 0, 1(1800, 1877, 1888), 911(911), 9411, 976, 1976, 1***976, 1900, 1***900, 5551212 |
| | Restriction filter 05 | N/A | 010, 1, 00 | N/A | N/A | N/A | N/A |
| | Restriction filter 06 | N/A | * | N/A | N/A | N/A | N/A |
| | Routing service mode | Off | Off | Off | Off | Off | Off |
| Routing service overflow | No | No | No | No | No | No | |
| Public DN | Public DN lengths | Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3) | Default(8), 0(11), 00(17), 1(3), 9(3) | Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3) | Default(25) | Default(7) | Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3) |

Table 22 Mexico, New Zealand, North America, Norway, Poland, and PRC parameters (Sheet 4 of 4)

| Functionality | Attribute | Market profile | | | | | |
|---|-----------------------------|---|--------------------|------------------------------|---|--|---|
| | | Mexico | New Zealand | North America | Norway | Poland | PRC |
| Public OLI | Unknown number length | Variable | Variable | N/A | Variable | Variable | Variable |
| | Local number length | Variable | Variable | 7 | Variable | Variable | Variable |
| | National number length | Variable | Variable | 10 | Variable | Variable | Variable |
| Set capabilities | Handsfree | Auto | None | Auto | Auto | Auto | Auto |
| | Pickup group | None | None | None | None | 0 | None |
| | Allow redirect | Disabled | Disabled | Disabled | Disabled | Disabled | Disabled |
| | Call forward delay | Disabled (4) | Disabled (4) | Disabled (4) | Disabled (4) | Disabled (4) | Disabled (4) |
| Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value. | | | | | | | |
| Dial tone detection | | Enabled | Enabled | Enabled | Enabled | Enabled | Enabled |
| Set preferences | Language (first is default) | English French Spanish Turkish | UKEnglish VICAP | English French Spanish | Norwegian English Swedish Danish | Polish EuroFrench English Czech | English French Spanish Turkish |
| ONN blocking | Analog VSC (tone) | None | 141 | None | None | 1831 | None |
| | Analog VSC (pulse) | None | 141 | None | None | 1831 | None |
| | BRI VSC | None | 141 | None | None | None | None |
| | BRI per loop | SuprsBit | SrvcCode | SuprsBit | SuprsBit | SuprsBit | SuprsBit |
| Release reason | Release text | Simple | Detailed | None | Simple | Simple | Simple |
| | Release code | On | Off | Off | On | On | On |
| DTMF parameters | Tone duration | 120 msec | 120 msec | 120 msec | 120 msec | 110 msec | 120 msec |
| | Pause time | 1.5 msec | 3.5 msec | 1.5 msec | 3.5 msec | 1.5 msec | 1.5 msec |
| | Interdigit time | 80 msec | 100 msec | 80 msec | 100 msec | 80 msec | 80 msec |

Table 23 Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters (Sheet 1 of 4)

| Functionality | Attribute | Market profile | | | | |
|---------------|-----------------------------|----------------|--------|-------------|--------|----------------|
| | | Spain | Sweden | Switzerland | Taiwan | United Kingdom |
| Access codes | Direct dial digit | 9 | 9 | 9 | 0 | 0 |
| | Dest code for default route | 0 | 0 | 0 | 9 | 9 |

Table 23 Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters (Sheet 2 of 4)

| Functionality | Attribute | Market profile | | | | |
|----------------------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------|-------------------------------|
| | | Spain | Sweden | Switzerland | Taiwan | United Kingdom |
| Protocols | Digital trunking protocols | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS | ISDN DASS2 DPNSS |
| | BRI trunk protocol variants | ETSI-403 ETSI-QSIG | ETSI-403 ETSI-QSIG | ETSI-403 ETSI-QSIG | ITU-T | ETSI-403 ETSI-QSIG |
| | BRI S-loop protocol variant | ETSI-102 | ETSI-102 | ETSI-102 | ETSI-102 | ETSI-102 + BTNR191 |
| | PRI trunk protocol variants | ETSI-403 ETSI-QSIG MCDN | ETSI-403 ETSI-QSIG MCDN | ETSI-403 ETSI-QSIG MCDN | ITU-T MCDN | ETSI-403 ETSI-QSIG MCDN |
| | Global analog trunk versions | N/A | N/A | N/A | GATM | GATM |
| Telephony feature settings | Conference tone supported | No | No | No | No | Yes |
| | Held line reminder | Off | Off | Off | Off | Immediate |
| | Delay ring transfer | After 4 rings | After 4 rings | After 4 rings | After 4 rings | After 4 rings |
| | Transfer callback timeout | After 4 rings | After 4 rings | After 4 rings | After 4 rings | After 4 rings |
| | Network callback | 30 | 30 | 30 | N/A | 30 |
| | Host delay (ms) | 1000 | 1000 | 1000 | 1000 | 1000 |
| | Link time (ms) | N/A | 600 | N/A | 600 | N/A |
| System settings | Target line if busy setting | PBX > Busy DID > Prime | Prime | PBX > Busy DID > Prime | Prime | PBX > Busy DID > Prime |
| | Companding law | A-law | A-law | A-law | mu-law | A-law |
| | DTI carrier type | E1 | E1 | E1 | T1 | E1 |
| | Number of rings in a cycle | 2 | 1 | 2 | 1 | 2 |
| Hunt groups | M7000 set supported | Yes | Yes | Yes | Yes | Yes |
| | Default delay | 4 ring cycles | 4 ring cycles | 4 ring cycles | 4 ring cycles | 4 ring cycles |
| | Queue timeout | 60 sec | 60 sec | 60 sec | 60 sec | 60 sec |
| | If busy | Busy tone | Busy tone | Busy tone | Busy tone | Busy tone |
| | Mode | Sequential | Broadcast | Sequential | Broadcast | Sequential |

Table 23 Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters (Sheet 3 of 4)

| Functionality | Attribute | Market profile | | | | |
|--------------------------|------------------------------|--------------------------|--|--------------------------|--|--------------------------------------|
| | | Spain | Sweden | Switzerland | Taiwan | United Kingdom |
| Service times | Night | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 | Start 23:00 End 07:00 |
| | Evening | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 | Start 17:00 End 23:00 |
| | Lunch | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 | Start 12:00 End 13:00 |
| Service modes | Ringin service mode | Manual | Off | Manual | Off | Manual |
| | Ringin service trunk ans | Yes | Yes | Yes | Yes | Yes |
| | Restriction service mode | Off | Off | Off | Off | Off |
| | Restriction global overrides | N/A | N/A | N/A | N/A | 999 112 |
| | Restriction filter 01 | N/A | N/A | N/A | 0, 1(1800, 1877, 1888), 911(911), 9411, 976, 1976, 1***976, 1900, 1***900, 5551212 | 0(0800), 1 |
| | Restriction filter 05 | N/A | N/A | N/A | N/A | 010, 1, 00 |
| | Restriction filter 06 | N/A | N/A | N/A | N/A | * |
| | Routing service mode | Off | Off | Off | Off | Off |
| Routing service overflow | No | No | No | No | No | |
| Public DN | Public DN lengths | Default(25) | Default(11), 00(17), 01(10), 02(10), 020(9), 0200(10), 02000(7), 020000(10), 0201(10), 02010(9), 07(10), 071(11), 0718(10), 072(11), 077(11), 09(11), 1(3) | Default(25) | Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3) | Default(8), 0(11) 00(17), 1(3), 9(3) |

Table 23 Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters (Sheet 4 of 4)

| Functionality | Attribute | Market profile | | | | |
|---|-----------------------------|--|---|--|------------------------------|--------------------|
| | | Spain | Sweden | Switzerland | Taiwan | United Kingdom |
| Public OLI | Unknown number length | Variable | Variable | Variable | Variable | Variable |
| | Local number length | Variable | Variable | Variable | Variable | Variable |
| | National number length | Variable | Variable | Variable | Variable | Variable |
| Set capabilities | Handsfree | Auto | Auto | Auto | Auto | None |
| | Pickup group | None | None | None | None | None |
| | Allow redirect | Disabled | Disabled | Disabled | Disabled | Disabled |
| | Call forward delay | Disabled (4) | Disabled (4) | Disabled (4) | Disabled (4) | Disabled (4) |
| Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value. | | | | | | |
| Dial tone detection | | Enabled | Enabled | Enabled | Enabled | Enabled |
| Set preferences | Language (first is default) | Euro Spanish English Portuguese | Swedish English Norwegian Danish | German English EuroFrench Italian | English French Spanish | UKEnglish VICAP |
| ONN blocking | Analog VSC (tone) | None | None | None | None | 141 |
| | Analog VSC (pulse) | None | None | None | None | 141 |
| | BRI VSC | None | None | None | None | 141 |
| | BRI per loop | SuprsBit | SuprsBit | SuprsBit | SuprsBit | SrvcCode |
| Release reason | Release text | Simple | Simple | Simple | Simple | Detailed |
| | Release code | On | On | On | On | Off |
| DTMF parameters | Tone duration | 120 msec | 120 msec | 120 msec | 120 msec | 120 msec |
| | Pause time | 3.5 msec | 1.5 msec | 3.5 msec | 1.5 msec | 3.5 msec |
| | Interdigit time | 100 msec | 80 msec | 100 msec | 80 msec | 100 msec |

Global analog trunk parameters

This section contains information for the GATM4 and GATM8 MBMs. The information in the tables applies to downloaded profiles only; it is not applicable to DIP switch modes.

Global analog trunks are not supported in the following market profiles: Denmark, France, Germany, Holland, Italy, Norway, Spain, Sweden, and Switzerland.

For PRC and Hong Kong, analog trunks are available in North American DIP switch mode only.

The global analog trunk parameters are provided in the following tables:

- Localization, PSTN standards, and pulse dialing parameters (see [Table 24](#))
- Transmission parameters (see [Table 25 on page 79](#))
- Call supervision parameters (see [Table 26 on page 80](#))
- On-hook caller ID, disconnect supervision, and message waiting parameters (see [Table 27 on page 80](#))

Table 24 Localization, PSTN standards, and pulse dialing parameters (Sheet 1 of 2)

| Market profile | Localized | PSTN standards | Pulse Dialing (ms) | | |
|----------------|---|--|--------------------|-----------|-----------------|
| | | | Break time | Make time | Interdigit time |
| Australia | Yes | [1] AS/ACIF S003:2005 (2nd Edition) — Customer Access Equipment for Connection to a Telecommunications Network [2] AS/ACIF S002:2001 — Analogue interworking and non-interference requirements for Customer Equipment for connection to the Public Switched Telephone Network | 85 | 15 | 860 |
| Brazil | Yes | [1] Identification of the Calling Party for SPC With DTMF, 220-250-713. [2] Si3050 Global Voice/Data Direct Access Arrangement Specification. | 66 | 34 | 800 |
| CALA | No (North American based A-law) | N/A | 60 | 40 | 700 |
| Canada | Yes | N/A | 60 | 40 | 700 |
| Caribbean | Yes | N/A | 60 | 40 | 700 |
| Global | No (North American based A-Law) | N/A | 60 | 40 | 700 |
| Mexico | Yes | [1] Mexico general Specification, June 9, 1993 | 60 | 40 | 700 |
| New Zealand | No (UK-based telephony with Australian tones) | N/A | 66 | 34 | 740 |

Table 24 Localization, PSTN standards, and pulse dialing parameters (Sheet 2 of 2)

| Market profile | Localized | PSTN standards | Pulse Dialing (ms) | | |
|----------------|-----------|---|--------------------|-----------|-----------------|
| | | | Break time | Make time | Interdigit time |
| North America | Yes | N/A | 60 | 40 | 700 |
| Poland | Yes | [1] Polish ASS_1_v1.doc [2] ITU-T Telecommunication Standardization Sector of ITU Supplement2 Series E 01/94 | 66 | 33 | 700 |
| Taiwan | Yes | [1] Technical Specifications for Terminal Equipment for Connection to Public Switched Telephone Network, PSTN01, September 27, 2001 | 66 | 33 | 800 |
| United Kingdom | Yes | N/A | 66 | 34 | 740 |

Table 25 Transmission parameters

| Market profile | Transmission | | | | |
|----------------|-------------------|---|-----------------------------------|----------------------------------|----------------------------------|
| | PCM coding scheme | AC impedance | Loop length adjustment capability | Tx CO gain (short, medium, long) | Rx CO gain (short, medium, long) |
| Australia | A-law | 220 Ω + (820 Ω 120nF) | No | (N/A, 0, N/A) | (N/A, 6 dB, N/A) |
| Brazil | A-law | 600 Ω /900 Ω | Yes | (-3 dB, 0, 0) | (0, 0, 3 dB) |
| CALA | A-law | 600 Ω | Yes | (-3 dB, 0, 0) | (0, 0, 3 dB) |
| Canada | mu-law | 600 Ω | Yes | (-3 dB, 0, 0) | (0, 0, 3 dB) |
| Caribbean | mu-law | 600 Ω | Yes | (-3 dB, 0, 0) | (0, 0, 3 dB) |
| Global | A-law | 600 Ω | No | (N/A, 3 dB, N/A) | (N/A, 3 dB, N/A) |
| Mexico | A-law | 600 Ω | No | (N/A, 3 dB, N/A) | (N/A, 3 dB, N/A) |
| New Zealand | A-law | 320 Ω + (1050 Ω 230nF) | No | (N/A, 3 dB, N/A) | (N/A, 3 dB, N/A) |
| North America | mu-law | 600 Ω | Yes | (-3 dB, 0, 0) | (0, 0, 3 dB) |
| Poland | A-law | 600 Ω | No | (N/A, 3 dB, N/A) | (N/A, 3 dB, N/A) |
| Taiwan | u-law | 600 Ω | Yes | (-3 dB, 0, 0) | (0, 0, 3 dB) |
| United Kingdom | A-law | 320 Ω + (1050 Ω 230nF) | No | (N/A, 3 dB, N/A) | (N/A, 3 dB, N/A) |

Table 26 Call supervision parameters

| Market profile | Call supervision | | | | |
|----------------|----------------------|---------------|-------------------------|-------------------|------------------------------|
| | Link/flash time (ms) | OSI time (ms) | Force on-hook time (ms) | Wetting time (ms) | Ring confirmation count (ms) |
| Australia | 600 | 100 | 1600 | 0 | 150 |
| Brazil | 300 | 100 | 2000 | N/A | 256 |
| CALA | 600 | 100 | 1500 | N/A | 256 |
| Canada | 600 | 100 | 1600 | N/A | 256 |
| Caribbean | 600 | 100 | 1600 | N/A | 256 |
| Global | 600 | 100 | 1500 | N/A | 256 |
| Mexico | 600 | 100 | 1600 | N/A | 256 |
| New Zealand | 90 | 100 | 1600 | 15 | 200 |
| North America | 600 | 100 | 1600 | N/A | 256 |
| Poland | 500 | 500 | 1800 | N/A | 256 |
| Taiwan | 600 | 100 | 1600 | 0 | 256 |
| United Kingdom | 90 | 100 | 1600 | 15 | 200 |

Table 27 On-hook caller ID, disconnect supervision, and message waiting parameters (Sheet 1 of 2)

| Market profile | On-hook caller ID | | Disconnect supervision | | | Message waiting | | |
|----------------|-------------------|--------------------------------|------------------------------|---|---------------|-----------------|------------------|-------------------|
| | FSK | DTMF (Start Digit, Stop Digit) | OSI | Busy tone | Line reversal | FSK | Voltage reversal | Stutter dial tone |
| Australia | Bellcore | Not supported | No | No | ROI and ROA | Supported | Not supported | Not supported |
| Brazil | Not supported | Not supported | No | No | No | Supported | Not supported | Not supported |
| CALA | Bellcore | Not supported | Yes | No | No | Supported | Not supported | Not supported |
| Canada | Bellcore | Not supported | Yes | No | No | Supported | Not supported | Not supported |
| Caribbean | Bellcore | Not supported | Yes | No | No | Supported | Not supported | Not supported |
| Global | Bellcore | Not supported | Yes | No | No | Supported | Not supported | Not supported |
| Mexico | ETSI | Not supported | No | Supported (425 Hz, 250 ms On/ 250 ms Off) | No | Supported | Not supported | Not supported |
| New Zealand | ETSI | Not supported | Yes (500ms UK Guarded Clear) | No | No | Supported | Not supported | Not supported |

Table 27 On-hook caller ID, disconnect supervision, and message waiting parameters (Sheet 2 of 2)

| Market profile | On-hook caller ID | | Disconnect supervision | | | Message waiting | | |
|----------------|-------------------|--------------------------------|------------------------------|--|------------------------------|-----------------|------------------|-------------------|
| | FSK | DTMF (Start Digit, Stop Digit) | OSI | Busy tone | Line reversal | FSK | Voltage reversal | Stutter dial tone |
| North America | Bellcore | Not supported | Yes | No | No | Supported | Not supported | Not supported |
| Poland | ETSI | Not supported | No | Supported in unsupervised mode (425 Hz, 500 ms On/ 500 ms Off) | Supported in supervised mode | Supported | Not supported | Not supported |
| Taiwan | ETSI | Supported (D, C) | No | Supported (480 + 620 Hz, 500 ms On/ 500 ms Off) | No | Supported | Not supported | Not supported |
| United Kingdom | ETSI | Not supported | Yes (500ms UK Guarded Clear) | No | No | Supported | Not supported | Not supported |

GASM8 parameters

This section contains information for the GASM8 MBM.

Global analog stations are not supported in the following market profiles: Brazil, CALA, Denmark, France, Germany, Holland, Italy, Norway, PRC, Spain, Sweden, Switzerland, and Taiwan.

The GASM8 parameters are provided in the following tables:

- Localization, DIP switch settings, specifications, and transmission parameters (see [Table 28](#))
- Loop interface and call supervision (see [Table 29 on page 83](#))
- Dial pulse and DTMF parameters (see [Table 30 on page 83](#))

Table 28 Localization, DIP switch settings, specifications, and transmission parameters (Sheet 1 of 2)

| Market profile | Localized | DIP switch setting | Specifications | Transmission | | | | |
|----------------|-----------|--------------------|-----------------------------|---------------------------|---------------------|----------------|---------------------|-------------------|
| | | | | Input source impedance | Reference impedance | Load impedance | Bi-directional gain | PCM coding scheme |
| Australia | Yes | Australia | TS 003 TCE2 | 300 Ω + (820 Ω 120 nF) | | | 1.3 dB | CCITT A-law |
| Canada | Yes | North America | Refer to North America spec | 600 Ω | | | 3 dB | CCITT mu-law |
| Caribbean | Yes | North America | Refer to North America spec | 600 Ω | | | 3 dB | CCITT mu-law |

Table 28 Localization, DIP switch settings, specifications, and transmission parameters (Sheet 2 of 2)

| Market profile | Localized | DIP switch setting | Specifications | Transmission | | | | |
|----------------|---|--------------------|---|--|---------------------|----------------|---------------------------|-------------------|
| | | | | Input source impedance | Reference impedance | Load impedance | Bi-directional gain | PCM coding scheme |
| Global | No (North American based A-law) | North America | N/A | 600 Ω | | | 3 dB | CCITT A-law |
| Hong Kong | No (North American based mu-law) | North America | N/A | 600 Ω | | | 3 dB | CCITT mu-law |
| Mexico | No (North American based A-law) | North America | N/A | 600 Ω | | | 3 dB | CCITT A-law |
| New Zealand | No (UK-based telephony with Australian tones) | UK | N/A | 300 Ω + (1000 Ω 220 nF) | | | 1.8 dB | CCITT A-law |
| North America | Yes | North America | EIA/TIA-464A T512.1 T512.2 | 600 Ω | | | 3 dB | CCITT mu-law |
| Poland | Yes | Poland | [1] Polish ASS_1_v1.doc [2] Technical Requirements for Private Automatic Branch Exchanges. Reference Analog interfaces11.doc | 600 Ω | | | 0dB for Rx -7dB for Tx | CCITT A-law |
| United Kingdom | Yes | UK | BS 6450 Part 4 BTNR 1080 EN 41003 Annex D BS 6305 BTNR 315 | 300 Ω + (1000 Ω 220 nF) | | | 1.8 dB | CCITT A-law |

Table 29 Loop interface and call supervision parameters

| Market profile | Loop interface | | | Call supervision | | | |
|----------------|--------------------|--------------------|--------------------|---------------------|---------------------|-------------------------|--------------------|
| | Loop current limit | Ringling frequency | Ringling amplitude | Min. seize duration | Min answer duration | Min/max recall duration | Min clear duration |
| Australia | 32 mA | 25 Hz | 65 Vrms | 200 ms | 50 ms | 30/150 ms | 1500 ms |
| Canada | 32 mA | 20 Hz | 65 Vrms | 200 ms | 25 ms | 250/1100 ms | 1400 ms |
| Caribbean | 32 mA | 20 Hz | 65 Vrms | 200 ms | 25 ms | 250/1100 ms | 1400 ms |
| Global | 32 mA | 20 Hz | 65 Vrms | 200 ms | 25 ms | 250/1100 ms | 1400 ms |
| Hong Kong | 32 mA | 20 Hz | 65 Vrms | 200 ms | 25 ms | 250/1100 ms | 1400 ms |
| Mexico | 32 mA | 20 Hz | 65 Vrms | 200 ms | 25 ms | 250/1100 ms | 1400 ms |
| New Zealand | 32 mA | 25 Hz | 65 Vrms | 200 ms | 50 ms | 25/150 ms | 1500 ms |
| North America | 32 mA | 20 Hz | 65 Vrms | 200 ms | 25 ms | 250/1100 ms | 1400 ms |
| Poland | 32 mA | 25 Hz | 65 Vrms | 180 ms | 80 ms | 51/88 ms | 550 ms |
| United Kingdom | 32 mA | 25 Hz | 65 Vrms | 200 ms | 50 ms | 25/150 ms | 1500 ms |

Table 30 Dial pulse and DTMF parameters

| Market profile | Dial pulse | | | | DTMF | |
|----------------|--------------------------|------------------------|-----------------------|-------------------------------|--------------------|-----------------------|
| | Dial pulse coding scheme | Min/max break duration | Min/max make duration | Min interdigit pause duration | DTMF coding scheme | Min DTMF detect level |
| Australia | N | 25/120 ms | 10/90 ms | 250 ms | 16 digits | -25 dB |
| Canada | N | 25/120 ms | 10/90 ms | 250 ms | 12 digits | -25 dB |
| Caribbean | N | 25/120 ms | 10/90 ms | 250 ms | 12 digits | -25 dB |
| Global | N | 25/120 ms | 10/90 ms | 250 ms | 12 digits | -25 dB |
| Hong Kong | N | 25/120 ms | 10/90 ms | 250 ms | 12 digits | -25 dB |
| Mexico | N | 25/120 ms | 10/90 ms | 250 ms | 12 digits | -25 dB |
| New Zealand | N | 15/200 ms | 15/200 ms | 200 ms | 16 digits | -25 dB |
| North America | N | 25/120 ms | 10/90 ms | 250 ms | 12 digits | -25 dB |
| Poland | N | 51/88 ms | 25/48 ms | 150 ms | 12 digits | -29 dB |
| United Kingdom | N | 15/200 ms | 15/200 ms | 200 ms | 16 digits | -25 dB |

ISDN line services

Table 31 shows the ISDN private network services that are supported by BCM 4.0. Table 32 shows the network-based ISDN supplementary services and the features available for each.

Table 31 ISDN line services

| MCDN over PRI (SL-1) | DPNSS | DASS2 | ETSI QSIG |
|--|---|---|---|
| <ul style="list-style-type: none"> • Basic call • DDI • Name display • Number display • Centralized voice mail • Camp-on • ISDN call connection limit • Network call transfer • Break-in • Trunk route optimization (TRO) • Trunk anti-tromboning | <ul style="list-style-type: none"> • Basic call • DDI • Diversion • Redirection • Centralized voice mail • Call offer • Loop avoidance • Executive intrusion • Three party • Route optimization | <ul style="list-style-type: none"> • Basic call • DDI • Originating line identity (OLI) • Terminating line identity (TLI) • Call charge indication (CCI) • Call charge rate indication (CCRD) | <ul style="list-style-type: none"> • Basic call • DDI • Name display • Number display |

Table 32 ISDN services by protocol

| Protocol | Market profile | | Available ISDN services | |
|---|--|--|---|--|
| <ul style="list-style-type: none"> • NI | <ul style="list-style-type: none"> • Canada • Caribbean | <ul style="list-style-type: none"> • North America | <ul style="list-style-type: none"> • Basic call • DID • Name display | <ul style="list-style-type: none"> • Number display • ONN blocking |
| <ul style="list-style-type: none"> • ETSI Euro | <ul style="list-style-type: none"> • Australia • Brazil • CALA • Denmark • France • Germany • Global • Holland • Hong Kong • Italy | <ul style="list-style-type: none"> • Mexico • New Zealand • Norway • Poland • PRC • Spain • Sweden • Switzerland • Taiwan • United Kingdom | <ul style="list-style-type: none"> • Basic call • DDI • Subaddressing (on S-loop) • ETSI call diversion (partial rerouting) | <ul style="list-style-type: none"> • AOC-E (specific changes for Holland and Italy) • MCID • CLIP • COLP • CLIR |

Analog and digital trunk types

Table 33 provides a description of the types of analog and digital trunks.

Note that some of the analog and digital trunks are available only when you select specific market profiles.

Table 33 Analog and digital trunk types and descriptions (Sheet 1 of 2)

| Trunk types | Description |
|-----------------------------|--|
| Digital trunk types: | |
| T1/E1 | Digital line that carries data on 24 channels at 1.544 Mb/s (North America); 30 channels at 2,048 Mb/s (Europe) Loop, E&M, DID, and ground start lines are also versions of T1 lines. You can program auto-answer T1 loop start, T1 E&M trunks, T1 DID, T1 ground start trunks, PRI and IP trunks to map to target lines to provide for attendant bypass (calling directly to a department or individual) and line concentration (one trunk can map onto several target lines). |
| DID | A type of T1 trunk line that allows an outside caller to dial directly into a line on the BCM system. |
| Loop | A type of T1 line that is used on systems where the service provider supports disconnect supervision for the digital loop start trunks. These trunks provide remote access to the BCM system from the public network. These trunks must have disconnect supervision to allow the trunk to be set to auto-answer, which provides the remote access portal. |
| Ground | T1-groundstart trunk. These lines offer the same features as loop start trunks, but are used when the local service provider does not support disconnect supervision for digital loop start trunks. Ground start trunks work with T1 only. By configuring lines as ground start, the system recognizes when a call is released at the far end. |
| E&M | T1 and E&M. This type of trunk line is used to create simple network connections to other phone systems. This trunk always operates in a disconnected supervised mode. |
| PRI | ISDN interface with 23 B channels and 1 D channel at 1.544 Mb/s (in Europe: 30 B-channels and 1 D-channels at 2.048 Mb/s). These lines give you incoming and outgoing access to an ISDN network and are auto-answer trunks. |
| BRI | ISDN loop that provides both T and S reference point loops. These loops can support both network (T and S loops) and terminal equipment (S-Loop) connections. This type of line provides incoming and outgoing access to an ISDN network. ETSI ISDN BRI is the European Telecommunications Standards Institute specification for BRI ISDN service. BRI provides two bearer B-channels operating at 64 Kb/s and a data D-channel which operates at 16 Kb/s. The D-channel is used primarily to carry call information. Like loop start trunks, BRI lines can be configured as manual-answer or auto-answer. |
| DASS2 | (British) Trunk provides multiline IDA interconnection to the British Telecom network. |

Table 33 Analog and digital trunk types and descriptions (Sheet 2 of 2)

| Trunk types | Description |
|----------------------------|---|
| DPNSS | <p>A digital private network signaling system, which allows phone systems from different manufacturers to be tied together over E1 lines, offering significant enhancements to BCM networking capabilities.</p> <p>DPNSS makes it easier to support centralized network functionality within private networks for operators and attendants dealing with large numbers of calls. Its routing capabilities provide more of the larger-network capabilities without the expense of installing a new system, reconfiguring all the nodes, and worrying about a lot of downtime. Most functionality over DPNSS lines is transparent once the DPNSS is programmed into the system.</p> <p>DPNSS allows a local node, acting as a terminating node, to communicate with other PBXs over the network using E1 lines. For example, corporate offices separated geographically can be linked over DPNSS lines to other BCM systems, bypassing the restrictions of the PSTNs to which they may be connected. This allows connected BCM systems to function like a private network.</p> |
| Analog trunk types: | |
| Loop start | Standard PSTN telephone line. |

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