

Communication Server 2100

M3900 Meridian Digital Telephones Reference Manual

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New in this release

There have been no updates to the document in this release.

About this document

Purpose and audience

This guide provides feature, expansion module, and specification information for the M3900 Series Meridian digital telephones. This document's audience is administrative, and installation personnel.

Structure

This document contains the following sections:

- ["M3900 series general description" \(page 13\)](#) - provides an overview of the M3900 series Meridian digital telephones.
- ["Feature keys" \(page 25\)](#) - describes the look and the functions of the feature keys.
- ["Feature codes and abbreviations" \(page 31\)](#) - lists the feature codes and abbreviations.
- ["M3901 telephone set" \(page 35\)](#) - describes the M3901 telephone set.
- ["M3902 telephone set" \(page 39\)](#) - describes the M3902 telephone set.
- ["M3903 enhanced telephone" \(page 45\)](#) - describes the M3903 enhanced telephone.
- ["M3904 professional telephone" \(page 51\)](#) - describes the M3904 professional telephone.
- ["M3905 ACD telephone" \(page 59\)](#) - describes the M3905 ACD telephone.
- ["Hardware options" \(page 67\)](#) - describes the features and optional hardware available for each telephone set.
- ["Installation" \(page 75\)](#) - provides installation procedures for the sets and optional hardware.
- ["Features firmware and software management" \(page 107\)](#) - shows how to download firmware to your M3900 Meridian digital telephone.
- ["Environmental, power, and safety considerations" \(page 139\)](#) - shows environmental, power, and safety requirements.

- "Terminology" (page 143) - contains acronyms and abbreviations of terms used in this document.

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the next software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but re-released in the same software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

ATTENTION

To determine whether you have the latest version of this document and how documentation for your product is organized, check the release information in the *Meridian SL-100 Master Index of Publications*.

References in this document

This guide references the following documents:

- *Meridian SL-100 IPE Reference Manual*, 555-4001-129
- *Meridian SL-100 Alarm Clearing Procedures*, 555-4031-543
- *Meridian SL-100 Routine Maintenance Procedures*, 555-4031-536
- *Meridian SL-100 Card Replacement Procedures*, 555-4031-547
- *Meridian SL-100 Log Report Reference Manual*, 555-4031-840

M3900 series general description

Purpose

This chapter introduces you to the M3900 series digital telephones.

Introduction

The M3900 sets provide integrated voice and data communication. The M3900 sets communicate with the Meridian SL-100 switch through digital transmission over standard twisted-pair wiring.

The five models of the M3900 series telephones include the M3901, M3902, M3903, M3904, and M3905. Each of the M3900 sets have specific characteristics and support features using the following keys:

- fixed feature
- programmable line/feature (self-labeled)
- programmable feature (self-labeled)
- context sensitive soft keys

Minimum firmware requirements

The M3900 Release 3 telephone sets supported on the Meridian SL-100 require the following Release 3 firmware:

- M3902 Firmware version 8.0
- M3903 Firmware version 8.0
- M3904 Firmware version 8.2
- M3905 Firmware version 8.1

For information about how to obtain the latest firmware files, see "[Features firmware and software management](#)" (page 107).

Note: If you are using the Full Duplex Handsfree accessory with the M3904, the minimum firmware version is 8.3.

Due to several improvements made with M3900 Release 3 firmware and XPM 17, when you upgrade sites to XPM 17 all M3900 telephones must have Release 3 firmware. If your site has any M3900s with Release 2 firmware, you can download the Release 3 firmware from Nortel Networks web site at <http://nortelnetworks.com>. Select "Customer Support". If you are not a registered user, follow the option for customers to register for access. Only registered users can download the firmware. For more information, see "[Features firmware and software management](#)" (page 107).

The Display-based Expansion Module (DBA), and the Key-based Expansion Module (KBA) require a minimum firmware release as follows:

- **Display-based Expansion Module** - Release 6 of NTMN67AA or later
- **Key-based Expansion Module** - Release 2 of NTMN37BA or later

Minimum EIPE load requirements

The M3900 Release 3 telephones require a minimum of EIPE15AD.

Programmable line/feature keys (self-labeled)

The programmable line/feature keys (self-labeled) are located at the left and right sides of the upper section of the display area on the M3903, M3904, and M3905 telephone sets. The user changes the LCD label of these keys (except the primary directory number key) to meet their business needs.

The M3903 and M3904 sets provide two layers of functionality using these keys. The user accesses two Lines/Features per key. The M3904 provides the user with 12 lines/features that are accessible on the six keys. The M3903 provides users with four lines/features that are accessible on the two keys. The M3905 provides one layer of keys with eight line/feature keys.

Programmable feature keys (self-labeled)

Programmable feature keys (self-labeled) are the three keys located below the lower portion of the display area on the M3902 Meridian digital telephone.

Context-sensitive soft keys

The M3903, M3904, and M3905 have four soft keys directly below the display. Only the features that are configured for the telephone set display on the soft labels above the keys. For example, features like transfer and conference can be accessed during a call, but not Forward because that feature is not needed during a call. You can access the following functions or features using these keys:

- features configured for the telephone set
- phone status like on-hook, off-hook, or on a call
- options list, directory/log, or applications usage indication

Release 3 enhancements

Full Duplex Handsfree capability

The Full Duplex Handsfree (FDHF) functionality allows simultaneous, two-way communications during a handsfree call. For Full Duplex Handsfree functionality, you require an M3904 Release 3 telephone set equipped with an FDHF cartridge accessory. For hardware requirements information, see "[Full Duplex Handsfree Accessory](#)" (page 74).

The set attenuates the receive audio level during FDHF mode while both parties are speaking. Therefore, there can be fluctuations in the receive volume during an FDHF call. During the call, you can insert or remove the FDHF cartridge from the Accessory Connection Module (ACM) without interrupting the established call. If you remove the FDHF cartridge, the set restores half duplex operation.

One-button feature access keys

M3900 Release 3 firmware and MSL15 or later software introduces the following enhancements for Personal Directory, Corporate Directory, Call Log, and Redial List:

- The user can press the Directory/Log key and start a directory search through the dial pad without pressing the Select soft key. Searches can now be made with three letters, rather than only one.
- Instead of needing two key strokes with Corporate Directory, the user presses the Applications keys and enters letters using the dial pad to begin a search.
- Call Log and Redial List can be datafilled as either context-sensitive soft keys or programmable feature keys.

Pause in Dialing Strings

This feature enables the user to enter a 1.5-second delay in the dialing sequence on an external line. The sets use the delay for applications such as answering machines, IVR systems, auto attendant, when programming or editing their Personal Directory or Redial List. A new soft key, labeled "Pause", appears on the M3903, M3904, and M3905 telephone sets.

This feature introduces a Pause soft key. To enter a Pause in the dialing string while editing a number, press the Pause soft key. A Pause place marker appears in the dialing string.

The pause character is two parallel bars (||) that appear in the dialing display. You can insert additional pauses (for example, four pauses = 4 x 1.5 sec. = 6-sec. delay.) This feature is supported when using the Release 3 PC utility, NTMN82AB or later.

Call Forward enhancement

The Call Forward Enhancement feature modifies the method of activating Call Forward on M3903, M3904, and M3905 sets.

To forward your calls, or change a previously stored Call Forward number, follow the steps in [Procedure 1 "Use Call Forward on M3903, M3904, and M3905 sets"](#) (page 16).

Procedure 1

Use Call Forward on M3903, M3904, and M3905 sets

| Step | Action |
|------|--|
| 1 | Press the Call Forward Key. <i>The previously stored Call Forward number appears, if one exists.</i> |
| 2 | If you want to keep the previously stored Call Forward number, press Done . If you want to enter a new Call Forward number, go to Step 3. |
| 3 | Enter the Call Forward number and press Done . <i>When you start to enter the new number, the set automatically deletes the initial Call Forward Number.</i> |

—End—

Note: If you use Remote Call Forward to change the call forward number, the number that appears on the display of the telephone set is the last number entered directly from the telephone set. Currently, there is no plan to change this.

Special Character handling

Users can enter Special Characters, like those on a PC keyboard for the ASCII character set, to items such as the personal directory or feature key labels. The Special Character set contains up to 130 characters. In the edit mode, navigation keys access the special characters.

31-Digit Dialing

With the 31-Digit Dialing feature, M3900 display screens accommodate dialing strings of up to 31 digits. This allows the screens to fully display long dialing strings, such as calling card numbers and access codes.

The M3902 set has a one-line display. Use the Left/Right navigation keys to scroll through the digits on the line.

M3903, M3904, and M3905 display screens accommodate 24 characters on each line. For dialing strings greater than 24 characters, the number automatically wraps to the second line.

Table 1 "Features that support 31-Digit Dialing" (page 17) list the features that support 31-Digit Dialing on M3902, M3903, M3904, and M3905 sets.

Table 1
Features that support 31-Digit Dialing

| | M3902 | M3903 | M3904 | M3905 |
|--------------------|-------|-------|-------|-------|
| Personal Directory | | | ✓ | ✓ |
| Call Log | | ✓ | ✓ | ✓ |
| Redial | | ✓ | ✓ | ✓ |
| Predial | ✓ | ✓ | ✓ | ✓ |

Secondary DN dialing with Directories

This feature introduces the ability to dial out on secondary DNs when using the Personal Directory, Call Log, Redial List, and Corporate Directory Application.

Personal Directory, Call Log, and Redial

If there is a call on a primary DN, or the set is configured as an ACD Call Center telephone, use the following procedures to dial out on the secondary DN.

Procedure 2

Dial out on secondary DNs using Personal Directory, Call Log, and Redial - M3904

| Step | Action |
|------|--------|
|------|--------|

- | | |
|---|--|
| 1 | Press the Directory/Log Key, select the Personal Directory, and select the entry. |
| 2 | Press the secondary DN key and then the dial soft key. |

The M3904 dials the number.

Note: If you press the **dial** soft key prior to pressing the **secondary DN** key, the M3904 displays "Unable to Dial - Busy Primary Line".

—End—

Procedure 3**Dial out on secondary DNs using Personal Directory, Call Log, and Redial - M3905**

| Step | Action |
|-------------|--|
| 1 | Press the Dir/Log key or the Callers or Redial List and select the entry. |
| 2 | Press the dial soft key. <i>The M3905 displays "Select Free Line". Your site must be on MSL15 (or higher) and the patch ID DMX12 applied.</i> |
| 3 | Press a secondary DN key, press "OK", and press the dial soft key again. <i>The M3905 dials the number.</i> Note: If your site is not yet on MSL15, the M3905 will not display the message; however, you use the same steps to dial the number. |

—End—

Corporate Directory

If there is a call on a primary DN, or the set is configured as an ACD Call Center telephone, use the following procedures to dial out on the secondary DN.

Procedure 4**Dial out on secondary DNs using Corporate Directory - M3903 and M3904**

| Step | Action |
|-------------|---|
| 1 | Press the Applications Key, select Corporate Directory, and select the entry. |
| 2 | Press the secondary DN key and then press the dial soft key. <i>The M3903/M3904 dials the number.</i> Note: If you press the dial soft key prior to pressing the secondary DN key, the set will not dial the call, and it will cancel hold for the call that is on the primary DN. |

—End—

Procedure 5**Dial out on secondary DNs using Corporate Directory - M3905****Step Action**

- | Step | Action |
|------|---|
| 1 | Press the Applications key, select Corporate Directory and select the entry. |
| 2 | Press the dial soft key, then press a secondary DN key. <i>The M3905 dials the call.</i> |

—End—

Password clear

Administrators can clear and reset the Directory/Call Log password. Turn off the password by using Password Clear.

Full icon support

This feature enables the M3902, M3903, and M3905 sets to use the icons with I-Ringing, I-Active, U-Active, I-Hold, and U-Hold.

Service orders

M3900 Release 3 firmware and MSL15 software introduce two new options: RDLL (Redial List) and CLLG (Call Log.) For detailed examples of adding the M3900 sets using SERVORD, refer to the *Service Order Reference Manual*.

Flash download

Flash download provides the capability to download a new firmware version from the Meridian SL-100 switch to the Meridian digital telephones to:

- support a new language
- add new text prompts and soft-labels for feature and soft keys
- add new firmware-based applications
- support new signaling messages for server-based applications
- fix customer reported problems

Optivity Telephony Manager for Meridian SL-100 2.0

The Optivity Telephony Manager for Meridian SL-100 (OTM-MSL), version 2.0 or greater, initiates all flash download commands.

Note: For Meridian SL-100 customers and Communication Server 2100 customers, the M3900/EXPEC Firmware Manager is also available for

firmware downloads. "[M3900/EXPEC Firmware Manager \(MEFM\)](#)" (page 20)

OTM-MSL provides the ability to:

- query the current firmware version residing on Meridian digital telephones
- initiate flash download on M3900 sets on a set-by-set basis (that is, you can schedule downloads for a series of phones; downloads can occur during any time range, on any date)
- initiate flash download for all Meridian digital telephones configured on an IPE peripheral equipped with an extended peripheral equipment controller (EXPEC), NT7D07BA or later vintage
- keep track of download progress, and manage the correlation of firmware files for the different sets
- log download failures and provide a record of completed or failed downloads
- abort a download

Note: M3900 sets require an intelligent peripheral equipment (IPE) equipped with an EXPEC, NT7D07BA or later version.

Interactions and restrictions

During the download process, the M3900 sets are in an inoperable state. The sets display a message indicating that a download is in progress. If a download fails, the display indicates that maintenance is required.

In cases where there is an IPE equipped with an EXPEC and both M3900 and M2000 series sets coexist, the M2000 sets continue to operate during the flash download process.

M3900/EXPEC Firmware Manager (MEFM)

The M3900/EXPEC Firmware Manager (MEFM) is intended to provide a web-based interface through which the firmware on the M3900 telephone sets and EPIPE controller, that is, the EXPEC (Enhanced Extended Peripheral Equipment Controller) can be downloaded.

The M3900/EXPEC Firmware Manager tool includes the following functions:

- Telnet and FTP
- Scheduling
- EXPEC controller card load management
- M3900 firmware maintenance
- Secure web-based user interface

The M3900/EXPEC Firmware Manager will support Meridian SL-100 customers and Meridian SL-100 customers who transition to CS 2100. Please refer to "[M3900/EXPEC Firmware Manager](#)" (page 133) for a description and system requirements for the M3900/EXPEC Firmware Manager.

Meridian Digital Group Listening (GLISTEN)

Use the GLISTEN feature to activate the loudspeaker on the set when the handset is in use. A group of people can listen to the audio, but only the handset transmits audio to the far end. Group listening differs from handsfree in that the set enables the loudspeaker, but not the handsfree microphone. The handset is off-hook and its audio paths are on.

The GLISTEN feature is only available when enabled, and when assigned to the set through SERVORD. When this feature is not available, it does not show up in the options menu lists. In addition, because handsfree and group listening cannot be in activation at the same time, the group listening enable feature is not in the options list if there is an active call with handsfree enabled.

In order to use the GLISTEN feature, the user must first enable the feature by using the Options mode. When the feature is enabled, the handsfree key can turn the speaker on or off. To turn off the speaker, the user must press the Handsfree key a second time. The speaker only turns on if the handset is off-hook. The speaker automatically turns off when the handset is placed on-hook.

To activate handsfree when group listening is in use, the user must press and hold the Handsfree key, place the handset on-hook, and release the handsfree key. Alternately, the user can place the call on hold by pressing the Hold key, place the handset on-hook, followed by pressing the DN key that has the held call.

Note: You must enable handsfree for group listening to be enabled.

Interactions

GLISTEN is assignable to M3902, M3903, and M3904 sets using SERVORD commands NEW, NEWACD, ADD, and EST. Use the SERVORD CHF command to toggle the status of the option to an existing set previously listed. When you provision the options through SERVORD, the user can access the GLISTEN feature with the options key.

Data schema

Table IVDINV has set refinements added with GLISTEN as a boolean field. Refer to the *Customer Data Schema Reference Manual* for more information.

Password reset

The M3903, M3904, and M3905 sets provide password reset capability to directories that can be password protected.

The M3903 set uses password reset for the call log/redial fixed feature key. The call log/redial key allows access to the call log and the Redial List.

The M3904 set uses password reset for the directory/log fixed feature key. The directory/log key allows access to set-based applications, such as personal directory, call log, and Redial List.

The switch administrator performs password reset using the command interface (CI) command, RESETPWD. If a user forgets the password, the RESETPWD command resets the password for all directories.

When you perform Password Reset on a terminal with password protection enabled, the user must enter the new password to gain access to a list.

After performing password reset on a terminal with password protection disabled, the user enters the new password the next time password protection is enabled. Use the RESETPWD command to assign the new password.

Note: With M3900 Release 3, the administrator can disable the password functionality using the Password Clear enhancement by entering "00000000" (that is, eight zeros), instead of a new password. The user then will not be required to enter a password.

Desktop directory number download

The Meridian digital telephones display the DN associated with a DN key or the feature assigned to a feature key on a display area next to each of their keys. This display area eliminates the need for paper labels. The directory download occurs when you provision new DNs on the set or add new features.

Limitations and restrictions

DN download and feature key labeling only apply to Meridian digital telephones equipped with a display. The M3902, M3903, M3904, M3905, and the DBA use this function. The M3901 set does not use this function.

The M3902 set has a 2 x 24 character display. The keys for DN features have enough space for seven characters for both DN and features.

The M3903 set has a 3 x 24 character display. The keys for feature keys are limited to 10 characters.

The M3904 set has a 5 x 24 character display. The keys for features are limited to 10 characters.

The M3905 set has a 4 x 24 display. The keys for features are limited to 10 characters.

The M3904 and M3905 sets support a maximum of two KBAs or one DBA. A set that has at least one KBA cannot have a DBA and vice versa.

Interactions

The analog terminal adapter (ATA) functions with the M3900 sets.

Data schema

Refer to the *Customer Data Schema Reference Manual* for more information.

Feature keys

Purpose

This chapter describes the look and functions of the feature keys.

Fixed feature keys

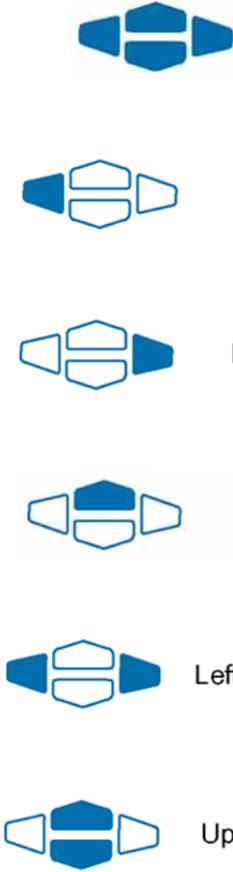
The M3900 Series Meridian Digital Telephone sets have feature keys that are pre-labeled with the assigned feature. These keys appear on the telephone with text or icon labels. Telephone icon key labels are available in specific markets. An asterisk (*) indicates optional key caps available with the M3905. [Table 2 "Feature key text and icon labels" \(page 25\)](#) shows the keys, text, and icons.

Table 2
Feature key text and icon labels

| Feature Key | Text label | Icon label |
|-------------------------------|---|---|
| Activity Key (M3905 only)* |  |  |
| Answer Agent (M3905 only)* |  |  |
| Answer Emergency (M3905 only) |  |  |
| Application Apps (M3905 only) |  |  |

| Feature Key | Text label | Icon label |
|------------------------------------|---|---|
| Call Agent* |  |  |
| Call Log (M3903 only) |  |  |
| Call Supervisor (M3905 only) |  |  |
| Copy |  |  |
| Directory/Log Dir/Log (M3905 only) |  |  |
| Display Queue (M3905 only)* |  |  |
| DN line |  |  |
| Emergency (M3905 only) |  |  |
| Feature Key (M3901 only) |  |  |

| Feature Key | Text label | Icon label |
|------------------------|---|---|
| Goodbye |  |  |
| Handsfree |  | |
| Headset |  |  |
| Hold |  |  |
| InCalls (M3905 only) |  |  |
| Make Busy (M3905 only) |  |  |
| Message |  |  |
| Mute |  |  |

| Feature Key | Text label | Icon label |
|-----------------------------|---|---|
| Navigation |  | <p>Left</p> <p>Right</p> <p>Up</p> <p>Left/Right</p> <p>Up/Down</p> |
| Not Ready (M3905 only) |  |  |
| Observe Agent (M3905 only)* |  |  |
| Options |  |  |

| Feature Key | Text label | Icon label |
|------------------|--|---|
| Quit |  |  |
| Shift |  |  |
| Transfer (M3902) |  |  |
| Volume |  | |

Feature codes and abbreviations

Purpose

This chapter lists the feature codes and abbreviations.

Code summary

Table 3 "Feature codes and abbreviations" (page 31) shows the DN Download feature codes and abbreviations.

Table 3
Feature codes and abbreviations

| Feature | 7-character display | 10-character display | Description |
|----------|---------------------|----------------------|--------------------------|
| AAB | AutoAB | AutoAns | Auto Answerback key |
| ACD DN | Line* | N/A | ACD MIS |
| ACD HOLD | ACDHld | ACDHold | ACD MIS |
| ACDNR | NotRdy | NotReady | ACD Not Ready key |
| ASL | AgtStat | AgentStat | ACD Agent Status Lamp |
| AUD | ADial | AutoDial | Automatic Dialing |
| AUL | AutoLn | AutoLn | Automatic Line |
| AUTODISP | AutDsp | Autodisp | Auto Display feature |
| BC | Bcap | BearerCap | Bearer Capability |
| BCLID | BCLID | BCLID | BCLID feature |
| BLF | BLF | BLF | Busy Lamp Field |
| BLK** | ** | ** | Blank key |
| CAG | Cagent | CallAgent | ACD Call Agent key |
| CFB | CFB | CFB | Separate Keylist for CFB |
| CFD | CFD | CFD | Separate Keylist for CFD |
| CFDVT | CFDTmr | CFDVarTimr | CFD Variable Timer |
| CFTOD | CFTOD | CFTOD | CALL Forward Time of Day |
| CFUIF | CFUIF | CFUIF | Separate Keylist CFUIF |

32 Feature codes and abbreviations

| Feature | 7-character display | 10-character display | Description |
|---------|---------------------|----------------------|---------------------------|
| CFW | CFWD | Forward | Call Forwarding |
| CIF | CIntFw | ConIntrFlw | Controlled Interflow |
| CLI | CLI | CallLineID | Calling Line Identify |
| CLSUP | Calsupv | Callsupvsr | ACD Call Supervisor |
| CNF | Conf | Conference | 4 to 30 Way Conference |
| COT | COT | CustOrigTr | Customer Originated Trace |
| COT | COT | COT | COT Feature key Access |
| CPK | Park | Park | Call Park |
| CPU | Pickup | Pickup | Call Pickup |
| CTD | CTD | TollDenied | Carrier Toll Denied |
| CTR | Xfer | Transfer | Call Transfer |
| CWD | CWD | CWD | CWD key |
| CWT | Cwait | CallWait | Call Waiting |
| DASK | DspAgt | DisplayAgt | ACD Display Agents |
| DCPK | DCPark | DirectPark | Directed Call Park |
| DDN | Line* | N/A | Data DN (Audits only) |
| DIN | DnyInc | DenyIncCal | Denied Incoming |
| DMCT | DMCT | DMCT | DMCT feature |
| DND | DND | DontDistrb | Do Not Disturb |
| DQS | DispQ | DisplayQue | ACD Display Queue Status |
| DQT | DspQTh | DispQTh | Display Queue Threshold |
| DRING | Dring | DistRing | Distinctive Ringing |
| DTMK | DTMK | DTMK | Data Terminal Mode key |
| EBO | BsyOvd | ExeBusyOvd | Executive Busy Override |
| ECM | ECM | ECM | CompuCall ECM feature |
| EMK | Emrgcy | Emergency | ACD Emergency key |
| EMW | EMsgWt | ExeMsgWait | Executive MSG Waiting |
| FAA | FAA | FAA | ACD FAA |
| FXR | FxXfer | FastXfer | Fast Transfer |
| GIAC | GIAC | GIAC | Group Intercom All Calls |
| GIC | GplCom | GplIntercom | Group Intercom |
| ICM | IntCom | Intercom | Intercom |
| INSPECT | Inspct | Inspect | Inspect key |

| Feature | 7-character display | 10-character display | Description |
|----------|---------------------|----------------------|---|
| JOIN | Join | Join | Call Join |
| KSF | ShrtHnt | ShortHunt | Key Set Short Hunt |
| KSMOH | MusHld | MusicHold | Key Set Music on Hold |
| LOB | LOB | LOBCode | Line of Business Code |
| LPIC | LPIC | PrimILC | Primary InterLATA Carrier |
| MBK | MkBusy | MakeBusy | Make Busy key |
| MBSCAMP | CampOn | CampOn | MBS CampOn key |
| MCH | MsHold | MalcsHold | Malicious Call Hold |
| MSB | MSB | MakeSetBsy | Make Set Busy |
| MSMWI | MSMWI | MSMWI | Multiple Set Message Waiting Indication |
| MWQRY | MWQry | MWQuery | Message Query |
| MWT | MsgWt | Message | Message Waiting key |
| NFA | NFA | NFA | Said on MBS feature |
| NGTSRVCE | NgtSvc | NightSvc | ACD Night Service key |
| OBS | Observ | Observe | ACD Observe Agent key |
| OLS | OLS | OrigLneSel | Originating Line Select |
| PBL | Line* | Line* | Private Business Line |
| PIC | PIC | PrimaryILC | Primary InterLATA Carrier |
| PRL | PriRIs | PrivacyRIs | Privacy Release |
| QBS | QryBsy | QueryBusy | Query Busy Station |
| QCK | Qconf | QuickConf | Quick Conference key |
| RAG | RgAgn | RingAgain | Ring Again |
| RMB | RMBusy | RandomBusy | Random Make Busy |
| RSUS | RqSupn | ReqSuspnsn | Requested_Suspension |
| SACB | SACB | SubsrBlock | Subscr Call Block |
| SCA | SCA | SelAccept | Selective Call Accept |
| SCF | SCFWD | SelForward | Selective Call Forward |
| SCL | SpCall | SpCallUser | Speed Calling |
| SCMP | SerCmp | SeriesCmp | Series Completion |
| SCRJ | SCRJct | SelReject | Selective Call Rejection |
| SCS | SpCall | SpCallUser | Speed Calling |
| SCU | SpCall | SpCallUser | Speed Calling User |

| Feature | 7-character display | 10-character display | Description |
|---------|---------------------|----------------------|--------------------------------------|
| SDN | Line* | Line* | Directory Number |
| SDY | LStudy | LineStudy | AT&T Line Study |
| SEC | ScCode | SecureCode | Security Code |
| SLQLG | SLQLG | SLQLG | Single Line Queuing |
| SLU | SLU | SLU | Subscriber Line Usage |
| SMDI | SmpMsg | SimplifyMsg | Simplified Message |
| SOR | SOR | StatOrigR | Station Orig Restrictions |
| SPB | SpBill | SpecBill# | Special Billing Code |
| SSAC | SSAC | StanAuth# | Station-specific Authorization Codes |
| StopHnt | SHU | StopHunt | Stop Hunt |
| SUPR | Supvsr | Supervisor | Supervisor feature |
| TLS | TLS | TermLneSel | Terminating Line Select |
| TRKDISP | TrkDsp | TrkMemDisp | Trunk Member Display |
| TWC | 3WC | 3waycall | Three-way Calling |
| TWCPUB | TWCPUB | TWCPUB | TWCPUB Line Option |
| UCDLG | UCDLog | UCDLogin | UCD Login key |
| UCDSD | UCDSD | UCDSDPoint | UCD SD Point feature |
| WML | WarmLn | WarmLine | MDC/RES Warm Line-NC0011 |

Note 1: Sets display line if the DN download fails. The user can manually enter the DN if this occurs. ** - The display remains blank for non-configured keys.

Note 2: If a feature is not on the DN Download list and is not assigned to a programmable feature key, the key appears blank. If a feature is not on the list, but is assigned to a programmable line/feature key, a user can change the label using the Options list.

M3901 telephone set

Purpose

This chapter describes the M3901 telephone set and its key configuration.

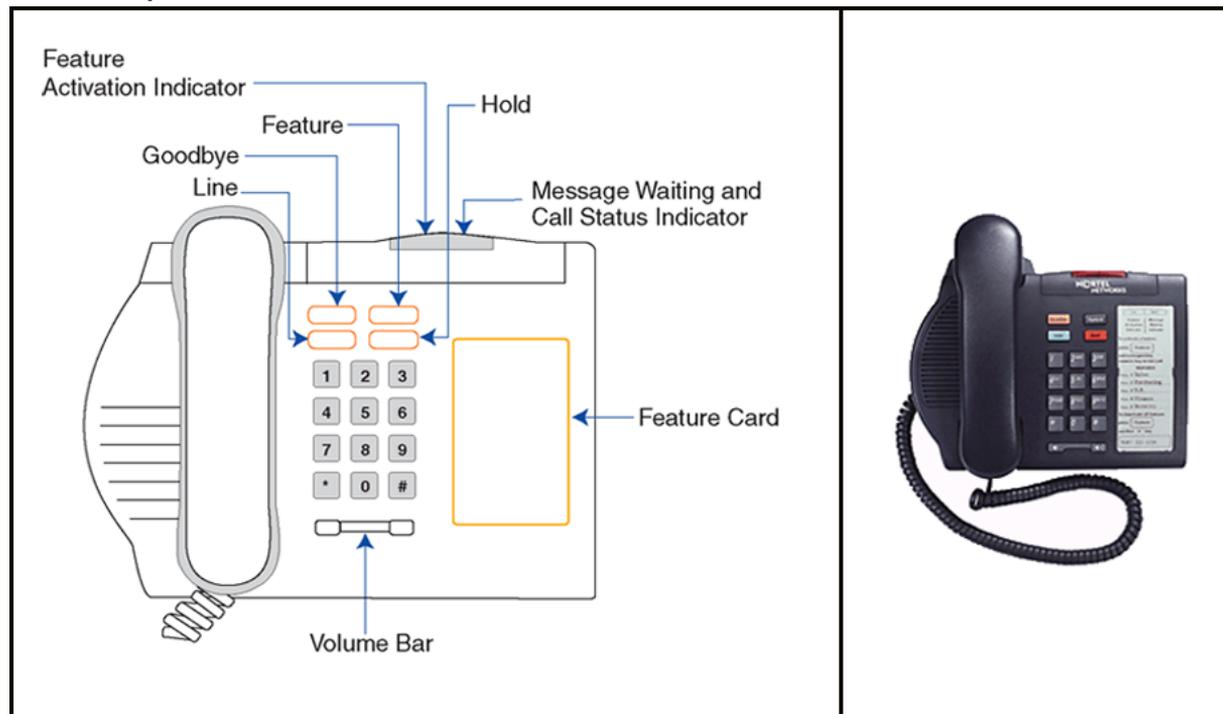
M3901 feature description

The M3901 set has feature key activation. It takes only two keystrokes to activate a feature. For example, press the Feature key and a keypad number to activate a feature. You can activate the following key combinations:

- the main feature key
- the five feature key numbers

Figure 1 "M3901 telephone set" (page 36) shows the M3901 set.

Figure 1
M3901 telephone set



M3901 Features

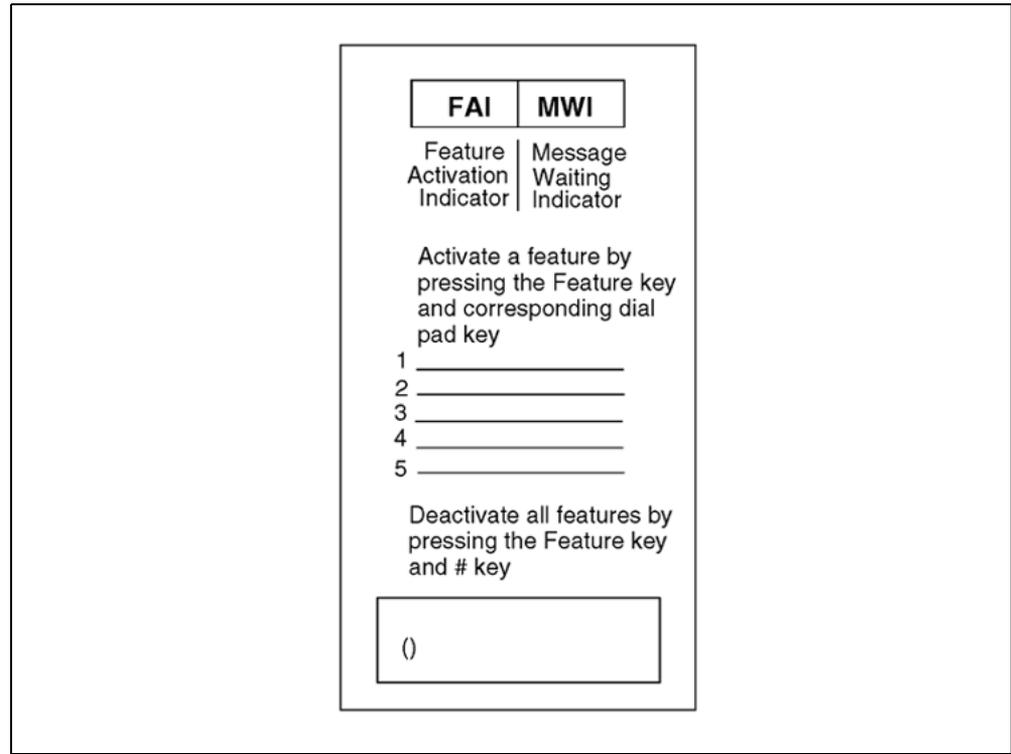
| M3901 features |
|--|
| One-line directory number (DN) capability. |
| Five programmable features. |
| Feature activation and message waiting/incoming call status indicator LED. |
| Amplified headset support. |
| Line, Feature, Hold, Goodbye, and Volume UP/DOWN fixed keys. |

Note: The M3901 set does not support automatic call distribution (ACD).

Feature card

The feature card enumerates the set directory and indicates the key sequence for feature activation. [Figure 2 "Feature card example"](#) (page 37) shows an example of the feature card.

Figure 2
Feature card example



Message Waiting and Call Status Indicator (MWI)

The MWI LED lights to show a message is waiting. This indicator visually alerts that a call is holding. The LED flashes to indicate an incoming call. It winks when a call is holding.

Feature Activation Indicator (FAI)

The Feature Activation Indicator LED indicator displays the status of all five programmable feature keys (keys 2-6). The Feature Activation Indicator LED is located on the left side of the MWI. The MWI and Feature Activation Indicator LED use the same lens with a separating wall. The Feature Activation Indicator LED turns off when all five programmable keys turn off. The LED winks when any one of the five keys wink. The Feature Activation Indicator LED turns on when any of the five keys turns on.

Line key

Use the Line key for on-hook dialing or to take a call off hold. Access the DN by taking the handset off-hook or by pressing the Line key. The DN must be assigned to key 1.

Goodbye key

Use the Goodbye key to terminate an active call.

Hold key

Use the Hold key to put an active call on hold. Press the Line key to take a call off hold. The MWI LED winks as a reminder that the call is on hold.

Compatible features

Refer to the *Service Order Reference Manual* for additional information.

M3901 key configuration

Table 4 "M3901 key configuration" (page 38) shows the M3901 set key configurations. Nortel Networks does not support the M3901 as a Call Center DN. The M3901 telephone firmware controls the Volume Control Bar, the Hold, and Goodbye keys.

Table 4
M3901 key configuration

| Key | Description |
|--|---------------------------------------|
| Key 1 | Line (directory number) (see Note 1). |
| Key 2 | Feature. |
| Key 3 | Feature. |
| Key 4 | Feature. |
| Key 5 | Feature. |
| Key 6 | Feature (see Note 2). |
| # | Deactivate all features. |
| other | Illegal or not defined. |
| <p>Note 1: Configure key 1 as the primary DN.</p> <p>Note 2: Configure keys 2-6 with any feature not requiring a display.</p> <p>Note 3: The M3901 firmware controls the Volume Control Bar, the Hold Key, and the Goodbye Key.</p> | |

M3902 telephone set

Purpose

This chapter describes the M3902 and its key configuration.

M3902 feature description

| M3902 features |
|---|
| One-line directory number (DN). |
| Three programmable feature keys (self-labeled). |
| Three fixed feature keys for Message, Transfer, and Options. Note: Although the Message and Transfer keys are permanently labeled, they are not restricted to those features. |
| Fixed keys for the following: <ul style="list-style-type: none"> • hold • goodbye • mute (with LED) • volume UP/DOWN • handsfree (with LED) • navigation keys (up, down, left, and right) |
| Two-line x 24-character display area. |
| On-hook dialing. |
| Support for an amplified headset. |
| One accessory port. |
| Handsfree calling option with LED. |

Figure 3 "M3902 telephone set" (page 40) shows the M3902 telephone set.

Figure 3
M3902 telephone set

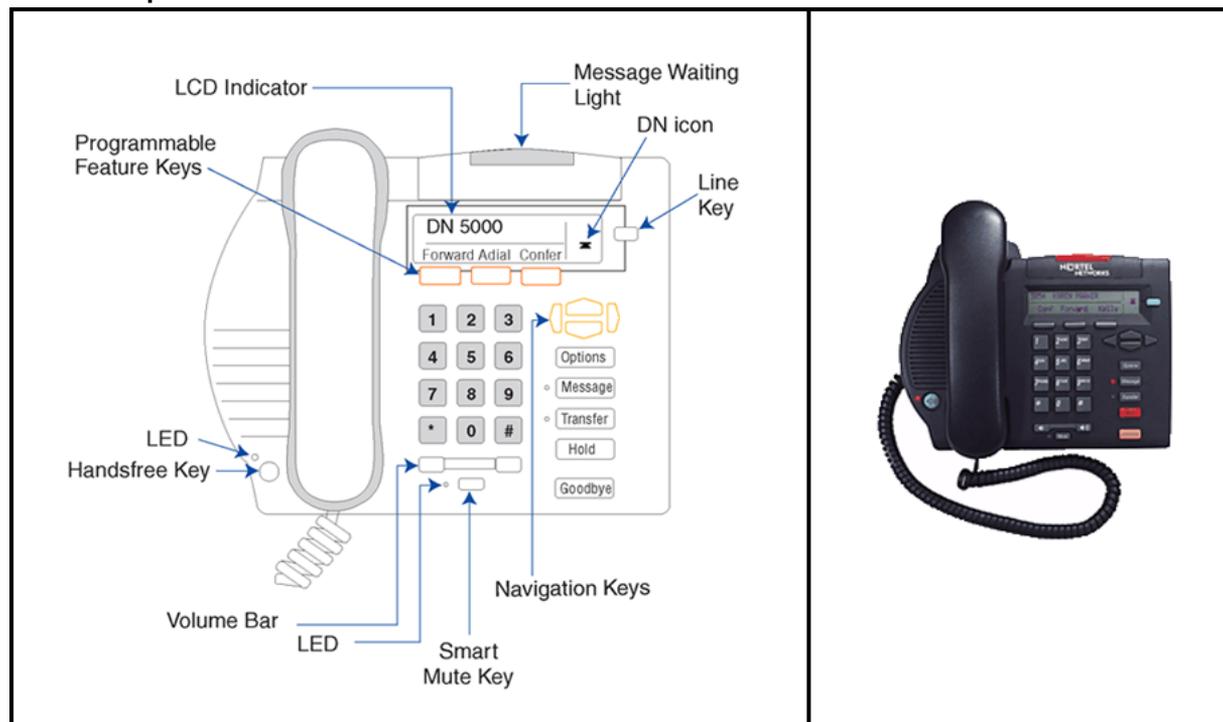


Table 5 "Key numbers" (page 40) describes the key numbers and their locations.

Table 5
Key numbers

| Key number | Description |
|------------|--------------------------------------|
| Key 1 | Line key (DN line must go on key 1). |
| Key 2 | Labeled Forward. |
| Key 3 | Labeled Auto Dial (Adial). |
| Key 4 | Labeled Conference (Confer). |
| Key 5 | Transfer key. |
| Key 6 | Message Waiting key. |

Note: You cannot assign DN or DN features to keys 2-6.

Message waiting indicator (MWI)

The MWI signals that a message is waiting to be heard. This LED flashes when the set is ringing. If the set is ringing when someone is leaving a message, the LED flashes until the set stops ringing.

Display

The display has two 24-character lines. The top line shows information like DN, the number of user presses when the set is in use, and time and date. When the information exceeds 24-characters, a scroll icon appears and you can see the rest of the display by scrolling.

The second line displays the feature key labels for the three programmable self-labeled keys. Each feature label consists of up to seven characters. The first character is an icon displaying the status of the feature. When the set is in Options mode, the top line displays related prompts and the bottom line displays key labels. There are six icon indicators showing various options and set status. [Table 6 "M3902 icon indicators" \(page 41\)](#) describes these icons.

Table 6
M3902 icon indicators

| Icon | Description |
|---|--|
|  | Down - indicates there is more data to display. |
|  | Up - indicates there is more data to display. |
|  | Left - indicates there is more data to display. |
|  | Right - indicates there is more data to display. |

| Icon | Description |
|---|---------------|
|  | DN/line icon. |
|  | Feature icon. |

Keys

Table 7 "M39002 keys" (page 42) describes the M3902 keys.

Table 7
M39002 keys

| Key | Description |
|--|--|
| Navigation keys | When the scroll icon displays, use the UP and DOWN keys to scroll through the top display line. Use the UP, DOWN, LEFT, and RIGHT keys for other functions, depending on the active application and Options mode status. |
| Self-labeled programmable feature keys | The use of the self-labeled programmable feature keys varies, depending on the different states of operation. In Options mode, they access programming options of the set. In other modes, they are dedicated self-labeled programmable feature keys with a corresponding display label. You must datafill these three keys as option keys 2-4 in SERVORD. |
| Options key | <p>Pressing the Options key activates Options mode. To exit the Options mode, press the Options key a second time or press the Quit softkey. Exiting Options mode by using the Options key causes the current action to be canceled and takes the user one level up in the options list. While in Options mode, the Line, Goodbye, and Hold keys can still be used to process calls, but the display shows only options mode information. Options mode shows an introduction screen listing the number of available options and instructions for navigating the list of options. Use the navigation keys to scroll through the Options mode list.</p> <p>The Options key provides access to the following items:</p> <ul style="list-style-type: none"> • Language - select the display language from English, Spanish, French, German, Swedish, Norwegian, Finnish, Italian, Brazilian Portuguese, and Japanese • Change Feature Key Label - change the feature labels from the default value • Screen Contrast - adjust the LCD contrast • Volume Adjustment - adjust the default volume level on the ringer, buzzer, speaker, and handset |

| Key | Description |
|--|--|
| | <ul style="list-style-type: none"> • Ring Type - select a ring type from a list of available tones • Call Timer Enable - calls are automatically timed and the timer displays for 10 seconds after call disconnect • Date/Time Format - select the time and date format to display when the phone is idle • Key Click Enable - provides audible feedback when using the dial pad (no feedback is given when the option is off) • Display Diagnostics - provides a self-diagnostic test for the display • Group Listening Control - activates and deactivates group listening <p>Note: You cannot assign the Options key to a DN or feature key.</p> |
| Goodbye key | The Goodbye key terminates an active call. |
| Hold key | The Hold key places an active call on hold. The feature key label of the held line displays an icon that shows that the call is on hold. Press the Line key to return to the call that is on hold. |
| Line key | Access the DN by pressing the Line key or taking the handset off-hook. Use the Line key for on-hook dialing or to take the call off hold. You must assign the DN to key 1. |
| Handsfree/ Group Listen key and indicator | <p>Press the Handsfree key to use the speaker with built-in microphone instead of a handset/headset. In handsfree mode, the handsfree indicator lights. Switch back to the handset/headset at any time during the call by taking the handset off-hook or using Options mode.</p> <p>In group listening mode, a group listen icon appears. Refer to the <i>Service Order Reference Manual</i> for Group Listen functionality.</p> |
| Mute key and indicator | Press the Mute key to mute the voice transmit path. While in handsfree mode, the microphone is muted. When in mute mode, the mute indicator flashes. To turn the voice transmit path on again, press the Mute key a second time. |
| Transfer key and indicator | The Transfer key is a fixed feature key that corresponds to feature/option key 5. You must program this key using SERVORD commands. Although it is permanently labeled as Transfer, it does not have to be datafilled as such. The LED for this key indicates the status of the feature. The indicator states are ON, OFF, FLASH, and WINK. A SERVORD message shows that Transfer is the recommended feature for this key. |
| Message key | The Message key is a fixed feature key that corresponds to feature/option key 6. You must program this key using SERVORD commands. Although it is permanently labeled as Message, it does not have to be datafilled as such. A SERVORD message shows that Message is the recommended feature for this key. In order to access voice mail without a message waiting, Nortel Networks recommends assigning Message to key 1 and Autodial to the Message key (key 6). The Autodial key should be programmed with the voice mail system DN. |

Compatible features

Refer to the *Service Order Reference Manual*.

M3903 enhanced telephone

Purpose

This chapter describes the M3903 and its key configuration.

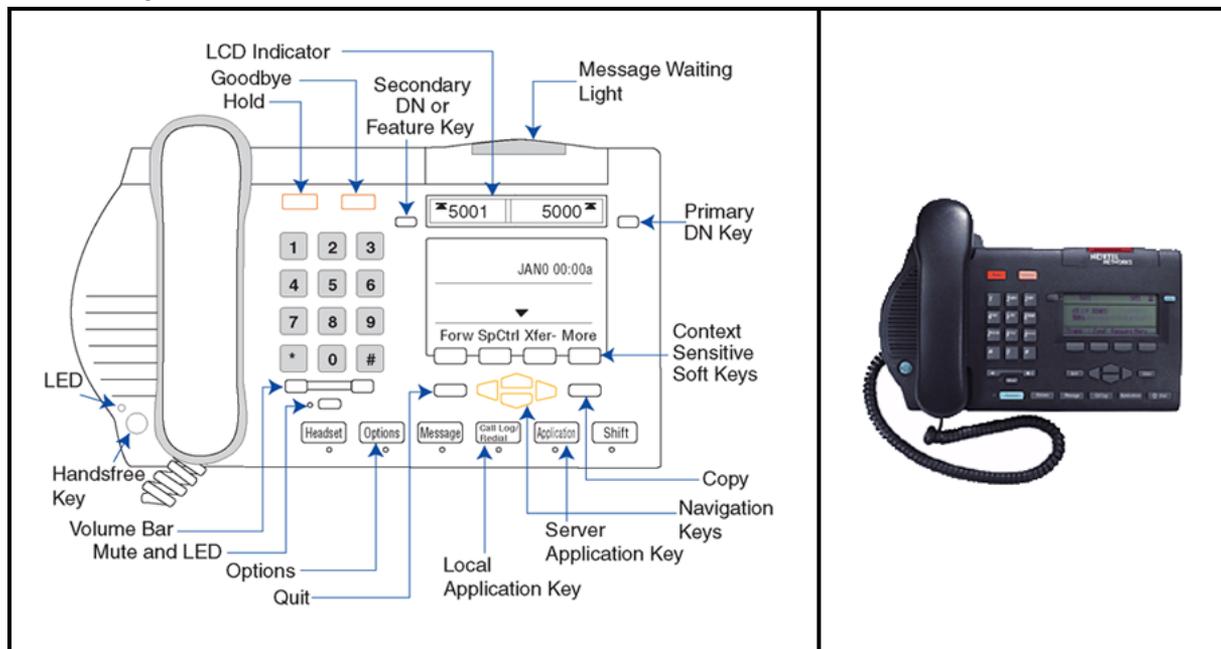
M3903 general description

| M3903 features |
|--|
| <p>Four directory numbers (DNs) with three-line display as follows:</p> <ul style="list-style-type: none"> • two programmable line/feature (self-labeled) keys, each with two layers, providing up to four line/feature keys • four context-sensitive soft keys to access context-sensitive soft key features • five fixed-feature/application keys including options, message, call log, applications, and a shift key |
| <p>Fixed keys for the following:</p> <ul style="list-style-type: none"> • hold • goodbye • mute (with LED) • volume UP/DOWN • headset (with LED) • handsfree (with LED) • navigation keys (up, down, left and right) |
| Copy and quit keys for applications and features. |
| Handsfree calling with LED. |
| Three-line x 24-character display area. |
| Call log (including Redial List). |
| On-hook dialing. |
| Two accessory ports. |

| M3903 features |
|---|
| Direct connect headset port. |
| Refined Corporate Directory search using the Resume key appearing on List View, Card View and No Matches Found screens. |

Figure 4 "M3903 telephone set" (page 46) shows the M3903 set.

Figure 4
M3903 telephone set



Note: All of the features currently labeled on the context-sensitive soft keys are for label referencing purposes. These features do not appear at the same time. It depends on the state (context) of the set.

Table 8 "Key numbers" (page 46) shows the key numbers and locations for the M3903 set that Figure 4 "M3903 telephone set" (page 46) illustrates.

Table 8
Key numbers

| Key number | Location |
|------------|---|
| Key 1 | Labeled as Prime DN (shown as 5000). |
| Key 2 | Labeled as second Line/Feature (shown as 5001). |
| Key 3 | Labeled as Prime DN, accessed by using the Shift key (shown as 5000). |

| Key number | Location |
|---|--|
| Key 4 | Labeled as second Line/Feature, accessed by using the Shift key (shown as 5001). |
| Keys 5-16 | Blocked. |
| Key 17 | Key labeled as Message. |
| Key 18 | Transfer (CXR). |
| Key 19 | Six-party Conference (CNFC06). |
| Key 20 | Call Forward (CFU). |
| Key 21 | Ring Again (RAG). |
| Key 22 | Call Park (CPK). |
| Key 23 | Call Pick-up (CPU). |
| Key 24 | Speed Call Short (SCS), Long (SCL), or User (SCU). |
| Key 25 | Privacy release (PRL). |
| Key 26-27 | Null. |
| Key 28 | Callers List. |
| Key 29 | Redial List. |
| Key 30-32 | Null. |
| Note: Keys 18-25 and 28-29 are the keys labeled as the four context-sensitive soft keys. | |

Message Waiting and Call Status Indicator (MWI)

The MWI LED lights to show a message is waiting. This indicator visually alerts that a call is holding. The LED flashes to indicate an incoming call. It winks when a call is holding.

Info line

The Info display line is 24 characters long. It displays information such as in use DN, user key presses, and time and date.

Text line

The 24-character text display line shows information about the incoming call, such as calling party name, calling party DN, and call redirection. If this information exceeds 24 characters, a scroll icon appears and allows the user to view the second line of display by using the navigation keys.

Label line

The 24-character display line shows the context sensitive soft key labels. Each feature label is up to seven characters.

Keys

Table 9 "M3903 keys" (page 48) describes the M3903 keys.

Table 9
M3903 keys

| Key | Description |
|-----------------|--|
| Navigation keys | When the scroll icon displays, the up and down keys scroll the top display line. The up, down, left, and right keys are used for other functions, depending on the active application and options mode status. |
| Options key | <p>Press the Options key to activate. Press a second time or press the Quit soft key to exit the options mode, which also cancels the current action. Press the Done soft key for the current action to take effect and move one level up in the options list. While in options mode, the Line, Goodbye, and Hold keys can still be used to process calls, but the display shows only options mode information. Options mode consists of an introduction screen that lists the number of available options and provides instructions for navigating the list of options.</p> <p>Use the Navigation keys to scroll through the options mode list. The Options key allows access to the following items:</p> <ul style="list-style-type: none"> • Language - select the display language from English, Spanish, French, German, Swedish, Norwegian, Finnish, Italian, Brazilian Portuguese, and Japanese • Change Feature Key Label - change the feature labels from their default values • Screen Contrast - adjust the contrast on the LCD • Volume Adjustment - adjust the default volume level on the ringer, buzzer, speaker, and handset • Ring Type - select a ring type from a list of available tones • Call Log Options - log all answered and unanswered calls or only unanswered calls in the callers • Call Timer Enable - automatically time all calls and display the time for 10 seconds after the call disconnects • Date/Time Format - select the time and date format to display when the phone is idle • Key Click Enable - provide audible feedback when using the dial pad (no feedback is given when the option is off) • On-hook Default Path - open the voice path automatically to headset or handsfree • Display Diagnostics - provide a display self diagnostic test • Group Listening Control - activate and deactivate group listening <p>Note: You cannot assign the Options key to a DN or feature key.</p> |

| Key | Description |
|--|--|
| Goodbye key | The Goodbye key terminates an active call. |
| Hold key | Press the Hold key to place an active call on hold. An icon displays that indicates the call is on hold. Press the Line key to return to the call on hold. |
| Handsfree/ Group Listen key and indicator | Press the Handsfree key to use the speaker (with built-in microphone), instead of the handset/headset. The handsfree indicator lights when the mode is on. Take the handset off-hook or use options mode to switch back to the handset/headset at any time during the call. Refer to the <i>Service Order Reference Manual</i> for Group Listen functionality. |
| Mute key and indicator | Press the Mute key to mute the call. The microphone is muted in handsfree mode and the indicator flashes. Press the key a second time to talk. |
| Prime DN key | Take the handset off-hook or press the DN key to access the DN. Press the DN key for on-hook dialing or to take a call off hold. This is a self-labeled key that displays the DN assigned to key 1. This key is also key 3 used for DNs and features. Press the shift key to access key 3. The prime DN key can only be used as a DN key. |
| Second Line/ Feature key | You can use this key as a second DN or as feature key 2. This is a self-labeled key that displays the DN or feature assigned to the key. This key is also key 4 for DNs and features. Press the shift key to access key 4. |
| Headset with LED key | Activate this key for headset use. The LED lights when the set is in headset mode. |
| Message key | This is a fixed feature key that corresponds to feature/option key 17. You must program this key using SERVORD. Although it is permanently labeled as Message, it does not have to be datafilled as such. In order to access voice mail without a message waiting, Nortel Networks recommends assigning Message to key 1 and Autodial to the Message key (key 17.) The Autodial key should be programmed with the voice mail system DN. |
| Quit key | Use the Quit key for applications and features. |
| Call Log key | Use the Call Log key to look at the call log and Redial List using the navigation keys. With M3900 Release 3 firmware and MSL15 software, you can assign the Call Log and Redial as a context-sensitive key or programmable line/feature key. There are 10 call log entries and five outgoing entries through the Redial List. Note: AUTODISP (autodisplay) should be assigned to M3900 sets with the Call Logging capability (that is, the M3903, M3904, M3905) to ensure logging of incoming and outgoing calls. |
| Application key | Use this key to connect to applications located on a remote server and to access the Corporate Directory Application. |
| Shift key | Use the Shift key to navigate between the two layers of line/feature keys. |

| Key | Description |
|-----------------------------|---|
| Copy key | Use the Copy key for applications and features. |
| Context-sensitive soft keys | <p>Assign up to 10 features on the four soft keys. You must assign the features to specific keys. The following list contains the features and their key numbers:</p> <ul style="list-style-type: none"> • key 18 - Transfer • key 19 - Conference • key 20 - Call Forward • key 21 - Ring Again • key 22 - Call Park • key 23 - Call Pickup • key 24 - Speed Call User (SCU), Short (SCS), or Long (SCL) • key 25 - Privacy Release • key 28 - Callers List • key 29 - Redial List <p>Note: Keys 26, 27, and 30-32 are reserved for future use. Keys 5-16 are not usable for the M3903 set. There are no definitions for these keys.</p> <p>Local set feature displays date and time when the terminal is idle.</p> |

Compatible features

Refer to the *Service Order Reference Manual*.

M3904 professional telephone

Purpose

This chapter describes the M3904 and its key configuration.

M3904 feature description

| M3904 features |
|---|
| 12 DNs with a five-line display. |
| Six self-labeled programmable line/feature keys with a second page of keys for a total of 12. |
| Four context-sensitive soft keys used to access context-sensitive soft key features. |
| Fixed feature/application keys for the following: <ul style="list-style-type: none"> • message • options • directory/log (call log/redial) • applications • shift |
| Fixed keys for the following: <ul style="list-style-type: none"> • hold • goodbye • mute (with LED) • volume UP/DOWN • headset (with LED) • handsfree/group listen (with LED) |
| Navigation keys (up, down, left and right). |
| Copy and quit keys for applications and features. |
| Handsfree calling with LED. |
| Five-line x 24-character display. |
| Personal directory. |

| M3904 features |
|--|
| Call Log (Includes Redial List). |
| On-hook Dialing. |
| Two accessory ports. |
| Direct Connect Headset port. |
| Full Duplex Handsfree Accessory (Optional). |
| Refined Corporate Directory search using the Resume key appearing on the List View, Card View, and No Matches Found screens. |

Figure 5 "M3904 telephone set" (page 52) shows the M3904 set.

Figure 5
M3904 telephone set

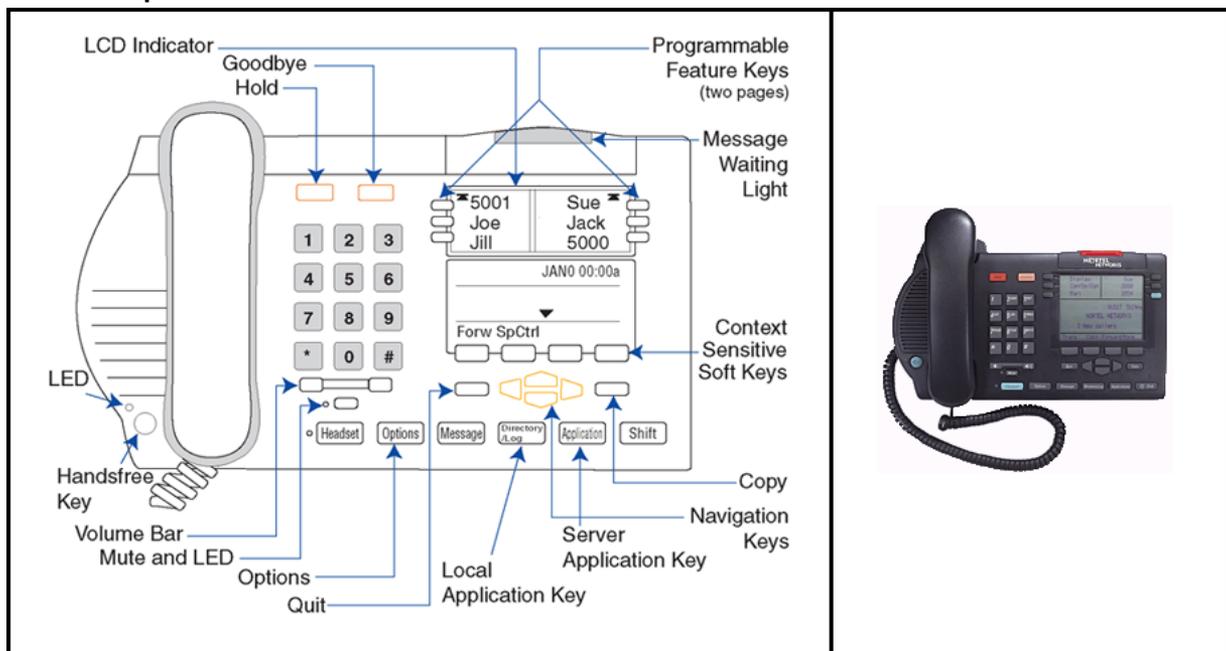


Table 10 "M3904 key numbers and locations" (page 52) shows the key numbers and locations for the M3904 set.

Table 10
M3904 key numbers and locations

| Key Number | Location |
|------------|---|
| Key 1 | Labeled as Prime DN (shown as 5000). |
| Key 2 | Labeled as key 2; second line or feature (shown as Jack). |
| Key 3 | Labeled as key 3; line or feature (shown as Sue). |

| Key Number | Location |
|---|--|
| Key 4 | Labeled as key 4; line or feature (shown as Jill). |
| Key 5 | Labeled as key 5; line or feature (shown as Joe). |
| Key 6 | Labeled as key 6; line or feature (shown as 5001). |
| Key 7 | Labeled as key 7; line or feature (shown as 5000) (see note). |
| Key 8 | Labeled as key 8; line or feature (shown as Jack) (see note). |
| Key 9 | Labeled as key 9; line or feature (shown as Sue) (see note). |
| Key 10 | Labeled as key 10; line or feature (shown as Jill) (see note). |
| Key 11 | Labeled as key 11; line or feature (shown as Joe) (see note). |
| Key 12 | Labeled as key 12; line or feature (shown as 5001) (see note). |
| Keys 13-16 | Blocked. |
| Key 17 | Labeled as Message (MWT). |
| Key 18 | Transfer (CXR). |
| Key 19 | Six-party Conference (CNF C06). |
| Key 20 | Call Forward (CFU). |
| Key 21 | Ring Again (RAG). |
| Key 22 | Call Park (PRK). |
| Key 23 | Call Pick-up (CPU). |
| Key 24 | Speed Call Short (SCS), Long (SCL), or User (SCU). |
| Key 25 | Privacy Release (PRL). |
| Keys 26-27 | Null. |
| Key 28 | Callers List. |
| Keys 29 | Redial List. |
| Keys 30-32 | Null. |
| Note: Use the shift key to access keys 7 through 12. | |

Message Waiting Indicator (MWI)

The MWI LED indicates that a message has been left and flashes when the set is ringing. If the set is ringing when someone is leaving a message, the LED flashes until the set stops ringing.

Info line

The Info display line is 24 characters long. It displays information like time and date.

Text line

Display information about incoming calls such as Calling Party Name, Calling Party DN, and Call Redirection on the three x 24-character lines. A scroll icon activates to alert the user to use the navigation keys to view the remaining information if the information exceeds three x 24-character lines.

Label line

Shows the context sensitive soft key labels on the 24-character display line. Each feature label is up to seven characters with the an icon displaying the status of the feature.

Keys

Table 11 "M3904 keys" (page 54) describes the M3904 keys.

Table 11
M3904 keys

| Key | Description |
|---|--|
| Layered self-labeled programmable line/feature keys | Six self-labeled programmable line/feature keys with two layers make a total of 12 line/feature keys. View six lines/features at a time using the shift key to toggle between the two layer/pages of DNs. You must datafill Key 1 as a DN key. You can datafill Keys 2-12 as either DNs or features. |
| Shift key | Use the Shift key to access the second layer of line/feature keys. |
| Context-sensitive soft keys | Assign up to 10 features to the four soft keys. You must assign the features to specific keys. Note: Keys 26, 27, and 30-32 are reserved for future use. Keys 13-16 are unusable for the M3904 set. There are no definitions for these keys. |
| Navigation keys | Use the up and down keys to scroll through the display line when the icon displays. The up, down, left, and right keys are also used for other functions, depending on the active application and options mode status. |
| Options key | <p>Activate the options mode by pressing the Options key. Press it again or press the Quit soft key to exit the mode. Exiting the options mode by using the Options key cancels the current action and goes one level up in the options list. While in options mode, use the Line, Goodbye, and Hold keys to process calls, but the display shows only options mode information. Options mode consists of an introduction screen listing the number of available options and instructions for navigating the list of options. Use the navigation keys to scroll through the options mode list.</p> <p>The Options key provides access to the following items:</p> <ul style="list-style-type: none"> • Language - select the display language from English, Spanish, French, German, Swedish, Norwegian, Finnish, Italian, Brazilian Portuguese, and Japanese • Change Feature Key Label - change the feature labels from their default values |

| Key | Description |
|-----|---|
| | <ul style="list-style-type: none"> • Screen Contrast - adjust the contrast on the LCD • Volume Adjustment - adjust the default volume level on the ringer, buzzer, speaker, and handset • Ring Type - select a ring type from a list of available tones • Call Log Options - log all answered and unanswered calls or only unanswered calls in the callers list • Live Dial Pad - enable or disable the live dial pad feature to automatically dial out and turn on handsfree when pressing a dial pad or soft-labeled key. If this feature is disabled, the terminal is in the regular predial mode. This feature is local to the terminal. • Preferred Name Match - enable or disable the preferred name match feature to match the phone number of incoming and outgoing calls with one listed in the users personal directory. If a match is found, the default call display information for an incoming call is replaced with the personal directory stored information (as edited and stored by the user). Format of the number must match the personal directory entry exactly. • Area Code Set-up - allows the user to enter area codes or prefixes to be used by the callers list. If this option is enabled, the callers list shows local numbers without the area code or internal numbers as extensions. <p>Note: The area code data is stored in the callers list record, and it is displayed in brackets after the number.</p> <ul style="list-style-type: none"> • Call Timer Enable - automatically time all calls and display the time for 10 seconds after the call disconnects • Date/Time Format - select the time and date format to display when the phone is idle • Key Click Enable - provide audible feedback when using the dial pad (no feedback is given when the option is off) • Headset Port On Call - enable or disable the call in progress indication feature. This feature requires a lamp-type accessory to be connected to the headset port of the terminal, which is signaled by the terminal while a call is in progress. The terminal turns on the accessory lamp while calls are in progress, and turns the lamp off once the call is terminated. • Headset Port External Alerter - enable or disable the external alerter (EXT ATR) feature. This feature depends on connecting an external alerter to the headset port of the terminal. If enabled, the terminal signals the external alerter when the system has turned alerting on. Both the on call and external alerter features can be enabled simultaneously. <p>Note: This feature is reserved for future third-party equipment.</p> <ul style="list-style-type: none"> • Call Indicator Light - allows the user to turn on or off the call indicator light |

| Key | Description |
|--|--|
| | <ul style="list-style-type: none"> • On-hook Default Path - open the voice path automatically to headset or handsfree • Display Diagnostics - provide a display self diagnostic test • Group Listening Control - activate and deactivate group listening |
| Goodbye key | Use the Goodbye key to terminate an active call. |
| Hold key | Press the Hold key to place an active call on hold. The feature key label of the held line displays an icon showing the call is on hold. Press the Line key to return to the call on hold. |
| Handsfree/ Group Listen key and indicator | Press the handsfree key to use the speaker (with built-in microphone), instead of the handset/headset. The handsfree LED lights when in handsfree mode. Use the options mode or take the handset off-hook to switch back to the handset/headset at any time during the call. In group listening mode, the handsfree indicator flashes. Refer to the <i>Service Order Reference Manual</i> for Group Listen functionality. |
| Mute key and indicator | Press the Mute key to mute the voice transmit path. While in handsfree mode, the microphone is muted. When in mute mode, the mute indicator flashes. To turn the voice transmit path on again, press the mute key a second time. |
| Headset with LED key | Press this key to activate headset mode. The LED alerts the user that the set is in headset mode. |
| Message key | This is a fixed feature key that corresponds to feature/option key 17. You must program this key using SERVORD commands. Although it is permanently labeled as message, it does not have to be datafilled as such. In order to access voice mail without a message waiting, Nortel Networks recommends assigning Message to Key 1 and Autodial to the message key (Key 17.) The Autodial key should be programmed with the voice mail system DN. |
| Quit key | Press the Quit key to cancel actions and for applications and features. |
| Directory/Log key | <p>The following directories are optionally password protected. The directories accessible by this key are:</p> <ul style="list-style-type: none"> • personal directory with a maximum of 100 entries • call log with a maximum of 100 • redial list with a maximum of 20 entries <p>Note: AUTODISP (autodisplay) should be assigned to M3900 sets with the Call Logging capability (that is, the M3903, M3904, M3905) to ensure logging of incoming and outgoing calls.</p> |
| Application key | <p>Use this key to connect to applications located on a remote server.</p> <p>Note: Use this key to access the Corporate Directory Application.</p> |
| Copy key | Use the Copy key for applications and features. |

Key-based Access Expansion Module (KBA) and Display-based Access Expansion Module (DBA)

The M3904 set supports two KBAs or one DBA.

Refer to "[Hardware options](#)" (page 67) for more information.

Compatible features

Refer to the *Service Order Reference Manual*.

M3905 ACD telephone

Purpose

This chapter describes the M3905 and its key configuration.

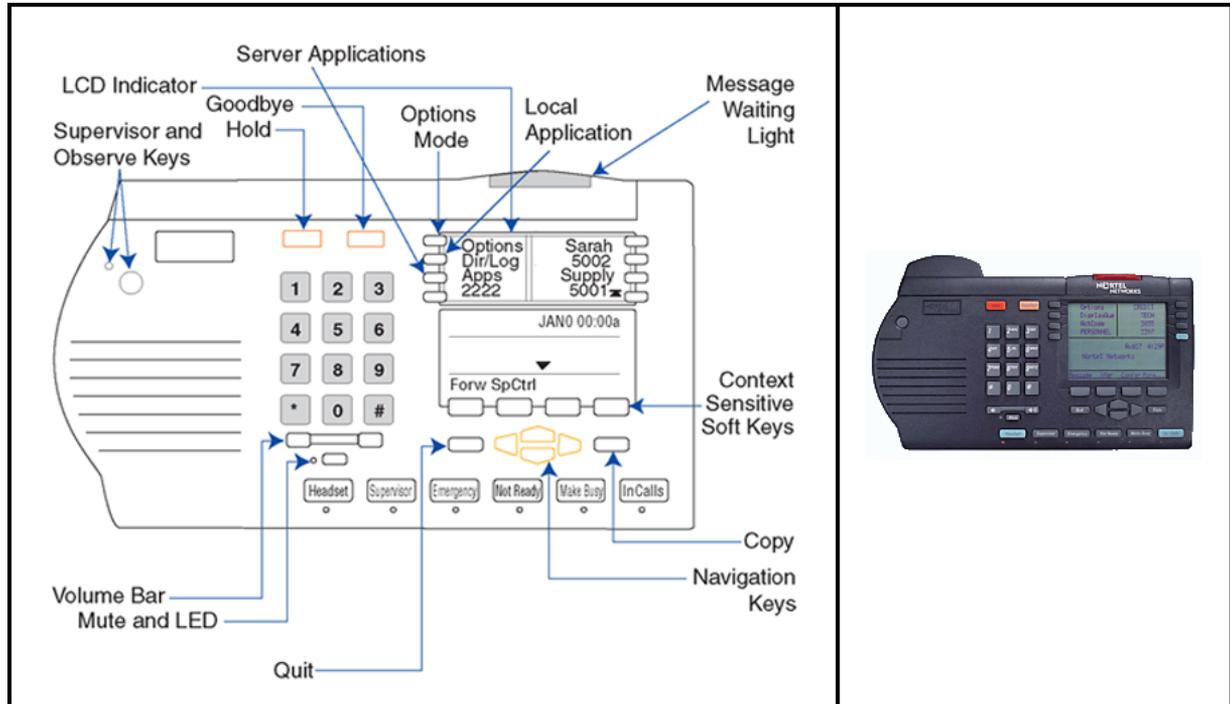
M3905 feature description

| M3905 features |
|---|
| Eight programmable line/feature keys (self-labeled) with a four-line display, giving the user access to eight line/feature keys. |
| Four context-sensitive soft keys used to access the context-sensitive features. |
| Six fixed feature/application keys for ACD features as follows: supervisor, emergency, not ready, make busy, in calls, and headset. |
| Fixed keys for the following: <ul style="list-style-type: none"> • hold • goodbye • mute (with LED) • volume UP/DOWN • headset (with LED) • supervisor observe (with LED) |
| Navigation keys (up, down, left, and right). |
| Copy and quit keys for applications and features. |
| Application (optional). |
| Four-line × 24-character display. |
| Handset (optional). |
| Two accessory ports. |
| Supervisor observe key with LED. |
| Supervisor headset observe port. |

| M3905 features |
|--|
| Amplified/non-amplified headset support. |
| Refined Corporate Directory search using the Resume key appearing on the List View, Card View, and No Matches Found screens. |

Figure 6 "M3905 ACD telephone set" (page 60) shows the M3905 set.

Figure 6
M3905 ACD telephone set



Note: You can configure four of the bottom six Fixed Feature keys (Make Busy, Not Ready, Supervisor and Emergency) to feature keys that suit the business needs of the Call Center user.

Table 12 "M3905 key configuration" (page 60) contains the key configurations for the M3905.

Table 12
M3905 key configuration

| Key number | Description |
|------------|---|
| Key 1 | Bottom right self-labeled programmable key (shown as DN5001). |
| Key 2 | Above Key 1; line or feature (shown as Supply). |
| Key 3 | Above Key 2 (shown as 5002). |

| Key number | Description |
|------------|---|
| Key 4 | Above Key 3; line or feature (shown as Sarah). |
| Key 5 | Bottom left self-labeled programmable key; line or feature (shown as 2222). |
| Key 6 | Above Key 5; line, feature, or application (shown as Apps). |
| Key 7 | Above Key 6; line or feature; default is Dir/Log. |
| Key 8 | Above Key 7 (shown as Options key). |
| Keys 9-12 | Configure as one of the following: <ul style="list-style-type: none"> • AEMK = Answer Emergency • CLSUP = Call Supervisor • EMK = Emergency • MSB = Make Set Busy • ACDNR = Not Ready • LOB = Line of Business • DQS = Display Queue Status (with supervisor or agent telephones) • OBS = Observe agent • CAG = Call Agent key • MSQS = Multistage Queue Status • AAK = Answer Agent |
| Key 17 | Recommended as MWK, but is not a default feature key since it can be used as a context-sensitive soft key. |
| Key 18 | CRX (Call Transfer) key. |
| Key 19 | CNF C06 (six-port Conference). |
| Key 20 | CFU (Call Forward). |
| Key 21 | RGA (Ring Again). |
| Key 22 | PRK (Call Park) |
| Key 23 | CPU (Call Pick-up). |
| Key 24 | Speed Call Short (SCS), Long (SCL), or User (SCU). |
| Key 25 | PRL (Privacy Release). |
| Keys 26-27 | Null. |
| Key 28 | Callers List. |
| Key 29 | Redial List. |
| Keys 30-32 | Null. |

Message Waiting Indicator (MWI)

The MWI indicates that a message has been left. This LED flashes when the set is ringing. If simultaneously the set is ringing and a message is left, the LED flashes until the set stops ringing.

Handset (optional)

The handset is optional for this set.

Keys

Table 13 "M3905 keys" (page 62) describes the M3905 keys.

Table 13
M3905 keys

| Key | Description |
|---|--|
| Eight self-labeled programmable line/feature keys | The M3905 set has eight self-labeled programmable keys on which DNs or features can be datafilled. Key 1 must be datafilled as a DN. The remaining keys, 2 through 7, can be datafilled as DNs or features. If applications are configured, Key 6 can be used to access those applications. |
| Context-sensitive soft keys | Assign up to 10 features to the four soft keys. You must assign features to specific keys. Note: Keys 26, 27, and 30-32 are reserved for future use. Keys 13-16 are unusable for the M3905 set. There are no definitions for these keys. |
| Application key | This key is used to connect to applications located on a remote server. The applications key is optional for Key 6. Use this key to access the Corporate Directory Application. |
| Navigation keys | When the scroll icon is displayed, the up and down keys scroll the top display line. Use the up, down, right, and left keys for other functions, depending on the active application and options mode status. |
| Options key | Press the Options key to activate. Press a second time or press the Quit soft key to exit the options mode, which also cancels the current action. Press the Done soft key for the current action to take effect and move one level up in the options list. While in options mode, the Line, Goodbye, and Hold keys can still be used to process calls, but the display shows only options mode information. Options mode consists of an introduction screen that lists the number of available options and instructions for navigating the list of options. Use the navigation keys to scroll through the options mode list. The Options key allows access to the following items: <ul style="list-style-type: none"> • Language - select the display language from English, Spanish, French, German, Swedish, Norwegian, Finnish, Italian, Brazilian Portuguese, and Japanese. |

| Key | Description |
|-------------|--|
| | <ul style="list-style-type: none"> • Change Feature Key Label - change the feature labels from their default values. • Screen Contrast - adjust the contrast on the LCD. • Volume Adjustment - adjust the default volume level on the ringer, buzzer, speaker, and handset. • Ring Type - select a ring type from a list of available tones. • Call Log Options - log all answered and unanswered calls or only unanswered calls in the callers list. • Live Dial Pad - allows you to press any dial pad key to automatically access a dial tone. • Preferred Name Match - displays the names of incoming and outgoing callers as stored in your Personal Directory, if the telephone number matches the one stored in your directory. This option allows you to personalize the displayed names for incoming and outgoing calls. • Area Code Set Up - enables the Callers List and Calling Line ID (CLID) display to show the number/extension followed by the area code/prefix in parenthesis. This makes it easier to identify local calls and internal calls. You can define up to three codes. • Call Timer Enable - automatically time all calls and display the time for 10 seconds after the call disconnects. • Date/Time Format - select the time and date format to display when the phone is idle. • Key Click Enable - provides audible feedback when using the dial pad (no feedback is given when the option is off). • Headset Type - open the voice path automatically to headset or handsfree. • Headset Port On Call - enable or disable the call in progress indication feature. This feature requires a lamp-type accessory to be connected to the headset port of the terminal, which is signaled by the terminal while a call is in progress. The terminal turns on the accessory lamp while calls are in progress, and turns the lamp off once the call is terminated. • Headset Port External Alerter - supports a visual or audible alerter and/or recorder device. This device plugs into the Headset port, which is located on the bottom of the telephone. • Display Diagnostics - provides a display self diagnostic test. <p>Note: You cannot assign the Options key to a DN or feature key.</p> |
| Goodbye key | Use the Goodbye key to terminate an active call. |

| Key | Description |
|--|--|
| Hold key | A user can place an active call on hold by pressing the Hold key. The feature key label of the held line displays an icon that shows that the call is on hold. A user can return to the call that is on hold by pressing the Line key for which the call is on hold. |
| Mute key and indicator | Press the Mute key to mute the voice transmit path. While in handsfree mode, the microphone is muted. When in mute mode, the mute indicator flashes. To turn the voice transmit path on again, press the Mute key a second time. |
| Headset with LED key | This key activates the set for headset use. The LED alerts the user that the set is in headset mode. |
| Quit key | The quit key is used for applications and features. |
| Dir/Log key | <p>The following directories are optionally password protected. The directories accessible by this key are:</p> <ul style="list-style-type: none"> • personal directory with a maximum of 100 entries • call log with a maximum of 100 • redial list with a maximum of 20 entries <p>Note: AUTODISP (autodisplay) should be assigned to M3900 sets with the Call Logging capability (that is, the M3903, M3904, M3905) to ensure logging of incoming and outgoing calls.</p> |
| Copy key | The Copy key is used for applications and features. |
| Call Supervisor, Emergency, Not Ready, Make Busy, and Incalls keys | <p>These keys are permanently labeled as such, but are not restricted to these features. The following list maps key numbers to features:</p> <ul style="list-style-type: none"> • Key 9 - Make Busy • Key 10 - Not Ready • Key 11 - Emergency • Key 12 - Supervisor Call <p>The Incalls key is paired with key 1.</p> |
| Optional key caps | <p>Optional key caps available with the M3905 set can be configured as follows:</p> <ul style="list-style-type: none"> • Call Agent • Observe Agent • Answer Emergency • Answer Agent • Activity (for LOB codes) |

| Key | Description |
|-------------|--|
| | <ul style="list-style-type: none">• Display Queue (for MSQS or display queue status) |
| Message key | Key 17 is called the Message key, but it is not restricted to that feature. This key appears with the context-sensitive soft keys. In order to access voice mail without a message waiting, Nortel Networks recommends assigning Message to Key 1 and Autodial to the message key (Key 17.) The Autodial key should be programmed with the voice mail system DN. |

Key-based access expansion module (KBA) and DBA support

The M3905 set supports one or two key-based KBAs or one DBA.

Compatible features

Refer to the *Service Order Reference Manual*.

Hardware options

Purpose

This chapter describes the optional hardware accessories and associated features available for each telephone set.

Accessory availability

Table 14 "Optional hardware accessories" (page 67) lists the optional hardware accessories available for each telephone set.

Table 14
Optional hardware accessories

| Accessory | M3901 | M3902 | M3903 | M3904 | M3905 |
|---|----------|----------|----------|--------------------|----------|
| Accessory Connection Module | N/A | Supports | Supports | Supports | Supports |
| Alternate Key Caps | N/A | N/A | N/A | N/A | Supports |
| Amplified Headset Accessory connected through Handset Jack (except connected through headset jack on M3905) | Supports | Supports | Supports | Supports | Supports |
| Analog Terminal Adapter | N/A | Supports | Supports | Supports | Supports |
| Display-based Expansion Module | N/A | N/A | N/A | Supports | Supports |
| External Alerter/Recorder Interface | N/A | Supports | Supports | Supports | Supports |
| Handset | Standard | Standard | Standard | Standard | Optional |
| Key-based Expansion Module | N/A | N/A | N/A | Supports | Supports |
| Non-amplified Headset Accessory connected through Headset Jack | N/A | N/A | Supports | Supports | Supports |
| Personal Directory PC Utility | N/A | N/A | N/A | Supports | Supports |
| Full Duplex Handsfree Accessory | N/A | N/A | N/A | Release 3 Supports | N/A |

Accessory descriptions

Handset option for the M3905

The M3905 set supports a non-amplified headset or amplified headset using the headset jack. The handset can be added to the M3905 set by removing the front plate of the telephone. A handset kit is available for the M3905 set. The handset connects to the headset jack.

Alternate key caps for the M3905

The M3905 set provides an alternate key cap kit to customize the telephone. Use the Key Cap Tool with the M3905 set to remove the four middle programmable keys and replace them with alternate keys. The alternate key caps include: answer emergency, answer agent, activity, call agent, observe agent, and display queue.

Headset options

The M3901, M3902, M3904, and M3905 sets support an amplified headset when the headset connects to the headset jack.

The M3903, M3904 and M3905 sets have a dedicated headset jack which supports a non-amplified headset. The M3903, M3904 and M3905 have a headset fixed feature key to turn the headset on and off. [Table 15 "Headset options" \(page 68\)](#) shows headsets that have been tested with the M3900 series sets.

Table 15
Headset options

| Headset type | Model |
|--|---|
| Non-amplified (to be used with Headset Key) | <ul style="list-style-type: none"> CPC# A0779338 Liberation 3-in-1 Direct Connect Headset (Unamplified) <p>Note: For use with the M3903, M3904, and M3905 sets. Plugs directly into the headset port. Includes three wearing styles: flexible boom, noise-cancelling microphone, wide screen and leatherette ear cushion.</p> |
| Amplified (connected through the handset jack for M3901 - M3904 sets and through the headset jack on the M3905). | <ul style="list-style-type: none"> Wireless Amplified Headset Liberation MPA I and II Plantronics Polaris <p>The headsets are not offered by Nortel Networks. The Plantronics is available through Plantronics Polaris. The Liberation is available through GN Netcom, Inc.</p> |

Meridian External Alerter and Recording Interface (MEARI)

The MEARI provides a remote ringer device installed in a location separate from the telephone. The MEARI provides access to a standard, off-the-shelf remote ringer, call status relay, audio recorder or visual indicator.

Program the MEARI interface to activate a ringer (or light) when the telephone rings, or activate a recorder when the telephone is in use. The MEARI requires an Accessory Connection Module (ACM).

MEARI connects to any M3900 set, except the M3901 which has no accessory dock. In order to use the MEARI accessory, the telephone must be equipped with the M3900 series ACM and power supply (purchased separately).

The MEARI provides relay contact outputs for both ringing and call status (off-hook condition) for activation of third-party peripheral products such as loud ringers or call-in-progress indicators. Additionally, the MEARI provides an audio output connection to voice recording equipment (as permitted by law).

The audio output level from the MEARI varies with handset, headset, and handsfree. Levels vary between local and remote speech, and between users. For this reason, voice recorders with automatic level control (ALC) circuitry provide the best quality recordings and uniform recorded speech level. This is especially true for recording handsfree conversations which provide the greatest range of speech level. The MEARI provides the following features:

- ring relay contact
- call status (off-hook) relay contact
- record audio

Since all three output signals operate independently, you can use the MEARI for more than one purpose, such as loud ringing, call in progress indication, and recording.

The MEARI does not require any software or system configuration.

Install the MEARI in the small dock of a M3902, M3903, M3904, or M3905 series set. There are three output connectors on the back of the MEARI cartridge. There is no need to disconnect the power supply from the telephone prior to insertion or extraction of the MEARI cartridge.

Analog Terminal Adapter (ATA)

The ATA connects an analog device such as a fax machine or modem to the telephone. This allows simultaneous use of the telephone and the analog device. The ATA is available for the M3902, M3903, M3904, and M3905 models. It requires an Accessory Connection Module.

Accessory Connection Module (ACM)

The ACM is an optional hardware module that installs into the telephone footstand. The ACM provides a port(s) to connect to the accessory cartridge interface.

Figure 7 "Accessory Connection Module" (page 70) shows the ACM being inserted in the footstand

Figure 7
Accessory Connection Module



The M3902 set has one accessory port. The M3903, M3904, and M3905 have two accessory ports. The plug-in cartridge allows the M3900 series sets to use the following accessories:

- ATA
- external alerter and recording interface
- personal directory PC utility (M3904 and M3905)
- full duplex handsfree cartridge (M3904 Release 3)

The M3901 set does not support the ACM.

Key-based Access Expansion Module (KBA)

The KBA has 22 keys which function as additional keys to the physical and self-labeled programmable feature keys on the M3900 series sets. You can use these additional keys as DN or feature keys. The sets and modules attach in such a way as they look and feel like one integrated unit. Only the M3904 and M3905 sets use the KBA.

There are 32 keys on the M3904 and M3905 sets. The M3904 and M3905 sets support one or two KBAs with 22 keys each. With one KBA, the key numbers are from 1 to 54 with the first key mapping to key number 33. With two KBAs, the key numbers are from 1 to 76, with the first key on the second KBA mapping to Key 55.

Note: You cannot combine the KBA with the Display-based Expansion Module (DBA).

You provision the KBA through SERVORD commands.

Figure 8 "Key-based expansion module accessory" (page 71) shows the KBA.

Figure 8
Key-based expansion module accessory



Note: To log Calling Party Name Display (CPND) the telephone set has to "know" the moment when an incoming call either is answered or unanswered. For this purpose, the set tracks the states of the icons. This is possible for the keys/icons located on the main set; however, the set is not able to track states of the keys/icons located on the add-on modules (that is, the KBA and DBA). As a result, although the set receives and displays the CPND for the call coming to the attached DBA or KBA, it is unable to log the CPND.

Display-based Expansion Module (DBA)

The DBA is an optional add-on module for the M3904 and M3905 sets exclusively. The module attaches to a set to increase the number of programmable feature keys on the set by 24 for a total of 56 keys.

The DBA has keys 33-56 supporting up to three layers of eight programmable feature keys. It has eight self-labeled keys with the feature labels next to the key. A Page fixed-key allows switching between the three layers of self-programmable feature keys. The labels change according to the features programmed for the next logical set of feature keys shifting through the display. A visual indicator shows which page (or layer) of self-labeled programmable feature keys is in use.

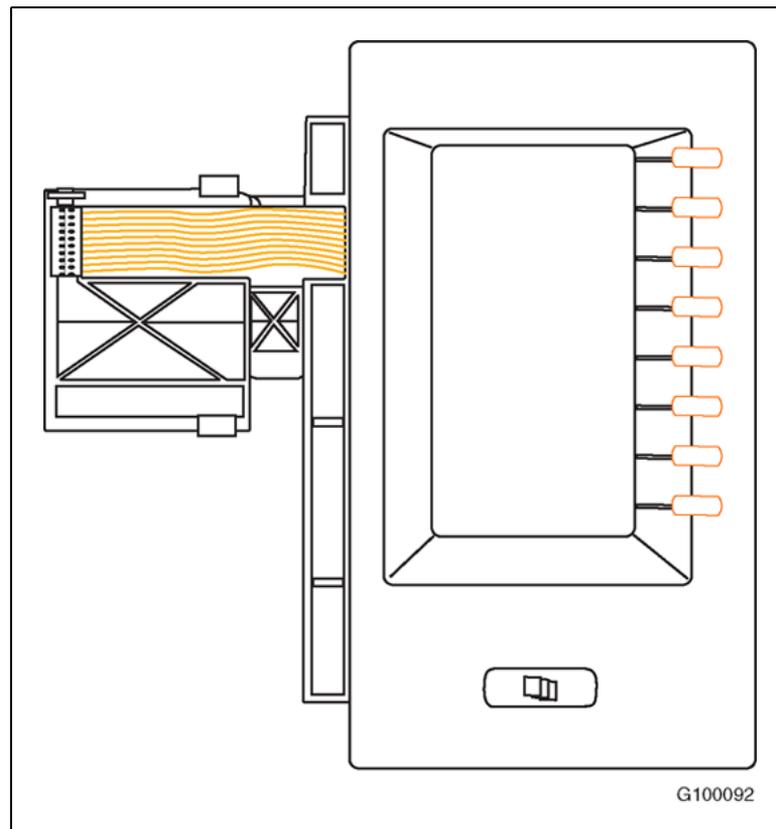
Note: The first key of the DBA maps to Key 33. The user can change the feature key labels by selecting "Change feature key label" from the Options list on the M3904 or M3905.

Use SERVORD commands to provision the DBA as a line option. Once a DBA has been added to a set, you can assign feature/DNs to the extra keys. The Meridian SL-100 uses a key map to download the DBA key assignments to the set. The DBA firmware handles the self-key labeling. The self-key label can be up to 10 characters in length.

Note: Only one DBA can be added onto a either an M3904 or M3905 set only. You cannot combine a DBA with a KBA.

Figure 9 "DBA expansion module" (page 72) shows the DBA.

Figure 9
DBA expansion module



Note: To log CPND the telephone set has to "know" the moment when an incoming call either is answered or unanswered. For this purpose, the set tracks the states of the icons. This is possible for the keys/icons located on the main set; however, the set is not able to track states of the keys/icons located on the add-on modules (that is, the KBA and DBA).

As a result, although the set receives and displays the CPND for the call coming to the attached DBA or KBA, it is unable to log the CPND.

Personal Directory PC Utility

The Personal Directory PC Utility provides a faster, easier way to create or modify a personal directory. Enter names and numbers into a personal directory file on a PC. Download the file directly from the PC to the M3904 or M3905 telephone. Upload a directory from the M3904 or M3905 set to a PC to modify the directory.

On the M3904, the PC and the set connect through a cartridge inserted into the telephone's ACM. The interface cartridge connects to the PC serial port through a serial cable. The personal directory PC utility requires an ACM installed in the telephone. The Personal Directory PC Utility cartridge is powered through the ACM. The ACM receives power through the telephone via the telephone line cord, which connects to a Teleadapt wall transformer power supply. The Personal Directory PC Utility is a small cartridge accessory which you can insert in either the small or large footstand opening.

Note: Purchase an RS232 serial cable for the PC connection separately. You require a 25-pin connector for the PC Utility.

With the Release 3 enhancements, the Personal Directory PC Utility supports 31-digit dialing and the pause character. If you have a previous version of the Personal Directory PC Utility, you can purchase the upgraded Personal Directory PC Utility software separately with the order code NTMN82BA.

The Personal Directory PC Utility supports the following languages:

- English (the default)
- French
- Spanish
- German
- Danish
- Portuguese
- Italian
- Norwegian
- Swedish
- Finnish
- Dutch

Telephone wall mount kit

The telephone wall mount bracket kit contains a one-piece wall mount plate that attaches the M3903, M3904, and M3905 telephone to the wall. The wall mount kit is available from your local Nortel Networks representative. The M3901 and M3902 have built-in wall mount brackets.

Full Duplex Handsfree Accessory

The Full Duplex Handsfree Accessory (simultaneous two-way conversation) is a cartridge accessory that provides full duplex handsfree capability for the M3904 Release 3 (NTMN34GA or later) telephone set. You insert the cartridge into the M3904's ACM.

The FDHF functionality requires the following hardware:

- M3904 Release 3 telephone set (NTMN34GA or later).

Note: NTMN34TA is the M3904 Release 3 icon set that supports FDHF.

- Full Duplex Handsfree cartridge (NTMN72AA or later)
- Accessory Connection Module (NTMN71AA)
- 110V wall transformer to power the FDHF cartridge (NTMN80AA)

Installation

Purpose

This chapter provide installation procedures for M3900 series sets and optional hardware accessories.

M3900 series Meridian digital telephones

Procedure 6 "Install the M3900 Series Meridian digital telephones" (page 75) explains how to install the M3900 series telephones.

Note: The station ringer test is not supported on the M3900 series sets.

Procedure 6

Install the M3900 Series Meridian digital telephones

| Step | Action |
|------|---|
| 1 | Complete the wiring and cross-connections (loop power). |
| 2 | Connect the telephone to the connecting block. |
| 3 | Place the telephone upright on the desk in the normal operating position. |
| 4 | Perform the normal acceptance procedures. |
| 5 | Supply the user with a quick reference guide. |



CAUTION

Before handling internal telephone components, you must discharge static electricity from your hands and tools by touching any grounded metal surface or conductor.

—End—

Telephone positions

Changing the telephone position

M3903, M3904 and M3905 sets have several height selections for the desktop positions. [Procedure 7 "Change the telephone position" \(page 76\)](#) shows how to change the telephone position.

Procedure 7

Change the telephone position

| Step | Action |
|-------|--|
| 1 | Press the bar at the top back side of the telephone. |
| 2 | With the position bar pressed in, raise or lower the telephone to the desired angle or height. |
| 3 | Release the bar to lock the telephone in the desired position. |
| —End— | |

Changing the telephone angle

The M3901 and M3902 Meridian Digital Telephones have three different angled height desktop positions.

Procedure 8

Change the telephone angle

| Step | Action |
|-------|--|
| 1 | Move the top of the footstand away from the telephone base (it has a snap connection). |
| 2 | Place the footstand in the desired position and snap the top of the footstand back into place. |
| —End— | |

Wall mounting the telephone

The telephone wall mount bracket kit contains a one-piece wall-mount plate to attach the telephone to the wall using [Procedure 9 "Wall mount the telephone" \(page 77\)](#).

Procedure 9**Wall mount the telephone****Step Action**

- 1 Place the wall-mount bracket against the wall and mark the spot to insert the screws.
Note: The M3901 and M3902 have built-in wall-mount brackets.
- 2 Screw the five screws in and leave about 3 1/2 mm (1/8 inch) between the head of the screw and wall.
- 3 Remove the footstand from the telephone by sliding the footstand down (using the plastic hinges) about 7 mm (1/4 inch).
- 4 Swing the footstand away from the telephone base and remove the telephone.
- 5 Attach the wall-mount bracket onto the back of the telephone by placing the telephone at the top edge of the wall-mount bracket and sliding the telephone into place.
- 6 Mount the wall-mount bracket, that is attached to the telephone, onto the screws located on the wall.

—End—

Headset consideration

Test the headset with the telephone before use. In a noisy environment, an amplified headset is an option. When using the amplified headset, there are two choices of volume control: the rocker control on the telephone and the switch on the headset. The user should adjust the telephone volume, before adjusting the headset volume. To provide the best communication with the least amount of distortion, the amplifier should have a higher setting than the telephone volume control.

Refer to your representative for the latest product bulletin from Nortel Networks recommending headset types for use with the M3900 Series digital telephone.

Accessory Connection Module (ACM)

The following steps explain how to install the ACM.

Procedure 10
Install the ACM

| Step | Action |
|-------------|--|
| 1 | Press the release latch on the back of the telephone. |
| 2 | Pull the footstand away from the back of the telephone. |
| 3 | Disconnect the line cord from the base of the telephone. |
| 4 | Move the telephone down 7 mm (1/4 inch), then use the hinges to swing the telephone footstand away from the base of the telephone. |
| 5 | Snap the ACM into the rectangular opening in the telephone footstand. |
| 6 | Plug the ACM cable connector into the back of the telephone. |
| 7 | Place the ACM attached ribbon cable into the track running down the telephone base. |
| 8 | Snap the plastic cable cover in place over the ACM ribbon cable. |
| 9 | Connect the line cord into the base of the telephone. |
| 10 | Connect the hinges to the telephone base and swing the footstand back in place. |
| 11 | Snap the footstand into a fixed position. |
| 12 | Return the telephone to its original position. |

—End—

Installing the ACM into the footstand

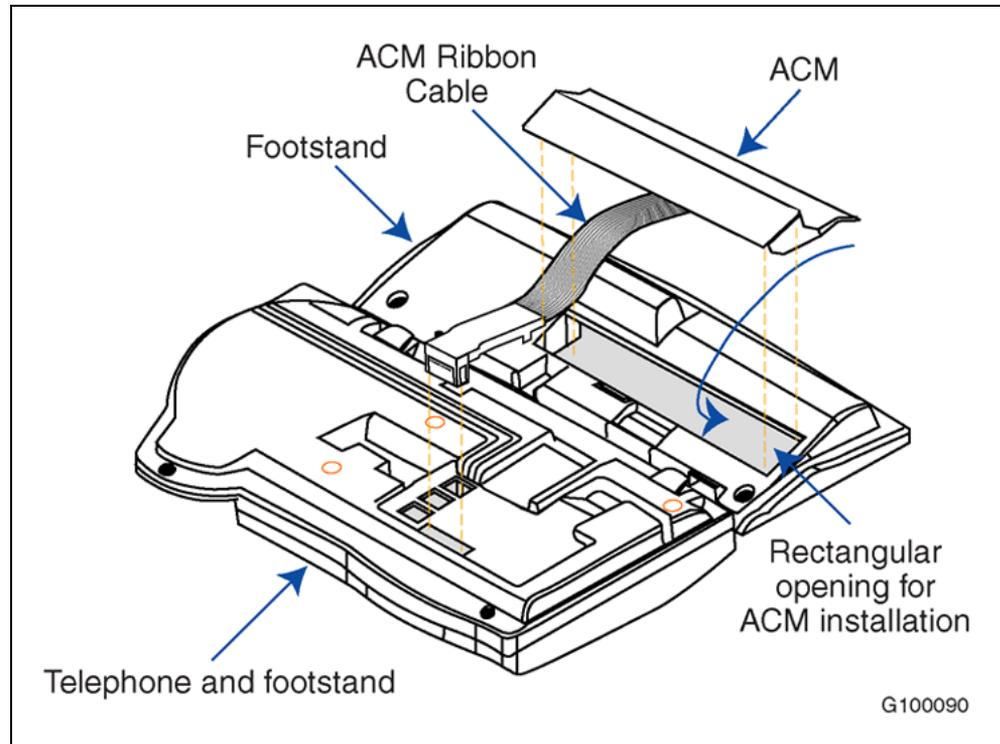
There is a cut out on the base of the footstand which displays the ACM connector ports. When ready to attach an accessory, insert the appropriate cartridge into the port slot. There is one accessory port available on the M3902. There are two accessory ports available on the M3903, M3904, and M3905.

Note 1: The accessories you attach to the telephone must be compatible. [Table 16 "Compatibility of accessories" \(page 79\)](#) shows accessory compatibility.

Note 2: You require a wall transformer to power accessory cartridges. The transformer does not come with the ACM unit. Contact your Nortel Networks representative to order the ACM compatible wall transformer (NTMN80AA).

Figure 10 "ACM Module" (page 79) shows the installation of the ACM into the telephone footstand.

Figure 10
ACM Module



There are two accessory ports on the back of the terminal footstand. Each port supports one cartridge accessory. You cannot use two accessories that require the same port type at the same time. For example, you cannot use two accessories that require a serial port connection at the same time. The shape and size of the plug in the accessory cartridge prevents the user from accidentally connecting incompatible accessories.

To check the compatibility of accessories, see [Table 16 "Compatibility of accessories"](#) (page 79) before buying optional hardware.

Table 16
Compatibility of accessories

| | ATA | KBA | PC Utility | MEAR I | DBA | FDHF |
|-------------------------------|-----|-----|------------|--------|-----|------|
| Analog Terminal Adapter | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Key-based Expansion Unit | ✓ | | ✓ | ✓ | No | ✓ |
| Personal Directory PC Utility | ✓ | ✓ | | ✓ | ✓ | ✓ |

| | ATA | KBA | PC Utility | MEARI | DBA | FDHF |
|--|-----|-----|------------|--------------|-----|--------------|
| Meridian External Alarmer and Recording Interface | ✓ | ✓ | ✓ | | ✓ | ✓ (see note) |
| Display Expansion Module | ✓ | No | ✓ | ✓ | | ✓ |
| Full Duplex Handsfree | No | ✓ | ✓ | ✓ (see note) | ✓ | |
| Note: FDHF is compatible with the MEARI; however, you cannot use FDHF when a recording device is connected. | | | | | | |

Analog Terminal Adapter (ATA)

[Procedure 11 "Install the ATA" \(page 80\)](#) describes how to install and use the ATA with your M3900 series set.

The ATA allows an off-the-shelf analog device (FAX, modem, or analog telephone (500/2500)) to work simultaneously with your M3902, M3903, M3904, or M3905 Meridian Digital Telephone. The M3901 set does not support the ATA.

Install the ACM into your M3900 Series set (see [Procedure 11 "Install the ATA" \(page 80\)](#)), before you install your ATA. The ACM provides connection capabilities between the M3902, M3903, M3904, and M3905 telephones and the ATA.

Procedure 11 Install the ATA

| Step | Action |
|------|--------|
|------|--------|

- | | |
|---|--|
| 1 | Insert the ATA accessory cartridge into the ACM. The latch should be at the top. |
| 2 | Connect the commercial device you have selected to use, either your FAX machine, modem, or analog (500/2500) telephone, to the connection on your ATA cartridge interface. |
| 3 | Plug the transformer into the electrical outlet (use only the transformer designed for your ACM accessories). |

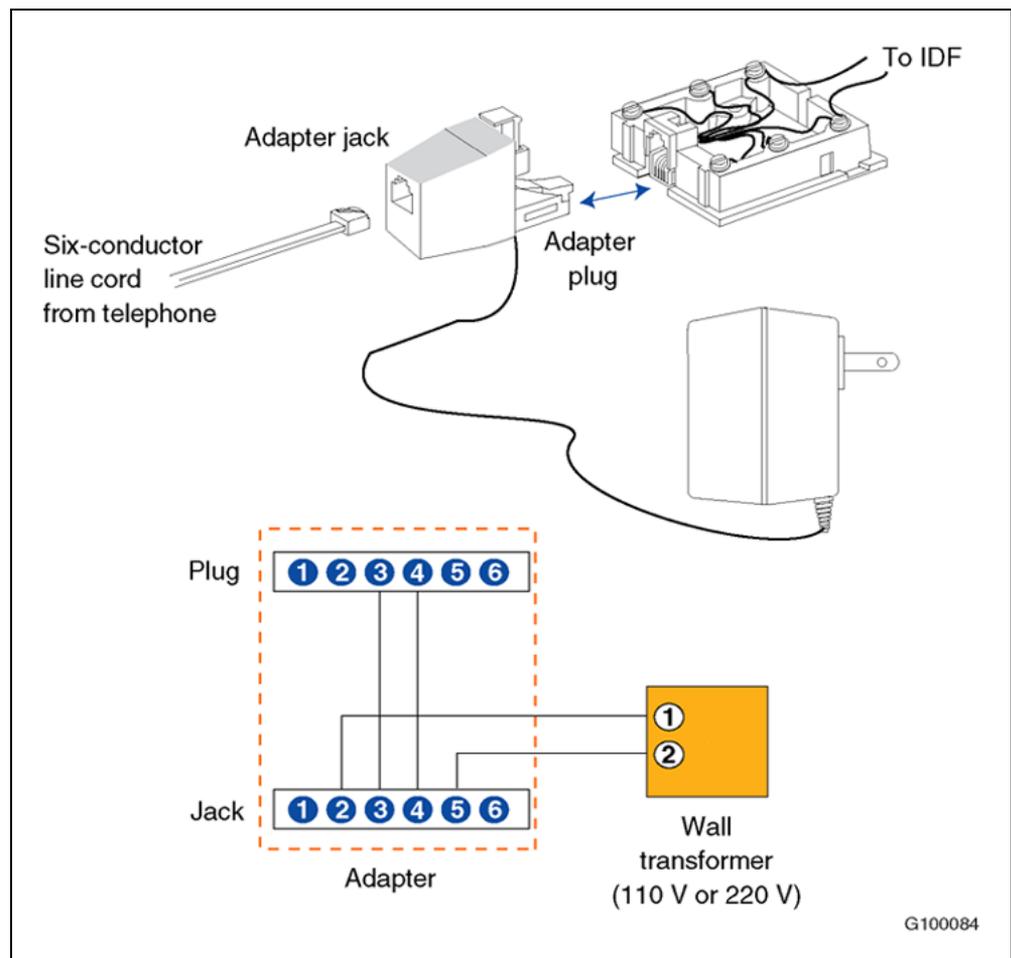
Note: The wall transformer for M3900 accessories is NTMN80AA (CPC A0779713) 110v Wall Transformer (M3900 series). It attaches between the telephone line cord and the telephone walljack.

- 4 Connect the Adapter plug, attached to your transformer, into the wall jack.
- 5 Connect the six-conductor line cord from the telephone to the Adapter jack attached to your ACM accessory transformer.
- 6 Refer to the manufacturer's documentation for complete installation and configuration instructions for your external analog device (FAX machine, modem, or 500/2500 telephone).

—End—

Figure 11 "ATA connections" (page 81) shows the connections for the ATA.

Figure 11
ATA connections



Note: The ATA supports connections to POTS services only. Features such as Message Waiting, Switchhook Flash/Link, Transfer, Conference, and CLASS type services are not supported on the attached device.

A red LED status light located on the ATA indicates the status of the ATA as follows:

- **Flashing red** - indicates that the ATA is operating normally. For more troubleshooting guidelines, refer to the user documentation that came with your analog device.
- **Solid red** - indicates that the ATA is not operating normally.
- **Red light off** - indicates that there is no power going to the ATA or the unit is not operating correctly. Check the power connections to the ATA.

Flexible voice and data capabilities allow you to have continuous use of both the Meridian Digital Telephone and the attached analog device. Your system administrator configures the flexible voice and data capabilities for your telephone on the system equipment. Contact your system administrator for more information about flexible voice and data capability.

When there is a power failure to the ATA, the Analog Device does not store or keep information (for example, outgoing FAX from your FAX machine). You must send the information again when power returns.

Table 17 "ATA configuration" (page 82) shows prompts and responses when configuring the ATA.

Table 17
ATA configuration

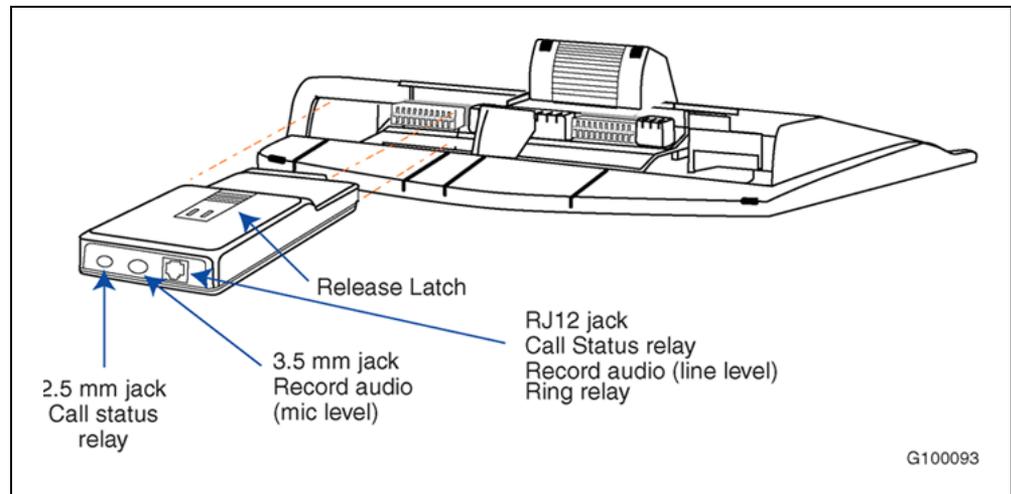
| Prompt | Response | Description |
|---|---|--|
| SO | NEW | Establish service for unassigned telephone lines. |
| LCC | ATA | Analog terminal adapter line class code. |
| Ringtype, group, subgroup, NCOS, SNPA, key, ringing | Follow normal administration procedures for an M3901 telephone for these prompts. | The prompts require datafill specified by the customer site. |
| LEN_OR_LTID | A B C D | A = IPE column. B = IPE shelf. C = IPE card slot. D = IPE odd port. |
| OPTKEY | \$ | There are no options available for the ATA. |

Meridian External Alerter and Recording Interface (MEARI)

Install the MEARI in the small dock of a M3902, M3903, M3904, or M3905 set. There are three output connectors on the back of the MEARI cartridge. There is no need to disconnect the power supply from the telephone prior to insertion or extraction of the MEARI cartridge.

Figure 12 "MEARI output connectors" (page 83) shows the MEARI output connectors.

Figure 12
MEARI output connectors



Procedure 12 "Install the MEARI" (page 83) describes how to install the MEARI.

Procedure 12

Install the MEARI

| Step | Action |
|------|--------|
|------|--------|

- | | |
|---|---|
| 1 | The RJ12 modular connector provides access to all three output signals and is intended for wiring connection to remotely located equipment (not on the desktop). Table 18 "RJ12 connections" (page 83) shows the connections. |
|---|---|

Table 18
RJ12 connections

| Position | Wire color | Function |
|--|------------|----------------------------|
| 3, 4 center pair | Green, Red | Call status relay contact. |
| Note: Wiring connected to the MEARI must not go outside a building for safety purposes. | | |

| Position | Wire color | Function |
|---------------|---------------|----------------------------|
| 2, 5 2nd pair | Black, Yellow | Record audio (line level). |
| 1, 6 3rd pair | White, Blue | Ring relay contact |

Note: Wiring connected to the MEARI must not go outside a building for safety purposes.

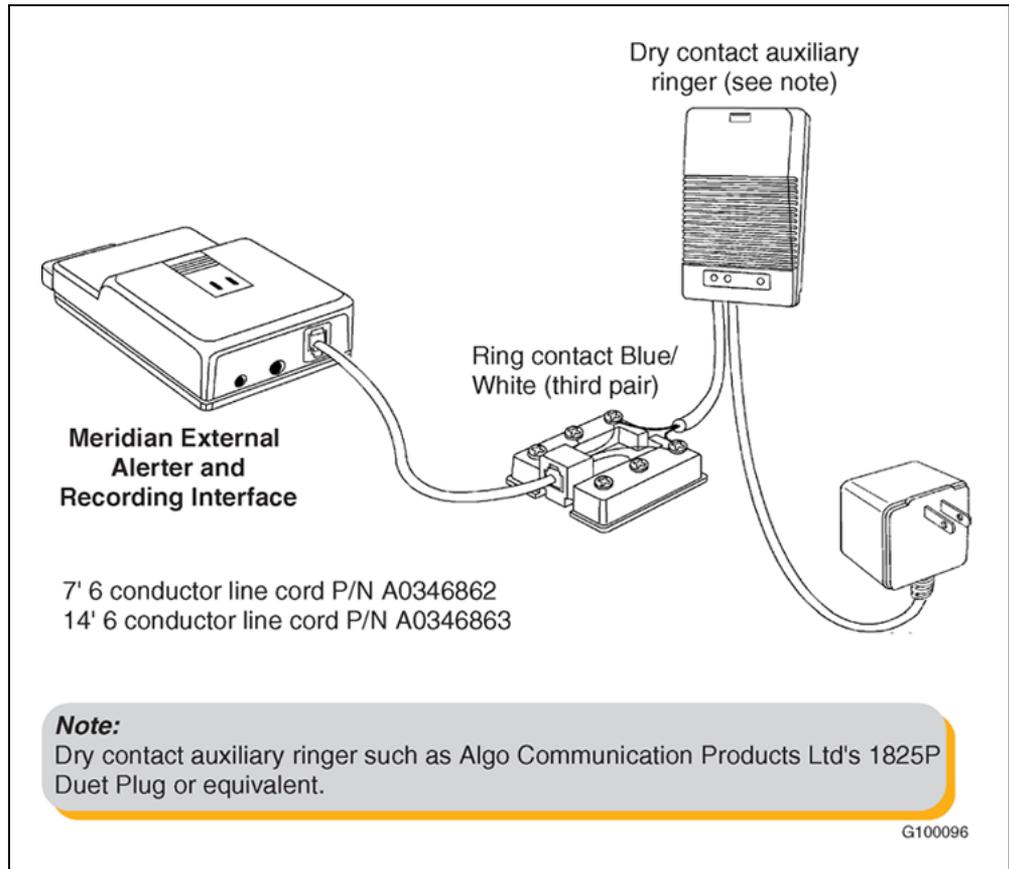
- 2 The center round connector is a 3.5 mm audio jack that provides the record audio signal between tip and sleeve at a reduced level for connection to the microphone input of a desktop voice recorder.
- 3 The smaller round connector is a 2.5 mm jack that provides the call status relay contacts between tip and sleeve for activation of a desktop voice recorder or connection to a call in progress indicator lamp.

—End—

Loud ringer connected to the MEARI

Figure 13 "Loud ringer connected to the MEARI through the RJ12 jack" (page 85) shows the loud ringer.

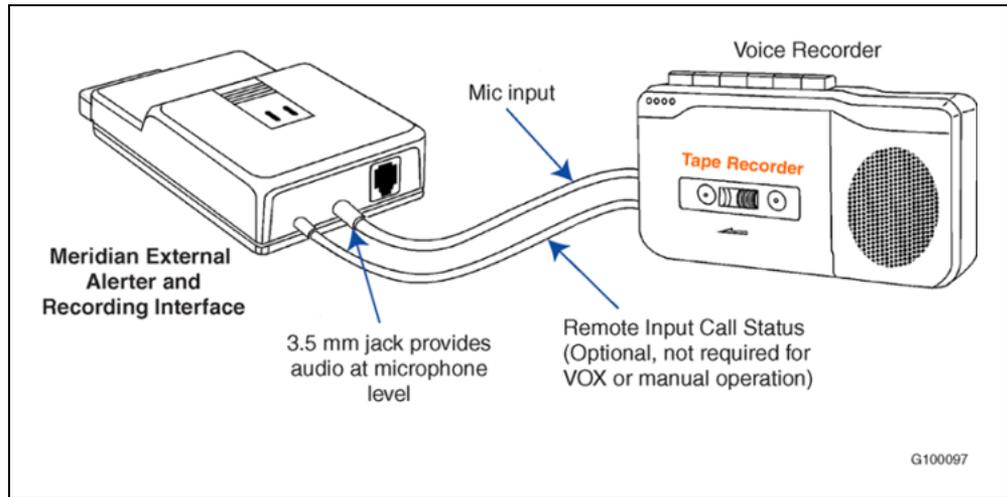
Figure 13
Loud ringer connected to the MEARI through the RJ12 jack



MEARI desktop recording device

Figure 14 "MEARI desktop voice recording device" (page 86) shows the MEARI desktop voice recording device.

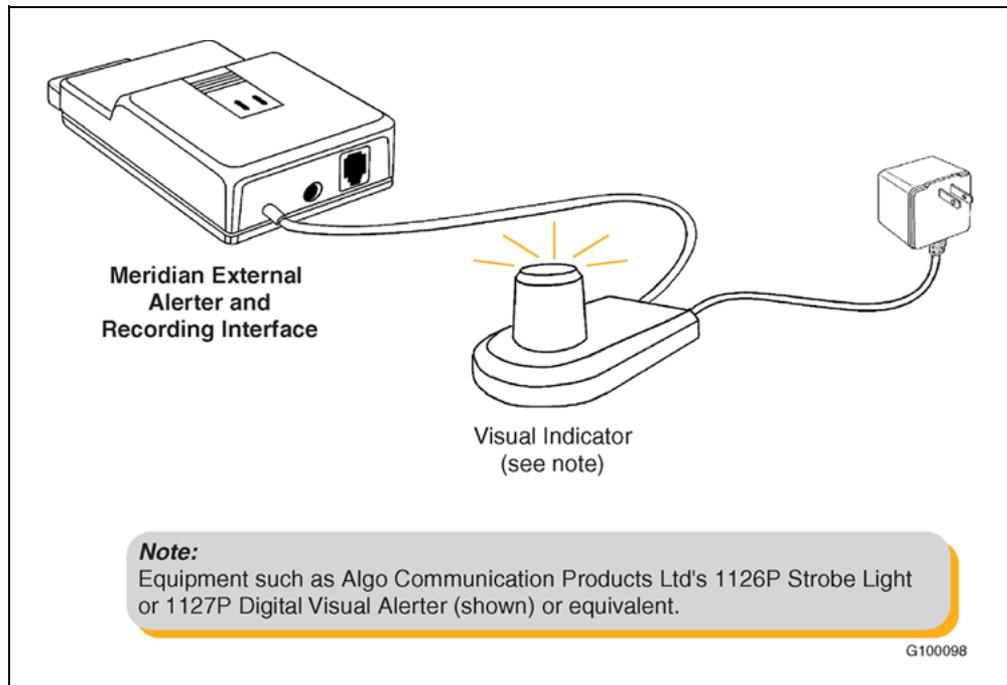
Figure 14
MEARI desktop voice recording device



MEARI call in progress indicator

Figure 15 "MEARI call in progress indicator" (page 86) shows the MEARI call in progress indicator.

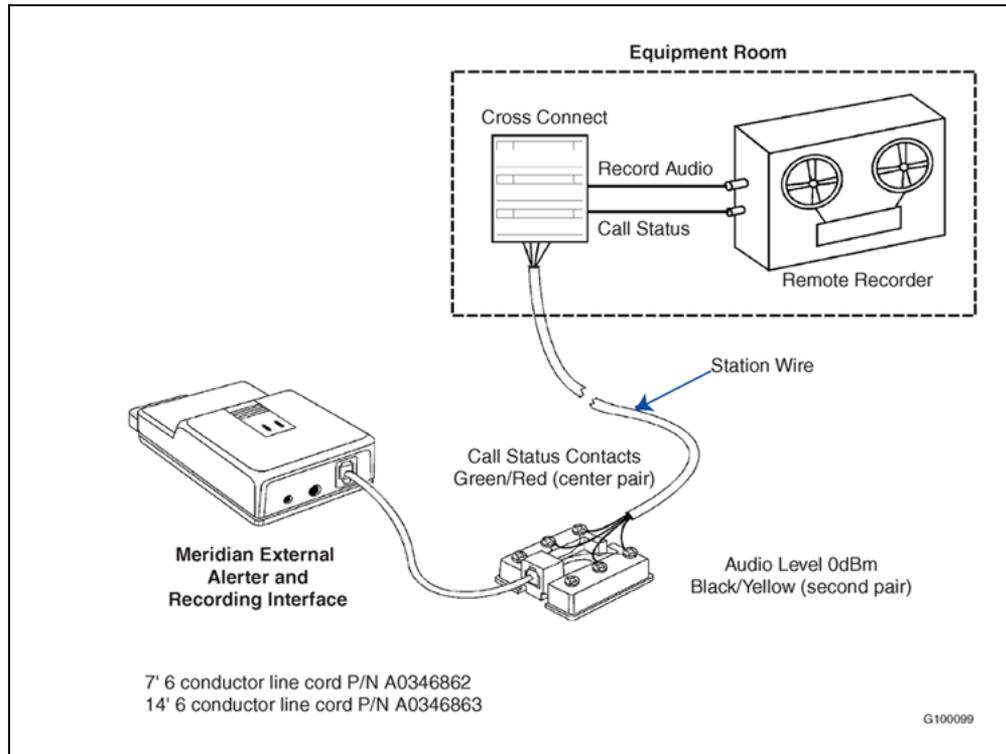
Figure 15
MEARI call in progress indicator



Remote voice recording using call status

Figure 16 "Remote voice recording using call status" (page 87) shows remote voice recording using call status.

Figure 16
Remote voice recording using call status



Troubleshooting

Procedure 13 "Troubleshooting for the MEARI" (page 87) provides some troubleshooting examples for the MEARI.

Procedure 13 Troubleshooting for the MEARI

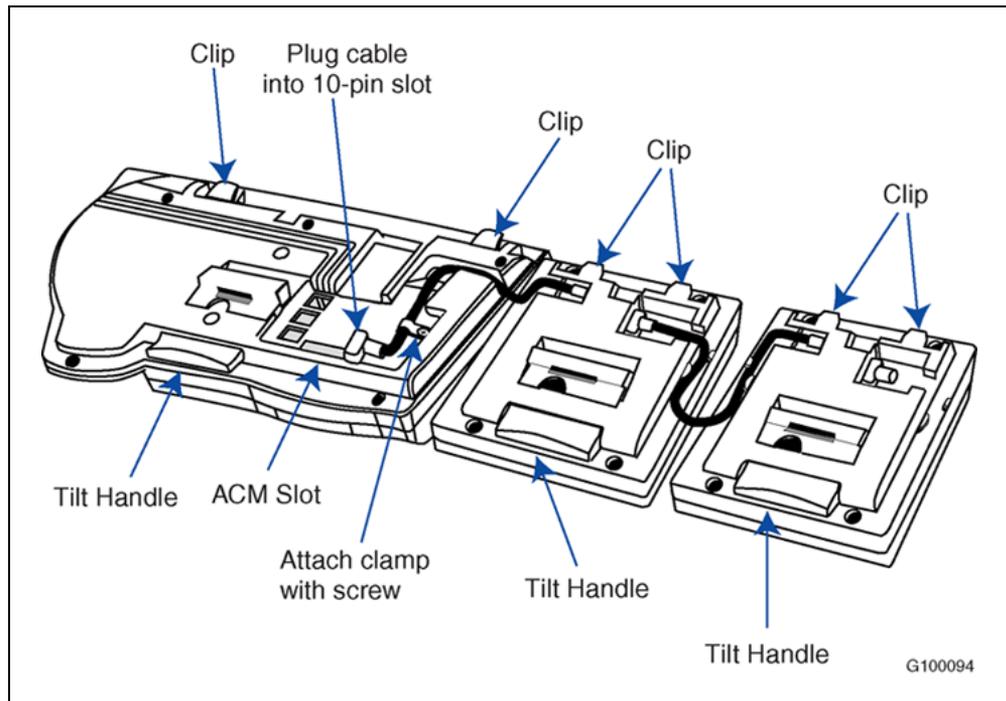
| Step | Action |
|------|---|
| 1 | Make sure that the ACM power supply is connected to the telephone and plugged into a working AC outlet. |
| 2 | Make sure that the MEARI is completely inserted and the release latch is engaged. |
| 3 | If using the RJ12 jack, make sure that the modular cord contains six wires. If using the 2.5 mm or 3.5 mm jacks, make sure that the plugs are fully inserted. |

—End—

Key-based Expansion Module Accessory (KBA)

The Key-based Expansion Module provides 22 additional keys for the M3904 and the M3905 telephones. You can add a second Key-based Expansion Module, for a total of 44 additional line/feature keys (see [Figure 17 "Key-based Expansion Module" \(page 88\)](#)). To install the KBA (NTMN37BA), you need to order the Key-based Expansion Module Kit 1 (NTMN38AB), which includes the single KBA footstand assembly. If you add a second KBA, you also need to order the Key-based Expansion Module Kit 2 (NTMN38BA), which includes the expansion KBA footstand assembly.

Figure 17
Key-based Expansion Module



Procedure 14

Install the Key-based Expansion Module Accessory

| Step | Action |
|------|--------|
|------|--------|

- | | |
|---|---|
| 1 | While depressing the telephone tilt handle, pull the telephone away from the footstand until it clears the final stop. Gently pull the footstand off the clips. |
|---|---|

Note: If an ACM is installed, unplug the ACM and remove it from the footstand. Install the ACM in the Single KBA Footstand Assembly. See the document "Accessory Connection Module Installation Guide" for detailed instructions.

- | | |
|---|---|
| 2 | Place the telephone and the Module face down on a non-abrasive surface, and align them. |
|---|---|

- 3 Plug the cable from the Module into the 10-pin connection port on the telephone.
- 4 Thread the cable through the opening in the side of the telephone.
- 5 Install the Single KBA Footstand (see [Procedure 16 "Install a Single KBA Footstand" \(page 89\)](#)).

—End—

Procedure 15

Add a second Key-based Expansion Module Accessory

| Step | Action |
|------|--|
| 1 | Place the telephone and the two Modules face down on a non-abrasive surface. |
| 2 | Plug the cable from the second Module into the 10-pin slot on the first Module. |
| 3 | Thread the cable through the routing clips on both Modules (see Figure 8 on page 11). |
| 4 | Install the Expansion KBA Footstand (see Procedure 17 "Install an Expansion KBA Footstand Assembly" (page 90)). |

—End—

Procedure 16

Install a Single KBA Footstand

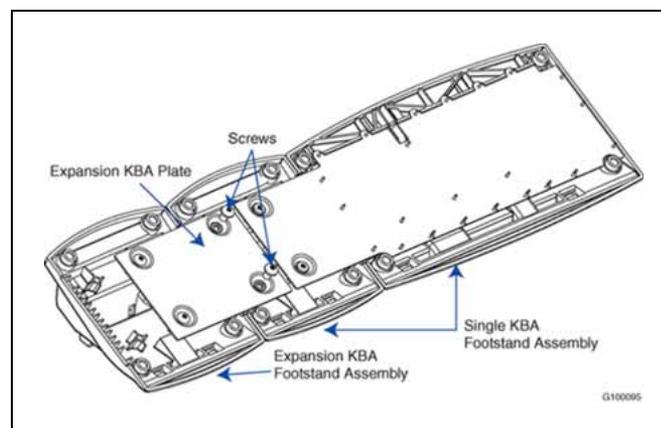
| Step | Action |
|------|---|
| 1 | Insert the clips on both the telephone and the Key-based Expansion Module into the hinges on the footstand assembly and press on the front of the footstand until they snap into place. |
| 2 | While squeezing the telephone and KBA tilt handles, swing the footstand into the desired position. |
| 3 | Turn the new assembly upright. |

—End—

Procedure 17
Install an Expansion KBA Footstand Assembly

| Step | Action |
|------|---|
| 1 | Place the Single KBA Footstand Assembly and the Expansion KBA Footstand Assembly face down on a flat surface. |
| 2 | Align the Expansion KBA Footstand Assembly with the Single KBA Footstand Assembly and slide them together. |
| 3 | Insert two screws through the Expansion KBA Plate into the Single KBA Footstand Assembly (see Figure 18 "Expansion KBA Footstand" (page 90)). |

Figure 18
Expansion KBA Footstand



- 4 Tighten all four screws, ensuring that the two footstand assemblies are properly aligned.
- 5 Insert the clips on the telephone and the Key-based Expansion Modules into the hinges on the combined Single/Expansion KBA Footstand Assembly, and while squeezing the Module Tilt Handles, swing the footstand into the desired position.
- 6 Turn the completed assembly upright.

—End—

Configure the Meridian SL-100 for the KBA

Table 19 "SERVORD configuration for the KBA" (page 91) shows an example of the SERVORD commands you use to configure the Meridian SL-100 for the KBA.

Table 19
SERVORD configuration for the KBA

| Prompt | Response | Description |
|--|----------|--|
| ADO | ... | ... |
| Line | x..x | x..x = Line or DN number. |
| OPTKEY | 1 | Option Key. |
| OPTION | KBA | Key-based Expansion Module Accessory. |
| KBA_COUNT | 1-2 | Number of KBAs. 1 = KBA. 2 = two KBAs. |
| <p>Note: Each Key-based Expansion Module provides 22 additional Line/Feature Keys. Configure these additional keys in SERVORD. Key numbers associated with the first Key-based Expansion Module are 33 through 54. Key numbers for the second Key-based Expansion Module are 55 through 76.</p> | | |

For more SERVORD information, see the *Service Order Reference Manual*.

Display-based Expansion Module Accessory

The DBA has eight programmable Line/Feature (self-labeled) keys with three layers. The DBA gives you a total of 24 programmable Line/Feature keys (that is, keys 33-56). The DBA shows only eight of these features at one time. Use the **Page** key to scroll to each key layer. [Procedure 18 "Install the DBA" \(page 91\)](#) describes how to install the DBA. The self-labeled field is 10 characters in length.

Procedure 18 Install the DBA

| Step | Action |
|------|---|
| 1 | While depressing the telephone title handle, pull the telephone away from the footstand until it clears the final stop. |
| 2 | Gently pull the footstand off the clips. |
| 3 | Place the telephone and the DBA face down of a non-abrasive surface and align them. |
| 4 | Lower the module into place and insert the 10-pin plug on the module into the 10-pin slot on the telephone. |

- 5 Push gently until the remaining tabs snap into place.
- 6 Insert the clips on the telephone into the hinges on the footstand, then press the front of the footstand until it snaps into place.
- 7 While depressing the telephone title handle, swing the footstand into the desired position, then release the handle.
- 8 Carefully turn the new assembly upright.

—End—

Configure the Meridian SL-100 for the DBA

Table 20 "Configure the Meridian SL-100 for the DBA" (page 92) shows an example of the Meridian SL-100 configuration for the DBA.

Table 20
Configure the Meridian SL-100 for the DBA

| Prompt | Response | Description |
|---|----------|---|
| ADO | ... | ... |
| LEN or DN | x...x | LEN or DN, where: x...x = Line or DN number. |
| OPTKEY | 1 | Option Key. |
| OPTION | DBA | Display-based Expansion Module Accessory. |
| Note: Keys associated with the DBA are 33-56. You must provision the DBA on Key 1 of the M3904 and M3905 sets. | | |

For more SERVORD information, see the *Service Order Reference Manual*.

Personal Directory PC Utility

The Personal Directory PC Utility provides a faster, easier way to create or modify a personal directory. Users can enter names and numbers into a Personal Directory file on their PC. Users can download (program) the file directly from the PC to the M3904 or M3905 set. Users can also upload (read) a directory from the M3904 or M3905 set to a PC and modify the directory.

You can access online help by clicking on **Help** on the Main Menu bar.

The Personal Computer and the M3904 or M3905 set connect through a cartridge inserted into the telephone's ACM. The interface cartridge connects to the PC serial port through a serial cable. The Personal Directory PC Utility requires that you have an ACM installed in your telephone (see [Procedure 10 "Install the ACM" \(page 78\)](#)).

The user supplies the serial cable for the PC connection. [Procedure 19 "Set up the Personal Directory PC Utility interface" \(page 93\)](#) describes how to set up the Personal Directory PC Utility interface.

Procedure 19

Set up the Personal Directory PC Utility interface

| Step | Action |
|------|---|
| 1 | Insert the interface cartridge into either the small, or large, port on the ACM in your M3904 or M3905 telephone set. The latch must be at the top. |
| 2 | Connect the personal computer to the M3904/M3905 telephone through a RS-232C serial interface cable (see Table 21 "RS-232-C pin to function description" (page 93)). |

Table 21
RS-232-C pin to function description

| Pin | Function | Description |
|-----|----------|----------------------|
| 2 | TX | Transmit |
| 3 | RX | Receive |
| 4 | RTS | Request to Send |
| 5 | CTS | Clear to Send |
| 6 | DSR | Data Set Ready |
| 20 | DTR | Data Terminal Ready |
| 7 | SG | Single Ground Signal |

Note: The user supplies the serial cable for the PC connection. One end of the cable must be a DB25 pin connector and the other end must match your computer serial port connection.

—End—

[Procedure 20 "Install the Personal Directory PC Utility software" \(page 93\)](#) describes how to install the Personal Directory PC Utility software.

Procedure 20

Install the Personal Directory PC Utility software

| Step | Action |
|------|--|
| 1 | Close all open applications before installing the Personal Directory PC Utility. |

- 2 Insert the Personal Directory PC Utility disk into drive A.
Note: Assuming that drive A is the floppy disk drive.
- 3 Click on **Start**.
- 4 Select **Run**.
- 5 Enter a:\setup.
- 6 Click on **OK**. The Nortel Networks logo screen appears while the installation utility loads.
- 7 The Welcome screen appears. Click on **Next** to continue installation.
- 8 If you agree to the terms of the Software License Agreement, click **Yes**.
- 9 Continue to click on **Next** until the installation is complete.
- 10 When asked, remove the disk from drive A.
- 11 Click on **Finish**.
Note: You must restart your PC to access the Personal Directory PC Utility.

—End—

Open the Personal Directory PC Utility

Procedure 21

Open the Personal Directory PC Utility

| Step | Action |
|------|--------|
|------|--------|

- | | |
|---|--|
| 1 | Click on Start . |
| 2 | Select Programs . |
| 3 | Select either the default folder, Meridian Desktop Evolution Personal Directory PC Utility, or the folder into which you installed the software. |
| 4 | Select PC Utility . |

—End—

Select a Personal Directory PC Utility port

Procedure 22

Select a Personal Directory PC Utility port

| Step | Action |
|------|--------|
|------|--------|

- | | |
|---|--|
| 1 | Click on Phone . |
| 2 | Click on Set port . The pull-down menu shows available PC ports: <ul style="list-style-type: none"> • Com1 • Com2 |

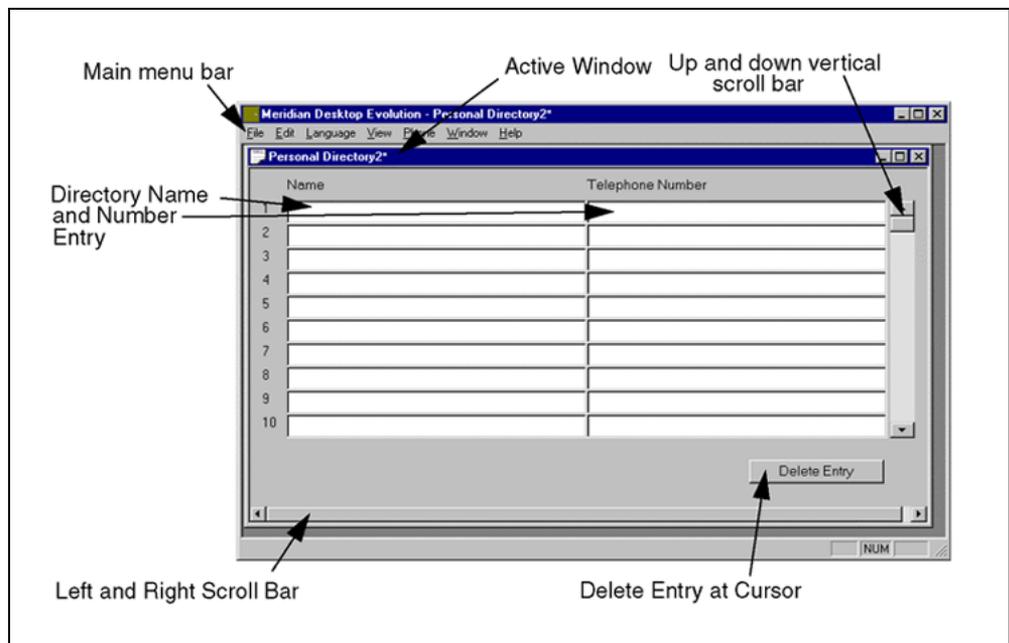
Note: The program selects the same port each time until you change it.

—End—

The Personal Directory PC Utility interface

Figure 19 "Personal Directory PC Utility interface" (page 95) shows the Personal Directory PC Utility interface.

Figure 19
Personal Directory PC Utility interface



There are three methods by which users can navigate within the Personal Directory PC Utility window:

- Press the Tab key to move from cell to cell and to move to a new entry row (an entry includes a name and a telephone number).
- Use the up and down arrows on the keyboard to move within the active window.
- Use the vertical scroll bar to move within the active window.

A Personal Directory PC Utility entry can have:

- Up to 31 characters for the telephone number (with NTMN82AB Meridian Personal Directory PC Utility or with the upgraded PC Utility software NTMN82BA).
- Up to 24 characters for the name.

Each Personal Directory file can have a maximum of 100 entries (an entry is one line).

Personal Directory PC Utility terms

The terms are as follows:

- **Read** (upload) - To copy the directory from the telephone to the PC.
- **Program** (download) - To install a directory from the PC to the telephone.
- **Import** - To copy a directory from another location into the active PC Utility window.
- **Export** - To copy a directory from the active PC window to another location. Use export to create a backup file.

On-line help

[Procedure 23 "Using On-line help" \(page 96\)](#) shows how to access the Personal Directory PC Utility On-line help.

Procedure 23 Using On-line help

| Step | Action |
|-------|--|
| 1 | Click on Help on the Main Menu bar. |
| 2 | Click on Personal Directory Utility Help and select the help topic. |
| —End— | |

Create a Personal Directory

Procedure 24 "Create a Personal Directory" (page 97) shows how to create a Personal Directory.

Procedure 24

Create a Personal Directory

| Step | Action |
|------|--|
| 1 | Open the Personal Directory PC Utility. <i>The program opens with the default "Personal Directory" window. The cursor insertion point is in the name field on the first line.</i> |
| 2 | Enter a name. |
| 3 | Press the Tab key to move to the Telephone Number section. |
| 4 | Enter a telephone number. To insert a 1.5 second pause in the dialing string, enter a comma (,). |
| 5 | Press the Tab key to move to the next line. |
| 6 | Continue to enter names and telephone numbers. |
| 7 | Save or export the directory before downloading it to the M3904/M3905 set to prevent the loss of data. |

—End—

Modify a Personal Directory

Procedure 25 "How to upload the Personal Directory from the telephone" (page 97) shows how to modify a personal directory.

Procedure 25

How to upload the Personal Directory from the telephone

| Step | Action |
|------|--|
| 1 | Check to make sure that the serial cable is connected to both the Personal Directory Utility cartridge and the PC. |
| 2 | Select Phone on the Main Menu bar. |
| 3 | Click on Read . Follow screen prompts until the directory appears. <i>The Personal Directory PC Utility cautions that you are about to replace the existing directory on the PC.</i> |
| 4 | Click on Yes to continue. |

—End—

Or, open an existing Personal Directory file into the active window (see [Procedure 26 "Open an existing file into the open window" \(page 98\)](#)).

Procedure 26

Open an existing file into the open window

| Step | Action |
|------|--------|
|------|--------|

- | | |
|---|--|
| 1 | Click on File on Main Menu bar. |
| 2 | Click on Open or Import . Select the file you want to modify. Note: The Import command allows you to open a comma-delimited text file created using an application other than the Personal Directory PC Utility. |
| 3 | Click on Save As or Export to create a backup file. |

—End—

Add names and telephone numbers

[Procedure 27 "Add names and telephone numbers" \(page 98\)](#) describes how to add names and telephone numbers.

Procedure 27

Add names and telephone numbers

| Step | Action |
|------|--------|
|------|--------|

- | | |
|---|--|
| 1 | Position the cursor on any empty line. |
| 2 | Enter a name. |
| 3 | Press the Tab key. |
| 4 | Enter a telephone number. |
| 5 | Press the Tab key to continue to add new names and telephone numbers. Note: Enter a comma (,) to insert a 1.5 second pause in the dialing string. |

—End—

Delete a character or single digit

Procedure 28 "Delete a character or single digit" (page 99) shows how to delete a character or single digit.

Procedure 28**Delete a character or single digit****Step Action**

- | Step | Action |
|------|---|
| 1 | Position the cursor to the right of the character or number you want to delete. |
| 2 | Press the Backspace key. |

—End—

or

Procedure 29**Alternate delete function****Step Action**

- | Step | Action |
|------|--|
| 1 | Position the cursor to the left of the character or number you want to delete. |
| 2 | Press the Delete key. |

—End—

or

Procedure 30**Second alternate delete function****Step Action**

- | Step | Action |
|------|--|
| 1 | Highlight the character or number. |
| 2 | Click on Edit on the Main Menu bar and click on Cut to delete. |

—End—

Cut or copy between Personal Directories

Procedure 31 "Cut or copy and paste between Personal Directories" (page 100) shows how to cut or copy between Personal Directories.

Procedure 31

Cut or copy and paste between Personal Directories

| Step | Action |
|-------|--|
| 1 | Open two or more Personal Directories. |
| 2 | Highlight the name or telephone number you want to cut or copy. |
| 3 | Click on Edit on the Main Menu bar. |
| 4 | Click on Cut or click on Copy . |
| 5 | Activate the second Personal Directory window by clicking on it. |
| 6 | Position the cursor on an empty line. |
| 7 | Click on Edit on the Main Menu bar. |
| 8 | Click on Paste . |
| —End— | |

Delete a directory entry

Procedure 32 "Delete a directory entry" (page 100) shows how to delete a directory entry.

Procedure 32

Delete a directory entry

| Step | Action |
|---|---|
| 1 | Position the cursor anywhere within the entry that you want to delete. |
| 2 | Click on the Delete Entry bar on the bottom right of the data entry screen to delete the line. |
| Note: You can delete only one entry at a time. | |
| —End— | |

Save or Export the Personal Directory file

Procedure 33 "Save or Export the Personal Directory file" (page 101) shows how to save or export the Personal Directory file.

Procedure 33**Save or Export the Personal Directory file****Step Action**

- 1 Click on **File** on the Main Menu bar.
- 2 Click on **Save As** or **Export**.
Note: Export creates a comma-delimited text file.
- 3 Define a destination for the Personal Directory file.
- 4 Enter a file name for the directory.
- 5 Click on **OK** to save.

—End—

Program (download) the Personal Directory

[Procedure 34 "Program \(download\) the Personal Directory" \(page 101\)](#) shows how to Program (download) the Personal Directory.

Procedure 34**Program (download) the Personal Directory****Step Action**

- 1 Check to make sure that the connection between the ACM Serial Port Cartridge and the PC serial port is secure.
- 2 Click on **Phone** on the Main Menu bar.
- 3 Click on **Program**.
- 4 The Personal Directory PC Utility cautions that you are about to replace the existing directory on the telephone. Click on **Yes** to continue.

A window opens that displays the status of the download.

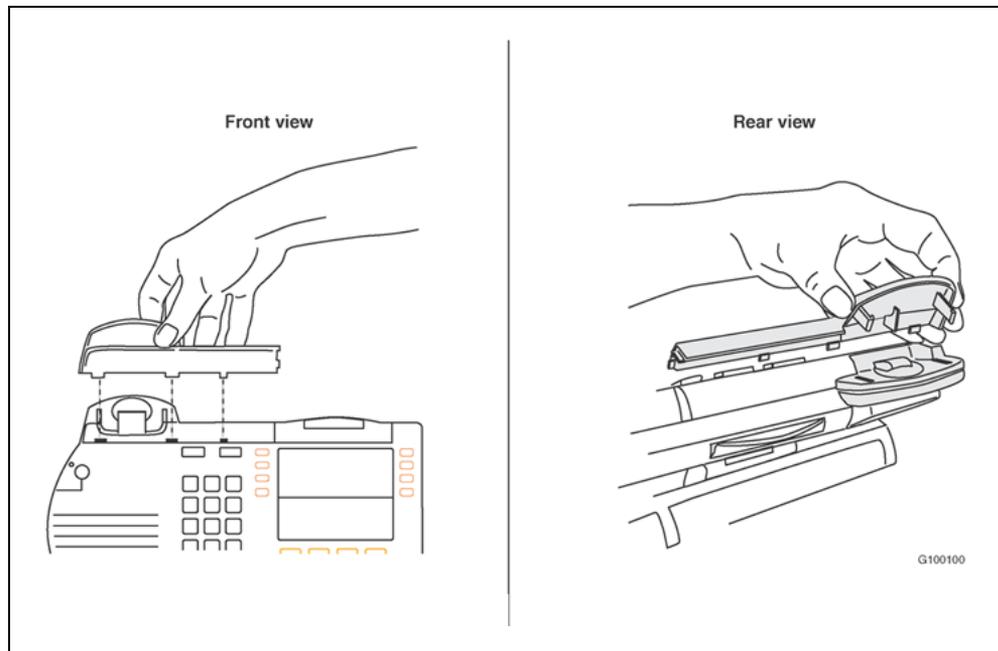
—End—

Handset option for the M3905 Call Center Telephone

The Handset Kit is a hardware option for the M3905 Call Center Telephone. The handset does not accompany the M3905. The handset can be added to the M3905 by removing the front plate of the telephone.

Note: Nortel Networks recommends that a system administrator complete this installation.

Figure 20
Removal of the hook switch cover



There are five tabs and two hidden snaps on the Hook Switch cover. There are two tabs along the right tab tree along the bottom edge (front view). To remove the cover, you must release the hidden snaps (rear view).

Procedure 35
Remove the Hook Switch Cover

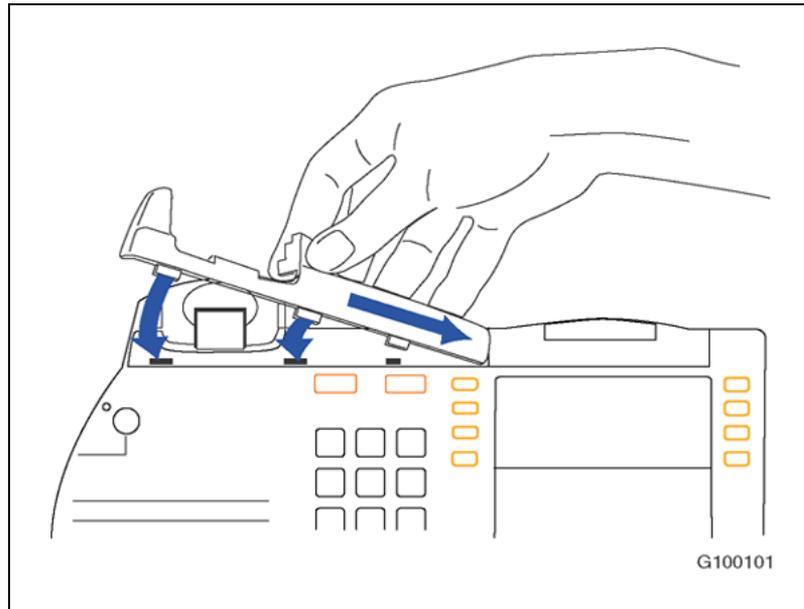
| Step | Action |
|------|--|
| 1 | Ease the cover to the left and pull on the left side to release the left snap. |
| 2 | While holding the left snap out, ease the cover to the right and pull on the right side to release the right snap. |
| 3 | Carefully maneuver the cover out from the three bottom slots and rotate the cover to release the two side tabs. |

—End—

Installation of the cradle

Procedure 36 "Install the cradle" (page 103) shows how to install the cradle.

Figure 21
How to install the cradle



Procedure 36
Install the cradle

| Step | Action |
|------|--------|
|------|--------|

- | | |
|---|--|
| 1 | Hold the cradle in the same position as when you removed the Hook Switch Cover; move the cradle to the right to place the tab into the slot. |
| 2 | Ease the other tabs on the bottom edge of the cradle into the slots. |
| 3 | When all tabs are in the proper position, secure the cradle into place by pushing straight downward. |

—End—

Alternate key caps for the M3905

Use the Key Extractor Tool with the M3905 Call Center Telephone to remove the programmable keys and replace them with alternate keys customizing your telephone to fit your need.

Figure 22
How to install the alternate key caps



As Figure 22 "How to install the alternate key caps" (page 104) shows, place the tips of the tool into the slots at the right and left of the key, grip tightly and pull straight upward.

Procedure 37
Install key caps

| Step | Action |
|------|---|
| 1 | Fit the two small elastomer posts into two slots on the underside on the keys and firmly press downward. |
| 2 | The key releases immediately after applying pressure. <p>Note: If the key does not release, remove it. Attempt the installation again, making sure that the posts and the slots are properly aligned.</p> |

—End—

Full Duplex Handsfree (FDHF) Accessory on the M3904

This section shows how to install and use the Full Duplex Handsfree (FDHF) Cartridge (NTMN72AA) with your M3904 Release 3 Meridian Digital Telephone (NTMN34GA). The FDHF cartridge enables simultaneous two-way communication during a handsfree call.

Note: The Full Duplex Handsfree accessory is only supported on the M3904 Release 3 or later telephone. A Full Duplex Handsfree compatible version of the M3904 Release 2 telephone is not available.

Prerequisites

You must install an Accessory Connection Module (NTMN71AA) into your M3904 set before you install the FDHF cartridge. The ACM provides connection capabilities between the M3904 set and the FDHF cartridge.

[Procedure 10 "Install the ACM" \(page 78\)](#) provides ACM installation instructions.

Procedure 38

Connect the FHDF cartridge

| Step | Action |
|------|--|
| 1 | Look at the label on the back of the set to make sure that your set is an M3904 Release 3. For Release 3, the label shows NTMN34GA. If the set is not a Release 3 vintage, the FDHF cartridge is not compatible. Contact your network administrator for more information. |
| 2 | Insert the FDHF cartridge into the ACM. The latch must be at the top. |
| 3 | Plug the wall transformer into an electrical outlet (use only the transformer designed for your ACM accessory). The following list shows the transformers Nortel Networks approves for use with the FDHF 110V wall transformer (NTMN80AA) cartridge. |
| 4 | Disconnect the telephone line cord from the telephone wall jack. This is similar to the ATA (see Figure 2 on page 6). |
| 5 | Connect the Adapter plug, attached to your transformer, to the telephone wall jack. |
| 6 | Connect the telephone line cord to the wall transformer adapter jack. |
| 7 | Verify that the FDHF cartridge is working properly. The cartridge is operating properly when: <ul style="list-style-type: none"> • the red LED on the cartridge is flashing, and • the volume bar displays 18 segments during handsfree volume adjustment. |

- the red LED on the cartridge is flashing, and
- the volume bar displays 18 segments during handsfree volume adjustment.

Note: Half-duplex mode displays only 12 segments.

—End—

Operating parameters

The M3904 set attenuates the receive audio level when in FDHF mode while both you and the other party are conversing; therefore, you can notice fluctuations in the receive volume during a FDHF call.

During a call, you can remove or insert the FDHF cartridge into the ACM without interrupting the established call. If you remove the FDHF cartridge, the set returns to half-duplex operation.

Status light indicator

A red LED status light on the FDHF cartridge indicates the status of the cartridge as follows:

- **Flashing red** - the cartridge is operating normally.
- **Solid red** - the cartridge is not operating normally. Contact your network administrator.
- **Red light off** - there is no power going to the cartridge or the cartridge is not operating correctly. Check the power connection to the cartridge. If the condition continues, contact your network administrator.

Meridian SL-100 configuration procedures

Table 22 "Add a new M3904 set with handsfree enabled in SERVORD" (page 106) and Table 23 "Enable handsfree on an existing M3904 set in SERVORD" (page 106) show examples of the SERVORD commands you use to configure the Meridian SL-100 FDHF on new and existing M3904 sets.

Table 22
Add a new M3904 set with handsfree enabled in SERVORD

| Prompt | Response | Description |
|------------|----------|---|
| SO: | new | Enter new if the telephone is not currently configured. |
| ... | | |
| HANDS_FREE | y | Enter "y" for yes. |

Table 23
Enable handsfree on an existing M3904 set in SERVORD

| Prompt | Response | Description |
|-------------|----------|---|
| SO: | Chf | Change feature on existing M3904 set. |
| ... | | |
| OPTKEY | 1 | Enter the primary DN key #. |
| OPTION: | hndsfree | Enter "hndsfree" for Handsfree operation. |
| HANDS_FREE: | y | Enter "y" for yes. |

Note: The M3904 must be NTMN34GA or later vintage. If you are replacing an existing M3904 that has handsfree enabled, you do not require a SERVORD change.

Features firmware and software management

Purpose

This chapter describes M3900 firmware and software requirements, as well as the firmware download process.

Features and software

System software

Both the M3900 Release 2 series digital telephones and Nortel Networks Corporate Directory Application for the Meridian SL-100 require the minimum software loads that [Table 24 "M3900 Release 2 and Corporate Directory Application minimum software"](#) (page 107) shows.

Table 24

M3900 Release 2 and Corporate Directory Application minimum software

| Commercial/Federal | Minimum MSL Loads |
|---------------------------|-------------------|
| Commercial Software Loads | MSL11 with XPM13 |
| Federal Software Loads | MSL12 |

Note: The M3900 series Release 3 telephones are backwards compatible to MSL11 (XPM 13) for Commercial and to MSL12 for Federal Software Loads; however, some new feature capabilities are not available until the MSL15 time frame and some require certain XPM releases. Beginning with MSL17 or MSL15 with XPM17, the M3900 series digital telephones must be upgraded to the Release 3 firmware.

The Enhanced Intelligent Peripheral Equipment (EIPes) should be on the minimum versions that [Table 25 "Minimum EIPE versions" \(page 108\)](#) shows. However, it is highly recommended that sites have the latest EIPE load available in order to maximize features and get the latest enhancements.

Table 25
Minimum EIPE versions

| Product | Minimum version |
|------------------------|-----------------|
| M3900 Series Release 3 | EIPE15AD |
| M3900 Series Release 2 | EIPE11AT |
| Corporate Directory | EIPE12AH |

[Table 26 "Meridian SL-100 /M3900 Phase 3 feature compatibility" \(page 108\)](#) lists M3900 Release 3 features and capabilities and shows which software and XPM loads are required for each capability. Customers should make sure that any applicable patches have been applied. The base software for the M3900 series digital telephones on the Meridian SL-100 is MSL11 for Commercial software loads; however, it is MSL12 for Federal software loads.

Table 26
Meridian SL-100 /M3900 Phase 3 feature compatibility

| Feature | Minimum MSL Release | M390 2 | M390 3 | M390 4 | M390 5 |
|--|----------------------------|--------|--------|----------------|----------------|
| Full Icon Support ¹ | MSL12 | ✓ | ✓ | ✓ | ✓ |
| Call Forward Enhancements | MSL11 | | ✓ | ✓ | ✓ |
| Password Clear | MSL11 | | ✓ | ✓ | ✓ |
| Pause in Dialing Strings | MSL11 | ✓ | ✓ | ✓ | ✓ |
| 31-Digit Predial | MSL11 | ✓ | ✓ | ✓ | ✓ |
| Special Character Handling | MSL11 | ✓ | ✓ | ✓ | ✓ |
| Refined Corporate Directory Search | MSL15 (XPM17) | | ✓ | ✓ | ✓ |
| Headset State Support | MSL11 ² (XPM14) | ✓ | ✓ | ✓ | |
| Speed Dial Capabilities (Virtual Office) | MSL11 | ✓ | ✓ | ✓ | ✓ |
| Virtual Office Automatic Logout | MSL11 | | ✓ | ✓ | |
| PC Utility Adapter | MSL11 | | | ✓ | ✓ |
| Full Duplex Handsfree Accessory | MSL11 ² (XPM14) | | | ✓ ³ | |
| Secondary DN Dialing | MSL11 | | ✓ | ✓ | ✓ ⁴ |

| Feature | Minimum MSL Release | M390 2 | M390 3 | M390 4 | M390 5 |
|---|---------------------|---|--------|--------|--------|
| One-button Feature Access Keys | MSL15 | | ✓ | ✓ | ✓ |
| M3905 Phase 3 set | MSL11 | | | | ✓ |
| Redial & Callers List Erase (Virtual Office) | N/A | Feature not available on Meridian SL-100. | | | |
| <p>Note 1: Full Icon Support is also compatible with Key-based Expansion Modules and Display-based Expansion Modules.</p> <p>Note 2: With appropriate patches applied.</p> <p>Note 3: M3904 Phase 1 and 2 sets cannot be firmware upgraded to a Phase 3 set supporting Full Duplex Handsfree. A new M3904 Phase 3 set is required to support the Full Duplex Handsfree Accessory.</p> <p>Note 4: Secondary DN Dialing is available on the M3903, M3904, and M3905 Phase 3 sets with MSL11 and above; however, the message "Select Free Line" that is displayed on the M3905 is not available until MSL15.</p> | | | | | |

M3900 telephone sets and accessories minimum firmware and release numbers

The M3900 Release 2 telephone sets and expansion modules that are supported on the Meridian SL-100 require the minimum firmware releases that [Table 27 "M3900 Release 2 minimum firmware releases"](#) (page 109) shows.

Table 27
M3900 Release 2 minimum firmware releases

| Component | Minimum firmware/Release numbers |
|--------------------------------|----------------------------------|
| M3902 | Firmware version 4.0 |
| M3903 | Firmware version 5.2 |
| M3904 | Firmware version 4.6 |
| M3905 | Firmware version 4.8 |
| Key-based Expansion Module | Release 02 |
| Display-based Expansion Module | Release 06 |

Note: The M3901 does not support firmware upgrades.

The M3900 Release 3 telephone sets that are supported on the Meridian SL-100 require the minimum firmware releases that [Table 28 "M3900 Release 3 minimum firmware releases"](#) (page 110) shows.

Table 28
M3900 Release 3 minimum firmware releases

| Component | Minimum firmware/Release numbers |
|----------------------------------|----------------------------------|
| M3902 | Firmware version 8.0 |
| M3903 | Firmware version 8.0 |
| M3904 | Firmware version 8.2 |
| M3904 with Full Duplex Handsfree | Firmware version 8.X |
| M3905 | Firmware version 8.1 |
| Key-based Expansion Module | Release 02 |
| Display-based Expansion Module | Release 06 |

The firmware version of the M3902, M3903, M3904, and M3905 telephones can be found through the Options List and Display Diagnostics option on the M3900 telephone (see [Procedure 39 "Verify firmware versions of M3900 telephones"](#) (page 110)).

Procedure 39
Verify firmware versions of M3900 telephones

Step Action

- 1 Press the **Options** key on the M3902, M3903, M3904, or M3905 telephone set.
- 2 Scroll to the "Display Diagnostics" option, using the **up** or **down** navigation keys.
- 3 Press the **Select** softkey.
- 4 Scroll to the screen that shows firmware version using the **up** or **down** navigation keys.

The bottom line of the screen should display Flash: X.X to LX.X. The first number after flash indicates the current firmware version of the telephone.

—End—

Firmware download process overview

The M3900 firmware download process provides information regarding the capability to download new firmware versions to the M3900 series digital telephones. Firmware download provides a way for installed M3900 telephones to be updated to the appropriate firmware release level on the Meridian SL-100. The latest generally available firmware files are available at no charge on the Nortel Networks web site for Meridian SL-100 customers.

Note: The following pages include firmware download information for Meridian SL-100 and Communication Server 2100 customers:

- The Meridian SL-100 firmware download process, the Optivity Telephony Manager (see "[Meridian SL-100](#)" (page 111))
- For information Meridian SL-100 and Communication Server 2100 firmware download information using the M3900/EXPEC Firmware manager (MEFM), see "[M3900/EXPEC Firmware Manager](#)" (page 133).

Meridian SL-100

Firmware downloads use the flash download procedure that provides the capability to download a new firmware version to the M3900 series digital telephones. See "[Flash download](#)" (page 19) and in the *Feature Description Manual*, NTP 555-4031-801. Nortel Networks Optivity Telephony Manager for Meridian SL-100 2.0 initiates all flash download commands. Nortel Networks Optivity Telephony Manager for Meridian SL-100 2.0 is a requirement for M3900 series digital telephones.

Firmware files location

Use the [Procedure 40 "Download a firmware file"](#) (page 111) to download a firmware file from the Nortel Networks web site and place the downloaded file onto the Meridian SL-100 SLM drive.

Procedure 40

Download a firmware file

| Step | Action |
|------|--|
| 1 | Connect to the Nortel Networks web site: www.nortelnetworks.com . |
| 2 | Move your cursor to "Customer Support" on the left side of the page. Click on Customer Support . |

Note: If you are not a registered user, you must register to be able to download the firmware files. Click on **Register** on the left side of the "Customer Support" page and register for access.

- 3 If you are a registered user, click on **Login** on the left side of the "Customer Support" page and log in with your user ID and password.
A "Security Alert" box appears asking if you want to proceed.
- 4 To be able to access the software, click on **yes**.
- 5 On the "Customer Support" page, move to the right side of the page to "Product Selection". Under "Product Selection" click on **View by a Product**.
You will be taken to the "Product Select" page.
- 6 On the "Product Select" page, under "View by a Product" in the middle of the page, use the pull-down menu and scroll down to "Meridian M3900 (M3900) Series Digital Telephones" and select it. Then click on **Save**.
You will be taken to the "Customer Support" page that shows both the "Documentation Listings" and the "Software Downloads".
- 7 Under "Software Downloads", the latest firmware files are listed, for example:
 - M3902v8-0
 - M3903v8-0
 - M3904v8-2
 - M3905v8-1
- 8 Click on the file that you want to download.
You will be taken to a page entitled "Software Downloads: Software Detail Information".
- 9 In the middle of the page, the file name is shown, along with the Software Family, Software Type, and File Download.
Click on the File Download that also displays the file name you want to download.
A "Save As" window appears. Select where you want to save the file, and click on "Save".
Note: Save the file to a server or a computer with shared file access.
- 10 To download additional firmware files, click on **Customer Support** on the left side of the page and repeat the steps above.
- 11 After downloading the file(s), the file(s) must be located on a server or shared computer that allows FTP of files. You can use one of

several programs to move the file(s), if necessary, such as WS_FTP Pro, ProComm Plus, etc. Contact your network administrator for additional assistance on moving the file(s).

—End—

Use [Procedure 41 "FTP Files onto the Meridian SL100"](#) (page 113) to FTP files onto the Meridian SL100.

Procedure 41
FTP Files onto the Meridian SL100

Step Action

From the Meridian SL-100 switch:

- 1 Identify the IP address to the server or computer.
 - a. FTP Connection: FTP "xx.xx.xx.xx" <IP address identified above>
 - b. Enter User ID: <If Required>
 - c. Enter Password: < If Required>
 - d. Enter Command: LS <Used to locate firmware file on server>
 - e. Enter Command: lcd :/S00dpml < s00dpml or s01dpml>
 - f. Enter Command: binary
 - g. Enter Command: `lrec1 '345'`
 - h. Enter Command: `Get 'M3903v80.bin345' 'M3903V80'`
Note: The second entry must be in upper case.

- 2 After download is completed, Enter Command: `quit`.
Note: The file is now on SLM drive. Use Optivity Telephony Manager for Meridian SL-100, 2.0 to download the files to the M3900 telephones.

—End—

Nortel Networks Optivity Telephony Manager for Meridian SL-100 2.0 firmware download

Nortel Networks Optivity Telephony Manager for Meridian SL-100, 2.0, provides firmware management for the M3900 series digital telephones: M3902, M3903, M3904, and M3905. The firmware download process is executed in Optivity Telephony Manager for Meridian SL-100 using the Expec controller card (NT7D07BA) in the EIPE.

Note: Since there is no upgradeable firmware load for the M3901 set, the M3901 set is not supported with this tool.

Optivity Telephony Manager for Meridian SL-100 enables the user to:

- view firmware loads on the connected EIPE
- initiate the transfer of M3900 firmware to the EIPE
- delete firmware loads from the EIPE
- view the space remaining on the EIPE for M3900 firmware loads
- initiate the transfer of a firmware file to multiple EIPEs
- provide the same FTP functionality as the Expec Service
- determine the location and access to the FTP server (FTP server requirements and options)
- view descriptions of the EIPE file system, requirements, and limitations

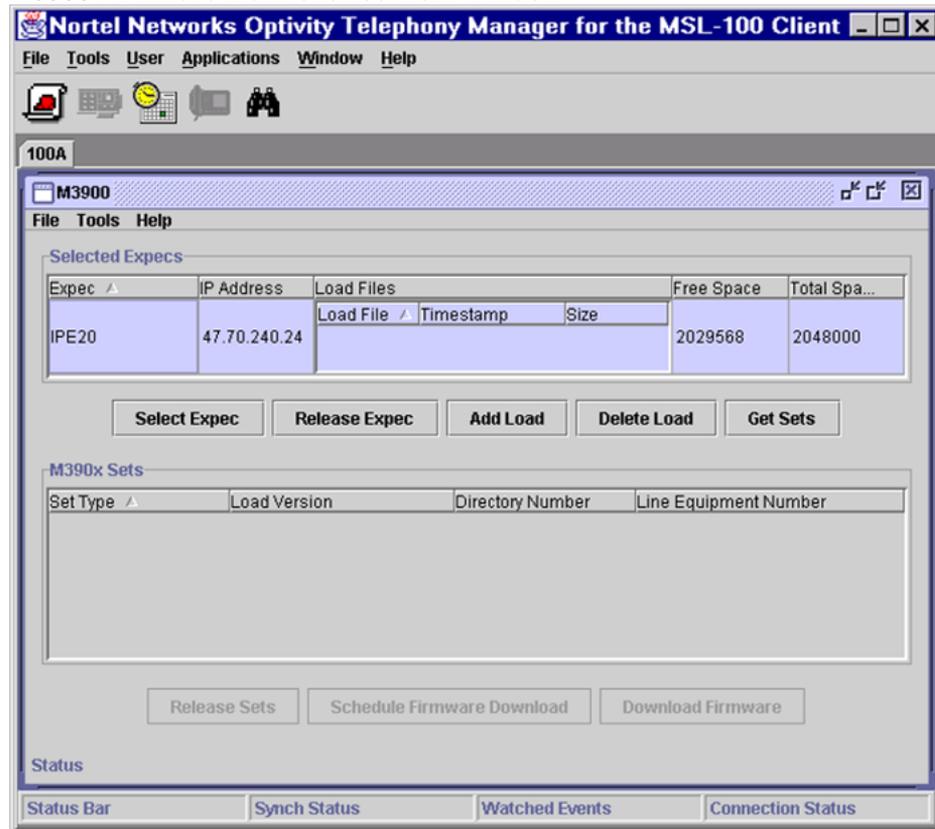
Through this tool, M3900 firmware loads can be downloaded to one M3900 series set or to all M3900 terminals of the same type on an EIPE. The same can be done for multiple EIPEs. The transfer and downloads of firmware to a single or multiple EIPEs can be scheduled to execute at a later time.

Using the M3900 Firmware Management main window, the user can access information such as the following:

- scheduling capabilities and limitations (that is, the ability to schedule the download of the Firmware to M3900 sets)
- network considerations
- transfer results and recovery (the system generates a log file after each firmware download session is complete)
- generate a record of the completion of each firmware load operation

Figure 23 "M3900 Firmware Maintenance Main window" (page 115) shows the M3900 Firmware Maintenance main window and toolbar items.

Figure 23
M3900 Firmware Maintenance Main window



The top half of the M3900 tool main window is used to reserve the Expects for load operations, to transfer M3900 firmware loads to Expects, and to select M3900 sets for downloading. Expects must be added to the Expec list using the **Add Expects** button. This reserves the Expects for use by the current user of the tool. [Table 29 "M3900 Firmware Maintenance Main window menus and buttons" \(page 115\)](#) describes the menu items and buttons in [Figure 23 "M3900 Firmware Maintenance Main window" \(page 115\)](#).

Table 29
M3900 Firmware Maintenance Main window menus and buttons

| Item | Description |
|------------|--|
| File menu | Access to the Exit Tool item on this menu. |
| Tools menu | Provides access to the Log File viewer, Active Jobs Status, and File Server Manager. |
| Help menu | Provides help annotations. |

| Item | Description |
|---|---|
| EIPEs (Expecs) list with M3900 firmware and EIPE load files | Expecs (EIPEs) are listed with the following information: <ul style="list-style-type: none"> • Name • IP Address • M3900 firmware and EIPE load file descriptions: File name, Timestamp, File size • Free Space available on the Expec • Total Space on the Expecs |
| Select Expec button | Opens a window for selecting Expecs. The Expecs that are listed in the tool window are available for performing firmware maintenance operations. The Select Expecs window used here is the same as that used in the Expec Load tool. |
| Release Expec button | Releases selected Expecs. Released Expecs are then not available to the user of the tool until they are re-added. |
| Add Load button | Opens a window for selecting and transferring an M3900 firmware load file to one or more Expecs. |
| Delete Load button | Opens a window for deleting M3900 firmware load files from one or more Expecs. |
| Get Sets button | Opens a window for selecting sets on the selected EIPE. |
| Release Sets button | Releases or deletes sets from list of M3900 sets. |
| Schedule Firmware Download button | Opens a window to schedule the firmware download for selected sets. |
| Download Firmware button | Initiates the immediate download of firmware to the selected sets. |

The same file servers and method for selecting them that is used for the Expec Load tool is also used for the M3900 tool. Once file servers are defined in the Optivity Telephony Manager for Meridian SL-100 server, M3900 load files can be selected. The correct file name and type should be verified to make sure it is a valid M3900 firmware load, before transferring it to any EIPE.

Once M3900 sets are listed in the bottom half of the window, the **Download Firmware** or **Schedule Firmware Download** buttons are used for the actual downloading. All scheduled firmware download tasks can be viewed in the Scheduler tool (see [Figure 35 "M3900 Tool > Firmware Download Schedule Time window"](#) (page 128)). All active M3900 jobs can be viewed in the Active Jobs Status tool (see [Figure 33 "Active Job Status > Download in Process"](#) (page 126)) found under the Tool menus of the M3900 tools window (see [Figure 36 "View current status of any upgrades from the Tools Menu"](#) (page 129)).

M3900 firmware download process The M3902, M3903, M3904, and M3905 sets can be upgraded to the latest firmware available. The Expec in the EIPE does the firmware upgrade process. The Nortel Networks Optivity Telephony Manager for Meridian SL-100, 2.0 server coordinates and logs this process. The Optivity Telephony Manager for Meridian SL-100 client controls what the server does.

Only one type of set (that is, M3902, M3903, M3904, or M3905) per Expec can be upgraded at any one time. Since Optivity Telephony Manager for Meridian SL-100 can communicate with multiple Expecs at the same time, this allows multiple sets throughout the Meridian SL-100 system to be upgraded at the same time. Multiple download sessions can be scheduled to allow for different types of sets to be upgraded.

The download process is as follows:

1. New firmware is placed on the Meridian SL-100 SLM drive.
2. A group (must be same set type, that is, all M3903s) of sets on an Expec are selected.
3. The Optivity Telephony Manager for Meridian SL-100 server telnets into the Expec.
4. The Expec FTPs into the Meridian SL-100.
5. The firmware is copied to the Expec's RAM.
6. The sets in the group are individually checked for "idle state", before the download starts.

TIP: If a set has any buttons pressed or is off hook, the process aborts and the system checks the next set for "idle state".

7. The Expec erases the current Firmware from the set.

Note: The set is now out-of-service for 15-45 minutes. There is visual notification of the process on the set.

8. The upgrade process starts.
9. When that set is finished, a message is sent to the Expec stating the firmware version.
10. The Expecs then checks the next set for "idle state", erases the current firmware from the set, and the upgrade process starts.
11. Steps 6-9 are repeated until all the selected sets are upgraded.

Note: Some sets may not successfully upgrade. Should that occur, you need to download firmware to those sets again.

12. The Optivity Telephony Manager for Meridian SL-100 server will save all the Expec messages during the process into a log file and display

in real-time in the Active Job Status window (see [Figure 33 "Active Job Status > Download in Process"](#) (page 126)).

13. When the upgrade is complete, the Optivity Telephony Manager for Meridian SL-100 server removes the Firmware from the Expec RAM and logs off the Expecs.

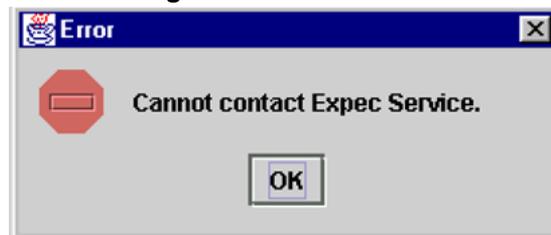
Procedures Use [Procedure 42 "Perform the firmware downloads"](#) (page 118) for the first firmware download after installing the Optivity Telephony Manager for Meridian SL-100 server and client, and synchronization is complete.

Procedure 42
Perform the firmware downloads

| Step | Action |
|------|---|
| 1 | Start server (if not running). |
| 2 | Start client. |
| 3 | Select the M3900 tool from menu in the M3900 Firmware Maintenance Window (see Figure 25 "M3900 Firmware Maintenance Main window > Select Expec" (page 119)). |

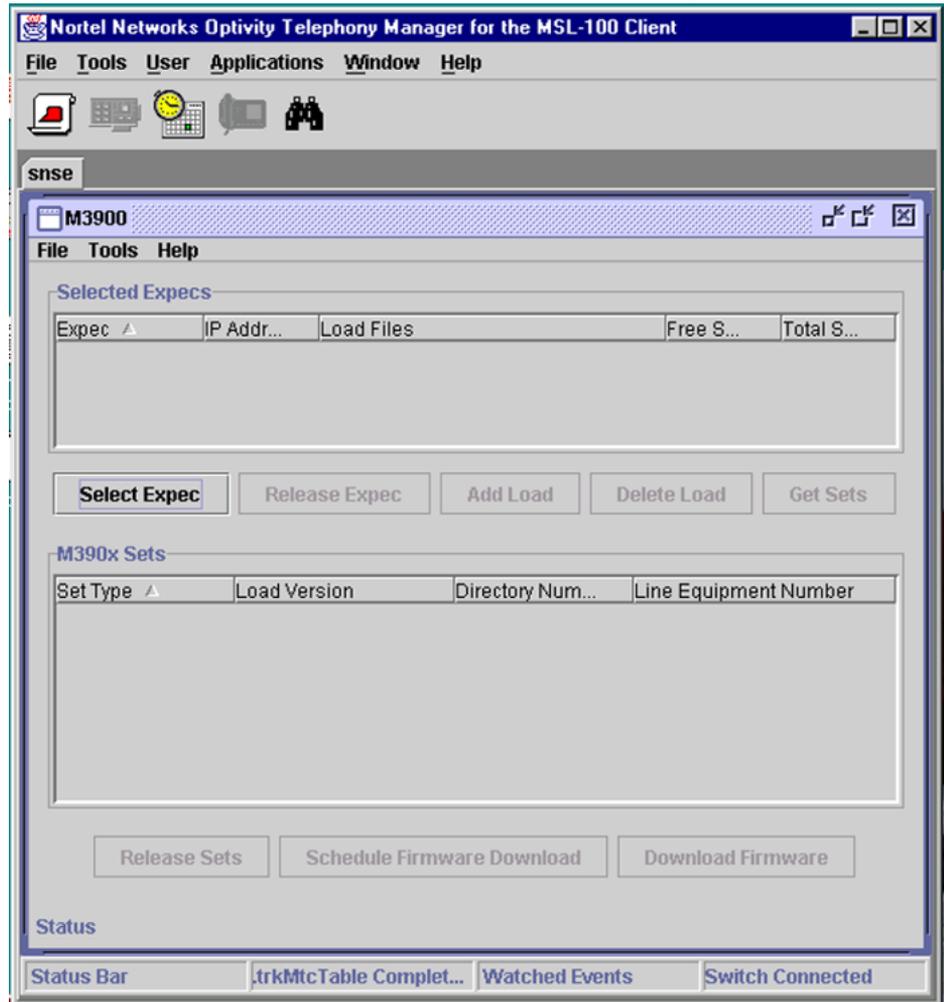
Note: If you get an error message like "cannot contact Expec service" (see [Figure 24 "Error message"](#) (page 118)), shut down your client and reconnect. What occurred is the Optivity Telephony Manager for Meridian SL-100 server application was shut down and is now back up.

Figure 24
Error message



4. Click the **Select Expec** button in the M3900 Firmware Maintenance Main Window (see [Figure 25 "M3900 Firmware Maintenance Main window > Select Expec"](#) (page 119)).

Figure 25
M3900 Firmware Maintenance Main window Select Expec



A list of Expecs is displayed.

- 5 Click the Expecs that contain the set(s) you want to upgrade (see [Figure 26 "Select Expecs"](#) (page 119)).

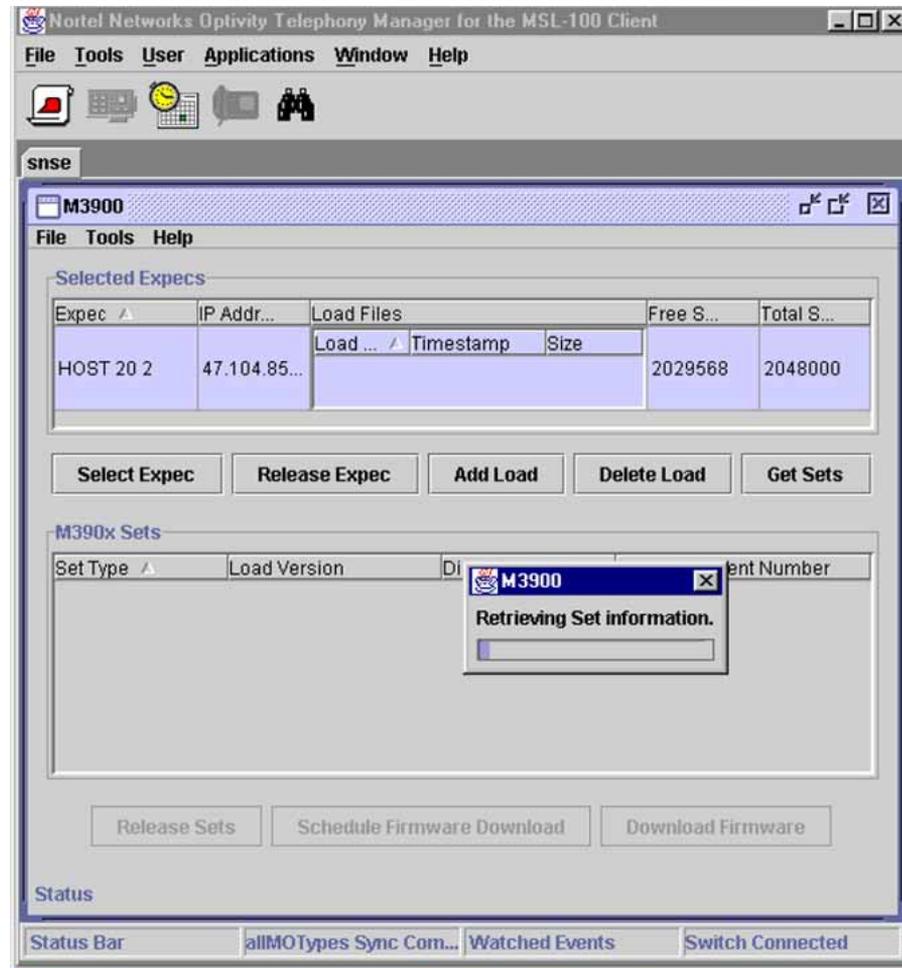
Figure 26
Select Expecs



TIP: You can select multiple Expecs. This allows you to download multiple sets of the same type across the Meridian SL-100 system.

- 6 Highlight the Expecs of the EIPE(s) in which you want to search for sets and click the **OK** button.
- 7 Click the **Get Sets** button (see Figure 27 "M3900 Firmware Maintenance Main Window > Get Set button" (page 120)).

Figure 27
M3900 Firmware Maintenance Main Window Get Set button

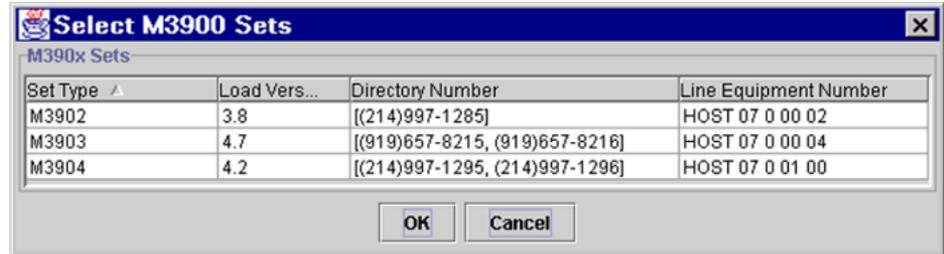


TIP: Make sure no files are present in RAM before starting an upgrade. See Procedure 46 "Delete M3900 firmware files from RAM" (page 133) for information on how to delete files from RAM.

- 8 From the list, you can select all the sets of one type that you want to upgrade, such as all the M3904s, one M3903, two M3902s, or all the M3905s, etc. (see Figure 28 "Select M3900 Sets window" (page 121)).

- 9 Highlight all of the sets that you want to upgrade. To select multiple sets of the same type, use the **shift** key.

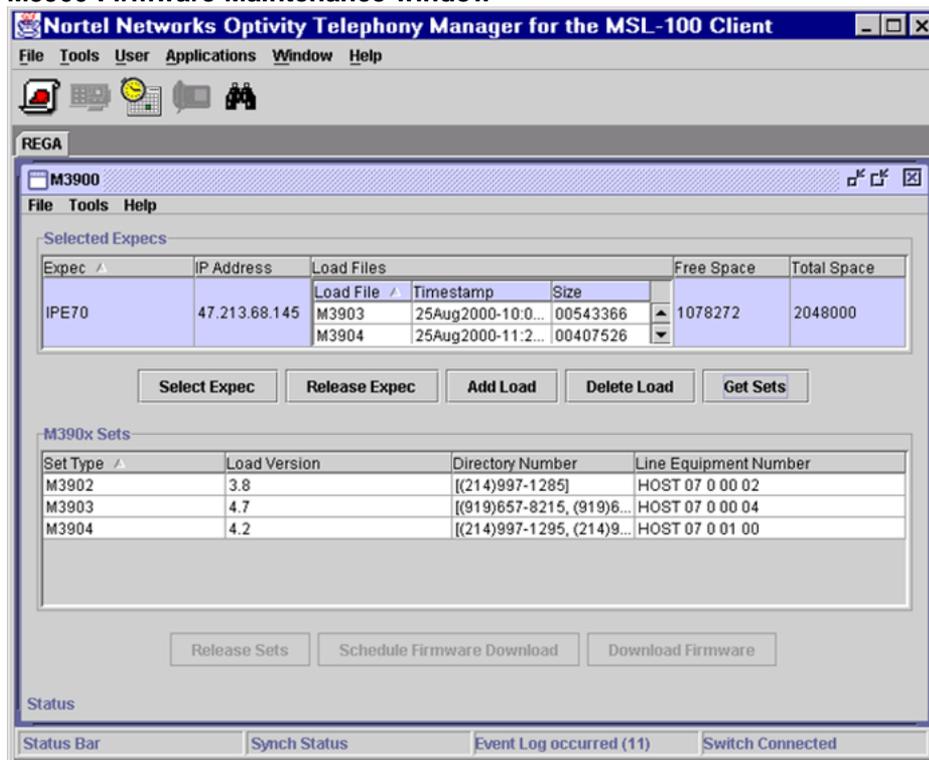
Figure 28
Select M3900 Sets window



- 10 Click on **OK** and a box is displayed that reads "Retrieving Set Information" as shown in [Figure 27 "M3900 Firmware Maintenance Main Window > Get Set button"](#) (page 120).
- 11 The three boxes in the lower portion of [Figure 29 "M3900 Firmware Maintenance window"](#) (page 122) should be highlighted. They are as follows:
- Release Sets
 - Schedule Firmware Download
 - Download Firmware

If you wish to download firmware immediately, click **Download Firmware** button. If you wish to schedule a firmware download, click **Schedule Firmware Download** and go to [Procedure 43 "Schedule a firmware download"](#) (page 128).

Figure 29
M3900 Firmware Maintenance window



- 12** Enter a job title (see [Figure 30 "Firmware Download Job Definition" \(page 123\)](#)), such as "M3905 20 20 18".

TIP: This job title becomes part of the log file name; include the LEN if possible.

Figure 30
Firmware Download Job Definition

Firmware Download Job Definition

M3900 Load Files

M3900 Job Title: M3905 20 20 18

File Server

File Servers

| File Server | IP Address |
|-------------|------------|
|-------------|------------|

List Files Add Update Delete

Directory Information

| File Name | Size |
|-----------|------|
|-----------|------|

OK Cancel

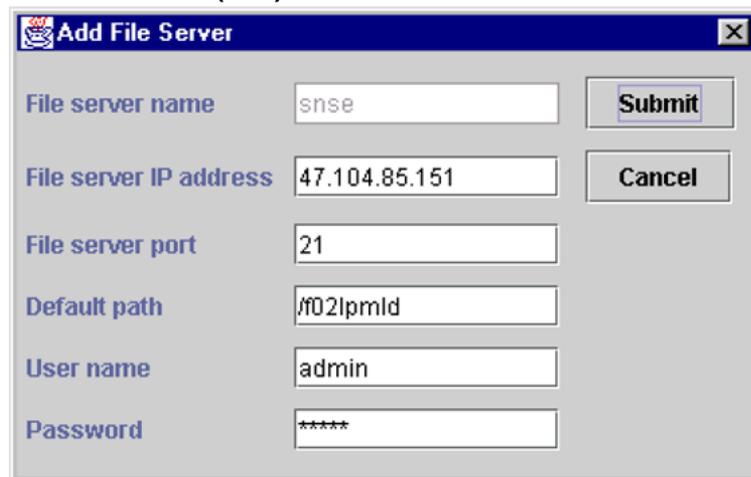
Note: The first time you upgrade a set or Expec you need to add a file server (FTP) IP address, File server port, default path, user name and password. If this is the first time you have upgraded a

telephone set or Expecs, follow Steps 13 through 18. If you do not need to add a file server, proceed to Step 17.

- 13 Click on the **Add** button.
- 14 Enter the FTP information of the Meridian SL-100 (see [Figure 31 "Add File Server \(FTP\) IP address"](#) (page 124)).

Note: The volume must have a "/" in front of it, for example;/s00dpmlid XA Core.

Figure 31
Add File Server (FTP) IP address

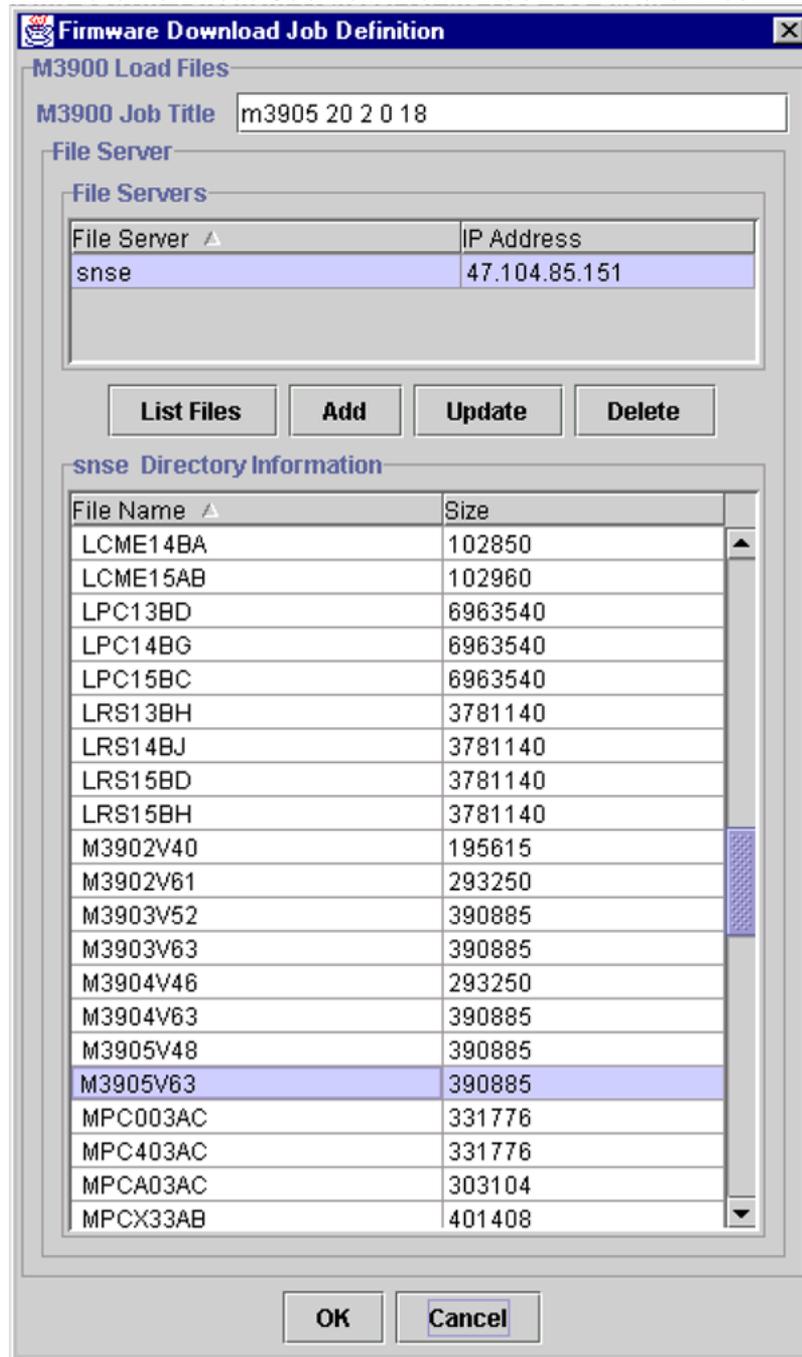


| | | |
|------------------------|---------------|--------|
| File server name | snse | Submit |
| File server IP address | 47.104.85.151 | Cancel |
| File server port | 21 | |
| Default path | /f02lpmlid | |
| User name | admin | |
| Password | ***** | |

- 15 Click on the **Submit** button.

Note: The FTP server is tested, before it is added to the list. You can create one file server for each volume.
- 16 Highlight the FTP server you just added (See [Figure 32 "Firmware Download Job Definition window > Firmware Files"](#) (page 125)).
- 17 Click on the **List Files** button. The firmware files are listed as shown in [Figure 32 "Firmware Download Job Definition window > Firmware Files"](#) (page 125).
- 18 Highlight the M3900 firmware you need for the specific set type that you are upgrading, such as "M3905V63" shown in [Figure 32 "Firmware Download Job Definition window > Firmware Files"](#) (page 125).

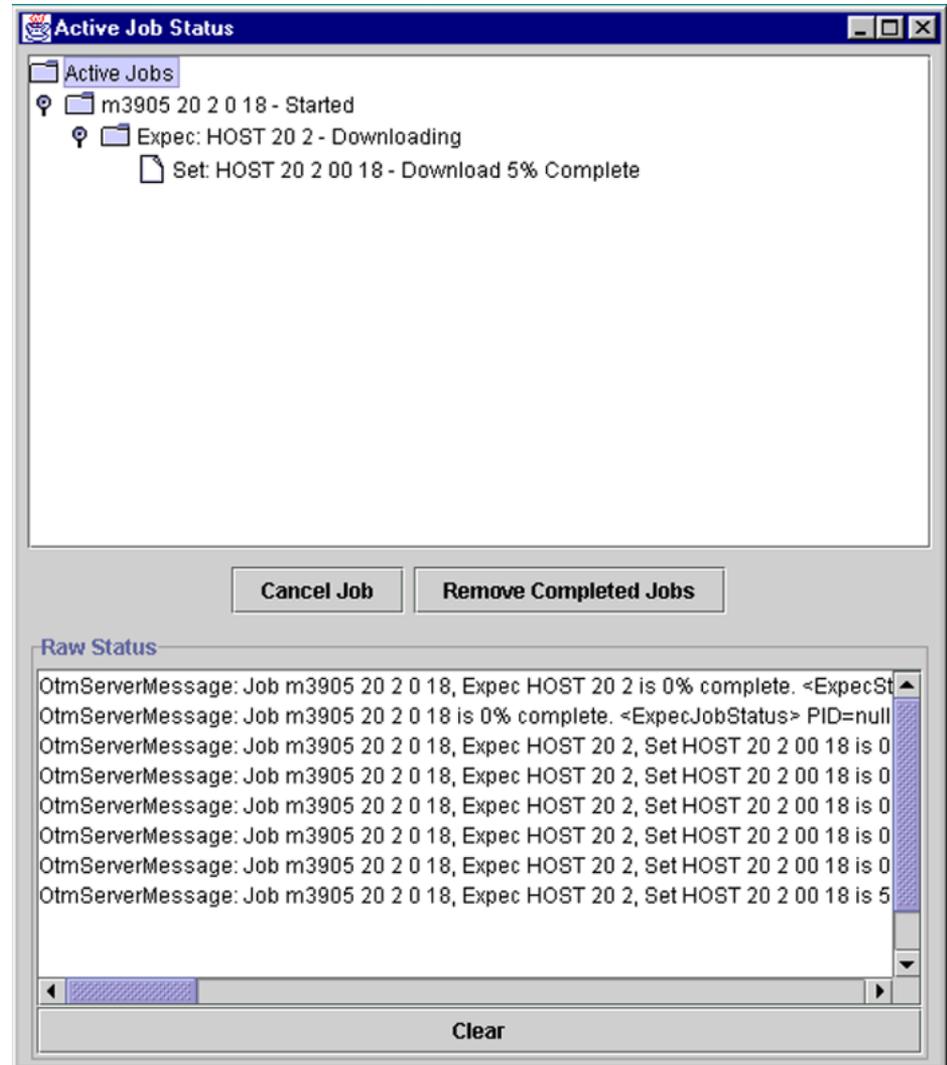
Figure 32
Firmware Download Job Definition window Firmware Files



- 19 Click on **OK** to begin the firmware download.
- 20 The process has now begun.

The Active Job status pop ups. See Figure 33 "Active Job Status > Download in Process" (page 126).

Figure 33
Active Job Status Download in Process



The Active Job Status window lists active M3900 firmware download jobs. Detailed status information is displayed in tree form allowing the user to expand or contract details for each job. This window has the following items:

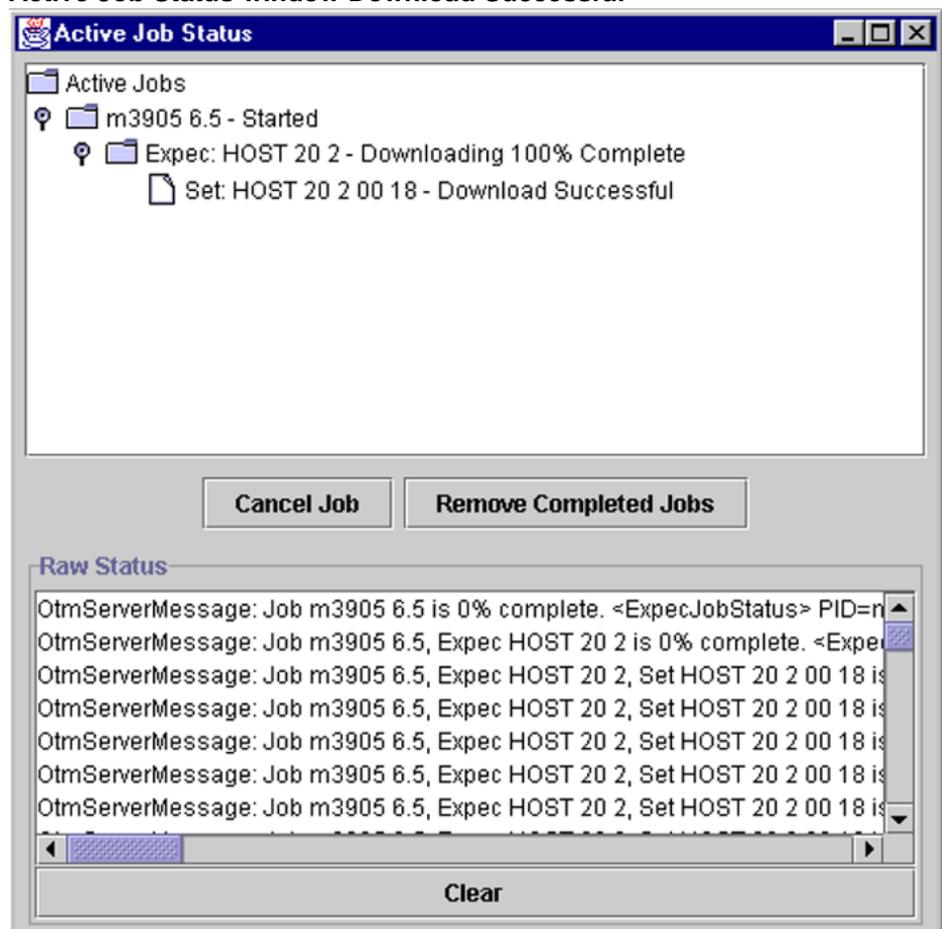
- **Cancel Job button** - Clicking on this button cancels the currently selected active job.
- **Remove Completed Jobs button** - Clicking on this button removes the completed jobs from the list.
- **Raw Status field** - This field displays debugging information.

- **Clear button** - Pressing this button clears the detailed information in the Raw Status field.

Note: At this point you can close down the client and let the server finish the job, or select another Expec and download firmware to another set(s) on a different Expec. Once the job is completed, some of this data will become a log file.

When the upgrade is finished you will see a "Download Successful" message (see [Figure 34 "Active Job Status window > Download Successful"](#) (page 127)).

Figure 34
Active Job Status window Download Successful



TIP: Log files are stored as "job title+date.txt" in the c:\OTM-MSL\logs folder.

—End—

Procedure 43
Schedule a firmware download

| Step | Action |
|------|--------|
|------|--------|

- | | |
|---|---|
| 1 | If you would like to schedule the firmware download for a later date or time, press the Schedule Firmware Download button (see Figure 25 "M3900 Firmware Maintenance Main window > Select Exec" (page 119)). |
| 2 | Complete the Schedule Dialog (see Figure 35 "M3900 Tool > Firmware Download Schedule Time window" (page 128)). |

Figure 35
M3900 Tool Firmware Download Schedule Time window

This window contains the following items:

- **Task Type** - Identifies the type of scheduled activity. Enter "SendToSets" for firmware downloads.
- **Task ID** - Identifies an individual task. For example, "IPE101 M3905 v4.6 Download".
- **Creator ID** - Identifies the user who created the scheduled task.
- **Start Time** - Sets the initial execution date and time of the task.
- **End Time** - An optional time at which a scheduled activity is to be stopped, if it is not completed. This is not applicable to Event Log archiving tasks, which are always allowed to run to completion.
- **OK button** - Completes the scheduling of the download and closes the window.
- **Cancel button** - Closes the window without scheduling the download.

—End—

Procedure 44**View current status of upgrades****Step Action**

- 1 If you want to see the current status of ANY upgrades the server is doing, the Active Job status can be accessed in the tools menu. You can also view the Log Files for completed jobs (see [Figure 36 "View current status of any upgrades from the Tools Menu"](#) (page 129)).

Figure 36
View current status of any upgrades from the Tools Menu

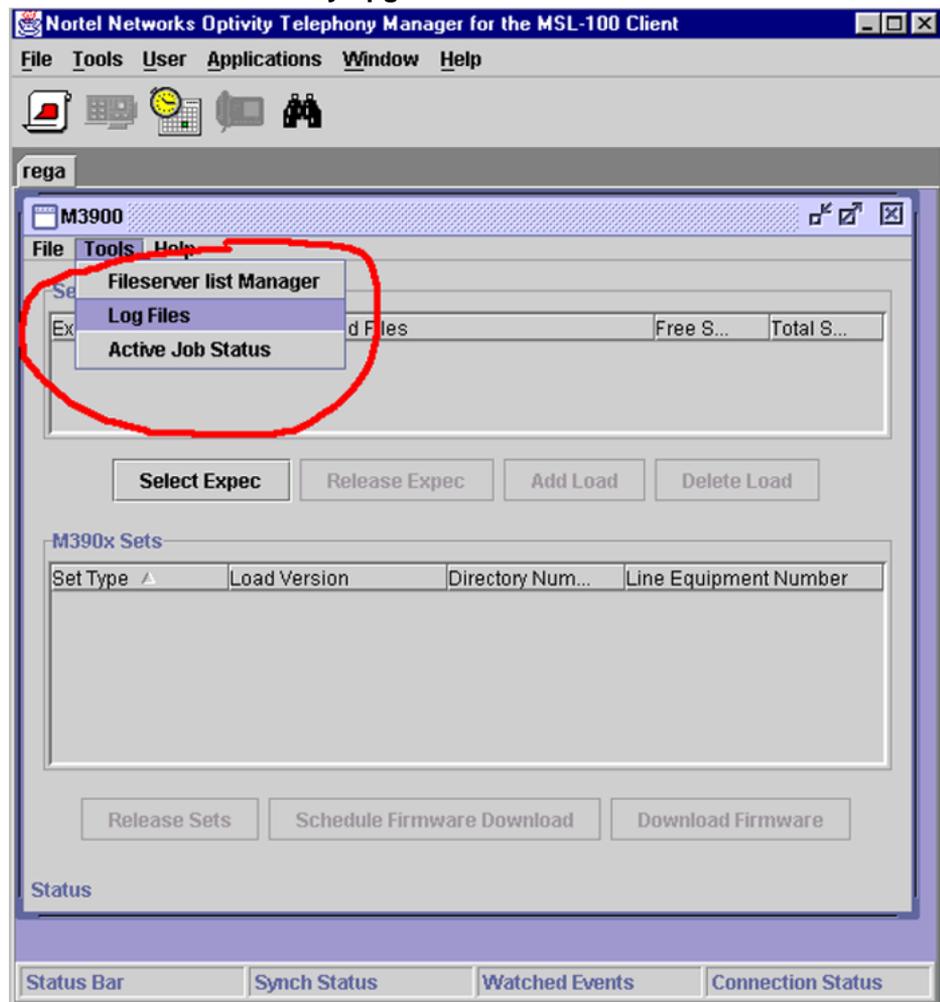
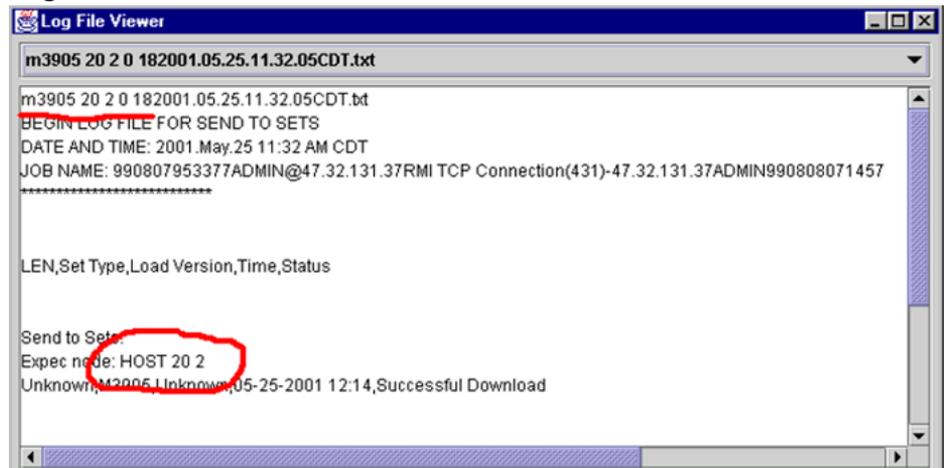


Figure 37
Log File Viewer window



Note: During the upgrade process the Exec is not available through telnet. If someone tries to log in during the upgrade, the system displays an error message (see [Figure 38 "Error message"](#) (page 130)). The only way to abort/stop the upgrade process is to bsy;rts the EIPE at the MAP.

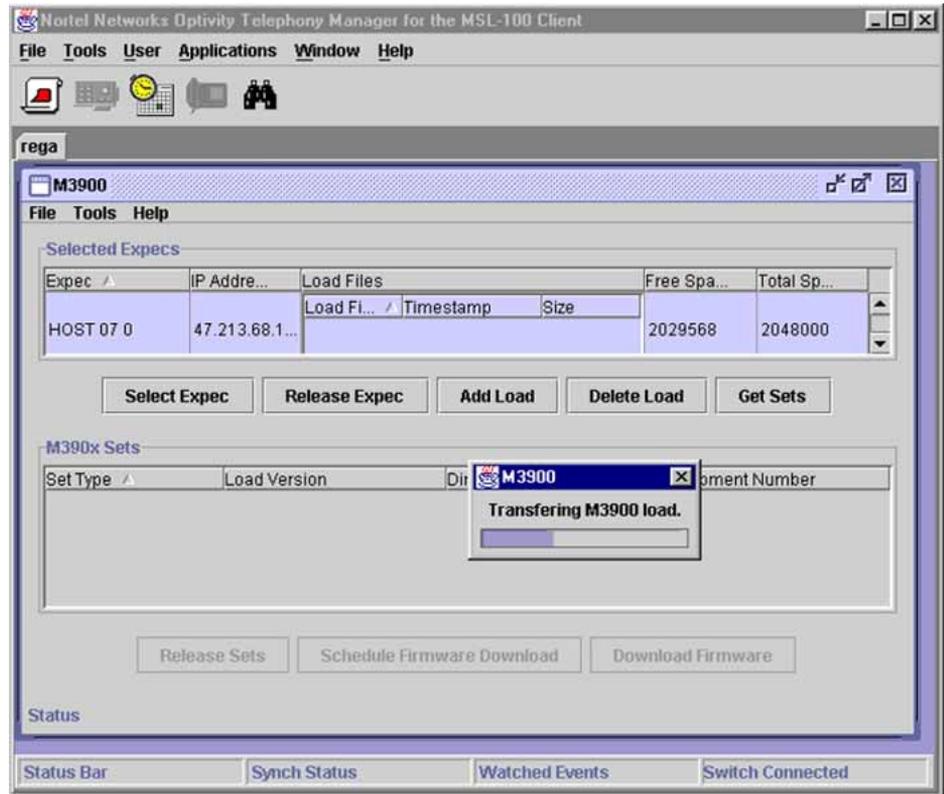
Figure 38
Error message



TIP: If the customer defines unique names for each switch technician, the name are echoed here. This is the name of the user who started a session on that Exec.

- 2 If a firmware download fails, you can test the different stages of the process. Try downloading the firmware from Meridian SL-100 to Exec Ram with the **Add Load** button (see [Figure 39 "Downloading firmware to Expects using Add Load button"](#) (page 131)).

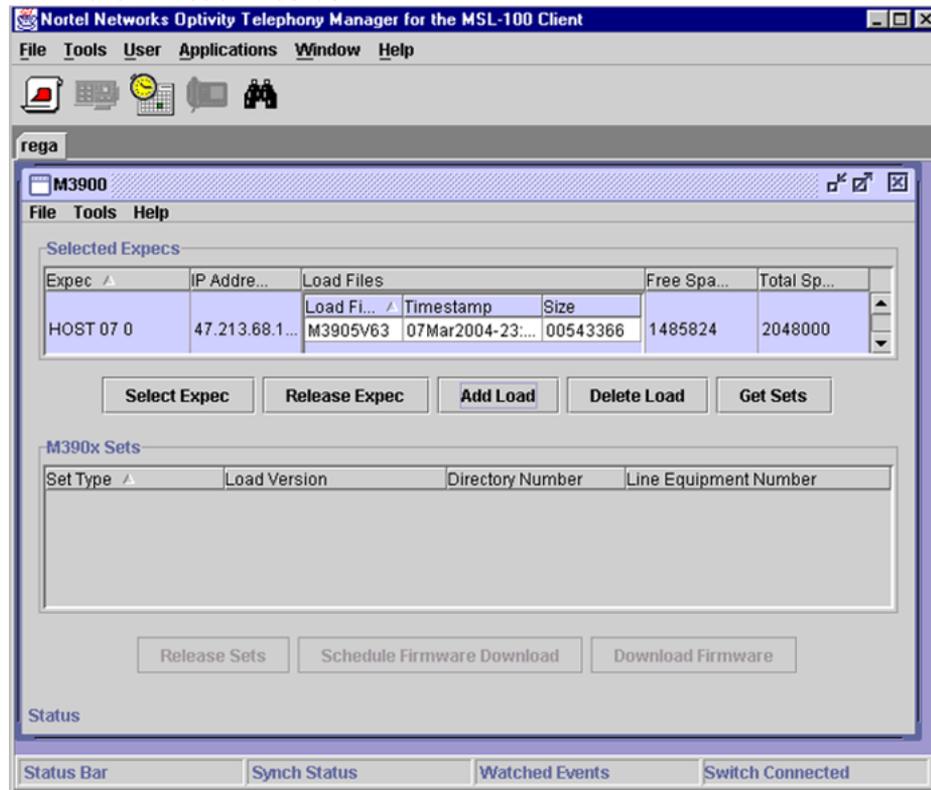
Figure 39
Downloading firmware to Expecs using Add Load button



You should see the firmware in the Load files box (this is RAM). If you can transfer to RAM, the problem may be a bad firmware file or defective telephone set (see [Figure 40 "Firmware in Load Files box"](#) (page 132)).

TIP: If there are firmware files in RAM, they must be removed with the **Delete load** button. This can cause upgrade failures.

Figure 40
Firmware in Load Files box



Note: If you cannot successfully add a load to the Expec RAM, check the FTP settings in Meridian SL-100 and file server settings in Optivity Telephony Manager for Meridian SL-100.

—End—

Procedure 45
Check FTP settings in the Meridian SL-100

Step Action

In the Meridian SL-100

- 1 Enter:


```
>ftp; >showsvusers
```

The MAP shows:

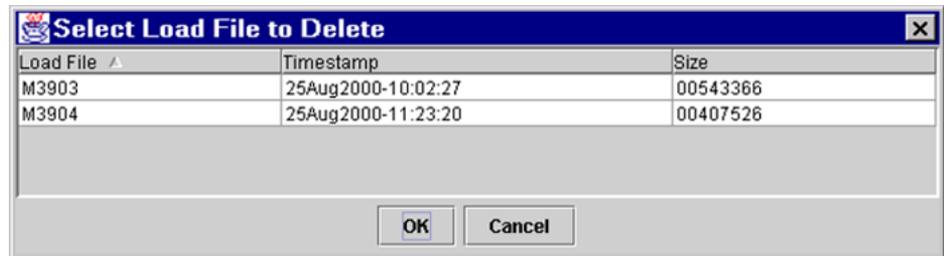
```
1. Sessions Reserved -> 2 Sessions Active -> 0 -
  USERNAME: admin      DEFAULTDIR: /SFDEV
  ACTIVE SESSIONS:
  0 ABSOLUTEpathname: yes  COMMAND TIMEOUT: forever
```

—End—

Procedure 46**Delete M3900 firmware files from RAM****Step Action**

- 1 Access the "Select Load File to Delete" box to select M3900 firmware load files on selected Expects. The window in [Figure 41](#) "Select Load File to Delete window" (page 133) opens.

Figure 41
Select Load File to Delete window



The window contains the following items:

- **Load files list** - List of M3900 firmware load files from selected Expects. If you select more than one Expec, only those common to all are listed. If no files are common to all selected Expects, no files are listed.
- **OK button** - When pressed the highlighted load file is selected. The selected file is then used in the subsequent delete operation.
- **Cancel button** - Cancels the file selection.

—End—

M3900/EXPEC Firmware Manager**Functional Description**

The M3900/EXPEC Firmware Manager will support Meridian SL-100 customers and Meridian SL-100 customers who transition to CS2100. Please refer to the M3900/EXPEC *Firmware Manager User Guide*, 555-4001-317 for more information.

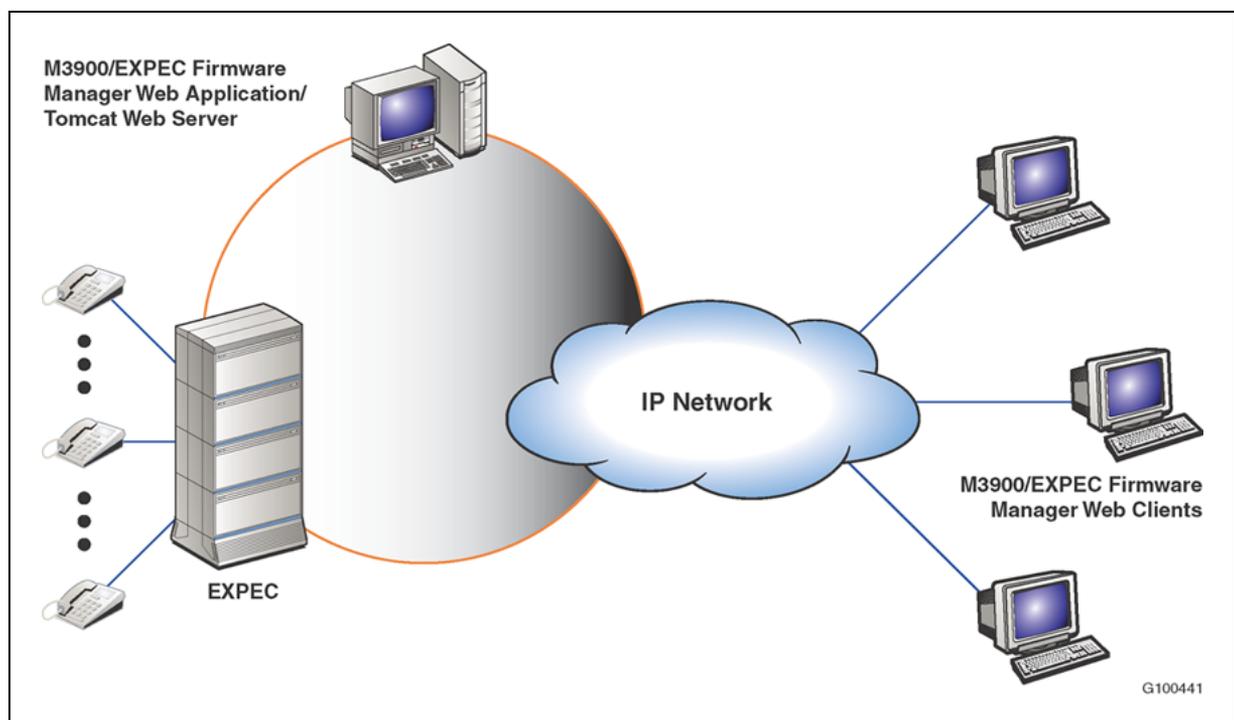
The MEFM application has the following responsibilities:

- authenticate client's login and provide Client Sessions

- maintain client profile information in the database
- manage connections to the EXPECs
- manage the connections to the file servers for firmware downloads
- manage secure connections to the web clients
- schedule downloads
- maintain a log of activity and errors

Figure 42 "M3900/EXPEC Firmware Manager Web Application/Tomcat Web Server" (page 134) shows the M3900/EXPEC Firmware Manager Web Application and Tomcat Server.

Figure 42
M3900/EXPEC Firmware Manager Web Application/Tomcat Web Server



The following sections describe the features provided by the MEFM.

Security The MEFM provides the following security features

- Limited user access - only users who have logged in with a correct password may use the MEFM system. An administrator will have full access to all the features of the system.
- Secure web access - SSL will be used between the web clients and the web server.

- Encryption - encryption will be used for passwords and other confidential information stored on the server.

Scheduler The scheduler feature is used to schedule downloads of software either to the M3900 sets or the EXPEC. Current status of all scheduled jobs will be available from the web client. Scheduled jobs will be kept in a "database" until they are executed.

Web interface The web client will have the following functions:

- user login
- ability to add:
 - file server
 - user
 - EXPEC
- ability to view:
 - EXPEC load details
 - activities
 - active jobs
- list EXPECs
- ability to edit/delete:
 - EXPECs
 - file servers
 - users
 - jobs
- get firmware load
- schedule status
- list M3900 sets
- view M3900 load details
- set bootable load
- remove load
- view log report
- view scheduled job list
- view active job list /status

- display error

EXPEC load management MEFM will provide load management for the EIPE controller card (EXPEC). Load management of the EXPEC loads will include the ability to:

- view loads on the EXPEC
- initiate the transfer of loads to the EXPEC
- delete loads from the EXPEC
- set the "bootable" load for the EXPEC
- see the space remaining on the EXPEC
- initiate the transfer of a load file to multiple EXPECs
- provide a record of the completion of each load transfer

The loads are transferred through the Ethernet portion the EXPEC card. The advantage of transferring the load files through the Ethernet is that the transfer time is greatly reduced and that the IPE remains in service while the load file is being transferred. Once a load is transferred to the IPE and set as the "bootable" load, the IPE must be BSY'd (busied) and RTS'd (returned to service) before the new load takes effect on that IPE.

Integrated Element Management Systems (IEMS) For information about configuration management in Nortel Networks Integrated EMS, please refer to *Integrated EMS Configuration Management*, NN10330-511.

M3900 firmware maintenance MEFM provides load management and load maintenance for the M3900 sets. The load management functions include:

- view loads on the EXPEC and M3900 sets
- initiate the transfer of loads to the EXPEC
- delete loads from the EXPEC
- set a "bootable" load for each version of the M3900 on the EIPE
- see the space remaining on the EXPEC
- initiate the transfer of a load file to multiple EXPECs
- provide a record of the completion of each firmware load operation

The maintenance of the loads will include the ability to schedule sending the loads to one of the M3900 or sequentially to all M3900s on an IPE or multiple IPEs.

Logging A flat file is used to store information about items including:

- errors
- critical events such as startup of the application
- firmware load operation

Database An XML database is kept for persistent information including:

- user information
- scheduled jobs
- EXPECs
- M3900s
- other application configuration information

Web server The Apache Tomcat web server will handle transaction handling, client sessions, and serving up web pages.

Integration with the CS2100 NMS The cross-platform of Java and the web interface will make the integration with the CS2100 NMS possible since the CS2100 NMS's strategy is to be on the Solaris platform with web interfaces.

System architecture

The M3900/EXPEC Firmware Manager architecture allows the load transfer function of the M3900 and EXPEC to be integrated into the CS2100 management system. The web application is written in Java and runs on a Tomcat web server providing cross-platform support. The architecture consists of the EXPEC controller card which communicates with the M3900 sets. The MEFM application communicates with the EXPEC through Telnet. The web clients communicate with the MEFM application through secure HTTP using a browser. FTP may be used, if necessary, to retrieve the firmware load from a file server.

MEFM application system requirements

The MEFM application will have the following system requirements.

Hardware requirements:

- 500 MHZ Pentium II, or equivalent processor
- minimum of 128 MB of RAM
- minimum of 300 MB hard drive space available
- a network connection to EXPEC/M3900 Firmware Manager client

Software requirements include:

- Sun Java JDK
- Tomcat Web server
- Windows 2000 Operating Systems with latest service pack installed

MEFM Web Client requirements

The web client application will have the following requirements

Hardware Hardware requirements include

- a network connection to EXPEC/M3900 Firmware Manager server
- a color monitor
- a computer system capable of running Microsoft Internet Explorer 4.0 or above

Software Microsoft Internet Explorer 4.0 or above, or Netscape Navigator

Environmental, power, and safety considerations

Purpose

This chapter addresses the following considerations for the M3900 Series Meridian Digital Telephones:

- temperature and humidity
- power consumption
- line engineering
- accessory environmental information
- safety and electromagnetic compatibility

Temperature and humidity

Table 30 "Temperature and humidity" (page 139) shows the temperature and humidity for operating and for storage.

Table 30
Temperature and humidity

| Item | Range |
|-----------------------------|--|
| Operating temperature | 0° to 50°C (32° to 104°F). |
| Operating relative humidity | 5% to 95% (noncondensing). At temperatures above 34°C (93°F) relative humidity limited to 53 mbar of water vapor pressure. |
| Storage temperature | -50° to 70°C (-58° to 158°F). |
| Storage relative humidity | 5% to 95% (noncondensing). At temperatures above 34°C (93°F) relative humidity limited to 53 mbar of water vapor pressure. |

Power consumption

Table 31 "M3900 sets power consumption" (page 140) shows the power consumption for the M3900 series sets.

Table 31
M3900 sets power consumption

| | M3901 | M3902 | M3903 | M3904 | M3905 |
|-----------------|-------|-------|-------|-------|-------|
| Idle | 29.3 | 37.3 | 42.5 | 31.5 | 15.02 |
| H/F Nominal | | 45.7 | 48.7 | 37.5 | |
| H/F Maximum | | 64.3 | 59.7 | 46.4 | |
| DBA Idle | | | | 39.29 | 15.31 |
| DBA H/F Nominal | | | | 45.9 | |
| DBA H/F Maximum | | | | 52 | |
| 2 KBA Idle | | | | 33.42 | 14.98 |

Note: Units of measurement are milli-amps (ma).

The M3905 uses a switch mode power supply and the M3904 uses a linear power supply. When a handset is off-hook with maximum volume, the current increases 2 to 5 ma using linear power supply and 1.5 ma on the M3905 using switch mode power supply.

Line engineering

M3900 Series Meridian Digital Telephones use twisted pair wiring on transmission lines. The maximum acceptable loop length is 1067 m. (3500 ft.), assuming 24 AWG (0.5 mm) standard twisted wire with no bridge taps. A 15.5 vdB loss at 256 kHz defines the loop length limit. Longer lengths are possible, depending on the wire's gauge and insulation.



WARNING

Use only the line cord provided with the telephone. A line cord designed for another telephone can cause damage to the equipment.

Accessory environmental information

Meridian External Alerter and Recording Interface

Table 32 "MEARI specifications" (page 141) provides MEARI specification and environmental information.

Table 32
MEARI specifications

| Item | Specification |
|--|---|
| Ring relay contact | Normally open, max 50 mA 30 V. |
| Call status relay contact | Normally open, max 50 mA 30 V. |
| Record audio level (RJ12 jack) | Nominal - 12dBm, 600 Ohm. |
| Record audio level (3.5 mm jack) | Nominal - 52 dBu, microphone level. |
| Operating temperature | 0°C to 50°C. |
| Humidity | 5% to 95% Relative Humidity. |
| Dimensions (H x W x D) | 1.25 x 3.75 x 4.65 inches. 3.2 x 9.5 x 11.8 centimeters. |
| Weight | 4 oz. 104g. |
| M3902, M3903, M3904, M3905 all equipped with M3900 series ACM and power supply | Compatible. |

Accessory Connection Module

Table 33 "Environmental information" (page 141) provides ACM specification and environmental information.

Table 33
Environmental information

| Item | Range |
|-----------------------------|---|
| Operating temperature | 0° to 50°C (32° to 104°F). |
| Operating relative humidity | 5% to 95% (non-condensing). At temperatures above 34°C (93°F) relative humidity limited to 53 mbar of water vapor pressure. |
| Storage temperature | -50° to 70°C (-58° to 158°F). |
| Storage relative humidity | 5% to 95% (non-condensing). At temperatures above 34°C (93°F) relative humidity limited to 53 mbar of water vapor pressure. |

Safety and electromagnetic compatibility

The M3900 series digital telephones have been tested and found to comply with the Safety and Electromagnetic Compatibility (EMC) standards shown in [Table 34 "Safety and Electromagnetic Compatibility standards"](#) (page 142).

Table 34
Safety and Electromagnetic Compatibility standards

| Standard | Description |
|--------------------------|--|
| EN 60950/IEC 950 | Safety of Information Technology Equipment including Electrical Business Equipment (Europe). |
| EN 41003 | Particular Safety Requirements for Equipment to be Connected to Telecommunications Network (Europe). |
| UL 1459 | Safety Telecom (USA). |
| UL 1950 | Safety Information Technology Equipment (USA). |
| CSA 22.2 225 | Safety Telecom (Canada). |
| CSA 22.9 950 | Safety Information Technology Equipment (Canada). |
| AS 3260, TS001, TA-1302 | Safety (Australia). |
| EMKO-TSE (74-SEC) 203/92 | Nordic Deviations to EN 60950. |
| BABT | Safety (UK). |
| JATE | Safety (Japan). |

Terminology

| | |
|--------------|-----------------------------|
| AAB | Automatic Answerback Key |
| AAK | Answer Agent |
| ACD | Automatic Call Distribution |
| ACDNR | ACD Not Ready |
| ACM | Accessory Connection Module |
| ADO | Asynchronous Data Option |
| AEMK | Answer Emergency |
| ALC | Automatic Level Control |
| ASL | ACD Agent Status Lamp |
| ATA | Analog Terminal Adapter |
| AUD | Automatic Dialing |

| | |
|-----------------|---------------------------|
| AUL | Automatic Line |
| AUTODISP | Automatic Display Feature |
| BC | Bearer Capability |
| BCLID | BCLID Feature |
| BLF | Busy Lamp Field |
| BLK | Blank Key |
| CAG | Call Agent Key |
| CFDVT | CFD Variable Timer |
| COS | Class of Service |
| CFTOD | Call Forward Time of Day |
| CFU | Call Forward Universal |
| CFW | Call Forward |
| CI | Command Interpreter |
| CIF | Controlled Interflow |
| CLI | Calling Line Identify |

| | |
|----------------|---------------------------------------|
| CLSUP | Call Supervisor |
| CNF | Four to 30-way Conference |
| CNF C06 | Six-party Conference |
| COT | Customer Originated Trace |
| CPK | Call Park |
| CPND | Calling Party Name Display |
| CPU | Call Pick-up |
| CTD | Carrier Toll Denied |
| CTR | Call Transfer |
| CWD | CWD Key |
| CWT | Call Waiting |
| CXR | Transfer |
| DASK | ACD Display Agents |
| DBA | Display-based Access Expansion Module |
| DCE | Data Communications Equipment |

| | |
|--------------|--|
| DCPK | Directed Call Park |
| DDN | Data DN (Audits Only) |
| DIN | Denied Incoming |
| DLC | Digital Line Card |
| DND | Do Not Disturb |
| DN | Directory Number |
| DQS | Display Queue Status |
| DQT | Display-Queue Threshold |
| DRING | Distinctive Ringing |
| DTMK | Data Terminal Mode Keys |
| EBO | Executive Busy Override |
| EIA | Electronic Industries Association |
| EMK | Emergency |
| EMW | Executive Message Waiting |
| EXPEC | Extended Peripheral Equipment Controller |

| | |
|----------------|-----------------------------------|
| EXT ATR | External Alerter |
| FAI | Feature Activation Indicator |
| FCC | Federal Communication Commission |
| FDHF | Full Duplex Handsfree |
| FXR | Fast Transfer |
| GIAC | Group Intercom All Calls |
| GIC | Group Intercom |
| GLISTEN | Group Listening |
| ICM | Intercom |
| IDF | Intermediate Distribution Frame |
| KBA | Key-based Access Expansion Module |
| KSF | Key Set Short Hunt |
| KSMOH | Key Set Music On Hold |
| LCD | Liquid Crystal Display |
| LED | Light Emitting Diode (lamp) |

| | |
|-----------------|---|
| LOB | Line of Business |
| LPIC | Primary Interlata Carrier |
| MBK | Make Busy Key |
| MBSCAMP | MBS Camp On Key |
| MCH | Malicious Call Hold |
| MDF | Main Distribution Frame |
| MEARI | Meridian External Alerter and Recording Interface |
| MSB | Make Set Busy |
| MSMWI | Multiple Set Message Waiting Indication |
| MSQS | Multistage Queue Status |
| MWI | Message Waiting Indicator |
| MWQRY | Message Query |
| MWT | Message Waiting |
| NGTSRVCE | ACD Night Service Key |
| OBS | Observe Agent |

| | |
|---------------|----------------------------|
| OLS | Originating Line Select |
| OPTKEY | Option Key |
| OTM | Optivity Telephony Manager |
| PBL | Private Business Line |
| PDN | Primary Directory Number |
| PIC | Primary Interlata Carrier |
| PRL | Privacy Release |
| QBS | Query Busy Station |
| QCK | Quick Conference Key |
| RAG | Ring Again |
| RMB | Random Make Busy |
| RNP | Ringing Number Pick-up |
| SACB | Subscriber Call Block |
| SCA | Selective Call Accept |
| SCF | Selective Call Forward |

| | |
|----------------|-----------------------------------|
| SCL | Speed Call Long |
| SCMP | Series Completion |
| SCRJ | Selective Call Rejection |
| SCS | Speed Call Short |
| SCU | Speed Call User |
| SDN | Secondary Directory Number |
| SDY | AT&T Line Study |
| SEC | Security Code |
| SERVORD | Service Order |
| SHU | Stop Hunt |
| SLQLG | Single Line Queueing |
| SLU | Subscriber Line Usage |
| SMDI | Simplified Message Desk Interface |
| SOR | Station Origination Restrictions |
| SPB | Special Billing Codes |

SSAC
Station-Specification Authorization Codes

SUPR
Supervisor Feature

TLS
Terminating Line Select

TRKDISP
Trunk Member Display

TWC
Three-Way Calling

TWC PUB
TWC PUB Line Options

UCDLG
UCD Login Key

WML
MDC/RES Warm Line-NC0011

Communication Server 2100

M3900 Meridian Digital Telephones Reference Manual

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