
Meridian 1 and Succession Communication Server for Enterprise 1000

Meridian Integrated RAN

Description, Installation, and Operation

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About this document

This document applies to Meridian 1 Internet Enabled and Succession Communication Server for Enterprise (CSE) 1000 systems.

This document is a global document. Contact your system supplier or your Nortel Networks representative to verify that the hardware and software described is supported in your area.

This document provides information about the implementation of the Meridian Integrated RAN (MIRAN) in the Meridian 1 system. It describes the MIRAN operation, installation, configuration, administration, applications, and maintenance.

This document focuses on the application and administration of the MIRAN for the Recorded Announcement (RAN) and Music-On-Hold (MOH) features.

The purpose of this document is to instruct the user how to install, configure, operate, and maintain the Meridian Integrated RAN (MIRAN) as a part of the overall Meridian 1 system.

MIRAN Release 2.0 requires that Meridian 1 run on generic software X11 release 19 or later.

What's new

This document has been updated to cover information on the upgrade of the MIRAN product to MIRAN Release 2.0. With the introduction of MIRAN Release 2.0, current MIRAN users (those with the NTAG36AA card) can take advantage of the following new features by means of a software upgrade (with a permanently installed PCMCIA disk) and new keycode:

- 366 day calendar

- Multi-user login and channel control
- An enhanced telephone user interface (TUI)
- Royalty-free music
- Disk storage query and expanded recording storage
- Improved C: drive access time

For new MIRAN users, and for existing MIRAN users who upgrade to the MIRAN Release 2.0 card (the NTAG36AC card), the MIRAN Release 2.0 card provides the following additional features:

- Text-based user interface accessed through the LAN
- An embedded Browser User Interface (BUI) providing web-based OA&M and NTP access through the LAN
- FTP download of voice and music files
- Storage capacity for eight minutes of voice and music recordings
- Six minutes of compressed, royalty-free music – the royalty-free music file can be deleted to gain 1.5 minutes of storage capacity for other recordings.
- Online access to this NTP (553-3001-112) through the BUI – the online NTP can be deleted to gain four minutes of storage capacity for voice and music recordings.
- Time & date synchronization with the Meridian 1 system through the LAN

Structure of this document

The following describes the structure of this document:

“Description” on page 17 describes the MIRAN functional and physical characteristics.

“Engineering guidelines” on page 49 describes system hardware and software requirements and MIRAN configuration options.

“Installation and configuration” on page 71 describes how to prepare the Meridian 1 equipment, how to install the MIRAN into the Intelligent Peripheral Equipment (IPE) module or shelf, and how to connect it to the external voice sources and voice delivery devices.

This section also describes the MIRAN configuration, RAN implementation, MIRAN expansion, channel assignment administration, and access security administration.

“RAN Application: Telephone User Interface” on page 215 describes different RAN applications based on use of the terminal OA&M access using menus and commands.

“RAN Application: Telephone User Interface” on page 215 describes how to use a DTMF telephone to record new announcements and how to place existing announcements in or out of service.

“RAN Application: The Browser User Interface” on page 235 describes how to operate and administer the MIRAN card(s) using a web-based server hooked up to the LAN.

“Maintenance” on page 257 describes how to maintain and troubleshoot the MIRAN card and associated equipment.

Appendix A: “Sound recording, codes, and interfaces” on page 267 lists the MIRAN display hexadecimal codes as well as pin assignment and connector types for external connections to the MIRAN. It also contains an example of how to configure the system for telephone set-based administration.

Appendix B: “Product integrity” on page 275 describes reliability, environmental specifications, product integrity, and regulatory standards for the MIRAN.

Description

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This section contains information on the following topics:

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This chapter describes the NTAG36 Meridian Integrated RAN (MIRAN), both at a system level and at a card level. It describes functions, specifications, applications, and operation of the MIRAN. This chapter contains the following sections:

- Card overview, describing the function of the MIRAN card and its place in the Meridian 1 system
- Features overview, describing the basic features of the MIRAN product, including the new features for MIRAN Release 2.0
- Technical description, including descriptions of the structure of the MIRAN card, the faceplate and backplane connections

Card overview

The MIRAN provides multi-tasking voice processing applications such as Recorded Announcement (RAN) and Music-On-Hold (MOH). The MIRAN is an Intelligent Peripheral Equipment (IPE) card compatible with Meridian 1 Options 21E, 51, 51C, 61, 61C, 71, 81, and 81C. It is also compatible with Options 11E and 11C systems, and SL-1 systems NT and XT that support IPE cards.

The MIRAN operation requires X11 release 19 or later. The MIRAN application software comes preinstalled in MIRAN.

The MIRAN communicates with X11 system software through trunk signaling announcements over the DS-30X link and emulates the Enhanced Universal Trunk card. The same LD programs used to configure the Enhanced Universal Trunk card, trunk routes, and trunk functions are also used to configure the MIRAN routes.

The MIRAN provides up to eight internal one-to-one trunk emulation ports/channels and one or two external multi cross-connect channels to support RAN and MOH applications. Each multi cross-connect channel can connect to up to 16 external trunk ports at the MDF.

The MIRAN card comes in three sizes: small, medium, and large. The largest single MIRAN card provides 8 trunk emulation ports/channels and 2 multi cross-connect channels, for a total of 10 RAN/MOH channels.

Use PCMCIA Flash memory cards to do the following:

- expand the MIRAN announcement storage memory
- install new RAN and MOH applications
- backup announcements from the MIRAN to the PCMCIA card

The MIRAN provides internally eight to fourteen minutes of announcement storage capacity. If eight to fourteen minutes of announcement storage capacity is sufficient, a Flash memory card is not necessary for this purpose.

A maximum of 16 MIRAN cards can be linked in a V-LAN configuration to increase the RAN capacity. This V-LAN configuration allows one terminal to access any MIRAN in the chain for the purpose of maintaining and configuring individual MIRAN cards and their RAN and MOH applications.

Both the MIRAN card and the MIRAN Release 2.0 card connect to a maintenance terminal (for text-based OA&M) over an RS-232 port, or over the CE-MUX using the pass-thru feature on Options 11E and 11C.

The MIRAN Release 2.0 card can also connect to the maintenance terminal through a 10BaseT LAN connection. Through the LAN connection, telnet into the MIRAN Release 2.0 card to perform text-based OA&M. The internal web server of the MIRAN Release 2.0 card can also be used to perform web-based OA&M.

Note: The LAN connection for the MIRAN Release 2.0 card is optional, but necessary for telnet access, web-based OA&M, and FTP downloading of files.

The MIRAN also contains a Telephone User Interface (TUI). A DTMF telephone can be used to do the following:

- configure the MIRAN
- record new announcements
- swap existing announcements in and out of service

To use the TUI, one of the eight one-to-one ports/channels (port 7) must be configured as a DID port dedicated to telephone access.

Both cards connect to an external music source over an analog I/O port. This port can also be used to input music or voice to a tape recorder. An additional analog port is available on the backplane.

Figure 1 on page 20 illustrates the communication bus structure between the MIRAN and the Meridian 1 CPU, as well as the Peripheral Controller in the IPE module. This structure works for both the original MIRAN card and the MIRAN Release 2.0 card.

Figure 1
MIRAN interface structure in the Meridian 1 system (Option 1)

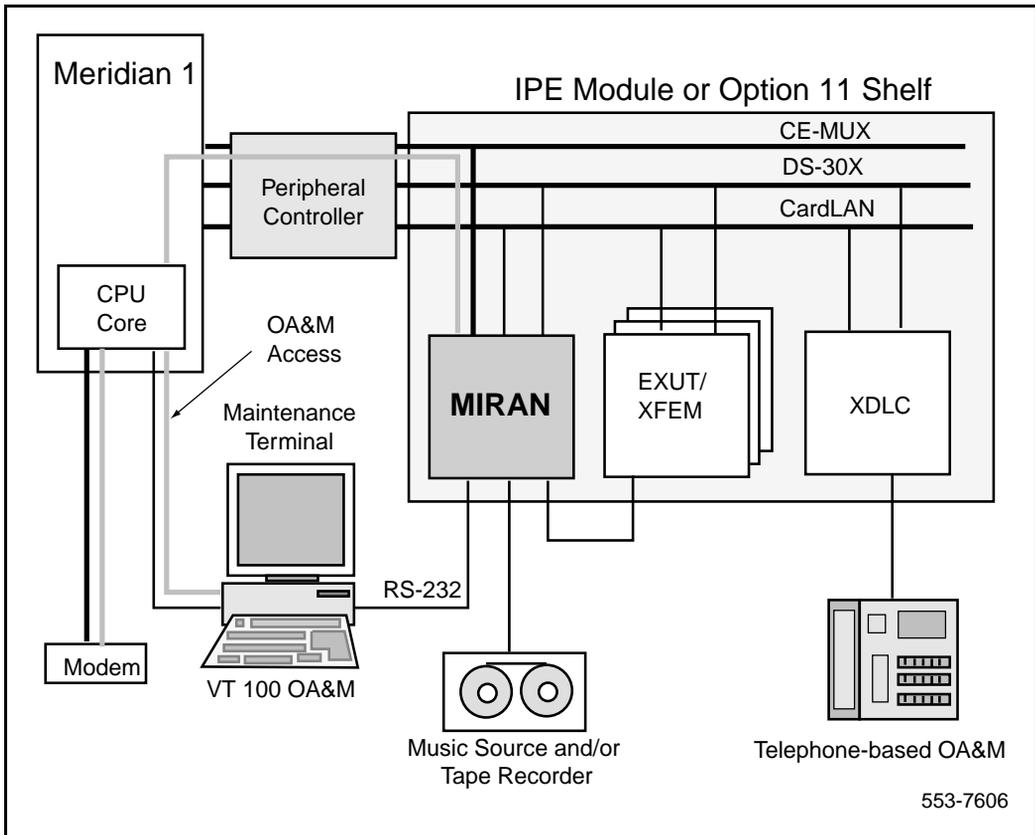
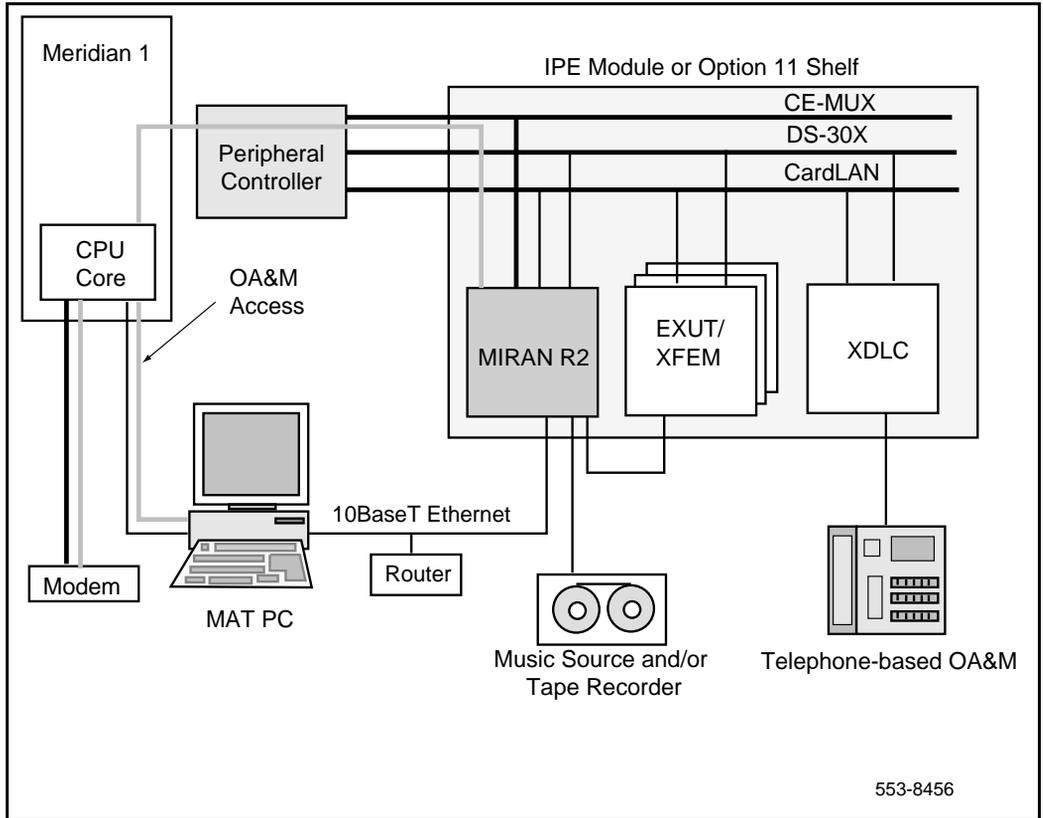


Figure 2 on page 21 illustrates the communication bus structure between the MIRAN Release 2.0 card, the Meridian 1 CPU, and the Peripheral Controller, making use of an LAN connection.

Figure 2
MIRAN Release 2.0 interface structure in the Meridian 1 system (Option 2)



The enhanced flexibility of the MIRAN card provides:

- easily expandable, industry-standard architecture (small, medium, and large configuration, controlled by keycode)
- a set of both standard and proprietary interfaces
- compatible with all systems that support IPE cards
- embedded real time operating system
- support for CE-MUX and Card-LAN
- simplicity to RAN and MOH applications (no external devices or cables)
- versatile storage capacity features provide for:
 - A recording storage capacity of up to eight minutes on the base MIRAN
 - Unlimited different announcements per channel per day changeable on a time-of-day and day-of-year basis
 - In-system upgradeable MIRAN with plug-in PCMCIA ATA Flash cards to more than five hours of storage
 - Up to eight internal one-to-one RAN or MOH port/channels, which support continuous and start/stop RAN mode (seven, if one is used for telephone-based OA&M access)
 - Two cross-connect channels, which cross-connect to a maximum of 16 trunk ports each, to provide a total of 32 RAN or MOH channels. These cross-connect channels support only continuous RAN mode.
 - Music and voice storage to the limits of the available Flash memory
- a versatile set of recording features that include the following:
 - Different announcements programmed to play at different times of day and different days of the year
 - FTP downloading of voice and music files through the LAN
 - Batch files, which enable rapid reconfiguration in case of emergency
 - Swapping of “in-service” and “in-reserve” announcements using a DTMF telephone

- Announcement backup and restore capability
- Transfer of existing announcements to the MIRAN
- New announcements recorded over a telephone or from common plug-in audio equipment (e.g., CD players, cassette players, etc.)
- Password-protected RAN recording from any DTMF telephone using a simple voice menu interface
- Connection of up to two external analog (music) sources for recording and playing
- Music recording provided on one faceplate input port

MIRAN design characteristics

The MIRAN card supports voice processing by providing connectivity to the Meridian 1 system, voice storage capacity, and access to an OA&M facility.

The MIRAN card (both NTAG36AA and NTAG36AC):

- is based on an industry standard 486 processor core
- uses standard interface buses (PCI, ISA, and PCMCIA)
- accesses all 32 DS-30X voice/signaling timeslots
- supports CE-MUX and Card-LAN interfaces
- provides two RS-232 serial ports for maintenance access (through the faceplate 8-pin Mini-DIN connector and through the MDF). Port B connects to the terminal, and port A is used together with port B to serially connect multiple MIRAN cards into a V-LAN for a single terminal access.
- provides two cross-connect channels (both input and output) for connecting to analog trunk cards

The MIRAN Release 2.0 card (NTAG36AC) also supports connection to the LAN through an ethernet adapter.

MIRAN channel overview

One-to-one recording ports/channels on the MIRAN emulate the Enhanced Universal Trunk card.

In addition to the eight one-on-one trunk emulation ports/channels, up to two multi cross-connect channels are also available. Thus, ten total ports/channels are available in the largest of the three MIRAN capacity options. See Table 1.

Table 1
MIRAN capacity options

MIRAN capacity option	No. of Multi cross-connect ports/channels	No. of one-to-one ports/channels (North America)	No. of one-to-one ports/channels (International)
Small	1	4*	2*
Medium	2	4*	4*
Large	2	8	8
* Also includes port 7 for the telephone user interface (TUI)			

Note: Each MIRAN capacity option consists of the NTAG36 MIRAN card, the NTDK57 Security Device, and a Keycode.

Each of the two cross-connect channels can be cross-connected with 16 (600 Ohm) trunks or 16 (900 Ohm) trunks to provide a total of up to 32 ports/channels.

For each capacity option in Table 1, port 7 on the MIRAN card can be configured for telephone-based OA&M.

Note: Only one-to-one ports/channels have Enhanced Universal Trunk card emulation; the two multi cross-connect channels do not.

Supported applications

MIRAN supports the following applications:

- 1st RAN
- 2nd RAN
- Intercept treatment
- Music on hold
- Automatic wake-up

Features overview

Text-based user interface

The text-based user interface provides menus and commands so that all necessary MIRAN OA&M functions can be performed. The software for this is part of the MIRAN-specific OA&M tool running under VxWorks; it is independent of Meridian 1 software.

There are two ways to use the text-based user interface to access all commands and options:

- Use the menu system
- Enter commands on the command line

To use the MIRAN text-based user interface, the MIRAN card must be accessed through a VT-100 type terminal. The MIRAN Release 2.0 card supports a serial connection between the terminal and the card.

The MIRAN Release 2.0 card also supports telnet access to the text-based user interface over a LAN. The serial interface takes precedence over the telnet interface. If a user has logged in through the serial interface, no one can log in through telnet. If someone has logged in through telnet, another user can remove the telnet user by logging in through the serial interface.

Note: Nortel Networks recommends HyperTerminal for Windows 95/98 for PC-based telnet access.

Refer to “RAN Application: Text-based user interface” on page 131 for more information on the text-based user interface.

Telephone User Interface

A Telephone User Interface (TUI) within the MIRAN application allows the application to be accessed from *any* Dual Tone Multiple Frequency (DTMF) telephone. The DTMF telephone can be either internal or external to the PBX system. The TUI uses a series of simple voice menus and prompts for quick modification of announcements and other simple tasks.

Note: It is necessary to handle extensive changes through the text-based user interface or the Browser User Interface (BUI).

The following can be done through TUI:

- record new announcements
- play announcements
- assign and unassign announcements to MIRAN ports
- access the MIRAN card security ID

The following *cannot* be done through the TUI:

- set the MIRAN card clock
- assign time-of-day restrictions to announcements
- access system configuration functions
- change passwords

The TUI cannot be accessed while another user uses the text-based user interface.

The TUI allows a user to login and issue specific commands through the dialpad of a Meridian Digital Telephone or any standard DTMF telephone. For security, login requires a valid user name and password, which the administrator supplies. The MIRAN card does not identify itself until a valid user name and password has been entered.

The TUI reduces the MIRAN one-to-one ports available for RAN or music from eight to seven. Because there is no messaging between MIRAN cards, port 7 must be reserved for the TUI on each MIRAN card that requires this interface. If a MIRAN card does not require the TUI, then all eight ports on the card are available for RAN or music.

Refer to “RAN Application: Telephone User Interface” on page 215 for more information on the TUI.

Browser User Interface

The MIRAN Release 2.0 Browser User Interface (BUI) is a web server embedded in the MIRAN Release 2.0 card. The BUI allows the MIRAN card to be accessed through a common web browser, to perform OA&M functions. The BUI provides OA&M screens similar to the text-based user interface.

The BUI option is available to MIRAN Release 2.0 users when the MIRAN card(s) is connected to the LAN through an ethernet adapter. For equipment and configuration information regarding the MIRAN BUI, refer to “LAN access installation and setup” on page 110.

The BUI is not necessary to perform OA&M for the MIRAN Release 2.0 card. All OA&M functions can be performed through the text-based user interface. The MIRAN BUI allows the MIRAN Release 2.0 card to be accessed through the LAN using a common web browser. For the web browser, Nortel Networks recommends using Netscape 3.0 or later, or Internet Explorer 3.0 or later. Any web browser used must support HTML frames.

Refer to “RAN Application: The Browser User Interface” on page 235 for more information on the BUI.

User interface multiple-access restrictions

Multiple users can simultaneously access a MIRAN Release 2.0 card. However, there are restrictions under which simultaneous access can occur. shows the various situations in which multiple access can occur.

Table 2
User interface multiple-access restrictions

A user has logged in through the...	Can another user can log in simultaneously through the...			
	Text UI?	TUI?	BUI?	FTP?
Text-based User Interface (Text UI)	No	No	Yes	Yes
Telephone User Interface (TUI)	No	No	Yes	Yes
Browser User Interface (BUI)	Yes	Yes	No	Yes
File Transfer Protocol (FTP)	Yes	Yes	Yes	No

Note: MIRAN Release 2.0 does not support simultaneous access through the same interface type.

MIRAN Release 2.0 does not support simultaneous access through the text-based user interface and the TUI.

Calendar assignment feature

The MIRAN Release 2.0 software introduces the concept of Calendar assignments for use in scheduling announcements. Assignments are made on a day and month basis, regardless of year, utilizing a 366 day calendar.

Calendar assignments

The Calendar assignment method of assigning files is more powerful and flexible than the “day, time, and filename” method which was employed in the original MIRAN product.

When a Calendar assignment is created, it is assigned a ‘weighting’ based on how specific the assignment is. Assignments are sorted in the Calendar list according to this weighting. The more specific assignments appear at the top of the list while the least specific assignments appear at the end. MIRAN searches the Calendar list when making channel assignments. The first entry in the list that matches the current day, time and channel will be the correct choice. If a match can not be found in the Calendar list, the search will revert to the assignment lists.

All Calendar assignments consist of the following components:

- Channel entry – can be a single channel, **6**; a range of channels, **2-4**; a combination, **0,2-4,7**; or a wildcard, *****, to denote all channels.

Note: When a wildcard is used, it affects only the channels to which the current user has access. These are the channels that are assigned to the user’s channel group.

- Time entry – can be a single time, **9:00**; a range of times, **9:00-10:15**; or a wildcard, *****, to denote the entire day. A wildcard can also be entered instead of the minutes, **9:***, to indicate the entire hour. Table 3 gives examples of time entries. The entries are sorted in order of most specific to least specific and indicates the order in which the entries would appear in the Calendar list.

Table 3
Time entry examples – sorted from most specific to least specific

Time entry	Comment
9:00-9:30	Range of times (no wildcards allowed) Note: The range '10:00-16:30' is more specific than '10:*' due to the use of the wildcard.
9:*	Entire hour (9:00 to 9:59)
9:00	9:00 until the end of the day (9:00 to 23:59)
*	Entire day (0:00 to 23:59)

- Date entry - can be a single date, *20/2*; a range of dates, *20/2-25/2*; a single day, *MON*; or a range of days, *MON-WED*. A wildcard, *, can be used instead of the day or the month; for example, *25/** would denote the 25th of each month, and **/12* would denote every day in December. A wildcard used alone, *, denotes every day.

Table 4 gives examples of date entries. The entries are sorted in order of most specific to least specific and indicates the order in which the entries would appear in the Calendar list.

Table 4
Date entry examples – most specific to least specific

Date Entry	Comment
20/1	Specific date
20/1-25/1	Range of dates (no wildcards allowed)
1/*	1st day of every month
*/1	Every day in January
MON	Every Monday
MON-WED	Every Monday through Wednesday Note: THUR-MON is also a valid range
*	Every day of the year

Note: The time and date definitions can be combined as part of a “descriptor”. Refer to “Calendar descriptors” on page 30.

- Filename or Analog channel – specifies the file to play when the assignment is active, or the analog channel (either ANALOG0 or ANALOG1) to take input from for playthrough.

Calendar descriptors

Calendar descriptors are a user-friendly way to store frequently used times and dates for Calendar assignments. Each date and time pair are assigned a descriptor name which denotes the period.

For example, to make assignments for the hour a business is closed for lunch, 13:00 to 14:00 Monday through Friday, instead of making the assignment manually, define a calendar descriptor called *‘lunch’*. The descriptor *‘lunch’* would have a date entry of *‘MON-FRI’* and a time entry of either *‘13:*’*, or *‘13:00-14:00’*. Assignments would then be made using the descriptor *‘lunch’*. The *‘lunch’* descriptor can be re-defined at any time, and it will take effect for all assignments using *‘lunch’*. Use calendar descriptors to avoid manually changing each assignment. This eliminates the chance that an assignment might be missed.

Table 5 on page 31 shows sample Calendar Descriptors that could be used in making assignments. These Descriptors are sorted from most specific to least specific and appear in the same order in which they would appear in the list of Calendar assignments.

Note: *Jan_sales_closed* has the time defines as '*'. This means at all times; however, because of the way the entries are sorted, *jan_sales_open* is always found during times when the store is open. During the time the store is closed, the search will 'fall through' to the *jan_sales_closed* assignment.

Table 5
Calendar Descriptor examples – most specific to least specific

Descriptor name	Date	Time	Comment
christmas	25/12	*	Christmas Day
jan_sales_open	1/1-20/1	9:00-5:30	January Sales - Store Open
jan_sales_closed	1/1-20/1	*	January Sales - Store Closed
1st_of_month	1/*	*	1st Day of Every Month
weekend	Sat-Sun	*	Weekends
weekday	Mon-Fri	*	Weekdays
morning	*	8:00-10:30	Every Morning
opening_time	*	9:00	Store Opening Time
always	*	*	Always

Calendar Files

The Calendar List is saved as a file called *_ASSIGNS.CAL*, and the Calendar Descriptors are saved in a file called *_DESCRIP.CAL*. The Calendar Descriptors file is loaded before the Calendar file so that the descriptors used in the Calendar file can be validated.

Note: Multiple Calendar List files and Descriptor files can be created, where each file contains a group of calendar assignments or descriptors. These files can be swapped in and out, and transferred to other MIRAN Release 2.0 cards. For more information, refer to “The Calendar Operations menu” on page 142 and “The Descriptor Operations menu” on page 150.

System time and date synchronization

MIRAN Release 2.0 introduces a system time and date synchronization feature. This feature requires an Lan connection and is therefore not available to initial MIRAN users upgrading to MIRAN Release 2.0 software.

The MIRAN Release 2.0 pack downloads the system time and date from the Meridian 1 on boot-up. The MIRAN Release 2.0 pack remotely logs in to the Meridian 1 and starts a terminal session. Once the session has been established, the MIRAN Release 2.0 accesses LD 2 and extracts the system time and date by sending the TTAD command. The session is ended and the real-time clock is set accordingly. The IP address of the Meridian 1 is stored in _CONFIG.DAT. The use of this feature cancels the OA&M commands SETDAY, SETTIME, and SETDATE.

Refer to “Configuring Ethernet for Time & Date Synchronization” on page 86 and “The Time & Date Configuration menu” on page 184 for instructions on configuring system time and date synchronization.

Note: MIRAN Release 2.0 can either synchronize the time and date with the Meridian 1 system, or have the time and date set manually.

Music-On-Hold option

A card can have music routes and trunks programmed to provide Music-on-hold service to callers. MIRAN Release 2.0 has approximately five minutes of royalty-free music on drive C:. This royalty-free music comes pre-assigned to channel 0 and is set to play ‘always’.

This assignment can be changed. The royalty-free music file can be deleted if it is not needed.

With Music Broadcast, and X11 Release 23 or later, up to 64 callers can simultaneously listen to music on a single channel. Earlier releases only permit one caller at a time to listen to music on a single channel

External music

A permanent connection is maintained, over the analog input port, between an external music source such as a CD player or tape recorder, and the MIRAN. This port is available at the MDF and on the MIRAN faceplate. External music is the most suitable when the music must be changed frequently.

Analog input is not confined to music. It can be used in many applications such as a “talking timetable” or advertisements that are changed on a regular basis. It is often used on the larger systems where a piece of audio equipment is dedicated for this purpose.

Note: MIRAN cannot receive a 600 Ohm or 900 Ohm music source.

Internal music

Internal music can be used when a music source is not permanently connected to the MIRAN. A technician can use an external music source to record the music onto the MIRAN, where it is stored digitally in Flash memory.

RAN password security

Different levels of access to the MIRAN card for the RAN application provide security for recorded announcements. Three levels of passwords are used:

- distributor
- administrator
- user

The password protection for telephone set-based OA&M is transparent to the system in which the MIRAN card is installed.

Administrator level password

MIRAN Release 2.0 introduces a new password level – the administrator password. The administrator default password is “**admin000**”. The Administrator level permits the following actions:

- creation of new Users
- assignment of passwords
- channel access permissions
- deletion of existing Users
- viewing/editing User information.

Individual Users can alter their own password. The Administrator can alter any User's password and channel access permissions.

Distributor level password

The distributor level password is alphanumeric, up to 16 characters long. The distributor default password is "**distrib0**". The distributor level is the next level of access above the basic user. The distributor is able to access the base code self-test and diagnostic procedures. This password level provides announcement monitoring for Card-LAN, DS-30X, and CE-MUX, 8051 signals.

User password

The user password must be only numeric and up to 16 digits long. The user default password is "**user0000**". The general OA&M password allows a user to login to the MIRAN administration menu. This password level provides unrestricted access to all of the RAN-based, and most of the MIRAN card level, administration options. The user password does not provide access to any diagnostic procedures.

Technical description

The NTAG36 MIRAN effectively implements RAN and MOH applications for Meridian 1 and systems supporting IPE cards.

The MIRAN provides faceplate and backplane interfaces, which are used to connect external RAN and music sources and maintenance terminals to the MIRAN. The hardware description provides information on the faceplate connectors and indicators as well as the backplane connections to the MDF.

Hardware architecture

The MIRAN is designed with the 486 microprocessor as its core. The microprocessor interfaces directly to the DRAM array and cache memory and to the rest of the system over PCI and SAI buses. Peripheral interfaces such as RS-232 maintenance interface and PCMCIA interface, connect to one or the other of these buses.

Meridian 1 interfaces such as Card-LAN, DS-30X, and CE-MUX connect to a dedicated microcontroller. This microcontroller communicates with the core microprocessor over the dual-ported RAM.

To optimize the installation of the MIRAN and the external connections to the MIRAN, the MIRAN card provides faceplate connections for occasional use of the external devices and the backplane or MDF connections for permanent connection of these external devices.

Figure 3 on page 36 shows a high level block diagram of the MIRAN card components.

MIRAN hardware list

Table 6 on page 37 lists specific MIRAN hardware components designed to support RAN and MOH applications in the Meridian 1 and SL-1 systems.

Figure 3
MIRAN block diagram

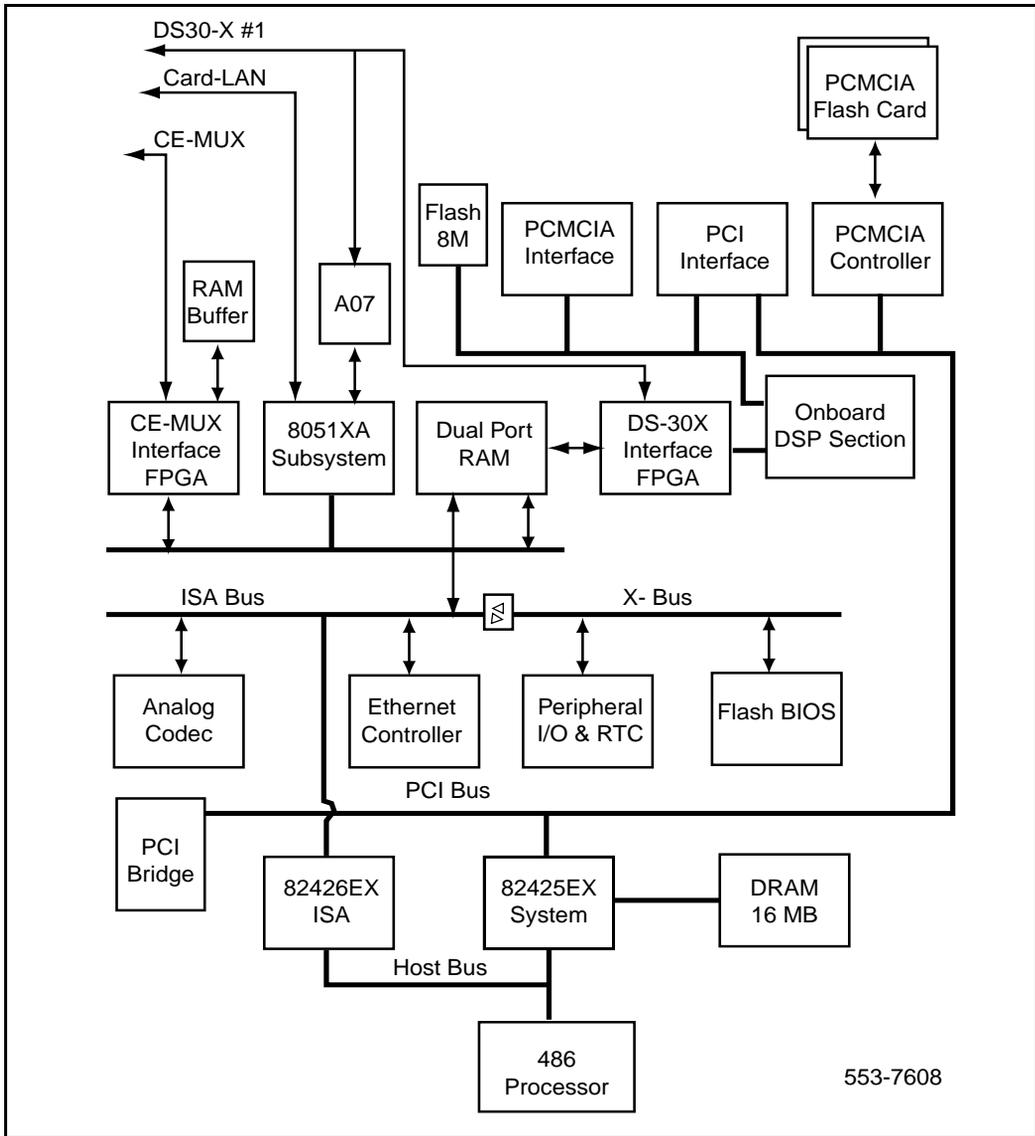


Table 6 does not list external equipment such as terminals, telephones, and recorders, because they can be non-proprietary products.

Table 6
MIRAN hardware list

Component	Description
NTAG36 Meridian Integrated RAN (MIRAN)	An IPE card that provides RAN and MOH applications over the Meridian 1 system. (NTAG36 plus security device plus keycode=NTAG88)
NTAG81AA Audio Cable	Connects external analog music source or a recording device to the 3.5 mm Audio Jack on the MIRAN faceplate. This is a splitter cable that provides the audio input signal on one connector and the audio output signal on the other connector.
NTAG81BA Maintenance Extender Cable	A 5 m (16.4 ft) cable that extends the NTAG81CA, NTAG81GA, or the NTAG81DA Cables when connecting a terminal to the MIRAN. Has one DB9 male and one DB9 female connector.
NTAG81CA Maintenance Cable*	A 3 m (9.8 ft) cable that connects the terminal to the MIRAN 8-pin Mini-DIN maintenance port on the faceplate. It is terminated with an 8-pin Mini-DIN male connector and a DB9 female connector.
NTAG81DA Maintenance Splitter Cable	A 3 m (9.8 ft) cable that connects the Mini-DIN connector on the MIRAN faceplate to a terminal or to an adjacent MIRAN to form a LAN daisy-chain. It has an 8-pin Mini-DIN connector on the common side and two DB9 connectors, one female (to connect to the maintenance terminal) and one male (to connect to the next MIRAN card in the V-LAN chain) on the split side.
NTBK48AA Terminal Cable	Connects the Option 11E/11C SDI port to the terminal.
NTAG81GA Multi-I/O Adapter Cable	Mounts to the I/O panel on the rear of the IPE module and to the MDF. Contains one RJ-45 connector for connection to the LAN, one DB9 female connector for connection to a maintenance terminal (either directly or through a modem), and one 50-pin connector for connection to the MDF.
3MB, 8MB, and 40MB PCMCIA Cards	Use for software upgrades, backups, and/or storage.
Note: The NTAG81CA maintenance cable is not needed if using the NTAG81GA multi-I/O adapter cable.	

Faceplate connectors and indicators

Figure 4 on page 39 shows the NTAG36 MIRAN card faceplate. It shows the connectors, a hex display, a status LED, a reset button, and a PCMCIA card slot.

The MIRAN faceplate provides the following interface connections:

Audio jack

This 3.5 mm audio jack provides access to a single analog input and a single analog output. It is also used to connect external analog sources, such as a tape recorder or CD player, in order to record into MIRAN Flash memory. or route it directly through a trunk emulation port into Meridian 1 for MOH. The audio jack can also be used to back up announcements from the MIRAN or transfer them onto another MIRAN card.

The audio jack provides an external connection to Port ANALOG0 for a short term connection of an external analog source.

Where a permanent connection to an external music source is required, the external connection should be made at the MDF not at the audio jack. At the MDF, the port signals are duplicated and an additional audio input and output is provided.

Status LED

The MIRAN faceplate red LED indicates the following:

- the enabled/disabled status of the card
- the self-testing result during power up or card insertion into an operational system

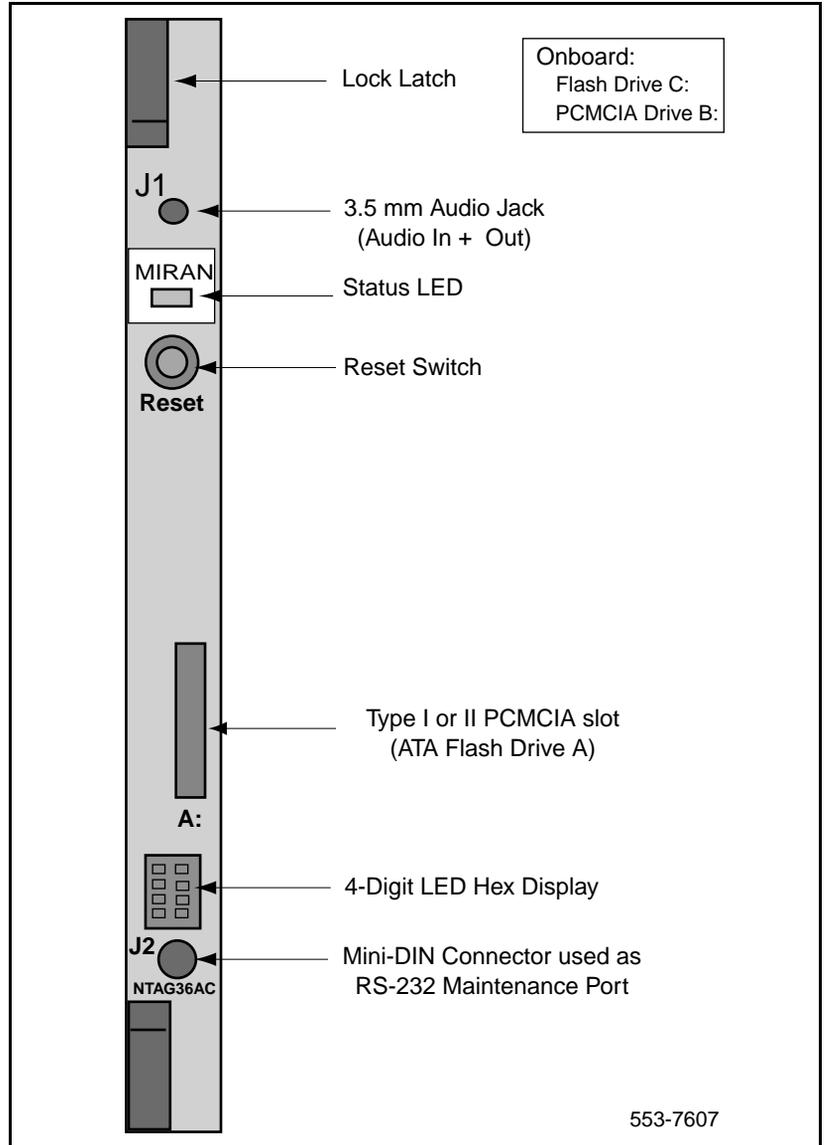
Reset switch

The reset switch on the faceplate manually resets the MIRAN card.

PCMCIA slot

This slot accepts standard PCMCIA cards including ATA Flash, and Type I or II ATA compatible. This slot is used for MIRAN software upgrades, backing up announcements, and additional storage.

Figure 4
The NTAG36 MIRAN faceplate



Maintenance hex display

This is a four-digit LED-based hexadecimal display that provides the status of the MIRAN at all times. It also provides an indication of fault conditions, and the progress of PCMCIA-based software upgrades or backups.

It also indicates the progress of the internal self-test in the form of T:xx. See section Appendix A: Sound recording, codes, and interfaces on page 267. Upon successful completion of the test and the start-up of the RAN application, the code “RAAn” is displayed, where **n** is the V-LAN card number (in hexadecimal). If cards are not connected in a V-LAN configuration the display will show RAA0.

RS-232 Asynchronous Maintenance Port

An 8-pin mini-DIN socket on the MIRAN faceplate provides access to both RS-232 ports. This faceplate port can provide access to the MIRAN for OA&M purposes. This connector is duplicated on backplane or at the MDF. It can be used to make a permanent terminal connection.

On-board PCMCIA slot

The MIRAN circuit board has a slot that accepts Type I, Type II, and Type III standard PCMCIA Flash cards. This connector is located on the MIRAN printed circuit board, not on the faceplate. This PCMCIA slot is used to increase voice and music memory storage. The slot can also be used to upgrade a MIRAN NTAG36AA card to MIRAN Release 2.0 software.

MIRAN I/O panel and MDF connections

As well as the faceplate connections, the MIRAN Release 2.0 card provides the following connections through the I/O panel:

- a connection to the MDF cable (which provides two external cross-connect channels, RS-232 ports A and B, and audio ports)
- a connection to the multi-I/O adapter cable

Multi cross-connect channel connection

Multi cross-connect channels are accessible at the MDF. These two external cross-connect channels can be cross-connected with 16 600 Ohm trunks or 16 900 Ohm trunks each, to provide a total of up to 32 trunks cross-connections. These channels do not emulate a trunk.

MDF ports A and B

A serial port, port B, is provided on the MIRAN card for maintenance functions. Access to this port is at the MDF. A terminal can be permanently connected here.

A second serial port, port A) is provided to enable the serial connection of multiple MIRANs. Port B connects to the terminal and port A is used together with port B to serially connect multiple MIRAN cards (up to 16 cards) into a maintenance V-LAN. This configuration enables one, permanently installed maintenance terminal to have access to up to 16 MIRAN cards. All 16 cards can be reached by telnet with this configuration. Refer to Figure 18 “Multiple MIRAN card connections over the RS-232 port at the MDF” on page 121.

CE-MUX

The CE-MUX interface provides a standard multiplexed CPU bus to allow the MIRAN to emulate standard equipment circuit cards for Option 11E and 11C maintenance access.

Analog ports

The MIRAN supports two analog input ports in order to connect external sources for recording announcements and/or music, or to provide two analog channels that can be mapped into up to eight logical RAN units.

The audio jack on the MIRAN faceplate provides access to a single analog input and a single analog output.

At the MDF, two analog inputs and two analog outputs are available for backing up stored announcements onto audio cassette tape.

The two channels are independent of each other in order to provide two analog ports for recording and playback. Tip and Ring pairs at the MDF provide the ability to permanently connect the external analog sources to both Port ANALOG0 and Port ANALOG1.

Multi-I/O adapter cable

The multi-I/O adapter cable mounts to the I/O panel on the rear of the IPE module and to the MDF. It contains one RJ-45 connector for connection to the LAN, one DB9 female connector for connection to a maintenance terminal (either directly or through a modem), and one 50-pin connector for connection to the MDF.

Note: It is very important that the 50-pin connector of the NTAB81GA cable be secured to the I/O connector using the mounting screw provided on the top of the 50-pin connector, as well as the fastener on the bottom.

The NTAB81GA cable provides a shielded RJ-45 coupler at the end of its LAN interface. This provides the connection point to the customer's LAN equipment. Shielded Cat. 5 cable must be used for connection from this point to the customer's Hub or Router.

Note: LAN connection is an option available with MIRAN Release 2.0. It is not necessary for basic MIRAN operation.

MIRAN reset and self-test functions

Reset is executed immediately following a power-on or system-level reset. This procedure initializes the processor before proceeding with the power-on self-test. The MIRAN attempts to log the source of each reset condition. This information can later be displayed on the maintenance terminal to find the cause of the problem, and the time and date when it occurred.

Hard reset

A hard reset is equivalent to a card insertion or loss of power. It results in a total reset of all hardware elements and a full hardware and software initialization. A hard reset is always followed by a power-up sequence. This process may last up to 2 minutes.

A hard reset can be initiated by any of the following activities:

- card-level maintenance over the RS-232 port
- MIRAN sanity reset
- excessive soft resets in a given time period
- by the administrator after upgrading MIRAN software

The excessive soft reset is an attempt at software-level recovery that repeatedly fails. The only other option in that case is to reset the hardware and reload the operating system.

Soft reset

The soft reset re-initializes software elements on the card and corresponds to a reboot of the card. The system checks for the presence of an alternative boot source (for example, a newly inserted PCMCIA Flash card) during soft resets. This process lasts approximately 1 minute. During power up procedure, the system checks first drive A: then drive B: and finally drive C: for configuration information.

A soft reset can be initiated by any of the following:

- card-level maintenance
- excessive sanity non-maskable interrupts in a given time period

The last situation would arise if numerous unsuccessful attempts were made to recover from a software (or hardware) error condition before exceeding a pre-defined threshold.

Executed immediately after a power-on or reset, this procedure:

- performs a minimum-level of hardware testing
- performs a full diagnostic check
- opens a communication path to an external maintenance terminal so that the MIRAN diagnostic status can be displayed during self test

Diagnostic self-test

This tests the installed hardware and does the following:

- determines the integrity of the hardware
- establishes MIRAN configuration in terms of its processor, RAM capacity, and Flash memory

The MIRAN displays any unexpected results on the maintenance port and updates the Flash configuration. It can also indicate self-test results on the MIRAN faceplate hex display.

BIOS initialization

This process initializes the base hardware, using configuration information stored in Flash. The BIOS layer provides initialization and device drivers.

The BIOS layer initializes the hardware and boots the operating system, using the low level reset, self-test, and BIOS initialization.

Built-in monitoring functions

The operating system provides some low level access over a maintenance port for debugging purposes.

Sanity monitoring

This background task checks the sanity of the system, particularly in relation to other tasks that may be tying up CPU or memory resources. It attempts to restore normal MIRAN operation when the performance has degraded to an unacceptable level. If all else fails, this task restarts the MIRAN in order to return to a functional state.

Responsibility for monitoring the MIRAN sanity is shared between the 486 and the 8051XA processors. The 8051XA monitors the 486 by sending periodic diagnostic polling announcements. A response is expected within a given time period. Failure of the 486 to respond initiates a recovery procedure, which repeats the announcement at least two more times, followed by generating a soft reset to the 486, and eventually a full board-level reset. Failure to recover at that point results in a permanent error code on the hex display.

Software security

To provide security for the RAN and music applications as well as to prevent unlawful product usage, the MIRAN uses a security device and keycode security approach.

Security overview

A security device and keycode mechanism is necessary to protect against unlawful MIRAN feature usage, because industry-standard PCMCIA cards are used as the software medium on the MIRAN. All upgrades of either channel capacity or application software are restricted to a given MIRAN card and are accurately tracked to allow for satisfactory handling of field repairs and incremental upgrades.

Security is required for the following upgrades:

- port/channel capacity upgrades
- feature enhancements
- new applications

Security is not required for the following upgrades:

- Flash memory capacity expansion
- customer recorded prompts
- backup and restore operations
- application patching/bug fix

Security device

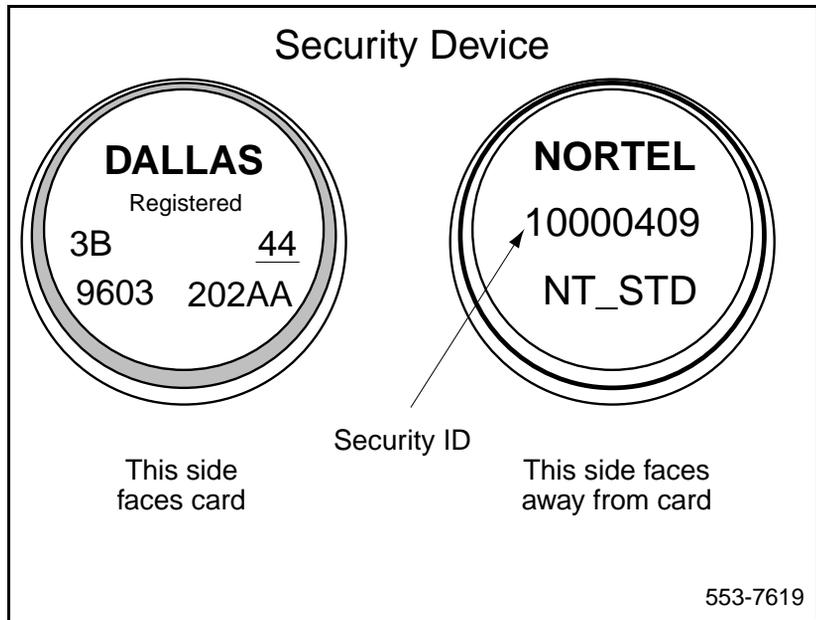
This button-sized device has a unique 12-digit laser-etched code that cannot be overwritten. In addition, it contains 1kbit of PROM to:

- identify the button as part of a Nortel product
- provide an 8-digit security ID

Figure 5 on page 46 illustrates an example of a security device that contains a unique 12-digit laser etched code and 1kbit of PROM preprogrammed with Nortel specific information. The 'NORTEL'-side of the security device shows the 8-digit security ID. The security device must be installed with the 8-digit inscription facing away from the card.

Note: If the security device is properly installed, the Nortel Networks logo, with the 8-digit inscription underneath, is visible. Figure 6 on page 47 shows the position of the security device on the MIRAN card.

Figure 5
Example of a security device



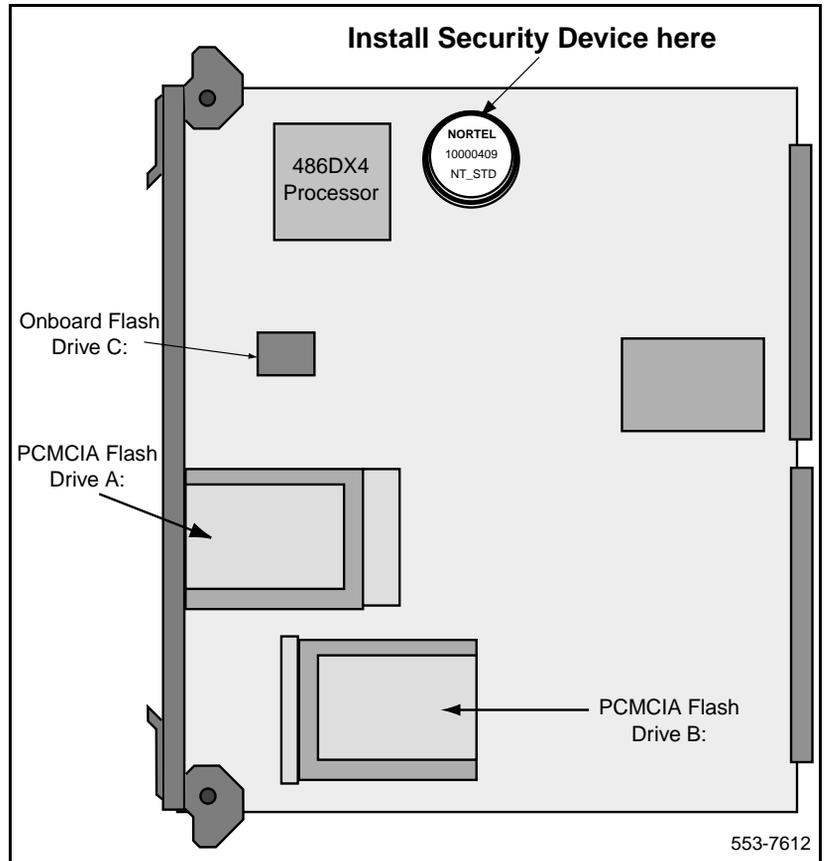
Security ID

The security ID is the number that the customer must query from the MIRAN maintenance port prior to ordering an upgrade. It is read from the security device and it is unique for each MIRAN card.

The security ID number can be found:

- at the top left-hand corner of the terminal-based OA&M menu or screen
- by using a command on the telephone set-based OA&M access
- on an adhesive label in the box
- on the shipping paperwork

Figure 6
Security device installation in the MIRAN card



Keycode

Nortel Networks provides the customer with a keycode to enable them to install any desired upgrade. The keycode is entered over a terminal using the local maintenance port on the MIRAN card. The keycode consists of three sets of eight digits and must match the Security ID on the MIRAN card.

Keycodes can enable more functionality in an existing application, such as adding ports and features, or can be used with a PCMCIA Flash card to provide new software features. The MIRAN comes from the factory equipped with a keycode. Spare and repaired MIRAN cards are not equipped with a keycode nor with the security device. For the MIRAN to operate correctly, the keycode must be installed.

Engineering guidelines

Contents

This section contains information on the following topics:

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Reference list

The following are the references in this section:

- *System Engineering* (553-3001-151)
- *Features and Services* (553-3001-306)

Meridian 1 general system engineering guidelines are described in *System Engineering* (553-3001-151). The following information deals specifically with engineering guidelines for MIRAN planning and implementation. For MIRAN technical characteristics, refer to Appendix B: “Product integrity” on page 275.

X11 software requirements

The MIRAN card emulates the Enhanced Universal Trunk card. The MIRAN card uses the existing Trunk Administration LD 14 and Trunk Route Administration LD 16 programs to configure the MIRAN trunk parameters and MIRAN trunk routes.

To support the MIRAN functions, the Meridian 1 system must run X11 release 19 or later software. However, the X11 release and the available software options that the user has affect the functions of the MIRAN card. The following paragraphs detail the differences.

For users with X11 release 22.08 or 21.41 and earlier

Note: This section applies to customers who do not have the MLSS option.

The two MIRAN cross-connect channels each support up to 16 RAN or MOH listeners. To do this, connect each cross-connect channel to as many as 16 EXUT trunks, with each trunk route programmed to run in continuous RAN mode.

Note: The two EXUT trunk routes, associated with the two cross-connect channels, must be programmed to run in continuous mode (RTYP = CON in LD 16).

The eight MIRAN one-to-one channels each support only one RAN listener per RAN route.

For users with X11 release 21.45 or 22.16 and later, but without RAN Broadcast

Note: This section applies to customers who have the MLSS option, but do not have RAN Broadcast.

The two MIRAN cross-connect channels each support up to 16 RAN or MOH listeners. To do this, connect each cross-connect channel to as many as 16 EXUT trunks, with each trunk route programmed to run in continuous RAN mode.

Note: The two EXUT trunk routes, associated with the two cross-connect channels, must be programmed to run in continuous mode (RTYP = CON in LD 16).

With the MLSS RAN mode, the MIRAN one-to-one channels can each have the same RAN announcement or music assignment, and the same MLSS RAN trunk route assignment. Therefore, multiple callers can hear the same RAN announcement, although listening on different MIRAN one-to-one channels. One large MIRAN card in MLSS mode supports up to eight callers listening to the same announcement.

Note: Nortel Networks recommends that port/channel 7 of the MIRAN card be reserved exclusively for the Telephone User Interface (TUI); this configuration leaves a maximum of seven listeners hearing the same announcement on a single MIRAN card.

For example, using one of these X11 software releases, ten callers must be able to hear the same RAN announcement. There are two options with MIRAN:

- Use ten MIRAN one-to-one ports/channels (two MIRAN cards), placing all of them in the same MLSS RAN route and placing the same recording on all ten channels.
- Use one MIRAN cross-connect channel (one MIRAN card), connecting it to ten EXUT ports (two EXUT cards) and placing each EXUT port in continuous RAN mode.

Note: The MLSS (multi-channel start/stop control) RAN mode allows playing of the same recording independently on multiple channels over the same RAN route.

For users with X11 release 23 or greater and RAN Broadcast

The two MIRAN cross-connect channels can each support up to 16 RAN or MOH listeners. To do this, connect each cross-connect channel to as many as 16 EXUT trunks, with each trunk route programmed to run in continuous RAN mode.

Note: The two EXUT trunk routes associated with the two cross-connect channels must be programmed to run in continuous mode (RTYP = CON in LD 16).

With the RAN Broadcast feature, each internal one-to-one channel can support up to 30 callers simultaneously using a single timeslot. RAN Broadcast also provides other benefits, such as the ability to stagger announcements based on time or number of callers in queue, and the ability to provide MOH until a RAN is available.

Note: The cross-connect channels do not support RAN Broadcast if they are cross-connected to more than one trunk input. If a cross-connect port is connected to just one trunk input, that port can be configured for RAN Broadcast (RTYP = MCON in LD 16).

Option 11C with RAN Broadcast

Option 11C systems come from the factory with 12 pre-installed RAN Broadcast connections. This allows 12 callers to hear the same RAN announcement on a single one-to-one channel. Additional RAN Broadcast connections for the Option 11C can be purchased.

Large Meridian 1 systems with RAN Broadcast

Large Meridian 1 systems do not come with pre-installed RAN Broadcast connections. RAN Broadcast connections (SW150A) can be purchased in increments of one.

Example:

A customer with a large Meridian 1 system requires RAN for two incoming trunk routes. Each route requires a first RAN for up to 25 callers and a second RAN for up to 20 callers. The system then requires 90 RAN Broadcast connections and one MIRAN small card.

The MIRAN is supported by:

- Meridian 1 options 21E, 51, 51C, 61, 61C, 71, 81, and 81C
- SL-1 systems NT and XT upgraded to support IPE cards
- Option 11E and 11C (main cabinet for CE-MUX capabilities)

Table 7 lists the Meridian 1 modules and card slots suitable for MIRAN installation.

Table 7
Card slots available for MIRAN installation in different modules

Meridian 1 module	Suitable card slots
NT8D37BA/EC IPE modules, NT8D11BC/ED CE/PE modules	All available IPE card slots
NT8D37AA/DC IPE modules	Slots 0, 4, 8, and 12
NT8D11AC/DC CE/PE modules	Slot 0

MIRAN requirements

The MIRAN equipment can be engineered to meet a specific site and application requirements. Select the number of ports/channels and the size of the memory required to support current and future requirements. The MIRAN is available in a basic form that provides a limited number of ports/channels, and minimum memory size. The basic MIRAN can be easily upgraded by building on the existing basic platform to increase the number of ports/channels and the memory size.

MIRAN channel capacity options

The MIRAN comes in three port/channel capacity options. These options are listed in Table 8.

Table 8
MIRAN channel capacity options

MIRAN option	No. of Multi cross-connect ports/channels	No. of one-to-one ports/channels (North America)	No. of one-to-one ports/channels (International)
Small	1	4	2
Medium	2	4	4
Large	2	8*	8*

Note: Port/channel 7 can be used as a DID port for telephone-based OA&M access; in this case, the large MIRAN option has only seven one-to-one channels available for RAN or MOH.

For each capacity option, port 7 can be configured as a DID port for telephone-based TUI OA&M access. In this case, port 7 of the large MIRAN option is not available for RAN or MOH applications. Port 7 on a large MIRAN can be configured for RAN and MOH when not needed for telephone-based OA&M access.

The small and medium MIRAN options continue to have all one-to-one ports/channels available for RAN and MOH, because port/channel 7, which is used for telephone-based OA&M access, does not count against the port capacity for these two options.

MIRAN listener capacity options

The size of the MIRAN card (small, medium, or large) affects the number of simultaneous calls that the MIRAN card can support. The RAN Broadcast feature also affects the number of simultaneous calls that the MIRAN card can support.

Without RAN Broadcast, each internal one-to-one port can support a single call at a time. Each external cross-connect port can connect to up to 16 EXUT ports, which enables the MIRAN card to support up to 16 additional simultaneous call per external port.

With RAN Broadcast, each internal one-to-one port can support 30 simultaneous listeners. The external cross-connect ports do not support RAN Broadcast; therefore, each external port still supports 16 simultaneous callers.

Table 9 lists the total call-handling capacity for each MIRAN size, with and without RAN Broadcast.

Table 9
MIRAN call-handling capacities

MIRAN size option	Call capacity without RAN Broadcast	Call capacity with RAN Broadcast
Small	20 (18) ¹	136 (76)
Medium	36 (36)	152 (152)
Large ²	39 (39)	242 (242)

Note 1: Numbers in parentheses refer to the call capacities for the international MIRAN version.

Note 2: The large configuration assumes port 7 has been configured as a DID route for Telephone User Interface (TUI) access.

Supported RAN modes

The MIRAN card supports the following RAN modes for the internal and the external channels:

- Internal one-to-one ports/channels support continuous and Level Start (LVL) RAN and MOH modes.
- Internal one-to-one ports/channels support Multi-Level Start/Stop (MLSS or MLVL) RAN and MOH modes.
- External cross-connect channels support Delay Dial (DDL) and Immediate (IMM) continuous RAN and MOH modes.

Note: MIRAN supports Auto-Wake-Up. To configure this feature on MIRAN, refer to Automatic Wake Up in *Features and Services* (553-3001-306).

Voice storage capacity

Expand the MIRAN storage capacity by installing PCMCIA ATA Flash cards into either the faceplate slot (drive A:) or the internal slot (drive B:). Nortel Networks recommends using drive B: for voice storage and drive A: for software upgrades, because drive A: is accessible on the faceplate, making the PCMCIA card easy to remove.

Table 10 lists the memory size and the corresponding announcement recording time.

Table 10
MIRAN voice storage capacity expansion

Memory allocation	Recording time
Base MIRAN card (NTAG36AA) memory	4 minutes
Base MIRAN Release 2.0 (NTAG36AC) card memory	8 minutes*
40 MB PCMCIA Flash memory	80 minutes
A 170 MB PCMCIA card	340 minutes
Each additional 1 MB of Flash memory	2 minutes
*The royalty-free music file (filename: music.sbc) occupies approximately 1.5 minutes of the available 8 minutes of recording time. The online version of this document (filename: miran.pdf) occupies approximately 4 minutes of available 8 minutes of recording time. Either or both of these files can be deleted to gain additional voice storage capacity.	

External cross-connect channel characteristics

Table 11 displays electrical specifications for the MIRAN RAN cross-connect output channels A0 and A1.

Table 11
Characteristics of the cross-connect output channels (A0 and A1)

Characteristic	Specification
Terminal impedance	*600/900 Ohms
Supervision type	Continuous, level, or pulse
dc signaling maximum loop length	600/900 Ohms loop
Ground potential difference	±1 V
* Up to 16 trunks with 600 Ohms and 16 trunks with 900 Ohms can be cross-connected.	

Table 12 displays electrical specifications for the MIRAN RAN cross-connect input channels (ANALOG0 and ANALOG1).

Table 12
Characteristics of the cross-connect input channels (ANALOG0 and ANALOG1)

Characteristic	Specification
Terminal impedance	10 kΩ
Line input	1 V rms or 2.83 V peak-to-peak

Power and ground requirements

The IPE module power supply (ac or dc) provides power to the MIRAN.

Note: Power supplied at the IPE module backplane at each card slot exceeds the power requirement for each MIRAN card. Therefore, there is no restriction on the number of MIRAN cards in the IPE module.

Table 13 displays the MIRAN power requirements.

Table 13
MIRAN power requirements

Configuration	+/-15V	5V	Total Power
Basic 8-port/channel	7.0 W	8.0 W	15 W
8-port/channel ± 4MB Flash	7.0 W	8.3 W	15.3 W

The maximum IPE module per-slot power budget is 30 Watts, with an effective limitation of 20 Watts for thermal compensation. A dc/dc converter provides the 3.3 volts required by the 486 processor and the PCMCIA interfaces.

Note: Power supplied at the IPE module backplane at each card slot exceeds the power requirement for each MIRAN card. Therefore, there is no restriction on the number of MIRAN cards in the IPE module.

Table 14 shows the maximum current required from each power supply rail.

Table 14
Backplane power available (per card slot)

Supply Rail	Available on backplane	With dc-dc converter	MIRAN
3.3 V	—	2400 mA	8 W
5 V	2000 mA	2000 mA	10 W
+/- 15 V	800 mA	366 mA	10 W

The processor contains three separate grounds: logic, analog, and frame. Logic ground connects to the processor ground. The CODEC has its own separate analog ground that connects to the logic ground at a single point.

Each MIRAN I/O port routed to the backplane has its own ground to simplify connections.

External equipment requirements

The MIRAN can perform RAN applications without any external connections.

External devices must be connected to the MIRAN faceplate connector or to the MDF, to perform any of the following operations:

- text-based (or terminal-based) OA&M
- web-based OA&M
- connecting external music sources to the MIRAN
- recording RAN announcements or music

Maintenance terminal requirements

A VT100 terminal, or a PC emulating a terminal, is used to:

- perform RAN and MIRAN administration
- perform maintenance and diagnostics on each MIRAN
- access and configure any MIRAN in a V-LAN configuration

Up to 16 MIRANs can be serially connected into a V-LAN connection to provide access to each MIRAN card from a single terminal.

A terminal can use:

- a menu system to perform administrative and maintenance functions
- commands that are entered on the command line

The terminal must be connected to the MIRAN RS-232 interface. The connection can be made:

- at the mini-DIN connector on the MIRAN faceplate using the NTAG81CA or NTAG81DA Maintenance Cable for occasional use
- at the MDF tip/ring pairs using a terminal cable that must be less than 50 feet long. The cable is not supplied.

For a Single Terminal Access (STA), MIRAN can be connected to an MSDL port operating in the STA mode. This way, MIRAN and other application cards installed in the system can be accessed from a single terminal.

Terminal interface must be set at 9600 baud, 8 data bits, 1 stop bit, and no parity. Flow control is not supported.

Table 15 lists the terminal-based OA&M access method for different system options over the SDI or MSDL ports.

Table 15
Terminal-based OA&M access for different system options

System option	Access description
Option 11E – remote	Connect a modem to the MIRAN RS232 Port B through the MDF. For multiple cards, use V-LAN and connect the first card in the chain to the modem.
Option 11E – local	Connect a PC or terminal directly to the MIRAN RS232 Port B through the faceplate connector and maintenance cable or through the MDF. For multiple cards, use V-LAN and connect the first card in the chain to the terminal/PC.
Meridian 1 Options 21-81C	Use STA feature on the MSDL card where MIRAN is one of the monitored systems. For multiple cards, use V-LAN and connect the first card in the chain to the MSDL.
Option 11C – CEMUX passthru	Configure MIRAN as an LSSL in LD 17 and use AX <port no.> command at the system TTY to passthru to MIRAN (no cabling required). Multiple MIRAN cards can be given different port numbers. Card must be in the main cabinet.
Option 11C – Cabled passthru	Connect MIRAN to CPU port 1 or 2 through the maintenance cable and 9 to 25 RS232 adapter. Configure port as LSSL. Use AX <1> or <2> to passthru to MIRAN. VLAN can be used for multiple cards. Card may reside in the expansion cabinet.

Telephone for OA&M access

An Unrestricted (UNR) DTMF telephone must be used. To perform telephone-based OA&M, set one of the internal one-to-one MIRAN ports/channels (port 7) to be a DID trunk in the Meridian 1 system. The DID trunk route makes MIRAN port 7 accessible through a route access code from any unrestricted DTMF telephone. To access a MIRAN, enter a valid user name and password. Small and medium size MIRAN options also use port 7 for telephone-based OA&M access.

External analog sources

The MIRAN provides a facility to connect tape recorders or CD players to do the following:

- record onto the Flash memory on the MIRAN
- record announcements from the MIRAN onto a tape for backup
- record backed-up announcements to another MIRAN card

Refer to Figure 12 “Analog device connection at the MDF” on page 110.

These external analog sources can be connected to the following:

- the 3.5 mm Audio Jack on the MIRAN faceplate (one input and one output) by using the NTAG81AA Audio Cable
- at the MDF. The cable is not supplied.

MIRAN hardware list

Table 16 on page 62 lists specific MIRAN hardware components designed to support RAN and MOH applications in the Meridian 1 and SL-1 systems.

Table 16 does not list external equipment such as terminals, telephones, and recorders, because they are (or can be) non-proprietary products.

Table 16
MIRAN hardware list

Component	Description
NTAG36 Meridian Integrated RAN (MIRAN)	An IPE card that provides RAN and MOH applications over the Meridian 1 system. (NTAG36 plus security device plus keycode=NTAG88)
NTAG81AA Audio Cable	Connects external analog music source or a recording device to the 3.5 mm audio jack on the MIRAN faceplate. This is a splitter cable that provides the audio input signal on one connector and the audio output signal on the other connector.
NTAG81BA Maintenance Extender Cable	A 5 m (16.4 ft) cable that extends the NTAG81CA, NTAG81GA, or the NTAG81DA Cables when connecting a terminal to the MIRAN. Has one DB9 male and one DB9 female connector.
NTAG81CA Maintenance Cable*	A 3 m (9.8 ft) cable that connects the terminal to the MIRAN 8-pin Mini-DIN maintenance port on the faceplate. It is terminated with an 8-pin Mini-DIN male connector and a DB9 female connector.
NTAG81DA Maintenance Splitter Cable	A 3 m (9.8 ft) cable that connects the Mini-DIN connector on the MIRAN faceplate to a terminal or to an adjacent MIRAN to form a LAN daisy-chain. It has an 8-pin Mini-DIN connector on the common side and two DB9 connectors, one female (to connect to the maintenance terminal) and one male (to connect to the next MIRAN card in the V-LAN chain) on the split side.
NTBK48AA Terminal Cable	Connects the Option 11E/11C SDI port to the terminal.
NTAG81GA Multi-I/O Adapter Cable	Mounts to the I/O panel on the rear of the IPE module and to the MDF. Contains one RJ-45 connector for connection to the LAN, one DB9 female connector for connection to a maintenance terminal (either directly or through a modem), and one 50-pin connector for connection to the MDF.
3MB, 8MB, and 40MB PCMCIA Cards	Use for software upgrades, backups, and/or storage.
Note: The NTAG81CA maintenance cable is not needed if the NTAG81GA multi-I/O adapter cable is used.	

Ethernet/LAN requirements

MIRAN Release 2.0 enables the customer to connect the MIRAN Release 2.0 card (NTAG36AC) to the customer LAN. Through the LAN connection, the following actions can be performed:

- access a Browser User Interface (BUI), which is embedded on the MIRAN Release 2.0 card, from any PC with a common web browser to perform web-based OA&M
- perform FTP downloads and uploads of announcement and music files from the MIRAN Release 2.0 card
- telnet to the MIRAN text-based user interface through the BUI
- access an online version of this document through the BUI

Note: Connection to the LAN is *optional*. All OA&M functions can be performed through the text-based user interface.

To access *each* MIRAN Release 2.0 over the LAN, the following are needed:

- one NTAG81GA I/O Panel Ethernet and Serial Port Adapter Cable
- a shielded RJ45 mating coupler and shielded RJ45 cable to connect to the customer hub (not supplied)
- an IP address, subnet mask, and Gateway for the card (supplied by the network administrator)
- an FTP client to transfer files remotely to and from the MIRAN. Nortel Networks recommends WS_FTP.
- a telnet client for remote access to the MIRAN text-based user interface. Nortel Networks recommends HyperTerminal 4.0+.
- a web browser that supports HTML frames and JavaScript V1.1. Nortel Networks recommends Netscape Navigator 3.0+ or Internet Explorer 3.0+.

Note: European Option 21-81C customers that require LAN access to the MIRAN must install the MIRAN Release 2.0 card (NTAG36AC) in slot 0, 4, 8, or 12 in the IPE shelf.

LAN hub and router recommendations

The customer hub must support 10BaseT. The hub can be a passive hub, although a switched port hub is suitable if available. Nortel Networks recommends the Bay Networks NETGEAR EN104, EN108, or EN116 hub, depending on the number of ports required.

For remote access to the system LAN, Nortel Networks recommends the NETGEAR RM356 modem router. This allows dial-in access to the LAN segment containing all of the MIRAN Release 2.0 (and other) networked cards.

Upgrade requirements

Port expansion

The MIRAN product is available in three capacity options: small, medium, and large. See Table 8 on page 54. There is a maximum of eight internal one-to-one channels and two external cross-connect channels on each MIRAN card.

To upgrade a MIRAN Release 2.0 card to a larger capacity, only a new keycode needs to be entered.

Note: Nortel Networks only supports port expansion upgrades for cards that contain the MIRAN Release 2.0 software. Customers with the original MIRAN NTAG36AA cards must first either upgrade their cards to the MIRAN Release 2.0 software or replace their cards with the MIRAN Release 2.0 card (NTAG36AC) before they can expand port capacity.

Software upgrade to MIRAN Release 2.0

Existing MIRAN NTAG36AA cards can be retained, and the software upgraded to MIRAN Release 2.0 software. To do this, the MIRAN to MIRAN Release 2.0 PCMCIA Upgrade Kit (NLT82AA) is required. The customer retains the current Security Device.

The upgrade kit provides the following:

- an 8MB PCMCIA upgrade card
- a new keycode
- the latest version of this document (553-3001-112)

For instructions on how to perform this upgrade, refer to “Upgrade MIRAN NTAG36AA card to MIRAN Release 2.0 software” on page 126.

Note: This upgrade does not provide LAN capability. For LAN capability, the customer must upgrade to the new NTAG36AC MIRAN Release 2.0 card. For information on the new functionality that comes with the MIRAN Release 2.0 software, refer to “What’s new” on page 13.

Hardware and software upgrade to MIRAN Release 2.0

Customers who use the original MIRAN NTAG36AA card can gain LAN capability for their MIRANs by upgrading to the new MIRAN Release 2.0 card and software.

To perform this upgrade, the MIRAN to MIRAN Release 2.0 Card Upgrade Kit is required. This upgrade kit provides the following:

- a MIRAN Release 2.0 card (NTAG36AC) without a Security Device
- an ethernet and DB9 adapter cable with a 50-pin connector (NTAG81GA)
- a new keycode
- the latest version of this document (553-3001-112)

The existing Security Device from the old card is retained, and placed in the new one. For information on the new functionality that comes with the MIRAN Release 2.0 card and software, see “What’s new” on page 13. For instructions on how to perform this upgrade, see “Replace MIRAN NTAG36AA card with MIRAN Release 2.0 card and software” on page 127.

Engineering a MIRAN RAN and music application

Based on the options of the MIRAN equipment, external equipment, and the RAN and MOH requirements, a MIRAN system can be engineered to meet the system requirements.

The following six examples illustrate what equipment is required to meet specific site application requirements. It also discusses the alternatives available for connecting multiple MIRANs and connecting external devices to the MIRAN.

Example 1:

Application requirements:

- Provide two internal RAN channels and one external cross-connect channel to cross-connect 10 trunk ports.
- Provide 1 hour of recording space on the MIRAN card.
- Provide telephone-based OA&M access.

Equipment requirements:

- one small MIRAN
- one 40 MB PCMCIA ATA Flash card
- two Enhanced Universal Trunk cards or three Flexible E&M cards

Example 2:

Application requirements:

- Provide multi-channel level start/stop control RAN mode for four internal RAN channels and two external cross-connect channels to cross-connect 30 trunk ports.
- Provide 4 minutes of recording space on the MIRAN.
- Provide terminal-based OA&M access.

Equipment requirements:

- one medium MIRAN
- four Enhanced Universal Trunk cards or eight Flexible E&M cards
- one NTAG81CA Maintenance Cable (to connect the terminal to the mini-DIN connector on the MIRAN faceplate)

or

- a terminal cabled at the MDF through port A, where total distance from the MDF to the terminal does not exceed 50 ft (17 m)

Note: In this mode, all four ports/channels play the same announcement independently over the same RAN route.

Example 3:

Application requirements:

- Provide seven internal RAN channels and two external cross-connect channels to cross-connect 30 trunk ports.
- Provide 1 hour of recording space on the MIRAN.
- Provide telephone-based OA&M access.
- Provide terminal-based OA&M access.
- Provide web-based OA&M access.

Equipment requirements:

- one large MIRAN
- one 40 MB PCMCIA ATA Flash card
- four Enhanced Universal Trunk cards or eight Flexible E&M cards
- one NTAG81GA Multi-I/O Adapter Cable. The Ethernet port connects to the customer's LAN. The serial port can connect to a maintenance terminal.

Example 4:

Application requirements:

- Provide 11 internal RAN channels and 3 external cross-connect channels to cross-connect 40 trunk ports.
- Provide 1 hour of recording space on the MIRAN.
- Provide telephone-based OA&M access
- Provide terminal-based OA&M access.

Equipment requirements:

- one large MIRAN with 40 MB PCMCIA ATA Flash memory
- one small MIRAN for the North American market, or
- one medium MIRAN for the international market
- five Enhanced Universal Trunk cards or ten Flexible E&M cards

- two NTAG81DA Maintenance Splitter Cables to inter-connect the two MIRAN cards to their respective mini-DIN connectors on the MIRAN faceplate and to connect the terminal)

or

- cross-connect ports A and B of the two MIRANs at the MDF and cross-connect the terminal to one MIRAN at the MDF. The distance between the MDF and the terminal must not exceed 50 ft. See Figure 18 on page 121.

Note: The total number of internal one-to-one ports is 12. Configure port 7 on each card as a DID trunk for telephone-based OA&M access. This reduces the number of available ports for RAN and MOH applications on the large MIRAN to seven ports; but the number of available ports on the small (or medium) MIRAN remains at four.

Example 5:

Application requirements:

- Provide 14 internal RAN channels and 4 external cross-connect channels to cross-connect 60 trunk ports.
- Provide 1 hour of recording space.
- Provide two external analog (music) sources.
- Provide telephone-based OA&M access.
- Provide terminal-based OA&M access.

Equipment requirements:

- two large MIRAN with 40 MB PCMCIA ATA Flash memory
- eight Enhanced Universal Trunk cards or fifteen Flexible E&M cards
- two NTAG81AA Audio Cables to connect external analog sources, or the external analog sources can be connected at the MDF

- one NTAG81DA Maintenance Splitter Cable, to inter-connect the two MIRAN cards to their respective mini-DIN connectors on the MIRAN faceplate and to connect the terminal
- or**
- cross-connect ports A and B of the two MIRANs at the MDF and cross-connect the terminal to one MIRAN at the MDF. The distance between the MDF and the terminal must not exceed 50 ft. See Figure 18 on page 121.

Note: The total number of internal one-to-one ports is 16. Configure port 7 on each card as a DID trunk for telephone-based OA&M access. This reduces the number of available ports for RAN and MOH applications on each large MIRAN to seven ports.

Example 6:

Application requirements:

- Provide three recorded announcements for up to 12 total simultaneous callers and MOH for up to 64 simultaneous callers.
- Provide four minutes of recording space on the MIRAN card.
- Provide telephone-based, terminal-based, and web-based OA&M access.

Equipment/system requirements:

- one small (in North America) or medium (international) MIRAN
- X11 release 23 or later system software with RAN and Music Broadcast features
- 12 RAN Broadcast connections
- 64 Music Broadcast connections

Note: Nortel Networks pre-equips each Option 11C with 12 RAN Broadcast connections and 100 Music Broadcast connections. For all other Meridian 1 options (Option 11C-81C), additional RAN and Music Broadcast connections can be purchased in increments of one.

- one NTAG81GA Multi-I/O Adapter Cable. The ethernet port connects to the customer's LAN. The serial port can connect to a maintenance terminal through a modem.

Installation and configuration

Contents

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Reference list

The following are the references in this section:

- *Features and Services* (553-3001-306)
- *Administration* (553-3001-311)

This chapter describes the installation of the NTAG36 Meridian Integrated RAN (MIRAN). This chapter provides instructions for the following:

- X11 system configuration for the MIRAN
- Basic MIRAN installation, including:
 - overview and preparation
 - maintenance terminal setup
 - card installation
 - external audio device setup
 - telephone user interface (TUI) setup
 - basic MIRAN configuration tasks
- Ethernet installation and setup
- V-LAN installation and setup
- Upgrades and replacements

The following procedure describes the steps required to quickly install and configure the MIRAN product.

MIRAN quick installation procedure

- 1 Request an IP address, subnet mask, and Gateway from the system administrator. This step is only necessary if the MIRAN is connecting to the LAN.
- 2 Insert the security device onto the MIRAN board. Install the security device with the Nortel Networks logo and the 8-digit inscription facing away from the board.
Note: The security device can be correctly inserted in only one position.
- 3 Connect the 50-pin female connector of the multi-I/O adapter cable to the I/O panel. Connect the RJ45 connector to the LAN hub; use an RJ45 coupler and additional RJ45 cable, if necessary. Connect the 50-pin male connector to the MDF cable.
- 4 Connect a VT-100 terminal to the MIRAN using the provided NTAG81GA cable.
Note: The NTAG81CA cable can be used to connect a terminal to the J2 faceplate connector.
- 5 Configure the terminal in VT-100 mode at 9600 baud, 8 data bits, 1 stop bit, and no parity.
- 6 Insert the MIRAN card into an *unequipped* IPE slot and watch the terminal screen for boot-up commands. This requires approximately 90 seconds.
Note: Before installing a MIRAN card into an IPE slot, ensure that no cross-connect wires from another product remain attached to this slot. Cross-connect wires that carry a ringing voltage can damage the MIRAN card.
- 7 At the logon screen of the text-based user interface, ensure that the cursor is in the 'User Name:' field. Then log on by doing the following:
 - Type in the user name (**admin**), and press the 'down' arrow.
 - Type in the administrator default password (**admin000**), and press the 'down' arrow again.
 - Press <CR> at the 'Login' prompt.

Note: If an 'Access denied' response is received, press the 'Shift' key and tilde (~) to refresh the screen. Then repeat step 7. Repeat step 7 up to three times. If an 'Access denied' response is received for a third time, the MIRAN card locks the user out for 20 minutes.

- 8 At the Main menu:
- Select **2**, "Pack Administration"
 - Then select **2**, "Keycode Entry"

Note: The keycodes are on a label that accompanies the security device. Pull off this keycode label and attach it to the MIRAN faceplate.

Between the brackets, type in the 24-character keycode with a space between each set of eight characters. Select **Execute** to execute the keycode. Wait for a keycode validation response ('Keycode validated'). Then select **Exit** to return to the Pack Administration menu.

Note: If LAN access is not needed for the MIRAN, omit step 9 and just log out of the text-based user interface after step 8.

- 9 At the Pack Administration menu, select **6**, "LAN Configuration". At the Ethernet Configuration screen, enter the new IP address, subnet mask, Gateway, and IP method of the MIRAN card, obtained from the network administrator. Select **Set** to set the LAN configuration parameters. Then select **Exit** to return to the Pack Administration screen. Finally, log out of the text-based user interface by selecting **9** from the menu screen until the Main Menu screen appears.
- 10 Reboot the MIRAN card by pressing the reset switch on the front of the pack. This causes the keycode to take effect. Wait for the card to reboot and the Login screen to come up on the maintenance terminal. This also requires approximately 90 seconds.
- 11 Log into the Meridian 1 system. Program a DID route and configure a DID trunk on MIRAN unit 7. Use the TN for the loop, shelf and card slot into which the MIRAN card is plugged. For example, if the MIRAN card was installed in 20 0 0, then provision 20 0 0 7 as the DID unit to allow local telephone access for the recording of RAN announcements.

Note: This step can be performed first.

- 12 Use a local DTMF telephone to dial the DID access code for MIRAN unit 7.

Note: The local DTMF telephone must have an 'unrestricted' Class of Service; that is, CLS = UNR in LD 11.

Enter the pound sign (#), then the user name ('user'=8737) followed by star (*), then the password (87370000) followed by star (*). Next, press 5 and then press 5 again to begin recording a RAN announcement. When finished recording, press 3 to stop the recording and press 1 to save the announcement. Because MIRAN writes the recording to flash memory, it can take 30 seconds or longer for MIRAN to respond that it has saved the announcement. Please be patient.



CAUTION
Loss of Data

After pressing 1 to save the announcement, do not hang-up. Wait for MIRAN to state that it has saved the announcement and tagged the announcement with an announcement identifier.

For example: 'Announcement has been saved as announcement 1'.

- 13 Program RAN and Music routes and trunks for the remaining channels. For example, program channel 0 as a Music trunk and channel 1 as a RAN trunk.

Note: MIRAN Release 2.0 comes with royalty-free music pre-assigned to channel 0 and set to play 'always'. Therefore, Nortel Networks recommends that channel 0 be configured as a Music route. However, this assignment can be removed and any other announcement or music file assigned in its place.

For pre-release 23 Meridian 1 systems see "Multi-channel level start/stop RAN route" on page 80 and "Level start/stop RAN route" on page 81.

If using X11 release 23 or later, refer to the RAN Broadcast feature in *X11 Features and Services* (553-3001-306). For MIRAN with X11 release 23 or later, and configured with RAN Broadcast, use Route Type "MLVL" (RTYP = MLVL in LD 16).

- 14** Log in to the MIRAN using the default user name (**user**) and password (**user0000**). Log in to the text-based user interface through the maintenance terminal as before. Or, if the MIRAN is connected to the LAN, the MIRAN Browser User Interface (BUI) can be accessed by pointing a web browser to the IP address of the MIRAN card. To assign an announcement to a MIRAN channel, do the following:
- At the Main Menu select (1) "MIRAN Administration...".
 - At the MIRAN Administration menu select (1) "Announcement Configuration...".
 - At the Announcement Configuration menu select (1) "Calendar Operations...".
 - At the Calendar Operations menu select (1) "Calendar Assignment with Descriptor".
 - At the Calendar Assignment with Descriptor screen, first enter the channels (ports) for a particular announcement to play on. For example, if the TN for a RAN trunk is 20 0 0 5, assign an announcement to channel 5.
 - At the 'Filename:' prompt, enter the filename of the announcement that must play on the selected channels. Browse the list of available announcements to select one.
 - At the 'Descriptor' prompt, enter the descriptor that defines when the selected announcement will play on the selected channels. Browse the list of available descriptors to select one. (Descriptors can be defined if the pre-configured descriptors do not meet system needs.)
 - Move the cursor to 'Add to Calendar' and press <CR> to create the calendar assignment with descriptor.
- 15** To test RAN announcements, dial the trunk access code for the desired RAN route and listen to the announcement that plays.
- 16** Manually back up RAN announcements and configuration in the event of a power loss or MIRAN re-boot. To complete a back-up, do the following:
- At the Main Menu select (1) "MIRAN Administration...".
 - At the MIRAN Administration menu select (3) "Backup Configuration".
 - At the 'Device:' prompt, enter the drive where the configuration will be backed up. For example, enter **A:** to back up the MIRAN configuration information to a PCMCIA card in drive A:.

Select from the choices below. The list below does not appear on the menu screen. Perform the backup procedure twice: once on Internal Storage C, and once on device “A” or “B”, if equipped.

- Internal Storage C (old s/w RIs. 1.39 or 1.46 backup s/w to internal storage “C”)
- External ATA A Backup when using a spare PCMCIA
- Internal ATA B When PCMCIA resides on the MIRAN card
- Exit out to the Main Menu

Note: MIRAN provides an automatic save function after exiting the TUI. If changes are made through the text-based user interface or the BUI, back up manually.

X11 system configuration

In the X11 system software, configure the following for MIRAN:

- RAN and Music routes
- A DID route
- Trunks for the above routes

To allow synchronization of the time and date between the X11 system and the MIRAN Release 2.0 card, the Meridian 1 system must be configured for LAN access in LD 117. Use LD 17 to set up a PTY with a Limited Access Password (LAPW) to access only LD 2. Refer to “Configuring Ethernet for Time & Date Synchronization” on page 86 for this procedure.

The X11 system software can be configured either before or after the MIRAN equipment is installed. Nortel Networks recommends configuring the X11 system software first, in order to save setup time once the MIRAN pack arrives.

The following sections describe X11 system software configuration for MIRAN.

Configuring RAN routes

The MIRAN card emulates an Enhanced Universal Trunk (EXUT) card in the Meridian 1 system. Configure RAN routes and trunks for the MIRAN card in the same way as for the EXUT card. For detailed information on Trunk Route Administration LD 16 and Trunk Administration LD 14, see *Administration* (553-3001-311).

To configure the RAN propagation route and the mode of activating the recorded announcement, define its parameters using Trunk Route Administration program LD 16. The MIRAN emulates the Enhanced Universal Trunk characteristics and does not require modification of LD 16 to configure the MIRAN functions.

The MIRAN and the Enhanced Universal Trunk card support the following modes of operation:

- Delay Dial Continuous RAN (DDL)
- Immediate Start Continuous RAN (IMM)
- Level Start/Stop RAN (LVL, MLSS, or MLVL)

The MIRAN supports all of the above on two, four, or eight independent ports. The same RAN announcement can be assigned to different ports, allowing multiple callers to hear the same announcement at the same time.

Note: With X11 Release 23 and the availability of RAN Broadcast, up to 30 callers can simultaneously listen to the same RAN announcement on a single RAN port.

Continuous RAN routes (Delay Dial and Immediate Start)

Continuous (immediate or delay) RAN plays an announcement over and over again. Callers “barge in” on a announcement playing on an Immediate Start RAN route. Callers receive a ringback tone for an announcement playing on a Delay Dial RAN route until the announcement begins again. At the end of each announcement, a pulse is issued on the control pulse line that is used by the trunk unit to cut through to the waiting call. External channels barge in at any time during the announcement. Internal ports/channels wait until the announcement starts, to be connected to a RAN announcement.

Note: Cross-connect channels support only continuous RAN modes.

To configure a continuous RAN route, load Route Data Block program LD 16 using the system TTY and enter the appropriate responses to the prompts as shown.

LD 16 – Define a continuous RAN route.

Prompt	Response	Description
REQ	NEW/CHG	Define new or change existing configuration
TYPE	RDB	Route data block
CUST	0-99	Customer number
ROUT	0-511	Route number (0-127 for Option 11C)
TKTP	RAN	Trunk type recorded announcement (RAN)
RTYP	CON MCON	Continuous route Continuous Multi-channel (for RAN Broadcast)
- LGTH ¹	4-(60)-7200	Maximum message length in seconds
- GRD ¹	PLAY(IDLE)	Ground signal from RAN indicates MIRAN is playing (idle).
REP	1-15	Number of repetitions of RAN
POST	ATT DIS	Route to attendant after maximum repetitions Disconnect after maximum repetitions

Prompt	Response	Description
STRT	IMM DDL	Immediately connect call to recorded ann. Delay call connection until start of ann.
BDCT ²	YES(NO)	Allow (disallow) broadcast capability
ASUP	(NO) YES CO	Do not return answer supervision Return answer supervision Return answer supervision if originator is a CO trunk
ACOD	xxx...x	Trunk route access code

These prompts only appear if RTYP = MCON.
The 'BDCT' prompt appears only if customer has package 327 (RANBRD).

Multi-channel level start/stop RAN route

In the multi-channel level start/stop control RAN, the leading edge of the start signal initiates announcement playback that continues until either the trailing edge of the start signal occurs or the end of the announcement is reached. If the trailing edge of a level start signal terminates an announcement, it resets immediately and is again available for playback. The multi-channel level start/stop control RAN mode allows the same announcement to be played over multiple RAN channels completely independently using the same RAN route. See "Example 2:" on page 66.

To configure this RAN route, load LD 16 using the system TTY. Then respond to the prompts as shown, with the appropriate parameter selection.

LD 16 – Define a multi-channel level start/stop RAN route.

Prompt	Response	Description
REQ	NEW/CHG	Define new or change existing configuration
TYPE	RDB	Route data block
CUST	0-99	Customer number
ROUT	0-511	Route number (0-127 for Option 11C)

Prompt	Response	Description
TKTP	RAN	Trunk type recorded announcement (RAN)
RTYP	MLSS MLVL ¹	Multi-channel level start/stop RAN (for X11 release 21.41 or 22.16 or higher) Level start/stop, multi-channel (for RAN Broadcast)
- LGTH ²	4–(60)–7200	Maximum message length in seconds
- GRD ²	PLAY (IDLE)	Ground signal from RAN indicates MIRAN is playing (idle).
REP	1–15	Number of repetitions of RAN
POST	ATT DIS	Route to attendant after maximum repetitions Disconnect after maximum repetitions
STRT	IMM	Immediately connect call to recorded announcement
BDCT ³	YES(NO)	Allow (disallow) broadcast capability
ASUP	NO YES CO	Do not return answer supervision Return answer supervision Return answer supervision for a CO trunk
ACOD	xxx...x	Trunk route access code

Set RTYP = MLVL with RAN Broadcast, even if broadcast capability (BDCT = NO) is disallowed for this route.

These prompts appear only if RTYP = MCON.

The 'BDCT' prompt appears only if using package 327 (RANBRD).

Multi-Level Start/Stop RAN (MLSS or MLVL) allows multiple start/stop RAN channels to be supported within the same RAN route.

Level start/stop RAN route

In the immediate (“level”) start RAN, the leading edge of the start signal initiates announcement playback. The playback continues until either the trailing edge of the start signal occurs or the announcement ends. If the trailing edge of a level start signal terminates an announcement, it resets immediately and is again available for playback.

To configure this RAN route, load LD 16 using the system TTY. Then respond to the prompts as shown, with the appropriate parameter selection.

LD 16 – Define a level start/stop RAN route.

Prompt	Response	Description
REQ	NEW/CHG	Define new or change existing configuration
TYPE	RDB	Route data block
CUST	0–99	Customer number
ROUT	0–511	Route number (0-127 for Option 11C)
TKTP	RAN	Trunk type recorded announcement (RAN)
RTYP	LVL	Level start/stop mode.
REP	1–15	Number of repetitions of RAN
POST	ATT DIS	Route to attendant after maximum repetitions Disconnect after maximum repetitions
STRT	IMM	Immediately connect call to recorded announcement
ASUP	NO YES CO	Do not return answer supervision Return answer supervision Return answer supervision if originator is a CO trunk
ACOD	xxx...x	Trunk route access code

Music-On-Hold activation and route configuration

Music-On-Hold (MOH) operates in a continuous mode with an immediate connection to the music source. The music source plays continuously. Callers “barge in” on playing music.

To specify the conference loop for the MOH, use the Configuration Record program LD 17 as shown.

LD 17 – Adds or changes conference loop for MOH.

Prompt	Response	Description
REQ	CHG	Define change existing configuration
TYPE	CFN	Configuration record
CEQU	Yes (No)	Change common equipment parameters
XCT	0–158	Loop number for NT8D17 Conference/TDS card.
CONF	0–158	Conference loop should be an even number.

To configure the MOH route, load Route Data Block program LD 16 using the system TTY. Then respond to the prompts as shown, with the appropriate parameter selection.

LD 16 – Define Music-On-Hold route.

Prompt	Response	Description
REQ	NEW/CHG	Define new or change existing configuration.
TYPE	RDB	Route data block
CUST	0–99	Customer number
ROUT	0–511	Route number (0-127 for Option 11C)
TKTP	COT, MUS	Trunk types for MOH
MUS	Yes (No)	Music-on-hold
_MRT	0–511	Music route number
STRT	IMM	Immediately connect call to music-on-hold.
ICOG	OGT	For music-on-hold select outgoing trunk only.
BDCT ^{1,2}	YES (NO)	Allow (disallow) broadcast capability.

Prompt	Response	Description
ASUP	NO YES CO	Do not return answer supervision. Return answer supervision. Return answer supervision if originator is a CO trunk.
ACOD	xxx...x	Trunk route access code

The 'BDCT' prompt appears only if using package 328 (MUSBRD).
If BDCT = YES, no conference loop is necessary; each music trunk has 64 broadcast connections.

Configuring the DID route for the TUI

To configure MIRAN for TUI (telephone-based OA&M) access using internal one-to-one port 7, configure the appropriate route and trunk data blocks. Route Data Block program LD 16 commands define the DID route data block.

LD 16 – Define a DID route for the TUI.

Prompt	Response	Description
REQ	NEW/CHG	Define new or change existing configuration
TYPE	RDB	Route data block
CUST	0–99	Customer number
ROUT	0–511	Route number
TKTP	DID	Trunk type for telephone-based OA&M access
ICOG	IAO	Incoming and outgoing trunk
ACOD	xxx...x	Trunk route access code
CNTL	Yes	Gate opener for control timers
NEDC	ETH	Near end. Both ends have disconnect control.

Prompt	Response	Description
FEDC	ETH	Far end. Both ends have disconnect control.
MANO	YES	Manual Outgoing Trunk Route

Configuring the MIRAN trunks

After a RAN, Music, or DID route is configured, configure the route's corresponding trunk. A trunk data block specifies the parameters for a particular trunk. Because the MIRAN emulates the Enhanced Universal Trunk card, define the MIRAN parameters using the Trunk Administration program LD 14 on the system TTY. Respond to the appropriate prompts in LD 14 on page 85 to configure the MIRAN data block.

LD 14 – Configure the MIRAN trunk data block for RAN, MOH, and DID.

Prompt	Response	Description
REQ	NEW	New MIRAN trunk data block
TYPE	MUS, RAN, DID	Type of trunk: music, RAN, or DID
TN	l s c u	MIRAN loop, shelf, card, and unit. ^{1, 2}
XTRK	EXUT	Enhanced Universal Trunk Card
CUST	0–99	Customer number defined in LD 15 and prompted when REQ= NEW
RTMB	xxx yyy	Route (0-511) and member (1-254) number
CONN ³	(4)–48	Maximum number of broadcast connections allowed for this trunk
SIGL	LDR	Signaling for battery or loop outpulsing for telephone-based OA&M over MIRAN port 7
BIMP	600, 900	Balanced trunk impedance for MIRAN
STRI	DDL ⁴ , IMM	Incoming trunk starting arrangement

Prompt	Response	Description
STRO	DDL ⁴ , IMM	Outgoing trunk starting arrangement
CFLP	0–159	Music conference loop

The DID trunk on unit (port) 7 must be configured in order to use the TUI.

MIRAN Release 2.0 comes from the factory with six minutes of royalty-free music pre-configured on port 0. Unit 0 can be configured as a Music trunk to make easy use of the royalty-free music.

The 'CONN' prompt only appears if BDCT = YES in LD 16 when configuring a RAN route.

Do not program MUS or DID trunks as Delayed Dial (DDL).

Configuring Ethernet for Time & Date Synchronization

Because synchronization of time and date over the LAN requires the connection of the Meridian 1 to a LAN environment, X11 release 22 is the minimum software that supports Time & Date Synchronization.

Note: Refer to “The Time & Date Configuration menu” on page 184 for instructions on configuring Time & Date Synchronization.

LD 117

Use LD 117 to configure the LAN for the Meridian 1. This allows the MIRAN Release 2.0 card to access a *system* TTY to retrieve the system time and date.

Note: Host names and IP addresses that appear in the following steps are examples only.

1 Configure the LAN at the Meridian 1.

```
>LD 117
>NEW HOST M1SRVR01 41.1.1.10
>CHG ELNK ACTIVE M1SRVR01
>CHG MASK 255.255.255.0
```

If the Meridian 1 has a dual CPU, repeat the above steps for the backup (inactive) CPU.

```
>LD 117
```

```
>NEW HOST M1SRVR01 41.1.1.11
>CHG ELNK ACTIVE M1SRVR02
>CHG MASK 255.255.255.0
```

2 Define the routing table.

If the network contains a default gateway, define the routing table. The routing table provides the Meridian 1 with the IP address of the gateway server. This process enables the Meridian 1 to send return messages to the gateway, which are then forwarded to the requesting client.

```
>LD 117
>NEW ROUTE 0.0.0.0 47.1.1.250
```

3 Save the configuration.

```
>LD 43
>EDD
```

4 Perform an INIT.

LD 17

Use LD 17 to configure a PTY for use with MIRAN Release 2.0. Use the same method as MAT to define a LAPW (Limited Access Password) and ID to access *only* LD 2. This allows a task running on MIRAN Release 2.0 to remotely log in, access LD 2, and extract the system time and date from the Meridian 1.

The following shows an example of the proper LD 17 configuration to enable System Time & Date Synchronization:

1 The first section is only required if login names are not configured.

```
>ld 17
CFN000
MEM AVAIL: (U/P): 3352174 USED: 203153 TOT:3555327
DISK RECS AVAIL: 2764
DCH AVAIL: 15 USED: 1 TOT: 16
AML AVAIL: 10 USED: 0 TOT: 10
REQ> chg
TYPE> pwd
PWD2 (user's level 2 password)
LNAME_OPTION> yes
MEM AVAIL: (U/P): 3352174 USED: 203153 TOT:3555327
DISK RECS AVAIL: 2764
DCH AVAIL: 15 USED: 1 TOT: 16
AML AVAIL: 10 USED: 0 TOT: 10
DEFAULT LOGIN NAMES SAVED
```

Note: At this point, the old passwords will work with either the newly assigned user IDs or with the default user ID values associated with the old passwords. See the online help for LD17, LNAME_OPTION, for more information. Please alert others, for example, all technicians with access to the Meridian 1, and the distributor, of any changes.

2 Continue configuring LAPW.

```
REQ> chg
TYPE> pwd
PWD2 (user's level 2 password)
LNAME_OPTION> yes
NPW1
LOGIN_NAME
NPW2
LOGIN_NAME
LAPW> 88 (example)
PWTP
PW88
```

Note: The user will be prompted to enter the new password.

```
LOGIN_NAME> johns (example)
OVLA> all
OVLA
CUST> all
CUST
HOST
MAT> yes (not necessary for MIRAN)
MAT_READ_ONLY> no
OPT
LAPW
FLTH
LOCK
AUDT
INIT
MEM AVAIL: (U/P): 3352149 USED: 203178 TOT:3555327
DISK RECS AVAIL: 2764
DCH AVAIL: 15 USED: 1 TOT: 16
AML AVAIL: 10 USED: 0 TOT: 10
REQ> end
```

If using LAN or PPP connections, configure a PTY for each MAT application that will run over LAN or PPP simultaneously. For example, Maintenance Windows and System Terminal each require a PTY if they run at the same time. If there are enough free ports, Nortel Networks recommends that at least two PTYs be configured. A maximum of 8 PTYs (maximum of 4 PTYs on an Option 11C) can be allocated.

3 Find an empty TTY slot.

```
>ld 17
```

Note: Choose an empty port number between 0 and 15. Choose a PTY number between 0 and 7. In this example, TTY 13 is free, and PTY 0 assigned.

```
REQ> chg
TYPE> adan
ADAN> new tty 13
TTY-TYPE> pty
PORT> 0
DES> 13
DES> new pty
FLOW
USER> mtc bug sch
TTYLOG
BANR
```

Basic MIRAN installation

Installation overview

The MIRAN can operate on the following systems:

- Meridian 1 system options 21E, 51, 51C, 61, 61C, 71, 81, and 81C
- Options 11E/11C
- SL-1 systems that supports IPE and Enhanced Universal Trunk cards

Refer to “X11 software requirements” on page 50 for more information.

To install a MIRAN, follow the general procedures listed below. These procedures include:

- Preparing the site
- Unpacking, inspecting, and taking inventory of the equipment
- Installing the MIRAN card in the selected IPE card slot, if not already installed
- Installing the cables between the MIRAN faceplate connectors and external devices, if required
- Installing the cables to the I/O panel connector at the rear of the module, if required

- Cross-connecting external devices to the MIRAN card through the MDF (e.g., trunk cards, CD player, cassette player, etc.)
- Cross-connecting multiple MIRAN cards in a serial chain, if required

Installation preparation

Preparation consists of unpacking and inspecting components, taking inventory, and locating the IPE card slots where the MIRAN will be installed.

Unpacking and inspection

Unpack and inspect the equipment for damage. When unpacking, follow general precautions recommended by computer and telephone equipment manufacturers:

- Remove items that generate static charge from the installation site.
- Be grounded before handling any equipment.
- Remove equipment carefully from its packaging.
- Visually inspect the equipment for obvious faults or damage.

Taking inventory

Verify that all the equipment is at the site before the installation begins. Check the equipment received against the shipping documents.

Locating the card slot

A MIRAN card can be installed in any IPE card slot in an IPE module or shelf that has a 25-pair tip/ring cable connected between the backplane and the I/O panel. The only slot that cannot be used is the Peripheral Controller card slot labeled *Cont*.

Note: IPE card slots 0, 4, 8, and 12 are already pre-configured for Miran card installation.

In the Options 11E and 11C cabinet, the MIRAN card can be installed in any card slot from 1 to 10. Refer to “LD 17 – Option 11C CEMUX/pass-thru access configuration” on page 107.

Note: If the backplane RS-232 connections are to be used, refer to Appendix C: “NT8D37 cable connections” on page 281 for NT8D37 ribbon cable connection configuration on the backplane.

Verifying MDF wiring

The MIRAN interfaces appear on the IPE module's backplane. The backplane is cabled to the I/O panel at the rear of the IPE module, which is then connected to the Main Distribution Frame (MDF) by the 25-pair cable.

Trunks connect to the two MIRAN external cross-connect channels at the MDF, as shown in Table 17. The two MIRAN external cross-connect channels wiring is shown in Figure 7 on page 95.



CAUTION

Damage to Equipment

Before installing a MIRAN card into an IPE slot, ensure that no cross-connect wires from another product remain attached to this slot. Cross-connect wires that carry a ringing voltage can damage the MIRAN card.



CAUTION

Service Interruption

Any EXUT or XFEM card that is cross-connected to a MIRAN card must reside in the same PBX as the MIRAN card.

Table 17 lists the tip/ring pairs for the MIRAN card installed in the IPE module. It shows the wire color code at the MDF to facilitate cross-connect to the external terminal equipment or trunk tip/ring pairs.

Table 17
NT8D37 IPE Module MIRAN pair termination (I/O panel to MDF cable)

Pair	Pin No	Pair color	MIRAN Assignment
1T/1R	26/1	W-BL/BL-W	RANAT0/RANAR0
2T/2R	27/2	W-O/O-W	CNTRPLS0/GRD
3T/3R	28/3	W-G/G-W	RANAT1/RANAR1
4T/4R	29/4	W-BR/BR-W	CNTRPLS1/GRD
5T/5R	30/5	W-S/S-W	AGRD/AGRD
6T/6R	31/6	R-BL/BL-R	No connection
7T/7R	32/7	R-O/O-R	AIN1/AIN0
8T/8R	33/8	R-G/G-R	Reserved
9T/9R	34/9	R-BR/BR-R	No connection
10T/10R	35/10	R-S/S-R	Reserved
11T/11R	36/11	BK-BL/BL-BK	Reserved
12T/12R	37/12	BK-O/O-BK	Reserved
13T/13R	38/13	BK-G/G-BK	Reserved
14T/14R	39/14	BK-BR/BR-BK	Reserved
15T/15R	40/15	BK-S/S-BK	Reserved
16T/16R	41/16	Y-BL/BL-Y	BDCDA-/Reserved
17T/17R	42/17	Y-O/O-Y	BSOUTA-/BSINA-
18T/18R	43/18	Y-G/G-Y	SGRD/BDTRA-
19T/19R	44/19	Y-BR/BR-Y	BRTSA-/BDSRA-
20T/20R	45/20	Y-S/S-Y	BSINB-/BCTSA-
21T/21R	46/21	V-BL/BL-V	BDCDB-/BSOUTB-
22T/22R	47/22	V-O/O-V	BDSRB-/BDTRB-
23T/23R	48/23	V-G/G-V	R22 RXD+/T22 RXD-
24T/24R	49/24	V-BR/BR-V	R23 TXD+/T23 TXD-
25T/25R	50/25	V-S/S-V	spare

Note: Each of the following I/O panel connectors is cabled as shown above: connectors A, B, C, D, E, F, G, K, L, M, N, R, S, T, and U.

Identifying external cross-connect channels at the MDF

The MIRAN external cross-connect channels are routed from the IPE module backplane to the MDF over the 25-pair tip/ring cable. These two cross-connect channels can be connected up to a maximum of 32 trunks (16 each) at the MDF. This provides 32 RAN or 32 MOH application channels, or any combination of RAN and MOH channels totaling 32.

Table 18 lists the NTAG36 MIRAN card pair termination for the two external cross-connect channels that connect to multiple trunks. It lists the pinout and the cable wire color code for the two MIRAN external channels. Each of these two external MIRAN channels can cross-connect to up to 16 trunks for a total of 32 RAN channels.

Table 18
NT8D37 IPE Module: NTAG36 MIRAN external cross-connect channels

MIRAN Assignment	25-pair cable Pin No	Pair color code	MIRAN Port
RANAT0/RANAR0 CNTRPLS0/GRD	26/1 27/2	W-BL/BL-W W-O/O-W	A0
RANAT1/RANAR1 CNTRPLS1/GRD	28/3 29/4	W-G/G-W W-BR/BR-W	A1
<i>Note:</i> The MIRAN has up to 8 internal one-to-one ports/channels (0-7) and two external cross-connect channels (A0 and A1).			

Figure 7 illustrates connection of the two MIRAN external cross-connect channels from the IPE module I/O panel to the MDF cross-connect terminals, and from the MDF to the multiple trunks for Enhanced Universal Trunk wiring.

Figure 7
MIRAN external cross-connect channels relative to the EXUT wiring

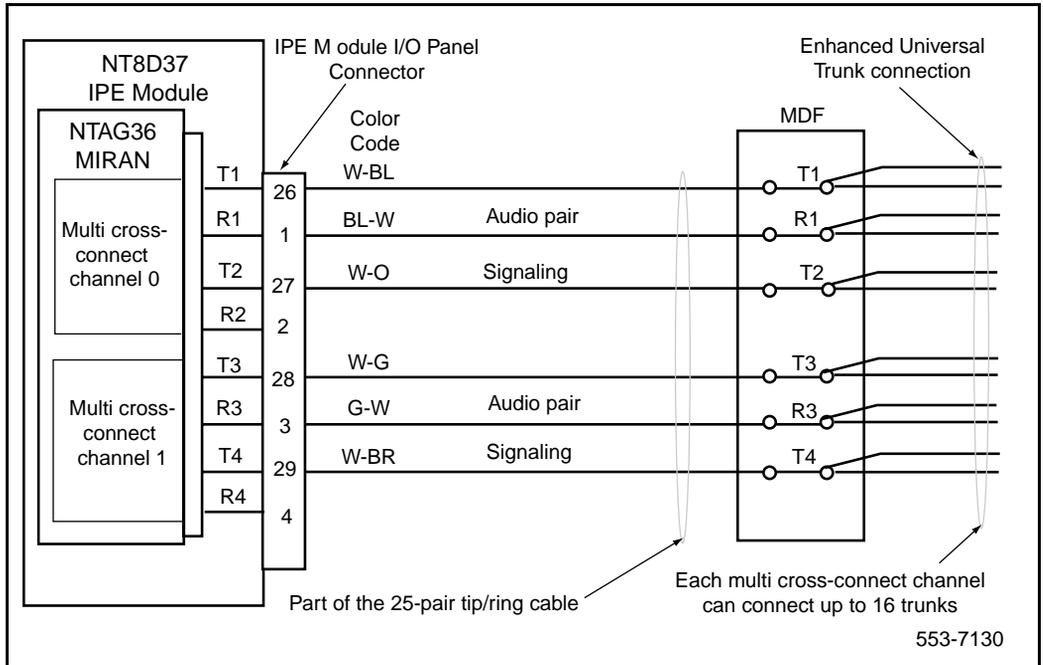
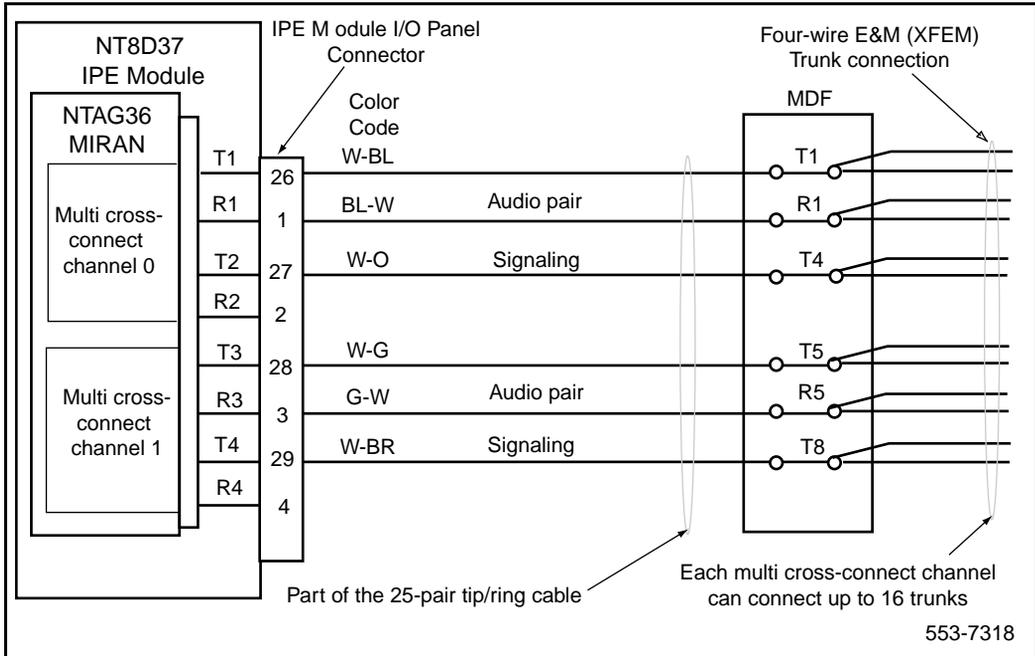


Figure 8 illustrates a connection of the two MIRAN external cross-connect channels from the IPE module I/O panel to the MDF cross-connect terminals, and from the MDF to the multiple trunks for 4-Wire E&M trunk wiring.

Figure 8
MIRAN external cross-connect channels relative to the XFEM wiring



MIRAN card installation in an IPE shelf

Before installing the card, inspect the IPE module or cabinet I/O panel for backplane cabling.



CAUTION

Damage to Equipment

Before installing a MIRAN card into an IPE slot, ensure that no cross-connect wires from another product remain attached to this slot. Cross-connect wires that carry a ringing voltage can damage the MIRAN card.



CAUTION

Service Interruption

Any EXUT or XFEM card that is cross-connected to a MIRAN card must reside in the same PBX as the MIRAN card.

To install MIRAN cards into an IPE shelf, follow these steps:

- 1 Identify the IPE card slot(s) selected for MIRAN card(s).
- 2 Pull the top and bottom extractors away from the MIRAN faceplate.
- 3 Insert the MIRAN card into the card guides and gently push it until it makes contact with the I/O panel connector.
- 4 Push the top and the bottom extractors firmly towards the faceplate to insert the MIRAN card into the faceplate connector and to lock it firmly in place.

- 5 Observe the faceplate hexadecimal display. It indicates the progress of the internal self-test in the form of **T:xx**. See “MIRAN hexadecimal codes” on page 268. Upon successful completion of the test and the start-up of the RAN application, the display shows the code “**RAAn**”, where **n** is the V-LAN card number (in hexadecimal). If cards are not in a V-LAN configuration, the display shows **RAA0**.

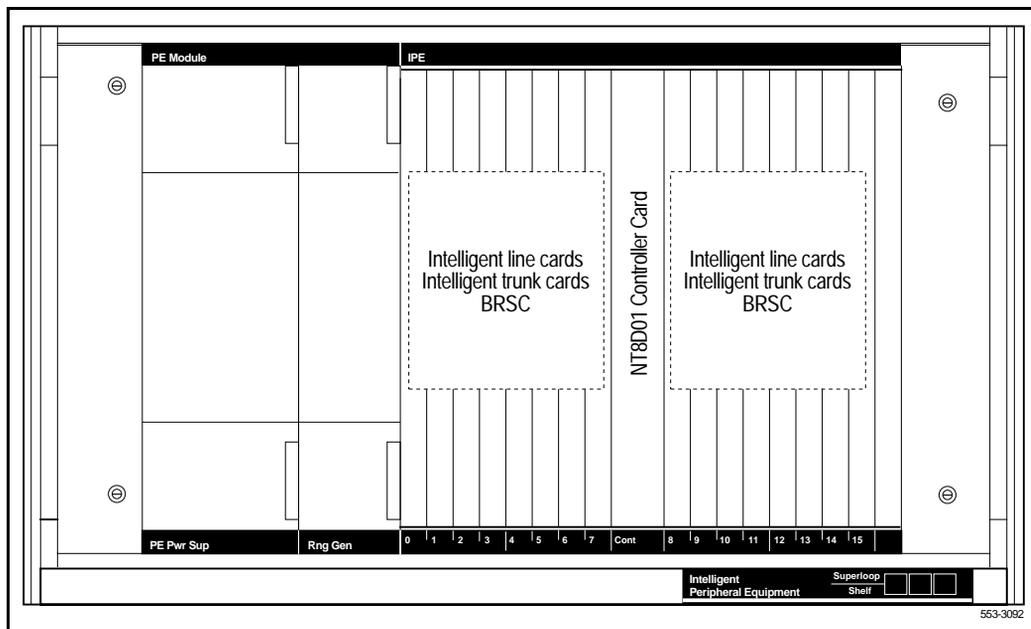
Note: During the MIRAN bootup sequence, either an error message or the ‘**T:xx**’ self-test messages is seen on the hex display. To interpret an error message, refer to “MIRAN hexadecimal codes” on page 268.
- 6 To enable the MIRAN, load the Network and PE Diagnostic program, LD 32, into the system memory using the system TTY. Execute the **ENLC I s c** command, where **I** is the loop, **s** is the module or shelf, and **c** is the card to enable.
- 7 Repeat steps 1 through 6 for each additional MIRAN.

Figure 9 on page 99 shows the IPE module and the card slots where the IPE cards reside. A MIRAN card can be installed into any IPE card slot except the Peripheral Controller card slot.

Note: European customers who need the MIRAN Release 2.0 LAN capability must install the card in slot 0, 4, 8, or 12 of the IPE shelf.

Note: If using either the NT8D37AA/DC IPE or the NT8D11AC/DC CE/PE module, and the port A and B MDF connections are needed, the MIRAN card cannot be installed in slots 3, 7, 11, or 15 of the IPE shelf. The necessary tip/ring pairs in these slots are not available at the MDF.

Figure 9
The NT8D37 IPE module



MIRAN card installation in Option 11E/11C

Before installing the card, inspect the Option 11E/11C module or cabinet I/O panel for backplane cabling.



CAUTION

Damage to Equipment

Before installing a MIRAN card into a slot, ensure that no cross-connect wires from another product remain attached to this slot. Cross-connect wires that carry a ringing voltage can damage the MIRAN card.



CAUTION

Service Interruption

Any EXUT or XFEM card that is cross-connected to a MIRAN card must reside in the same PBX as the MIRAN card.

To install one or more MIRAN cards into an Option 11E or 11C system, do the following:

- 1 Identify the card slot(s) selected for the MIRAN card(s). If planning to use CE-MUX interface connection for Option 11C, install the MIRAN in a slot from 3 to 9 in the main cabinet.
- 2 Pull the top and bottom extractors away from the MIRAN faceplate.
- 3 Insert the MIRAN card into the card guides and gently push it until it makes contact with the backplane connector.
- 4 Push the top and the bottom extractors firmly towards the faceplate to insert the MIRAN card into the faceplate connector and to lock it firmly in place.
- 5 Observe the faceplate hexadecimal display. It indicates the progress of the internal self-test in the form of **T:xx** (refer to "MIRAN hexadecimal codes" on page 268). Upon successful completion of the test and the start-up of the RAN application, it displays the code, "**RAAn**", where **n** is the LAN card number (in hexadecimal). If cards are not in a LAN configuration the display shows **RAA0**.
Note: During the MIRAN bootup sequence either an error message or the '**T:xx**' self-test messages are seen on the hex display. To interpret an error message, refer to "MIRAN hexadecimal codes" on page 268.
- 6 To enable the MIRAN, load the Network and PE Diagnostic program, LD 32, into the system memory using the system TTY. Execute the **ENLC c** command, where **c** is the card to enable.
- 7 Repeat steps 1 through 6 for each additional MIRAN.

Connecting a VT100-type terminal to the MIRAN

A VT100-type (maintenance) terminal must be connected to the MIRAN to perform the following OA&M functions during installation and setup:

- Entering keycode information
- Entering the IP address, subnet mask, and Gateway information for the LAN configuration

The VT100-type terminal can also be used to perform any of the other OA&M functions. The VT100-type uses MIRAN's text-based user interface to perform OA&M. Refer to "RAN Application: Text-based user interface" on page 131 for more information on the text-based user interface.

This section describes the procedures for connecting a VT100-type terminal to the MIRAN in the following four situations:

- Connecting a terminal to the MIRAN in the IPE module (for customers with options 21-81C or any system that uses IPE modules)
- Connecting a terminal to the MIRAN in the Option 11E/11C, basic
- Connecting a terminal to the MIRAN in the Option 11E/11C, pass-thru option
- Connecting a terminal to the MIRAN in the Option 11C, CE-MUX option

For a terminal-based OA&M access, specify the VT-100 type terminal interface characteristics to ensure compatibility with the MIRAN RS-232 interface.

Set the interface parameters as follows:

- Transmission speed; 9600 bps
- Data bits: 8
- Stop bit: 1
- Parity: No
- Flow control: none

If using a Windows™ based terminal emulator, disable the CTRL and the arrow keys used by Windows™ because these keys are used by the OA&M for traversing the menus.

Connecting a terminal to the MIRAN in the IPE module

To connect a terminal to the MIRAN in the IPE module, the following options are available:

- Connecting directly to the MIRAN faceplate
- Connecting to the MIRAN faceplate through a modem
- Connecting directly at the MDF
- Connecting to the I/O panel connector through a modem
- Connecting to the I/O panel through the multi-I/O adapter cable. See “Installing the multi-I/O adapter cable” on page 111.

The connection of a terminal to the faceplate is simple and preferable for occasional use of the terminal. For a permanent connection, use the MDF to connect the terminal to the MIRAN.

Connecting the terminal directly to the faceplate connector

The MIRAN has an 8-pin mini-DIN connector at the bottom of the faceplate. This connector can be used to connect a terminal as well as interconnect multiple MIRAN cards into a serial chain. One terminal can service all the MIRAN cards in the chain. See “Connecting multiple MIRAN cards” on page 117 for information on connecting multiple MIRAN cards into a serial chain.

To connect the terminal or a personal computer emulating a terminal to the 8-pin mini-DIN connector on the MIRAN faceplate, do the following:

- 1 Place the terminal in the desired location. If the distance to the MIRAN is less than 10 ft (3 m), an extension cable is not needed.
- 2 Plug the 8-pin mini-DIN male connector of the NTAG81CA Maintenance cable into the MIRAN 8-pin mini-DIN female connector located at the bottom of the faceplate.

- 3 Plug the NTAG81CA cable DB9 female connector into the terminal. If the terminal requires a different connector, get an adapter cable or a compact adapter and install it between the terminal and the NTAG81CA cable.
- 4 If the terminal is more than 10 ft (3 m) from the MIRAN, use the 16-foot NTAG81BA Maintenance Extender Cable. If the terminal requires a different connector, use an adapter cable of the appropriate length.

Connecting a modem to the faceplate connector

To connect a modem to the 8-pin mini-DIN connector on the MIRAN faceplate, do the following:

- 1 Place the modem in the desired location.
- 2 Plug the 8-pin mini-DIN male connector of the NTAG81CA Maintenance cable into the MIRAN 8-pin mini-DIN female connector at the bottom of the faceplate.
- 3 Plug the DB9 female connector of the NTAG81CA cable into the DB9 male connector of the NTAG81DA maintenance splitter cable.
- 4 Plug the DB-25 male connector of the NTAG81DA maintenance splitter cable into the DB-25 female connector on the modem.

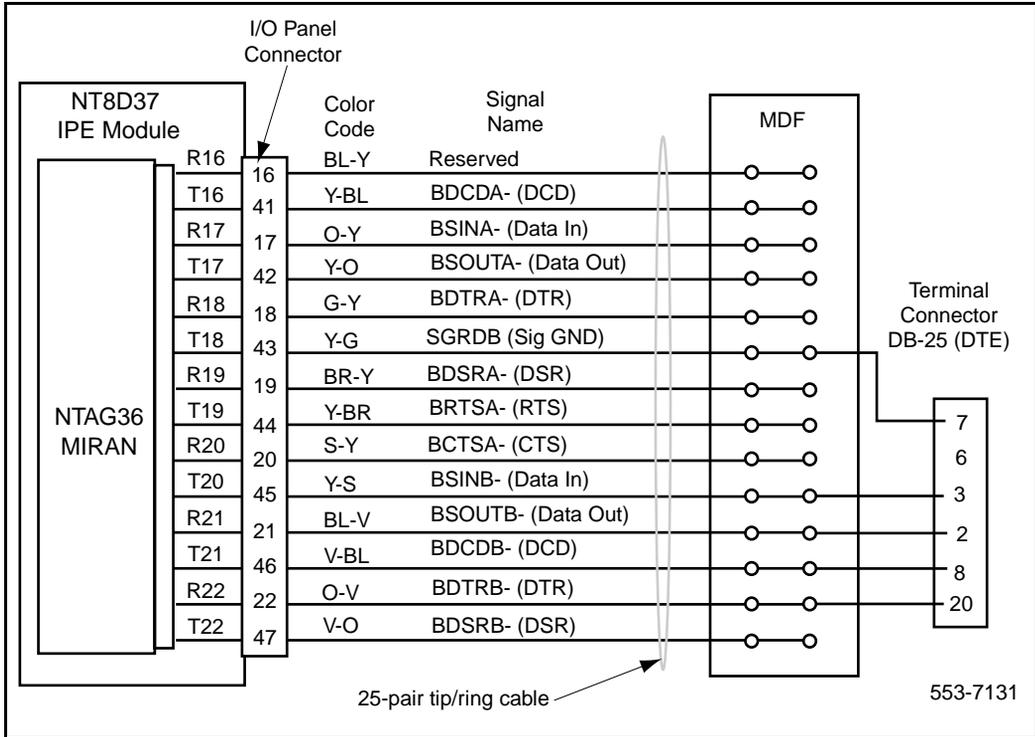
For additional information on how to setup the modem, refer to “MIRAN interface connectors” on page 270.

Connecting the terminal directly to the MDF

For a permanent connection of a terminal to the MIRAN, connect the terminal to the MDF tip/ring pairs that provide ports A and B. The total distance from the MIRAN to the MDF to the terminal must not exceed 50 ft (15 m).

Figure 10 on page 104 illustrates the terminal wiring, which starts from the IPE module I/O panel through the MDF to the terminal. It shows the I/O panel pinout, the 25-pair tip/ring wire color code, the signal description, the terminal cable, and DB-25 terminal connector.

Figure 10
Terminal connection to the MIRAN at the MDF



To connect the terminal, or a personal computer emulating a terminal, at the MDF using ports A and B, refer to Figure 10 and follow this procedure:

- 1 Place the terminal in the desired location. Place it close to the MDF to minimize the total distance between the MIRAN and the terminal. The total distance must not exceed 50 ft (15 m).
- 2 Cross-connect the terminal cable at the MDF as Figure 10 shows. Observe the cable connector pinout and the cable wire color code. Terminal cable is not supplied with the MIRAN equipment.
- 3 Cross-connect the wires of the open end of the terminal cable into the MDF connector block according to the Figure 10 wiring diagram.
- 4 Plug the connector at the other end of the terminal cable into the terminal RS-232 connector.

Connecting a modem to the MDF

To connect a modem to the MIRAN through the MDF, do the following:

- 1 Place the modem in the desired location.
- 2 Plug the 50-pin MDF cable connector into the 50-pin I/O panel connector.
- 3 Cross-connect the modem cable to the MDF.

For additional information on how to setup the modem, refer to “MIRAN interface connectors” on page 270.

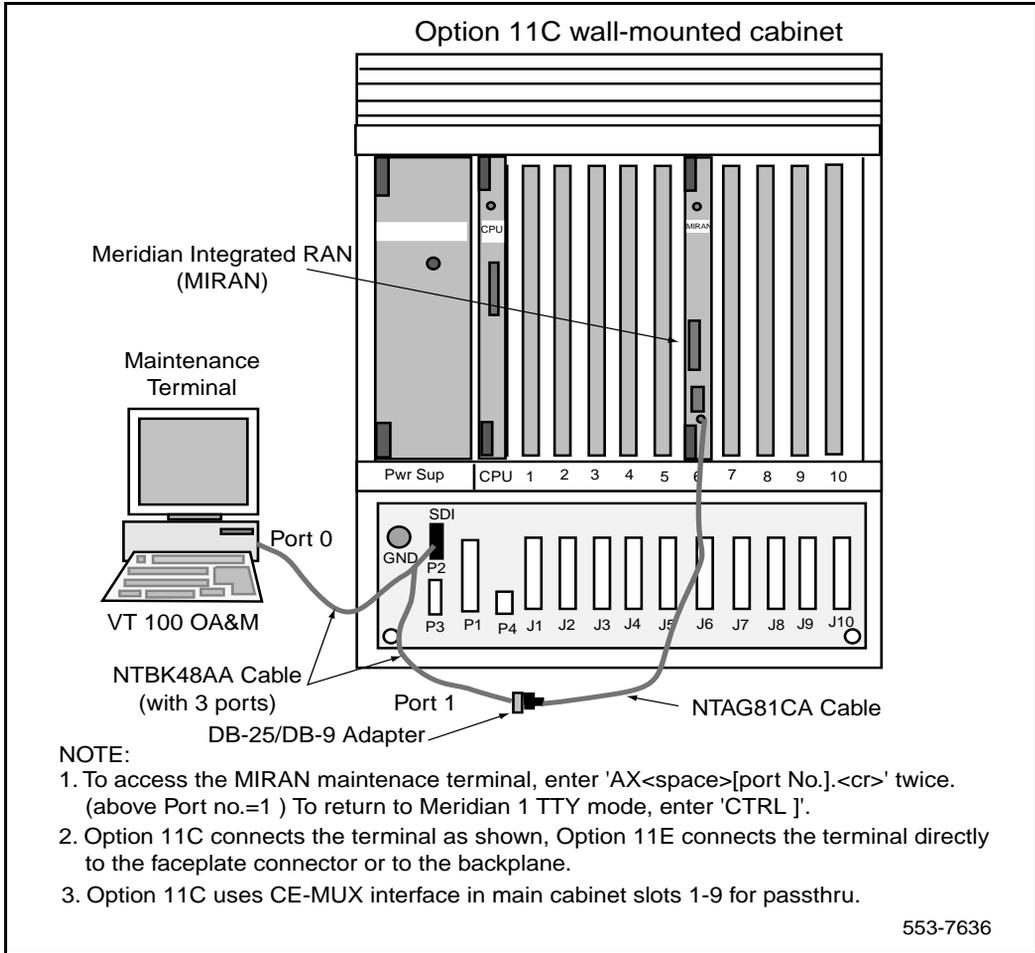
Option 11E/11C MIRAN terminal connection, basic setup

The Options 11E and 11C systems uses a pass-thru approach to connect the TTY and the terminal used for OA&M access.

Figure 11 on page 106 shows the terminal connection to the SDI port on the cabinet backplane and to the 8-pin mini-DIN connector on the MIRAN faceplate. This allows the terminal to be used as a TTY and as a terminal-based OA&M.

A terminal connected to the Option 11E or 11C system can be used as a system TTY, and for terminal-based OA&M access to the MIRAN card.

Figure 11
Option 11C terminal connection



To connect the terminal:

- 1 Position the terminal on a desk near the system.
- 2 Plug the NTBK48AA cable DB-9 male connector into the SDI connector on the Option 11E or 11C backplane. See Figure 11 for detail connection illustration.
- 3 Connect the NTBK48AA Port 0 to the terminal RS-232 port.
- 4 Connect the NTBK48AA cable Port 1 DB-25 connector to the DB-25/DB-9 adapter.
- 5 Plug the NTAG81CA 8-pin mini-DIN connector into the MIRAN faceplate Mini-DIN RS-232 connector.
- 6 Plug the NTAG81CA cable DB-9 connector into the DB-9 connector on the DB-25/DB-9 adapter.

Configuring the Option 11C for CEMUX/pass-thru access

To be able to use the MIRAN maintenance terminal as a system TTY in Option 11C over the CEMUX/pass-thru, configure the terminal parameters using the Configuration Record program LD 17 as shown.

LD 17 – Option 11C CEMUX/pass-thru access configuration

Prompt	Response	Description
REQ	CHA	Change data
TYPE	CFN	Configuration record
ADAN	NEW TTY 3	Add new TTY
TTY_TYPE	LSL	Low speed AUX link
CAB	0	Main cabinet
CNDO	03	Card slot
PORT	0	MIRAN port
DES	MIRAN	Port or link designation
FLOWTYPE	NONE	Flow control

Prompt	Response	Description
BPS	9600	TTY speed
BITL	8	Number of bits
STOP	1	Stop bit
PARITY	NONE	Parity bit
ENL		Enable MIRAN

Note: To access the MIRAN, type the prompt "AX<space>[port number]". Press Enter twice to display the MIRAN OA&M screen on the maintenance terminal.

Note: To return to the system TTY mode, type <CTRL>] and the control will be passed back to the Meridian 1 system.

Connecting an external audio device

An analog audio source and receiver can be connected to the MIRAN for the following purposes:

- recording music or announcements to the Flash memory
- backing up announcements from the MIRAN to a tape or to another MIRAN card
- connecting directly through a trunk emulation port/channel into the Meridian 1 for MOH.

The analog device can be connected to either of the following:

- the 3.5 mm Audio Jack on the MIRAN faceplate
- at the MDF

Analog to internal pass-thru switchover

For Music-on-Hold, both analog ports can be used at the same time, each assigned to different internal channels.

To allow switching from an analog source to an internal channel, the configuration of each channel is polled every 30 seconds to check for an assignment switchover.

If the assignment is for a voice file, the playthrough will be stopped and the voice file started immediately. The opposite is also true. This switchover always occurs at the end of the file to avoid hearing truncated announcements.

Connecting audio devices to the MIRAN faceplate

The MIRAN has a 3.5 mm Audio Jack at the top part of the faceplate. This jack provides one audio input and one audio output.

To connect the external audio source to the MIRAN faceplate audio jack:

- 1** Plug the 3.5 mm jack on the common side of the NTAG81AA Audio Cable into the 3.5 mm Audio Jack on the MIRAN backplane.
- 2** Plug the audio input end of the NTAG81AA cable connector into the audio source device. If the source is at a distance from the MIRAN, an extension may have to be used (not supplied).
- 3** Plug the audio output end of the NTAG81AA cable connector into the audio receiver device for announcement backup. If the source is at a distance from the MIRAN, an extension may have to be used (not supplied).

Connecting audio devices at the MDF

The MIRAN provides two audio inputs and two audio outputs at the MDF.

To connect the external audio devices at the MDF, refer to Figure 12 on page 110 and follow these steps:

- 1** Position the audio devices in a convenient location.
- 2** Obtain the required audio cables of the appropriate length. The cable should have open wires at one end to connect to the MDF connector block.
- 3** Connect each audio cable to the appropriate Analog GND and Port terminal on the MDF. Refer to Figure 12 for signal name and color code of the 25-pair tip/ring cable pairs.
- 4** Plug the other end of each audio cable into the appropriate audio device, as shown in the Figure 12.

Note: The multi-I/O adapter cable connects the I/O panel to the MDF.

Figure 12
Analog device connection at the MDF

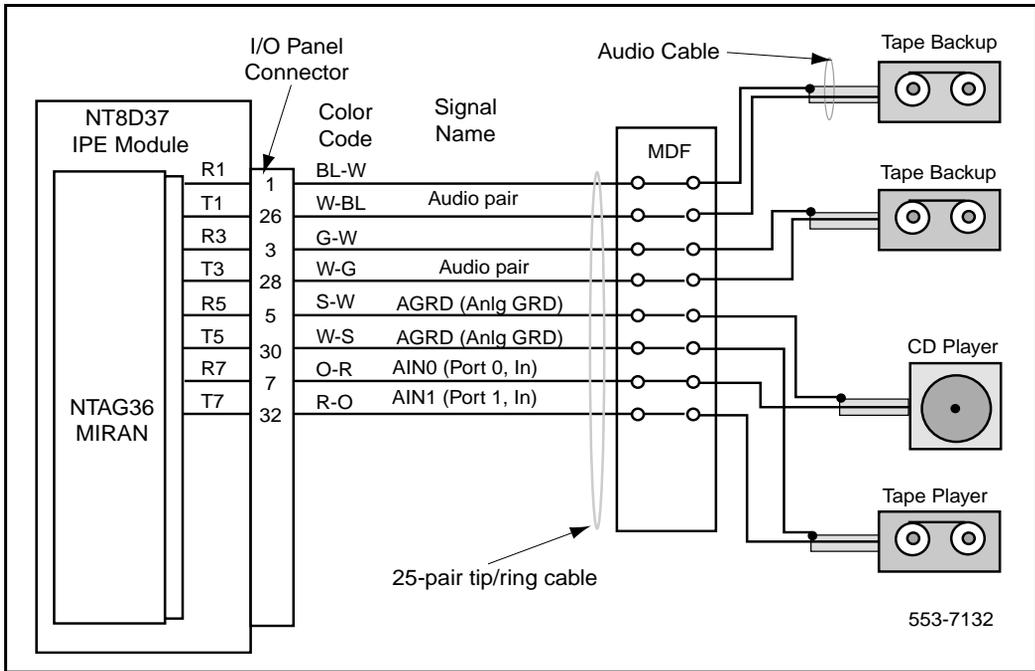


Figure 12 illustrates the external audio source and backup device connections at the MDF. It shows two audio inputs that provide external music or announcements to the MIRAN and two audio recorders that provide backup of announcements located in the MIRAN. Analog audio sources have a separate Analog Ground (AGND), and analog audio backup devices have their own separate AGND. An audio cable extends from the MDF to the audio device.

LAN access installation and setup

The MIRAN Release 2.0 card (NTAG36AC) provides the ability to connect the card to the LAN. LAN access to the MIRAN Release 2.0 card provides the ability to:

- Access the card through a common web browser to perform OA&M functions

- Perform FTP uploads and downloads of files to and from the card
- Telnet to the card from a remote site

Note: LAN access to MIRAN Release 2.0 is optional. LAN access is not necessary to perform any of the necessary OA&M functions.

The following sections describe the procedures for setting up and using the MIRAN Release 2.0 LAN capability.

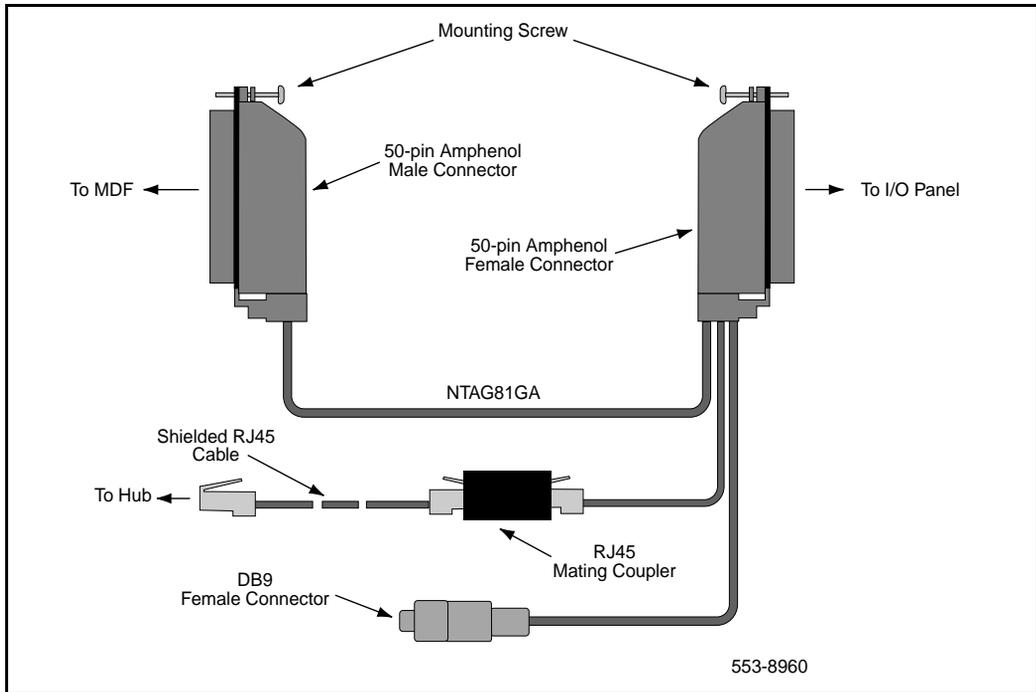
Installing the multi-I/O adapter cable

To enable the LAN capabilities of the MIRAN Release 2.0 card, the multi-I/O adapter cable (NTAG81GA) must be installed. The multi-I/O adapter cable comes with the MIRAN pack. The multi-I/O adapter cable can be installed either before or after installing the MIRAN Release 2.0 card. Figure 13 on page 112 shows a picture of the NTAG81GA multi-I/O adapter cable.

To install the multi-I/O adapter cable, do the following:

- 1 Locate the I/O panel connector for the card slot where the MIRAN Release 2.0 card is, or will be, installed.
- 2 Disconnect the 50-pin female connector of the MDF cable from the I/O panel.
- 3 Attach the 50-pin female connector of the multi-I/O adapter cable to the 50-pin male connector on the I/O panel.
- 4 Attach the 50-pin male connector of the multi-I/O adapter to the 50-pin female connector from the MDF, which was disconnected in step 2.
Note: Use a flathead screwdriver to tighten all 50-pin connectors.
- 5 Connect the RJ45 connector of the multi-I/O adapter cable to an RJ45 mating coupler.
- 6 Connect one end of an RJ45 cable to the RJ45 mating coupler and the other end to the E-LAN hub. This connection completes the connection of the MIRAN Release 2.0 card to the LAN.

Figure 13
The NTAG81GA multi-I/O adapter cable



Note: The DB9 female connector of the multi-I/O adapter cable can be connected to a maintenance terminal or to a modem. This configuration can provide a permanent connection for the card to a maintenance terminal. If necessary, use the NTAG81BA extender cable to extend the DB9 female connector lead from the multi-I/O adapter cable.

Configuring the IP address, subnet mask, gateway, and IP method

To enable the LAN capabilities of the MIRAN Release 2.0 card, do the following:

- Obtain the IP address, subnet mask, gateway, and IP method from the system administrator.

Note: The IP method can be either 'bootp' or 'static'. To disable the IP connection, but keep MIRAN working, set the IP method to 'disabled'.

- Install the MIRAN Release 2.0 card into the appropriate slot.
- Connect the VT100-type maintenance terminal.

To configure the IP address, subnet mask, Gateway, and IP method for the MIRAN Release 2.0 card, do the following:

- 1 Log in to the MIRAN Release 2.0 text-based user interface by entering the user name and password and selecting **-Login-** at the login screen. Refer to "The Login screen" on page 135 for further information.
- 2 At the Main Menu, select **-2-** to access the Pack Administration menu.
- 3 At the Pack Administration menu, select **-6-** to access the Ethernet Configuration screen.
- 4 At the Ethernet Configuration screen, enter the 'new' IP address, subnet mask, gateway, and IP method. This new information writes over any old LAN configuration information that the card contains.
- 5 Select **-Set-** to set the new LAN configuration information. A confirmation notice at the bottom of the Ethernet Configuration screen indicates successful completion of the task. Refer to "The Ethernet Configuration screen" on page 182 for further information.
- 6 Reboot the MIRAN card to activate the new LAN configuration.

Accessing the BUI

After installing the multi-I/O adapter cable and configuring the IP address, subnet mask, and gateway for the MIRAN Release 2.0 card, the Browser User Interface (BUI) can be accessed. To access the BUI, use a standard web browser that supports HTML frames. Nortel Networks recommends Netscape 3.0 or later, or Internet Explorer 3.0 or later.

To access the MIRAN Release 2.0 BUI, do the following:

- 1 Enter the IP address of the card in the URL address field of the browser. The login screen of the BUI appears.
- 2 Select the username; **admin** is the default.
- 3 Enter the password; **admin000** is the default password for **admin**.

- 4 Click on the **Login** button. If the login is successful, a confirmation message is received.
- 5 Click on **Main Menu**. The main MIRAN Administration page appears.

After accessing the BUI, most OA&M functions can be performed.

Note: The BUI cannot be accessed while someone else is using it.

Telneting to the MIRAN Release 2.0 card

The LAN connection to the MIRAN Release 2.0 card enables a user to telnet to the text-based user interface (see page 131) from a remote site, and interact with the MIRAN Release 2.0 card in the same way as using a local maintenance terminal.

To telnet to the MIRAN Release 2.0 card, do the following:

- 1 Point a standard web browser to the BUI address for the particular MIRAN Release 2.0 card to be accessed.
- 2 Click on the Telnet hyperlink in the left frame of the BUI login page. The login screen of the text-based user interface appears.

Note: Telnet access to the text-based user interface is available without logging into BUI.

At the login screen, log into the text-based user interface the same way as if using the local maintenance terminal.

Note: The MIRAN Release 2.0 card cannot be accessed while someone else uses the text-based user interface, the BUI, or the TUI.

FTP downloads and uploads

The LAN connection to the MIRAN Release 2.0 card provides the ability to FTP files to and from the card. To use the FTP capability, the following are required:

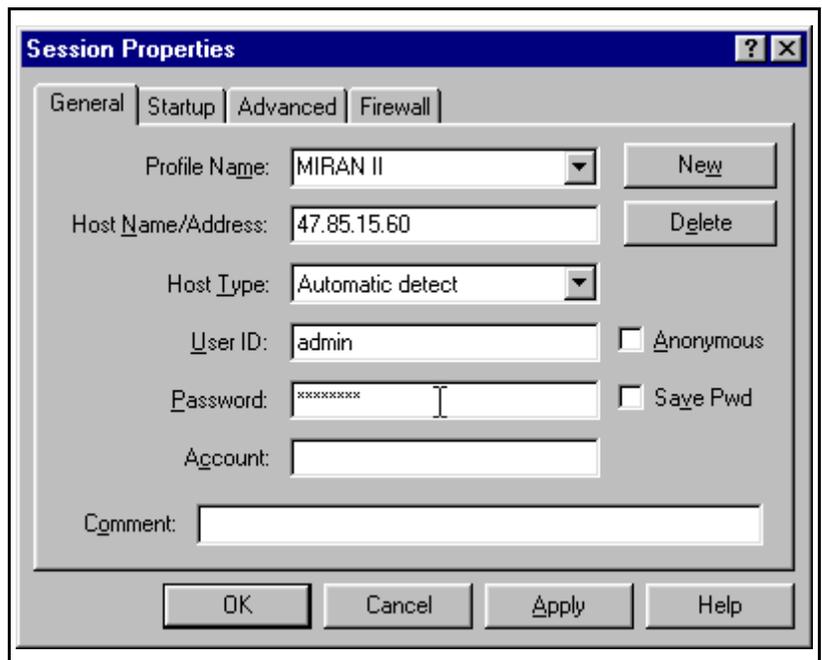
- A connection of the MIRAN Release 2.0 card to the LAN through the multi-I/O adapter cable
- A permanent assignment of an IP address to the card

- A valid user name and password with which to access the card
- a standard FTP client application (The figures in this section show the use of the WS_FTP Professional file transfer client.)

To FTP files to and from the MIRAN Release 2.0 card, do the following:

- 1 Open the FTP client application and select **Connect** to open a dialog box similar to the one that Figure 14 shows.

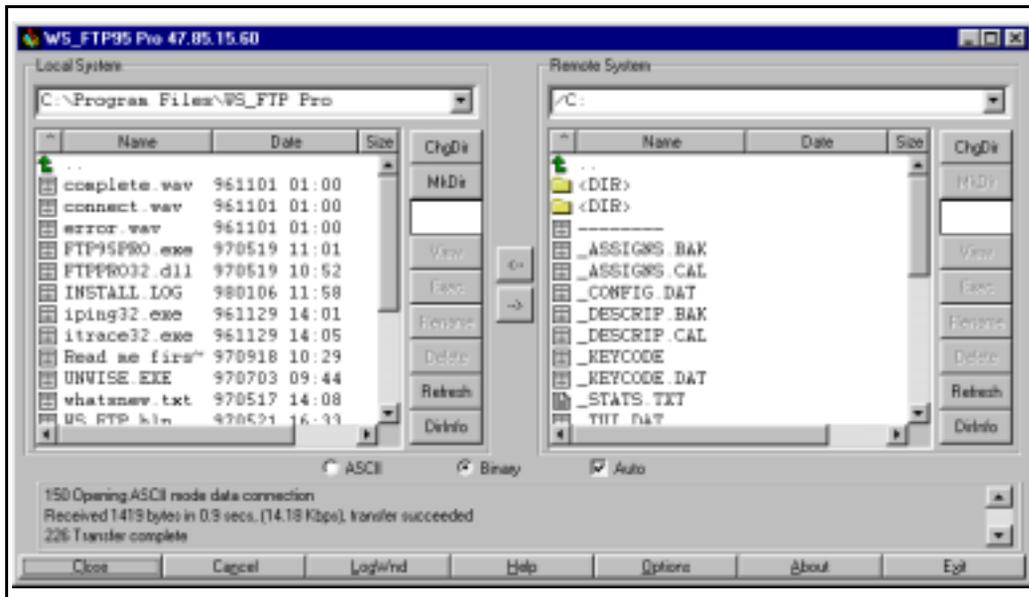
Figure 14
Logging into the MIRAN Release 2.0 card through an FTP client application



- 2 Enter the IP address of the MIRAN Release 2.0 card in the 'Host Name/Address' field.
- 3 Enter the user name and password for the card. This is the same user name and password used to log into the text-based user interface.

- 4 Click **OK** to connect to the MIRAN Release 2.0 card. A dialog box appears, similar to the one that Figure 15 on page 116 shows. From here, files can be FTP'd to and from the MIRAN Release 2.0 card in the same way files are FTP'd to and from any server.

Figure 15
Accessing the MIRAN Release 2.0 card through an FTP client application



Note 1: Select 'ASCII' format for the transfer of text files and 'Binary' format for the transfer of all other files.

Note 2: If a .WAV file is copied to the MIRAN card, remember the .WAV file must be converted to .ALW or .ULW format before an assignment can be created for the file. Refer to "The Convert Announcement File screen" on page 159 for instructions on converting sound files.

The 'Remote System' lists the files in drive C: of the MIRAN Release 2.0 card. If files must be transferred to or from drive A: or drive B:, select the 'Change Directory' option on the FTP client application. Enter '/A:' for drive A: or '/B:' for drive B: as the new directory name.

The FTP client application can also be used to perform file maintenance functions on the MIRAN Release 2.0 card such as:

- Renaming or deleting files
- Creating or deleting sub-directories

Most FTP client applications also allow profiles to be created for addresses that are frequently accessed. Use this capability to create a profile for each MIRAN Release 2.0 card in the network. This prevents having to enter the IP address, the user name, and the password each time a card is accessed.

Connecting multiple MIRAN cards

A maximum of 16 MIRAN cards can be connected in a daisy-chain to form a MIRAN Local Area Network for administration and maintenance purposes.

These MIRAN cards can be inter-connected:

- at the 8-pin mini-DIN connector on the MIRAN faceplate, or
- at the MDF

Connecting multiple MIRAN cards at the faceplate

All of the MIRAN cards in the system are connected in a daisy-chain using the NTAG81DA Maintenance Cable Splitter cable with a mini-DIN connector on the common end, and two DB9 connectors on the other ends.

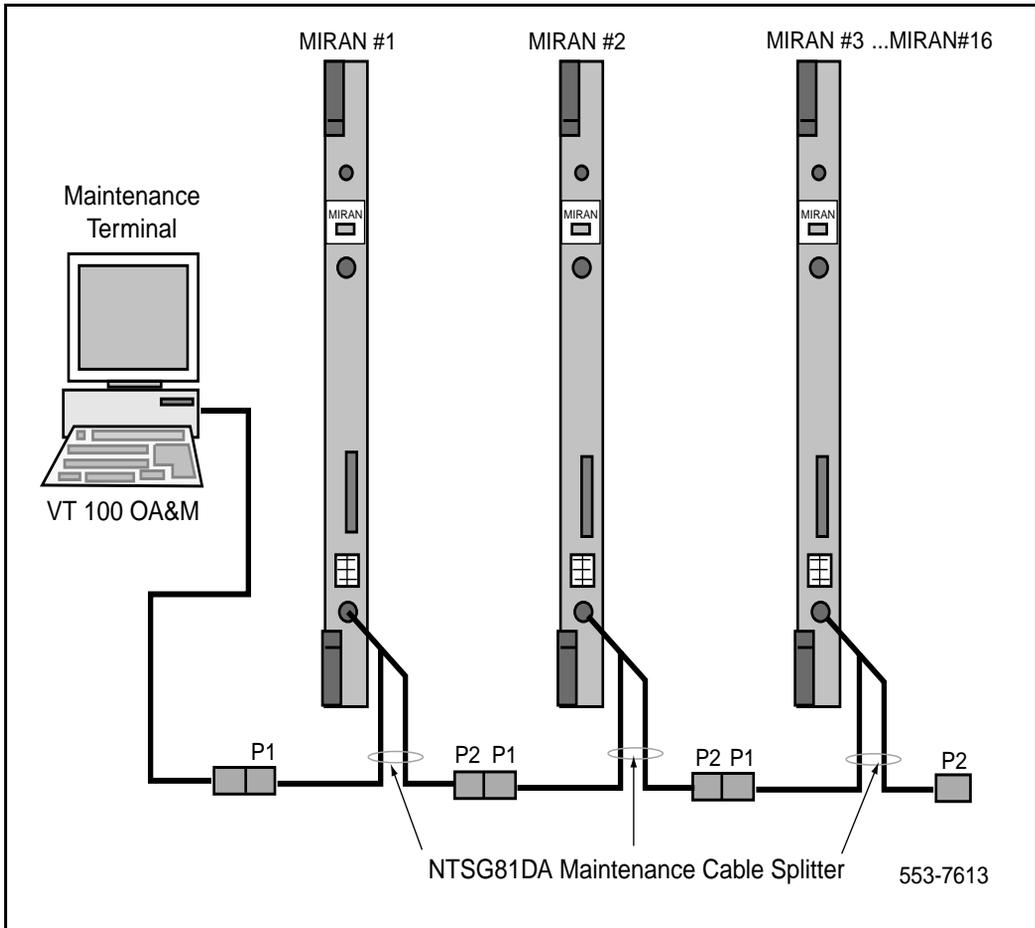
To install the MIRAN cards and connect them in a V-LAN configuration:

- 1 Install all the MIRAN cards into their card slots in the IPE module or shelf, if not already installed.
- 2 Plug the NTAG81DA cable mini-DIN connector into the mini-DIN connector on the MIRAN faceplate. Do this for every MIRAN installed.
- 3 Plug the DB9 female connector (labeled P1) of the NTAG81DA cable of the first MIRAN into the terminal, terminal emulating PC, or modem. Use the appropriate adapter cable, if necessary.
- 4 Plug the DB9 male connector (labeled P2) of the NTAG81DA cable of the first MIRAN into the DB9 female connector (labeled P1) of the NTAG81DA cable of the second MIRAN. See Figure 16 on page 118.
- 5 Repeat steps 3 and 4 for the rest of the MIRAN cards in the V-LAN configuration.

- 6 If MIRAN cards occupy the same module or shelf, the faceplate cables can be connected directly to each other as shown in Figure 16. For longer runs, the NTAG81BA Maintenance Extender cable is required to span the distance.

Figure 16 illustrates the multiple MIRAN connections in a V-LAN configuration to enable one terminal to access each MIRAN in the chain. A maximum of 16 MIRAN cards can be connected into a V-LAN configuration.

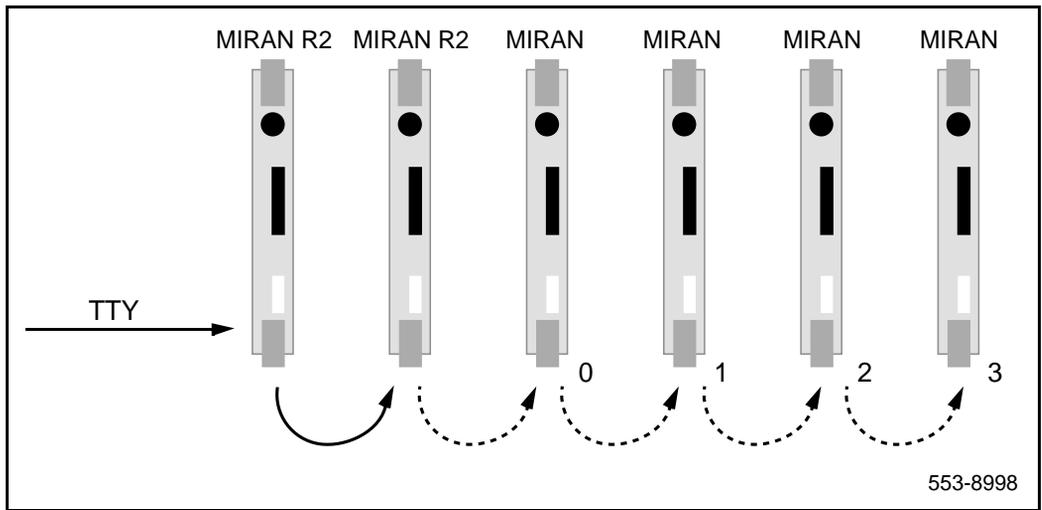
Figure 16
Terminal-based OA&M connection for multiple MIRAN cards



V-LAN Support

MIRAN Release 2.0 supports V-LAN over Ethernet as well as the serial method used in the initial MIRAN product. When connecting both MIRAN and MIRAN Release 2.0 cards, the MIRAN Release 2.0 cards must be the first cards in the V-LAN to be able to telnet to the older cards. Once a MIRAN Release 2.0 card in the V-LAN configuration is accessed by telnet, any MIRAN card (new or old) that follows in the V-LAN configuration can be accessed, as shown in Figure 17.

Figure 17
V-LAN connection of MIRAN and MIRAN Release 2.0 cards



Note: Use only the text-based user interface with a V-LAN configuration. Browser-based and FTP access are not available through a V-LAN configuration.

Note: Nortel Networks recommends that multiple MIRAN Release 2.0 cards that have LAN connections **not** be interconnected in a V-LAN configuration. The V-LAN overrides telnet access. To use telnet, telnet into the first MIRAN Release 2.0 card in the V-LAN chain to be able to access the other cards in the chain.

Connecting multiple MIRAN cards at the MDF

A maximum of 16 MIRAN cards can be connected in a V-LAN at the MDF. This is a more convenient approach than the connection at the MIRAN faceplate because it allows MIRAN cards to be removed without disconnecting any cables.

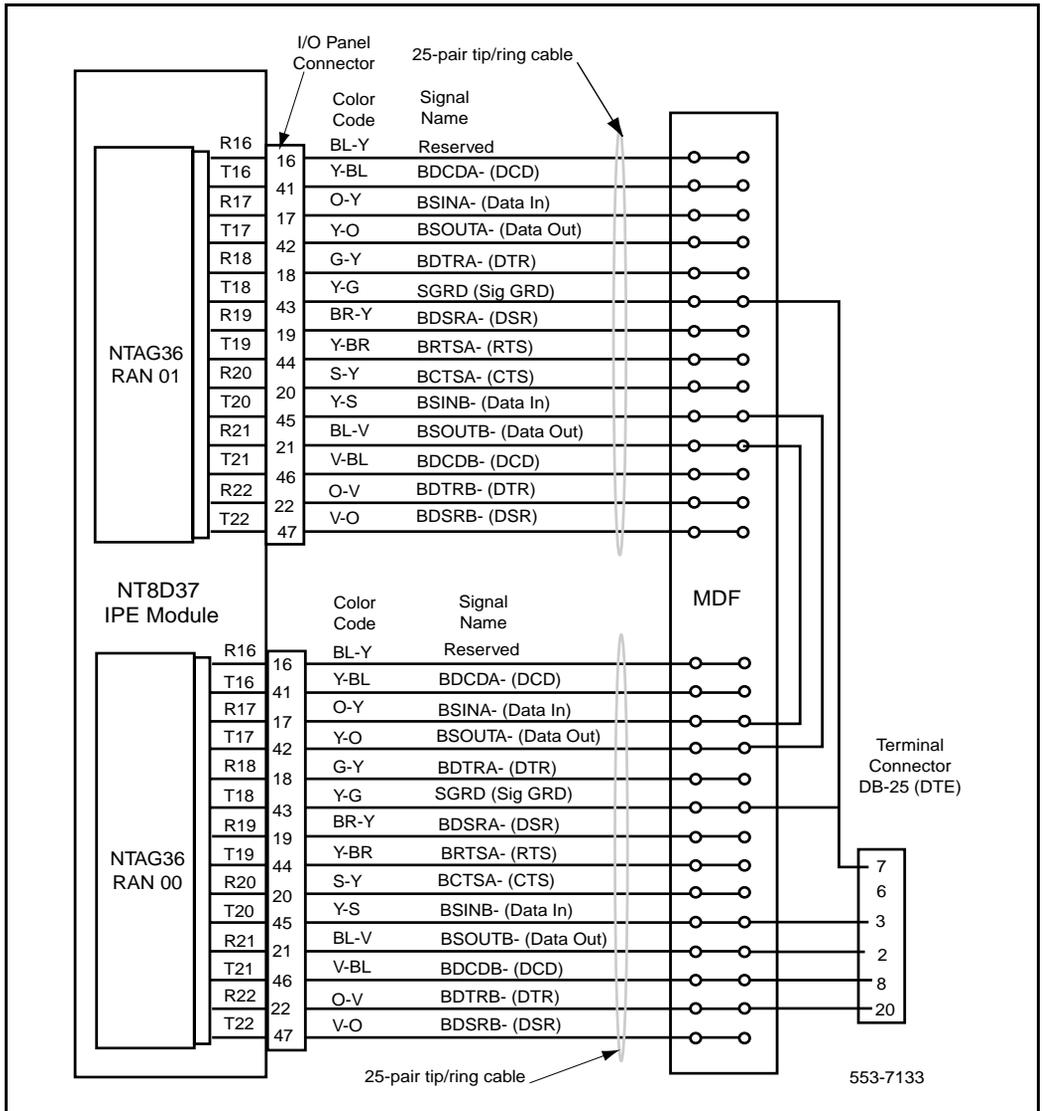
Note: If a MIRAN card is removed from the daisy-chain, all the remaining cards down-stream from the removed card cannot be accessed by the administration and maintenance terminal. All the cards that are up-stream, towards the terminal, will continue to be accessed by the terminal. Once the card is re-installed, all cards can be accessed.

To connect MIRAN cards in a V-LAN configuration at the MDF:

- 1 Install all the MIRAN cards into their card slots in the IPE module or shelf, if not already installed.
- 2 Identify each 25-pair tip/ring cable at the MDF that is associated with each MIRAN card. These cables have been installed during system installation or in the pre-installation preparation phase.
- 3 Cross-connect the wires at the MDF connector block that represent Port A and Port B as shown in Figure 18:
- 4 Connect the terminal to the first MIRAN in the V-LAN as shown in Figure 10 "Terminal connection to the MIRAN at the MDF" on page 104 by plugging the Port B connector of the first MIRAN to the terminal cable.
- 5 Cross-connect Port A of the first MIRAN to Port B of the second MIRAN in the chain, as shown in Figure 18.
- 6 Continue cross-connecting Port A to Port B until the last MIRAN in the daisy-chain.
- 7 Port A on the last MIRAN is not connected.

Figure 18 illustrates the connection of multiple MIRAN cards at the MDF by cross-connecting Port A to Port B of MIRAN cards.

Figure 18
Multiple MIRAN card connections over the RS-232 port at the MDF



Performing upgrades and replacements

Administration tasks can include upgrading Ran applications, and performing backups.

Upgrades can include:

- storage capacity expansion
- channel capacity expansion

Backups

Backup of recordings is not necessary because the Flash technology used on the MIRAN is very reliable. Backup is available to a PCMCIA memory card, if needed.

The configuration must be backed up. To back up the configuration, refer to “The Backup Configuration screen” on page 162.

PCMCIA backup

Insert a blank PCMCIA card into drive A:, as if increasing the messaging storage capacity. Before beginning to record any additional announcements to this Flash, initiate an OA&M session and select the backup to PCMCIA option or use the **BACKUP** command on the Command line.

The drive A: is checked for the BACKUP.DAT file before checking drive C:. If the BACKUP.DAT file exists on the PCMCIA card in drive A:, the system will retrieve the configuration from this drive rather than the BACKUP.DAT file in drive C:.

For details, see “RAN Application: Text-based user interface” on page 131 and “RAN Application: Telephone User Interface” on page 215 in this document. The new card is now available as a backup medium rather than as a storage medium.

If a backup is done to a non-blank card, the existing files will be overwritten.

Note: When backing up recordings and configuration, define the drive to use for backup.

A backup includes both recorded announcements and configuration. The configuration contains information relating to the RAN/music PCM data stored in Flash that includes:

- voice files
- announcement-to-channel allocation
- external/internal music selection
- passwords
- configuration variables

Figure 19 on page 124 illustrates backing up recordings by using a Flash Memory card.

Restoring configuration

When MIRAN is rebooted, the MIRAN configuration is restored from the disk using the following sequence: first drive A:, then drive B:, and finally drive C:.

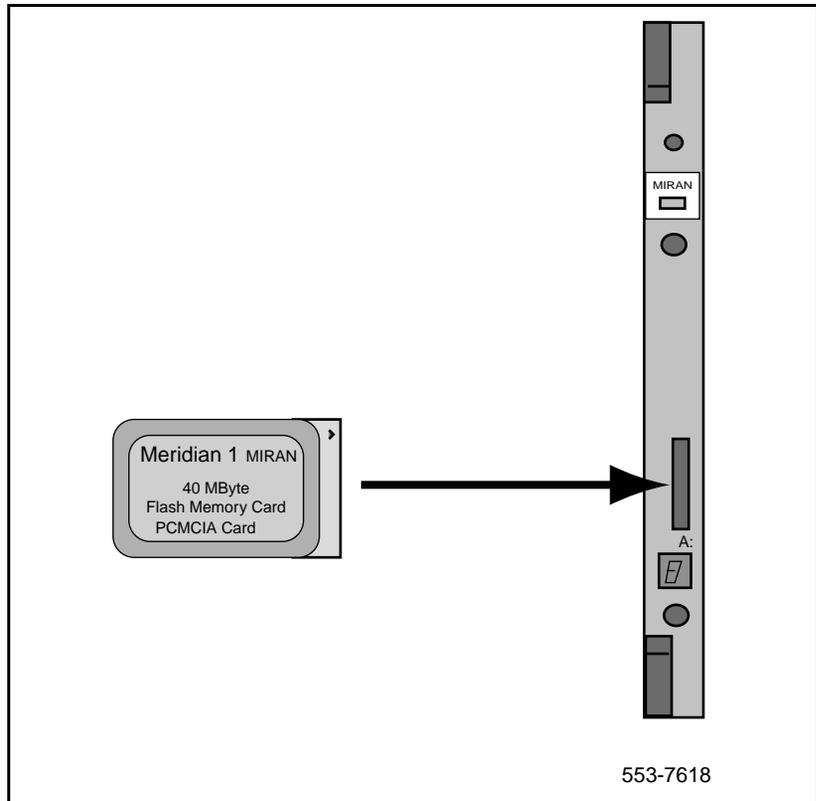
This allows a previously stored configuration to be over-written by installing an ATA card in drive A:, which contains a new BACKUP.DAT file that has been saved on a different MIRAN card.

RAN upgrades

Two types of RAN application upgrades are available on the MIRAN card. These are:

- a software upgrade for bug fix and/or addition of new features
- a memory upgrade to increase the voice storage capacity

Figure 19
Backups and upgrades of MIRAN configuration/recordings



Local software upgrade

To perform a local software upgrade:

- 1 Insert the new feature PCMCIA card into the drive A: slot on MIRAN, as shown in Figure 19 on page 124.

Note: The configuration file can be prepared in the distributor's office for each MIRAN customer and then placed on the PCMCIA card, along with the application and/or recorded announcements to be upgraded. Then, the PCMCIA card is sent to the customer, who inserts the PCMCIA card into the MIRAN card and performs the upgrade procedure.

- 2 Initiate the upgrade by using the “The Software Upgrade screen” on page 173. The MIRAN copies across the new application while maintaining all files from the existing ATA Flash memory that are still needed, such as existing recorded announcements and configuration.
- 3 Once the upgrade is complete, remove the old Flash card, unless it is needed to provide additional storage capacity.
- 4 Enter the new keycode on the MIRAN terminal to activate new features just installed.
Note 1: If the software upgrade is a maintenance type (bug fix etc.), new keycode is not needed.
Note 2: If the upgrade consists of a new application or enhancement, the administrator must enter a new keycode on the maintenance terminal to enable the upgrade.
- 5 Perform a cold reboot to activate the new feature(s).

Remote software upgrade

MIRAN Release 2.0 cards can be upgraded remotely from any location on the customer’s network using the following procedure.

- 1 Log into the card using an administrator level password. The access can be either through Telnet or through a modem connection.
- 2 Download the software upgrade binary over the network using FTP. Sufficient space must be available on the MIRAN Release 2.0 card.
- 3 Enter the software upgrade menu in the text-based user interface, through a serial or a telnet connection, and call up the file that was just downloaded. Complete the upgrade using “The Software Upgrade screen” on page 173.
- 4 Enter the new keycode on the MIRAN terminal to activate new features just installed.
Note 1: If the software upgrade is a maintenance type, such as bug fix, a new keycode is not needed.
Note 2: If the upgrade consists of a new application or enhancement, the administrator must enter a new keycode on the maintenance terminal to enable the upgrade.
- 5 Perform a cold reboot to activate the new feature(s).

Increasing voice storage

Voice storage capacity can be increased to the maximum amount available on commercially available PCMCIA memory cards (up to 5 hours).

To expand the announcement storage capacity, insert a blank PCMCIA Flash card into the A: slot on the faceplate. The MIRAN software checks the Flash card for formatting information. If none exists, the MIRAN will format the card in DOS format. When completed, the full capacity of the card will be available for storage. To expand voice storage, use the on-board drive B:.

Upgrade MIRAN NTAG36AA card to MIRAN Release 2.0 software

Note: Ensure that the new MIRAN Release 2.0 is on hand. Nortel Networks recommends that the entire MIRAN configuration be backed up to a spare PCMCIA card before beginning the upgrade procedure.

To upgrade an existing MIRAN NTAG36AA card to MIRAN Release 2.0 software, do the following:

- 1 Backup all announcement files that are being kept, to a PCMCIA card.
- 2 Disable the MIRAN NTAG36AA card in LD 32.
- 3 Remove any faceplate connections.
- 4 Remove the MIRAN NTAG36AA card from its slot.
- 5 Insert MIRAN Release 2.0 PCMCIA card in drive B:.
- 6 Re-install the MIRAN NTAG36AA card in its slot.
- 7 Restore faceplate connections, if any.
- 8 Log into the MIRAN card from the TTY and access the Software Upgrade menu. Select the 'Browse' option and select the B: drive. Select the file that has the extension '.MMS' and activate the upgrade.
- 9 When the upgrade is complete, reboot the pack. When the reboot is complete, the new '*MIRANII*' login screen appears.
- 10 Log into the MIRAN Release 2.0 text-based user interface (username = **admin** and password = **admin000**).
- 11 At the Main menu, enter **-2-** to access the Pack Administration menu. At the Pack Administration menu, enter **-2-** to access the Keycode Entry screen.

- 12 Input the new keycode. Wait for the keycode validation screen and ensure that the configuration is correct before continuing.
- 13 Insert the PCMCIA card from step 1 into drive A: and upload the announcement files.
- 14 Define users (if desired), calendar assignments, and descriptors.

Replace MIRAN NTAG36AA card with MIRAN Release 2.0 card and software

To replace a MIRAN NTAG36AA card that has an existing configuration with the MIRAN Release 2.0 card and software, do the following:

- 1 Backup all announcement files that are being kept, to a PCMCIA card.
- 2 Disable the MIRAN NTAG36AA card in LD 32.
- 3 Remove any faceplate connections.
- 4 Remove the MIRAN NTAG36AA card from its slot.
- 5 Remove the security device and insert it onto the NTAG36AC MIRAN Release 2.0 card.
- 6 Install the MIRAN Release 2.0 card.
- 7 Restore the faceplate connections.
- 8 Log into the MIRAN Release 2.0 text-based user interface (username = **admin** and password = **admin000**).
- 9 At the Main menu, enter **-2-** to access the Pack Administration menu. At the Pack Administration menu, enter **-2-** to access the Keycode Entry screen.
- 10 Input the new keycode. Wait for the keycode validation screen and ensure that the configuration is correct before continuing.
- 11 Insert the PCMCIA card from step 1 into drive A: and upload the announcement files.
- 12 Define users (if desired), calendar assignments, and descriptors.
- 13 Set up LAN connections, if desired.

Recording announcements remotely for use on the MIRAN card

MIRAN Release 2.0 enables a customer to record announcements on a remote PC, and then FTP them to MIRAN Release 2.0 cards that reside in different locations. Through the MIRAN Release 2.0 BUI, the announcements can also be assigned to the various MIRAN cards from the same remote PC.

For recording announcement files on a PC, Nortel Networks recommends the shareware, Goldwave. To record an announcement on a PC using Goldwave:

- 1 At the Goldwave window, go to the "Options" menu on the tool bar and select "File types". In the filename extension, insert "**snd**"; set "Rate (Hz)" to "**8000**"; set "Format:" to "**PCM**"; and set "Attributes:" to "**8-bit, mono, unsigned**". Click the OS Associate box and close the window.
- 2 Click the new icon on the tool bar. Select "voice" under quick settings, select "mono" under channels, and select the desired length of the announcement. Close the window.
- 3 Go to tools on the tool bar and select "Device controls". Press the red button to begin recording. Press the red button again to finish the recording.

Note: Use the "Help" menu to select the recording device.

- 4 Go to "Effects" on the tool bar and select "Resample". Change "Rate (Hz)" to "**8000**". Select "OK".
- 5 Go to "File" on the tool bar and select "Save as". Input the desired filename; select the file type, either "*.snd" or "*.raw"; and select "μ-law, mono" in the "File Attributes:". Select "Save".
- 6 Go to Windows Explorer, locate the file, and rename the file extension to ".ulw" (or ".alw", if appropriate).
- 7 Transfer the recording to a PCMCIA card or FTP it to a MIRAN's C: drive. Once the recording is on the MIRAN's C: drive, assign it to any available MIRAN channel.

Note: Remember to FTP announcement files as type "Binary".

As an alternative to step 5, save the file as type “*.wav” instead of “*.snd” or “*.raw”. Then skip step 6 and transfer the .wav file to the MIRAN’s C: drive as step 7 describes. However, once the .wav file is on the C: drive, it must be converted to μ -law or a-law format before the announcement can be assigned to a MIRAN channel. See “The Convert Announcement File screen” on page 159

To replace old announcement files with the new files that are on the PCMCIA:

- 1** Display existing (old) files by accessing the File Explorer screen from the File Commands menu. See “The File Commands menu” on page 166.
- 2** Delete the files that will be replaced. See “The Delete File screen” on page 169.
- 3** Copy new files from the PCMCIA card into the drive where the other announcement files are located. See “The Copy File screen” on page 168.
- 4** Convert files from .WAV to .ULW or .ALW, or convert files from .ULW or .ALW to .WAV, if required. See “The Convert Announcement File screen” on page 159.
- 5** Professionally recorded prompts must be in .WAV, .ALW, or .ULW format. See “The Record Announcement from External Channel screen” on page 157. Also see “Sound recording configuration” on page 267.

RAN Application: Text-based user interface

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This chapter describes the text-based user interface for the MIRAN Release 2.0 (NTAG36AC) card. The text-based user interface provides menus and commands to perform all of the necessary MIRAN OA&M functions. The software for this interface is part of the MIRAN-specific OA&M tool running under VxWorks; it is independent of Meridian 1 software.

There are two ways to use the text-based user interface to access all commands and options:

- Use the menu system
- Enter commands on the command line

To use the MIRAN text-based user interface, connect a VT-100 type terminal to the MIRAN card. The MIRAN Release 2.0 card supports a serial connection between the terminal and the card.

The MIRAN Release 2.0 card also supports telnet access to the text-based user interface over a LAN. Refer to “Connecting a VT100-type terminal to the MIRAN” on page 101 for instructions on how to make a serial connection from the MIRAN card to the VT-100 type terminal. Refer to “LAN access installation and setup” on page 110 for instructions on how to connect the MIRAN card to the ELAN.

The MIRAN Release 2.0 card also supports a Browser User Interface (BUI). This BUI provides a web-based version of the MIRAN menu system, which can be accessed access through a standard web browser. This BUI also supports file transfers and online viewing of customer documentation. For more information on the BUI, see “RAN Application: The Browser User Interface” on page 235.

General procedure for configuring MIRAN

The following procedure provides a general sequence of steps in configuring MIRAN functions and then using the text-based user interface to configure system RAN and MOH applications:

- 1** Configure the RAN and MOH trunk route and trunk data block, as “X11 system configuration” on page 77 describes.
Complete this step during installation and configuration.
- 2** Configure the DID trunk for the Telephone User Interface (TUI) access, if necessary.
See “Configuring the DID route for the TUI” on page 84 and “Configuring the MIRAN trunks” on page 85.
Complete this step during installation and configuration.
- 3** Setup the terminal for the text-based user interface access, which “Connecting a VT100-type terminal to the MIRAN” on page 101 describes.
Complete this step during installation and configuration.
- 4** Login to the MIRAN Release 2.0 text-based user interface as either a user or an administrator.
Both a user name and a password must be entered.
The default user login is *User Name: user* and *Password: user0000*.
The default administrator login is *User Name: admin* and *Password: admin000*.
The default distributor login is *User Name: distrib* and *Password: distrib0*.
See “The Login screen” on page 135 for more detail.
- 5** Enter the keycode, if necessary. See “The Keycode Entry screen” on page 172.

Note: When MIRAN is ordered as part of a new Meridian 1 (Options 51C through 81C), the factory pre-loads the keycode into the MIRAN. Option 11E/11C and stand-alone orders of the MIRAN require that the keycode be entered.

- 6 Perform a cold reboot of the MIRAN card and login again.
See “Maintenance and Diagnostics” on page 187 for instructions on performing a cold reboot.
- 7 Record the announcements.
From the Main Menu, select the MIRAN Administration menu, then the Announcement Configuration menu, then the Record Announcement screen.
Refer to “The Record Announcement from External Channel screen” on page 157.
From this screen, record announcements through port A0 on the faceplate or the MDF.
- 8 Assign announcements.
From the Record Announcement screen, return to the Announcement Configuration menu and select Calendar Operations.
From the Calendar Operations menu, create assignments, with or without descriptors.
Repeat this step for other files and channels.
Refer to “The Calendar Operations menu” on page 142.
- 9 Back up the original configuration onto drive C:, or to a PCMCIA card in drive A: if available.
- 10 Copy new files (if first installing or upgrading software) from drive A: to drive C:.
Remove the PCMCIA from drive A: and store in a safe place for future use. This enables the configuration to be restored into the MIRAN without having to re-configure the system and re-record the announcements.

Configuring the VT-100 type terminal

Each MIRAN card has a port A and a port B, which enables direct connection through the MDF to a VT-100 terminal, or to a PC running a terminal emulation program. Ports A and B can be used at the MDF to interconnect up to 16 MIRAN cards in a V-LAN configuration. This V-LAN serial connection enables maintenance of all MIRAN cards from a single terminal. The system numbers each card in hexadecimal, starting with 0 for the first card in the serial connection. Connect the terminal to card 0.

Note: Alternatively, each MIRAN card can be connected through an ethernet adapter to the LAN. This alternative enables maintenance of all MIRAN cards from any PC that has web or telnet access.

To run the text-based user interface, configure the VT-100 terminal emulation parameters as shown in Table 19.

Table 19
VT-100 terminal configuration parameters

Parameter	Setting
Transmission rate	9600 baud
Data bits; stop bit	8
Stop bit	1
Parity	No
Flow control	None

Note: If Windows™ based terminal emulation is used, disable the CTRL and ARROWS keys. The text-based user interface uses these keys to traverse the menus.

The Login screen

Figure 20 on page 136 shows the MIRAN Release 2.0 Login screen. This screen appears when the terminal is connected to the MIRAN card, and the Enter key is pressed.

The screen displays [VLAN ID **n**], where **n** is the MIRAN card number (in hexadecimal) that is currently accessed. The maintenance terminal is always connected to the first MIRAN in the V-LAN and is numbered 00 automatically.

Select the V-LAN button in the lower-left corner to go to the previous MIRAN card. Select the V-LAN button in the lower-right corner to go to the next MIRAN card.

To log in to the selected MIRAN card, do the following:

- 1 Enter the user name.
- 2 Enter the password.
- 3 Select the Login button.

Note: If an ‘Access denied’ response is received, press the ‘Shift’ key and tilde (~) to refresh the screen. Then attempt to log in again. If an ‘Access denied’ response is received for a third time, the MIRAN card locks the user out for 20 minutes.

Note: All passwords must be at least eight characters in length, with a maximum of 12 characters, for MIRAN Release 2.0. It is possible to change the passwords at each user level.

Note: All default users and passwords can be restored by deleting the C:_USERS.DAT file.

The Status screen

Select the Status button, without logging in, to view the status of the current card. Figure 21 shows the Status screen, which displays the following:

- the current status of the RAN Application version and release
- the board status
- the current time
- the status of the eight one-to-one channels and two cross-connect channels

To display up-to-date channels status, refresh the screen by pressing the spacebar.

To exit the Status screen and return to the Login screen, press the Enter key.

Figure 21
The Status screen

```

[10047402]           - Pack Status -
[TUE 13/07/1999 03:24:11]
                Board Enabled : Yes (Mu-Law)

Channel  Enabled  Application      Assigned by      Message Source  Active
  0         Y    Start/Stop RAN          super           None             N
  1         Y    Start/Stop RAN          super           A:WELCOME.ULW   N
  2         Y    Start/Stop RAN          super           A:WELCOME.ULW   N
  3         Y    Continuous RAN          super           !A:CLOSED.ULW   N
  4         Y    Continuous RAN          super           !A:CLOSED.ULW   N
  5         Y    Continuous RAN          super           A:WELCOME.ULW   Y
  6         Y    Continuous RAN          super           A:WELCOME.ULW   Y
  7         Y    Set Based O&M

                Cross Connect Ports (Mu-Law)

Port  Function  Application      Level            Message Source  Active
A0  Output    Idle            07 (-10.5 dB)   None             N
A0  Input     Idle            07 (-10.5 dB)   None             N
A1  Output    Idle            07 (-10.5 dB)   None             N
A1  Input     Idle            07 (-10.5 dB)   None             N

                Press Enter to exit, Space to refresh.
    
```

The Main menu

A successful login displays the Main menu. See Figure 22.

Figure 22
The Main menu

```
[10047402]           - Main Menu -           [Admin]

  1  MIRAN Administration...
  2  Pack Administration...
  3  Maintenance & Diagnostics...
  4  User Administration...

  9  Log Off...

Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

The Main menu provides five options:

- **MIRAN Administration** – accesses all RAN-specific tasks and menus such as announcement recording and configuration, operational statistics, backup and restore configuration, playback level setting, and batch file running.
See “The MIRAN Administration menu” on page 140.
- **Pack Administration** – accesses all MIRAN-specific tasks and menus such as file commands, keycode entry, software upgrade, system information, configuration variables, and LAN configuration.
See “The Pack Administration menu” on page 165.
- **Maintenance and Diagnostics** – provides access to system information, password change, command line access, diagnostics, warm reboot, and cold reboot. The distributor can access all functions, and user can access only system information and password change.
See “Maintenance and Diagnostics” on page 187.

- **User Administration** - provides access to adding, editing, viewing, and deleting users.
Refer to “The User Administration menu” on page 188.
- **Logoff** - logs out of the Main Menu and returns to the Login screen.

The MIRAN Administration menu

At the Main menu, select **-1-** to access the MIRAN Administration menu. See Figure 23.

Figure 23
The MIRAN Administration menu

```
[10047402]           - MIRAN Administration -           [Admin]
  1 Announcement Configuration...
  2 Operational Statistics
  3 Backup Configuration
  4 Restore Configuration
  5 Playback Level
  6 Run Batch File

  9 Back to previous Menu...

Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

At the MIRAN Administration menu, there are seven options:

- **Announcement Configuration...** – displays the Announcement Configuration menu that enables the following actions: to create calendar and descriptor announcements, record and play announcements, and convert announcement files. Refer to “The Announcement Configuration menu” on page 141.
- **Operational Statistics** – displays RAN channel usage statistics. See “The Operational Statistics screen” on page 160.

- **Backup Configuration** – saves configuration to a PCMCIA disk. See “The Backup Configuration screen” on page 162. Backups can also be set to occur automatically by setting the appropriate configuration variables.
- **Restore Configuration** – restores the configuration from a PCMCIA disk to the MIRAN. See “The Restore Configuration screen” on page 162.
- **Playback Level** – sets the sound volume (loudness) for the external analog channels. See “The Playback Level screen” on page 163.
- **Run Batch File** – executes a batch file containing OA&M commands. It enables multiple channel assignments with a single command in case of emergency. See “The Run Batch File screen” on page 164.
- **Back to previous Menu...** – returns to the Main menu.

The Announcement Configuration menu

From the MIRAN Administration menu, select **-1-** to access the Announcement Configuration menu. See Figure 24 on page 142.

At the Announcement Configuration menu, there are six options:

- **Calendar Operations** – used to create calendar assignments with or without descriptors, view calendar assignments, and remove calendar assignments. See “The Calendar Operations menu” on page 142.
- **Descriptor Operations** – used to add, edit, view, and delete calendar descriptors. See “The Descriptor Operations menu” on page 150.

Note: Before working with Calendar Operations and Descriptor Operations, read the section, “Calendar assignment feature” on page 28.

- **Record Announcement from External Channel** – used to record an announcement and determine its filename and duration. See “The Record Announcement from External Channel screen” on page 157.

Figure 24
The Announcement Configuration menu

```
[10047402]           - Announcement Configuration -           [Admin]

  1  Calendar Operations...
  2  Descriptor Operations...
  3  Record Announcement from External Channel
  4  Play Announcement to External Channel
  5  Convert Announcement File

  9  Back to previous Menu...

Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

- **Play Announcement to External Channel** – used to play a selected announcement.
See “The Play Announcement to External Channel screen” on page 158.
- **Convert Message File** – used to convert an announcement from .WAV format to .ALW or .ULW format (or the opposite). The filename of the announcement can be changed here.
See “The Convert Announcement File screen” on page 159.
- **Back to previous Menu...** returns to the MIRAN Administration menu.

The Calendar Operations menu

At the Announcement Configuration menu, select **-1-** to access the Calendar Operations menu. See Figure 25 on page 143.

The Calendar Assignment with Descriptor screen

Select **-1-** at the Calendar Operations menu to access the Calendar Assignment with Descriptor screen, which Figure 26 on page 143 shows. Here, an announcement is assigned to selected channels and associated with a defined descriptor. See “The Descriptor Operations menu” on page 150 for instructions on how to create a descriptor.

Figure 25
The Calendar Operations menu

```
[10047402]          - Calendar Operations -          [Admin]
  1  Calendar Assignment with Descriptor
  2  Calendar Assignment
  3  View Calendar Assignments
  4  Delete Calendar Assignment
  5  Load Calendar List
  6  Save Calendar List
  7  Clear all Calendar Assignments
  9  Back to previous Menu...
Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

Figure 26
The Calendar Assignment with Descriptor screen

```
[10047402]          - Calendar Assignment with Descriptor -          [Admin]

Channels : 0,2-4
          - Browse Channels -
Filename : C:MELCONE.ULW
          - Browse -
Descriptor : every_mon
          - Browse Descriptors -
-> - Add to Calendar - <-
          - Exit -
```

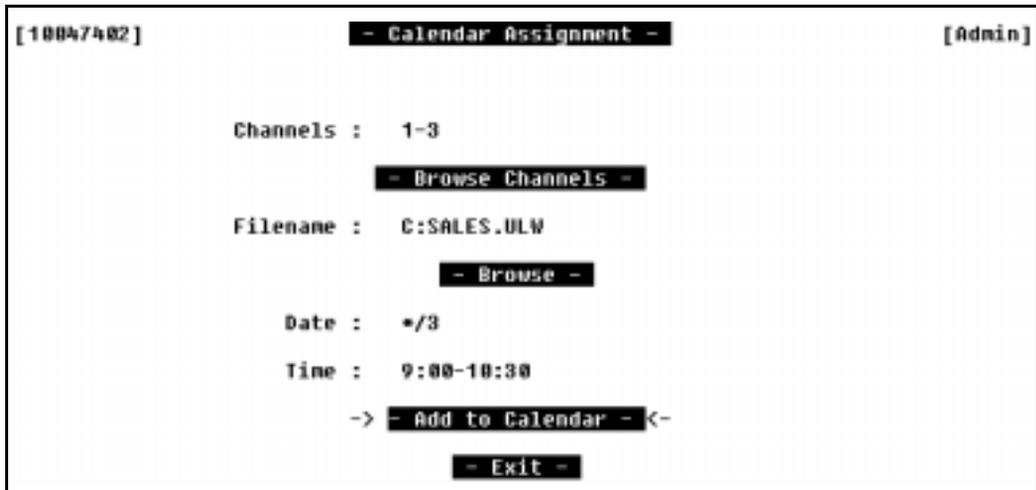
To create a calendar assignment with a descriptor, do the following:

- 1 Enter the channel(s) where the announcement will be assigned. **Browse** can be used to scan and select from the list of available channels. Use 's' to toggle the selection of channels.
- 2 Enter the filename of the announcement for which the assignment is being created. Select **Browse** to scan the list of available announcement files.
- 3 Enter the name of the descriptor to be associated with the assignment. Select **Browse Descriptors** to scan the list of available descriptors.
- 4 Select **Add to Calendar** to add the assignment with descriptor to the calendar. This updates the calendar immediately.
- 5 Select **Exit** to return to the Calendar Operations menu.

The Calendar Assignment screen

Select **-2-** at the Calendar Operations menu to access the Calendar Assignment screen. See Figure 27 on page 144. Here, an announcement is assigned to selected channels and defined directly (instead of using a descriptor) when the announcement plays on those channels.

Figure 27
The Calendar Assignment screen



To create a calendar assignment (without descriptor), do the following:

- 1 Enter the channel(s) where the announcement will be assigned. **Browse** can be used to scan and select from the list of available channels. Use 's' to toggle the selection of channels.
- 2 Enter the filename of the announcement for which the assignment is being created. Select **Browse** to scan the list of available announcement files.
- 3 Enter the time of day when the announcement is to be played.
- 4 Enter the date, dates, or days when the announcement is to be played.
- 5 Select **Add to Calendar** to add the assignment to the calendar. This updates the calendar immediately.
- 6 Select **Exit** to return to the Calendar Operations menu.

The View Calendar Assignments screen

Select **-3-** at the Calendar Operations menu to access the View Calendar Assignments screen. See Figure 28.

Figure 28
The View Calendar Assignments screen

```
[10047402]          - View Calendar Assignments -          [Admin]
[TUE 13/07/1999 03:45:40]

   ID  Date      Time      Descriptor      Filename
   000 Mon-Fri    01:00-02:00    A:LUNCH.ULW
   001 Mon-Fri    09:00-17:30    work_hours     A:GREETING.ULW
   002 Mon-Fri    *             weekdays       A:WELCOME.ULW
   003 *             *             always         A:CLOSED.ULW

[Page 01 of 01 (4)]

Press 'I' to toggle information.
Press Enter to Exit.
```

Note: The View Calendar Assignments screen shows TUI assignments by putting “TUI” in the date column and the channel assignments in the time column.

The View Calendar Assignments screen lists all Calendar Assignments in order of specificity. The most specific assignments – those with the most specific time and date – come first. The current day, date, and time appear in the upper-left corner of the screen. The filename for any assignments that match the current date and time appear in bold type.

The right column lists the name of the user who created the assignment. Only the administrator or the user who created an assignment can remove the assignment.

In the sample screen that appears in Figure 28 on page 145, notice that the assignment using the descriptor “every_Friday” has a time and date of “?”. This indicates that the descriptor “every_Friday” has been deleted and the system could not be retrieve the time and date information. The system ignores this assignment until someone re-defines “every_Friday”.

While in the View Calendar Assignments screen, the following actions can be performed:

- Press **I** to toggle the display for more information. The descriptor column lists the descriptor for each assignment, if there is one. The channel column lists the channels for each assignment.
- Press **Space bar** to list any more assignments that do not appear on the screen.
- Press **Enter** to exit this screen and return to the Calendar Operations menu.

The Delete Calendar Assignment screen

Select - **4-** at the Calendar Operations menu to access the Delete Calendar Assignment screen. See Figure 29 on page 147.

To delete a calendar assignment, do the following:

- 1 Use the up/down arrows to select the assignment to be deleted.
- 2 Press **D** to delete the selected assignment.

Figure 29
The Delete Calendar Assignment screen

```

[10047402]          - Delete Calendar Assignment -          [Admin]
[TUE 13/07/1999 03:48:44]

   ID  Date      Time      Descriptor      Filename      <--
--> 000  Mon-Fri    01:00-02:00    work_hours     A:LUNCH.ULW
    001  Mon-Fri    09:00-17:30    work_hours     A:GREETING.ULW
    002  Mon-Fri    *              weekdays       A:WELCOME.ULW
    003  *          *              always         A:CLOSED.ULW

[Page 01 of 01 (4)]

          Press 'I' to toggle information.
Use Up/Down arrows to select. Press 'D' to delete.
          Press Enter to Exit.

```

- 3 Press **Enter** to exit and return to the Calendar Operations menu.

While in the Delete Calendar Assignment screen, press the **Space bar** to view more assignments.

The Load Calendar List screen

Select **-5-** at the Calendar Operations menu to access the Load Calendar List screen. See Figure 30 on page 148.

A calendar list is a file that contains a collection of calendar assignments, for example, A:_ASSIGNS.CAL. Use this screen to load a calendar list from any available drive. This screen is valuable as a quick way to activate a calendar configuration for example, an emergency configuration, that had been previously saved.

Note: This function only adds assignments to the calendar list. It does not clear (overwrite) existing assignments.

Figure 30
The Load Calendar List screen



To load a calendar list, do the following:

- 1 Enter the filename of the calendar list to be loaded. **Browse** can be used to scan the list of available calendar lists.
- 2 Select **Load Calendar List** to load the selected calendar list. A verification message will be received.
- 3 Select **Exit** to return to the Calendar Operations menu.

The Save Calendar List screen

Select **-6-** at the Calendar Operations menu to access the Save Calendar List screen. See Figure 31 on page 148. Use this screen to save the current set of calendar assignments in a single file location on any of the available drives. The resulting file can be transferred to another MIRAN card or saved for future use.

Figure 31
The Save Calendar List screen



To save a calendar list, do the following:

- 1 Enter the filename of the calendar list to be saved. Select **Browse** to scan the list of current calendar lists.
- 2 Select **Save Calendar List** to save the selected calendar list. A verification message will be received.
- 3 Select **Exit** to return to the Calendar Operations menu.

The Clear All Calendar Assignments screen

Select **-7-** at the Calendar Operations menu to access the Clear All Calendar Assignments screen. See Figure 32 on page 149. Use this screen to clear all of the current calendar assignments. This screen is useful when a MIRAN is reconfigured for a new customer or when significant changes to the calendar assignments are necessary.

Figure 32
The Clear All Calendar Assignments screen



The 'Clear all Calendar Assignments' command clears the current calendar list. If the configuration variable 'AutoSave' is TRUE (the default), this command also overwrites the existing calendar file, `_ASSIGNS.CAL`.



CAUTION

Service Interruption

The 'Clear all Calendar Assignments' command causes all active announcements to stop playing.

To clear all calendar assignments, do the following:

- 1 Select **Clear all Calendar Assignments** to clear all calendar assignments. A verification message will be received.
- 2 Select **Exit** to return to the Calendar Operations menu.

The Descriptor Operations menu

At the Announcement Configuration menu, select **-2-** to access the Descriptor Operations menu. See Figure 33 on page 150.

Figure 33
The Descriptor Operations menu

```
[10047402]           - Descriptor Operations -           [Admin]
  1 Add/Edit Calendar Descriptor
  2 View Calendar Descriptors
  3 Delete Calendar Descriptor
  4 Load Descriptors
  5 Save Descriptors
  6 Clear all Descriptors

  9 Back to previous Menu...
Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

The Add/Edit Calendar Descriptor screen

Select **-1-** at the Descriptor Operations menu to access the Add/Edit Calendar Descriptor screen. See Figure 34 on page 151. A calendar descriptor can be created or edited here.

A calendar descriptor has a time and date associated with it. The time and date definitions determine when an announcement that has a particular descriptor assignment plays. For example, an announcement that uses the descriptor 'opening_hours' from Figure 34 plays from 9:00 a.m. to 5:30 p.m., Monday through Friday.

Figure 34
The Add/Edit Calendar Descriptor screen

```
[10047402]          - Add/Edit Calendar Descriptor -          [Admin]

Descriptor :  boxing day
                - Browse Descriptors -
Date :  26/12
Time :  *
        -> - Add Descriptor - <-
                - Exit -
```

To add or edit a calendar descriptor, do the following:

- 1 Enter the name of the descriptor to be created or edited, a maximum of 16 characters in length. To edit an descriptor, select one from the list of existing descriptors by selecting **Browse Descriptors**.
- 2 Enter the date, dates, or days of the week during which the descriptor must operate.
- 3 Enter the time during which the descriptor must operate.
- 4 Select **Add Descriptor** to add the descriptor. This immediately affects any assignments that contain this descriptor.
- 5 Select **Exit** to return to the Descriptor Operations menu.

The View Calendar Descriptors screen

Select **-2-** at the Descriptor Operations menu to access the View Calendar Descriptors screen. See Figure 35. The right-hand column of the screen lists the creator of each descriptor. Only the administrator, or the user who created a descriptor, can delete the descriptor.

Figure 35
The View Calendar Descriptors screen

```
[10047402]          - View Calendar Descriptors -          [Admin]
[TUE 13/07/1999 04:07:25]

Descriptor      Date      Time      Creator
always          *         *         admin
boxing_day      26/12     *         admin
christmas       25/12     *         admin
every_mon       Mon       *         admin
weekdays       Non-Fri   *         admin
weekend         Sat-Sun   *         admin
work_hours      Non-Fri   09:00-17:30  admin

█

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Press Enter to Exit.
```

At the View Calendar Descriptors screen, the following actions can be performed:

- Press the **Space bar** to view more descriptors that don't appear on the initial screen.
- Press **Enter** to exit and return to the Descriptor Operations menu.

The Delete Calendar Descriptor screen

Select **-3-** at the Descriptor Operations menu to access the Delete Calendar Descriptor screen. See Figure 36. The right-hand column of the screen lists the creator of each descriptor. Only the administrator, or the user who created a descriptor, can delete the descriptor.

Figure 36
The Delete Calendar Descriptor screen

```
[10047402]          - Delete Calendar Descriptor -          [Admin]
[TUE 13/07/1999 04:09:29]

      Descriptor      Date      Time      Creator
-->  always           *        *        admin
      boxing_day     26/12    *        admin
      christmas      25/12    *        admin
      every_mon      Mon       *        admin
      weekdays       Mon-Fri   *        admin
      weekend          Sat-Sun   *        admin
      work_hours     Mon-Fri   09:00-17:30 admin

[Page 01 of 01 (7)]

      Use Up/Down arrows to select. Press 'D' to delete.
      Press Enter to Exit.
```

To delete a calendar descriptor, do the following:

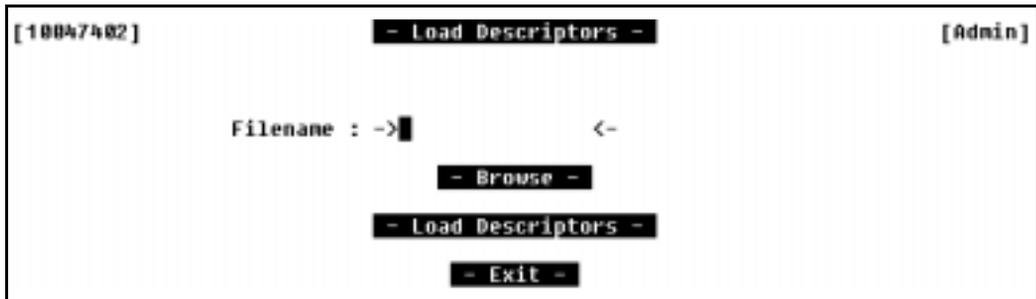
- 1 Use the up/down arrows to select the descriptor to be deleted. Press the **Space bar** to see more descriptors, if there are any.
- 2 Press **D** to delete the selected descriptor. This immediately affects any assignments that contain this descriptor. Any assignments that use this descriptor immediately become inactive.
- 3 Press **Enter** to exit and return to the Descriptor Operations menu.

The Load Descriptor List screen

Select **-5-** at the Descriptor Operations menu to access the Load Descriptor List screen. See Figure 37. A descriptor list is a file that contains a collection of descriptors, e.g., A:_DESCRIP.CAL.

Use this screen to load a descriptor list from any available drive. This screen is a quick way to load the same descriptor configuration to several MIRAN cards.

Figure 37
The Load Descriptor List screen



Note: This function only adds descriptors to the descriptor list. It does not clear (overwrite) existing descriptors.

To load a descriptor list, do the following:

- 1 Enter the filename of the descriptor list to be loaded. Select **Browse** to scan the list of available descriptor lists.
- 2 Select **Load Descriptors** to load the selected descriptor list. A verification message will be received.
- 3 Select **Exit** to return to the Descriptor Operations menu.

The Save Descriptor List screen

Select **-6-** at the Descriptor Operations menu to access the Save Descriptor List screen, which Figure 38 shows.

Use this screen to save the current set of descriptors in a single file location on any of the available drives. The resulting file can be transferred to another MIRAN card or maintained for future use.

Figure 38
The Save Descriptor List screen



To save a descriptor list, do the following:

- 1 Enter the filename of the descriptor list to be saved. Select **Browse** to scan the list of available descriptor lists.
- 2 Select **Save Descriptors** to save the selected descriptor list. A verification message will be received.
- 3 Select **Exit** to return to the Descriptor Operations menu.

The Clear All Descriptors screen

Select **-7-** at the Descriptor Operations menu to access the Clear All Descriptors screen, which Figure 39 shows. Use this screen to clear all of the current descriptor definitions. This screen is useful when a MIRAN is reconfigured for a new customer or when significant changes to the descriptor definitions are necessary.

Figure 39
The Clear All Descriptors screen



The 'Clear all Descriptors' command clears the current descriptors. If the configuration variable 'AutoSave' is TRUE (the default), this command also overwrites the existing descriptor file, `_DESCRIP.CAL`.

	CAUTION Loss of Data
The 'Clear all Descriptors' command clears all active descriptors. This renders 'inactive' all current calendar assignment that use descriptors. New descriptors must be defined or a new descriptor list loaded to re-activate these calendar assignments.	

To clear all descriptors, do the following:

- 1 Select **Clear all Descriptors** to clear all descriptors. A verification message will be received.
- 2 Select **Exit** to return to the Descriptor Operations menu.

The Record Announcement from External Channel screen

At the Announcement Configuration menu, select **-3-** to access the Record Announcement from External Channel screen, which Figure 40 shows. An announcement to the MIRAN card is recorded here.

Figure 40
The Record Announcement from External Channel screen

```
[10047402]    - Record Announcement from External Channel -    [Admin]

Audio Input :  a0
Filename :    C:TEST.ULW
              - Browse -
Duration :    5
-> - Start Recording - <-
          - Stop Recording -
              - Exit -
```

To record an announcement to the MIRAN card, do the following:

- 1 At the 'Audio Input' prompt, enter an external channel number, either A0 or A1, that will be used to record. Only the external analog channels can be used to record announcements.
- 2 At the 'Filename' prompt, enter the filename the announcement will have. A proper filename consists of eight alphanumeric characters with the appropriate three-letter extension (.ULW or .ALW). Remember to indicate on which drive the announcement file is to be saved.
Note: Use **Browse** to ensure that the filename that is chosen does not already exist.
- 3 At the 'Duration' prompt, enter the length of time, in seconds, the announcement can last.
- 4 Select **Start Recording** to start recording the announcement.

- 5 Select **Stop Recording** to stop recording. The MIRAN stops recording either when the duration is reached, or when **Stop Recording is selected**, or when the file system is full.
- 6 Select **Exit** to return to the Announcement Configuration menu.

The Play Announcement to External Channel screen

At the Announcement Configuration menu, select **-4-** to access the Play Announcement to External Channel screen, which Figure 41 shows. To verify an announcement, set up a test route to play the announcement. Once the announcement is accepted, it can be assigned to a regular route.

Figure 41
The Play Announcement to External Channel screen



To play an announcement that resides on the MIRAN card, do the following:

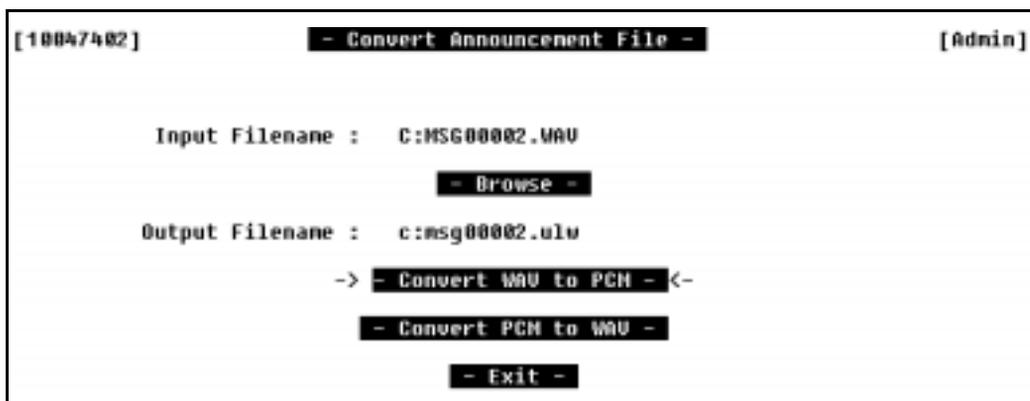
- 1 At the 'Channel' prompt, enter A0 or A1 to specify the recording channel to be used. Only use the external analog channels can be used to play announcements.
- 2 At the 'Filename' prompt, enter the filename of the announcement to be played.
Note: Use **Browse** to scan the list of existing filenames and select the one to be played.
- 3 Select **Start Playback** to start playing the announcement.

- 4 Select **Stop Playback** to stop playing the announcement. The MIRAN stops playing the announcement either when the duration is reached, the announcement ends, or **Stop Recording** is selected.
- 5 Select **Exit** to return to the Announcement Configuration menu.

The Convert Announcement File screen

At the Announcement Configuration menu, select **-5-** to access the Convert Announcement File screen, which Figure 42 shows. Use this screen to convert an announcement file from .WAV format to .ULW or .ALW format, or the reverse.

Figure 42
The Convert Announcement File screen



To convert an announcement file, do the following:

- 1 At the 'Input Filename:' prompt, enter the filename to be converted. Select **Browse** to scan and select from the list of available files.
- 2 At the 'Output Filename:' prompt, enter the desired filename for the converted file. If an output filename is not entered, the file receives the same filename as the input filename, with the appropriate new extension.

- 3 Select **Convert WAV to PCM** to convert the file from .WAV format to .ULW or .ALW format. Select **Convert PCM to WAV** to convert the file from .ULW or .ALW format to .WAV format.

Note: The conversion process makes a duplicate of the input file. Ensure sufficient disk space is available for the conversion process, and delete unnecessary files.

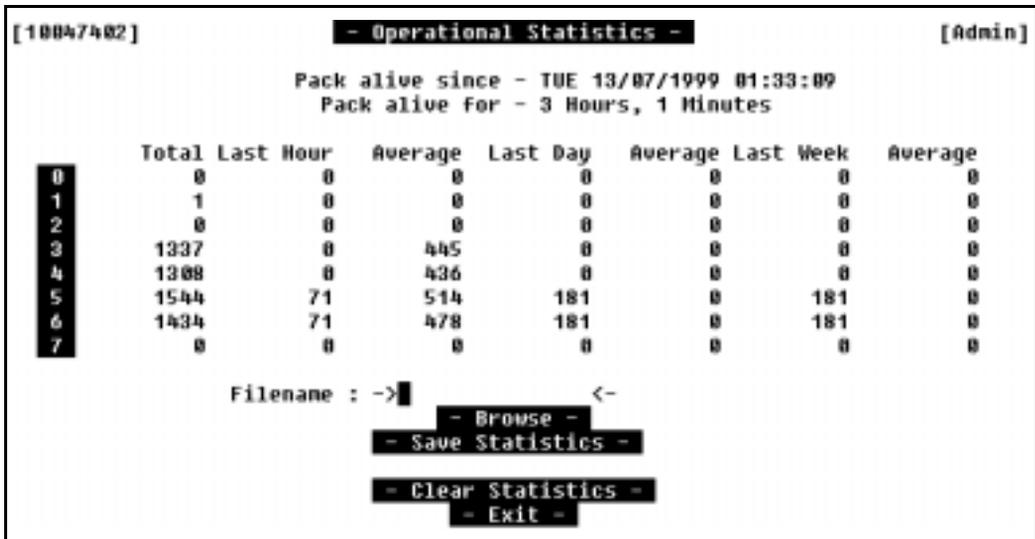
Note: Announcements must be in A-law (.ALW) or μ -law (.ULW) format, depending on the system's configuration, to play on MIRAN.

- 4 Select **Exit** to return to the Announcement Configuration menu.

The Operational Statistics screen

At the MIRAN Administration menu, select **-2-** to access the Operational Statistics screen, which Figure 43 shows. Use this screen to check the current traffic statistics of all the internal channels. The MIRAN card cannot display the statistics of the external channels, because it cannot monitor the traffic on these channels.

Figure 43
The Operational Statistics screen



Note: MIRAN Release 2.0 updates the operational statistics every minute.

Following is an explanation of each statistical column for each channel:

- **Total** – is the total number of calls received per channel since the last bootup of the MIRAN pack.
- **Last Hour** – is the number of calls received per channel in the last 60 minutes.
- **Last Hour Average** – is the average number of calls received per channel per hour since the last bootup of the MIRAN pack.
- **Last Day** – is the number of calls received per channel in the last 24 hours.
- **Last Day Average** – is the average number of calls received per channel per day since the last bootup of the MIRAN pack.
- **Last Week** – is the number of calls received per channel in the last seven days.
- **Last Week Average** – is the average number of calls received per channel per week since the last bootup of the MIRAN pack.

The current operational statistics can be saved to a file by doing the following:

- 1 Enter the desired filename for the file to be saved. Remember to indicate the drive where the file is to reside.
Note: Select **Browse** to choose an existing statistics file in which to save the statistics, or use **Browse** to ensure that the new filename does not already exist.
- 2 Select **Save Statistics** to save the statistics to the filename. The MIRAN generates a text file with values separated by commas.
- 3 Select **Exit** to return to the MIRAN Administration menu.

Note: Select **Clear Statistics** to reset all statistics on all channels.

The Backup Configuration screen

At the MIRAN Administration menu, select **-3-** to access the Backup Configuration screen, which Figure 44 shows. This screen enables back up for the calendar, file descriptor, and configuration variable information. Backups can be configured to occur automatically, by setting the appropriate configuration variables. See “The Configuration Variables menu” on page 176.

Figure 44
The Backup Configuration screen



Note: MIRAN saves user information such as user names and passwords automatically to drive C:. This is not part of this backup process.

To back up the configuration, do the following:

- 1 Select the storage device where the configuration will be backed up. This is usually a PCMCIA Flash card in the external drive A:.
- 2 Select **Backup Configuration** to start the backup process to the specified storage device.
- 3 When the backup is complete, select **Exit** to return to the MIRAN Administration menu.

The Restore Configuration screen

At the MIRAN Administration menu, select **-4-** to access the Restore Configuration screen, which Figure 45 shows. This screen enables the calendar, file descriptor, and configuration variable information to be restored. The most common use for this screen is to copy the configuration of another MIRAN card in the system by using a PCMCIA disk.

Figure 45
The Restore Configuration screen

```
[10047402]           - Restore Configuration -           [Admin]

Device :  a:
                -> - Restore Configuration - <-
                        - Exit -
```

To restore the MIRAN configuration from a backup device to the internal Flash memory of the selected MIRAN card, do the following:

- 1 Select the storage device where the configuration is saved. This is usually a PCMCIA Flash card in the external drive A:.
- 2 Select **Restore Configuration** to start the restore process from the specified storage device.
- 3 When the restoration is complete, select **Exit** to return to the MIRAN Administration menu.

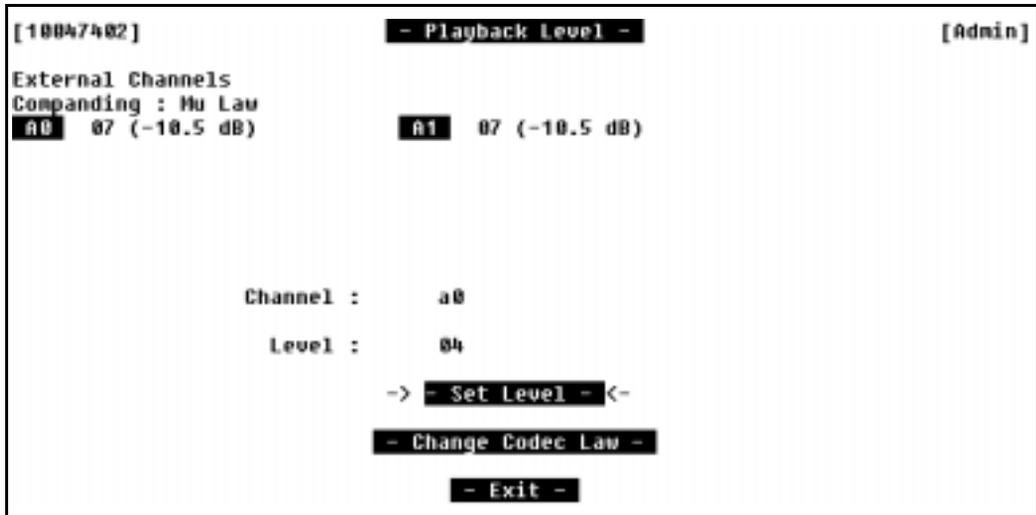
The Playback Level screen

At the MIRAN Administration menu, select **-5-** to access the Playback Level screen, which Figure 46 shows. This screen enables the playback level, or volume, to be separately determined for each external channel. The companding law for the external channels can also be changed. The top of the screen displays the current companding law, either A-law or μ -law. The screen also displays the current playback level for each external channel.

To change the playback level for an external channel, do the following:

- 1 Enter the channel, A0 or A1, where the playback level will be changed.
- 2 At the 'Level:' prompt, enter the playback level the channel will have. The level can range from 0 to 63. The value represents the attenuation of the signal; so the value 0 provides the loudest playback, while the value 63 provides the softest playback.
- 3 Select **Set Level** to update the playback level of the selected channel.
- 4 Select **Exit** to return to the MIRAN Administration menu.

Figure 46
The Playback Level screen



To change the companding law for the external channels, select **Change Codec Law** while at the Playback Level screen.

The Run Batch File screen

At the MIRAN Administration menu, select **-6-** to access the Run Batch File screen, which Figure 47 shows. This screen retrieves the standard file browser and asks for which batch file to run. The batch file runs immediately after it is selected.

Figure 47
The Run Batch File screen



To run a batch file, do the following:

- 1 Select a batch file to run by using the up/down arrows on the keyboard.

Note: Press **Space** to list more batch files.

- 2 Press **Enter** to run the selected batch file. MIRAN will then return to the MIRAN Administration menu.

The Pack Administration menu

At the Main menu, select **-2-** to access the Pack Administration menu, which Figure 48 shows.

Figure 48
The Pack Administration menu

```
[10047482]          - Pack Administration -          [Admin]
  1 File Commands...
  2 Keycode Entry
  3 Software Upgrade
  4 System Information
  5 Configuration Variables...
  6 Ethernet Configuration
  7 Time & Date...
  9 Back to previous Menu...
Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

At the Pack Administration menu, there are eight options:

- **File Commands...** – enables files to be explored, copied, deleted, renamed, and moved. Refer to “The File Commands menu” on page 166.
- **Keycode Entry** – enables keycodes to be entered for new MIRAN packs, port size increases, and software upgrades. See “The Keycode Entry screen” on page 172.

- **Software Upgrade** – enables software upgrades using a PCMCIA card. A keycode is needed for software upgrades but not for bug fixes. See “The Software Upgrade screen” on page 173.
- **System Information** – displays the MIRAN hardware platform configuration and software release information. See “The System Information screen” on page 175.
- **Configuration Variables...** – enables configuration variables to be viewed, edited, and saved. Configuration variables control certain aspects of the MIRAN Release 2.0 operation that aren’t obvious to the user. See “The Configuration Variables menu” on page 176.
- **Ethernet Configuration** – allows the IP address, the subnet mask, and the Gateway of the MIRAN Release 2.0 card to be set. This is necessary to enable LAN access to the MIRAN card. Refer to “The Ethernet Configuration screen” on page 182.
- **Time & Date Configuration** – enables the time and date of the MIRAN Release 2.0 card to be set in one of two ways: either manually, or retrieving the time and date automatically from the Meridian 1 system. Refer to “The Time & Date Configuration menu” on page 184.
- **Back to previous Menu...** – returns to the Main menu.

The File Commands menu

At the Pack Administration menu, select **-1-** to access the File Commands menu, which Figure 49 shows.

At the File Commands menu, there are six options:

- **File Explorer** – enables browsing through the directory file listings for the internal drive C: and any PCMCIA-based stored file lists. Refer to “The File Explorer screen” on page 167.
- **Copy File** – enables a file to be copied to a different file on the same drive or another drive. Refer to “The Copy File screen” on page 168.
- **Delete File** – enables a selected file to be deleted. Refer to “The Delete File screen” on page 169.
- **Rename File** – allows any existing file to be renamed. Refer to “The Rename File screen” on page 170.

Figure 49
The File Commands menu

```
[10047402]           - File Commands -           [Admin]

  1 File Explorer
  2 Copy File
  3 Delete File
  4 Rename File
  5 Move File

  9 Back to previous Menu...

Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

- **Move File** – allows a file to be copied to a specified location and the original source file deleted. Refer to “The Move File screen” on page 171.
- **Exit** – returns to the Pack Administration menu.

The File Explorer screen

At the File Commands menu, select **-1-** to access the File Explorer screen, which Figure 50 shows.

At the File Explorer screen, the following actions can be performed:

- Select which drive’s contents to explore. Use the right and left arrow keys to do this. The amount of storage space available on each drive appears below each drive letter.

Note: PCMCIA cards must be in place in drives A: and B: before those drives’ contents can be checked. Allow approximately ten seconds after inserting a PCMCIA card, for the drive to mount.

Figure 50
The File Explorer screen

```

[10047402]          - File Explorer -          [Admin]
[TUE 13/07/1999 05:01:48]

--> *  Filename  Type  Size      Date      Time      <--
      welcome  ulw   72      08/07/1999 15:42
      sales    ulw   72      08/07/1999 15:42
      italian  -     512     01/07/1999 16:51
      test     ulw  39680   30/06/1999 14:01
      _descrip bak   178    12/07/1999 13:00
      a:_stats txt   237    11/07/1999 16:26
      _config  dat   553    30/06/1999 15:50
      config   dat   652    02/01/1996 08:48
      _keycode -     26     17/05/1999 13:25
      testn    ulw  12672   27/01/1996 13:58
      msg00002 wav  12716   27/01/1996 13:56
      _stats   txt   229    07/07/1999 13:41

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      [ A: ] 0 [ B: ] 0 [ C: ] C
Bytes Free  2482176      0      2121728

Press Space for more or Enter to Exit
    
```

- Use the up/down arrows to scroll through the list of files.
- Press **Enter** to return to the File Commands screen.

The Copy File screen

At the File Commands screen, select **-2-** to access the Copy File screen, which Figure 51 shows.



CAUTION
Loss of Data
Disable the MIRAN card before transferring files between drives.

Figure 51
The Copy File screen



To copy an existing file to a different file, do the following:

- 1 At the 'Source Filename:' prompt, enter the filename to be copied. Include the drive where the file resides. Select **Browse** to scan the list of available files.
- 2 At the 'Destination Filename:' prompt, enter the filename, including the drive, where the file will be copied. Select **Browse** to scan the list of available files.
- 3 Select **Copy** to copy the selected file from the source filename to the destination filename.
Note: Steps 1-3 can be repeated as many times as needed before proceeding on to step 4.
- 4 Select **Exit** to return to the File Commands screen.

The Delete File screen

At the File Commands screen, select **-3-** to access the Delete File screen, which Figure 52 shows.

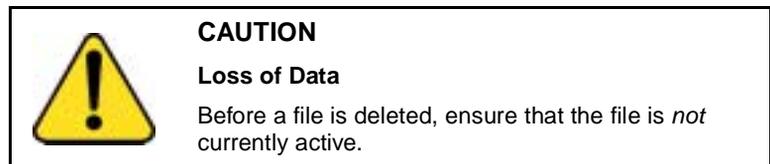


Figure 52
The Delete File screen



To delete a file, do the following:

- 1 At the 'Filename:' prompt, enter the filename to be deleted. Include the drive where the file resides. Select **Browse** to scan the list of available files.
- 2 Select **Delete** to delete the selected file.
Note: Steps 1 and 2 can be repeated as many times needed before proceeding on to step 3.
- 3 Select **Exit** to return to the File Commands screen.

The Rename File screen

At the File Commands screen, select **-4-** to access the Rename File screen, which Figure 53 shows.

	CAUTION
	Loss of Data
	Before a file is renamed, ensure that the file is <i>not</i> currently active.

Figure 53
The Rename File screen



To rename a file, do the following:

- 1 At the 'Filename:' prompt, enter the filename to be renamed. Include the drive where the file resides. Select **Browse** to scan the list of available files.
- 2 At the 'New Name:' prompt, enter the new name for the file. Include the drive where the file will reside. Select **Browse** to scan the list of available files.
- 3 Select **Rename** to rename the selected file.
Note: Steps 1-3 can be repeated as many times as needed before proceeding on to step 4.
- 4 Select **Exit** to return to the File Commands screen.

The Move File screen

At the File Commands screen, select **-5-** to access the Move File screen, which Figure 54 on page 172 shows.



CAUTION

Loss of Data

Before a file is moved, ensure that the file is *not* currently active.

Figure 54
The Move File screen



To move a file from one location to another, do the following:

- 1 At the 'Source Filename:' prompt, enter the filename to be moved. Include the drive where the file resides. Select **Browse** to scan the list of available files.
- 2 At the 'Destination filename:' prompt, enter the filename, including the drive, where the file is to be moved. Select **Browse** to scan the list of available files.
- 3 Select **Move File** to move the selected file. This action deletes the source filename and places the file in the destination filename.
Note: Steps 1-3 can be repeated as many times needed before proceeding on to step 4.
- 4 Select **Exit** to return to the File Commands screen.

The Keycode Entry screen

At the Pack Administration menu, select **-2-** to access the Keycode Entry screen, which Figure 55 on page 173 shows.

Figure 55
The Keycode Entry screen

```

[10047402]          - Keycode Entry -          [Admin]

                Current Configuration

                Version : 2.0.15d (R1s 1)
Internal Channels : 8
External Channels : 2
                Keycode : 24434204 45554371 17043253

                New Parameters

Keycode : ->|                                     <-

                - Execute -

                - Exit -

```

The Keycode Entry screen shows the current configuration, listing the MIRAN software version, the number of internal and external ports, and the current keycode. To change the keycode, do the following:

- 1 At the 'Keycode:' prompt, enter the new keycode. Remember to add a space between each group of eight numbers.

Note: For MIRAN Release 2.0, it is not necessary to enter the number of internal and external ports. The MIRAN extracts this information automatically from the new keycode.

- 2 Select **Execute** to update the keycode. If the new keycode is valid, a 'Keycode Validated' message appears, and the system updates the current configuration information.

Note: If performing an upgrade, step 2 enables the upgrade.

- 3 Select **Exit** to return to the Pack Administration menu.

Note: To abort the keycode update, select **Exit** without selecting **Execute**.

The Software Upgrade screen

At the Pack Administration menu, select **-3-** to access the Software Upgrade screen, which Figure 56 on page 174 shows.

Figure 56
The Software Upgrade screen



The Software Upgrade screen can be used to upgrade to a new software version or to reload the existing software to fix a bug. If upgrading to a new software version, a new keycode must be entered. If simply fixing a bug, a new keycode is not needed.

	<p>CAUTION</p> <p>System Failure</p> <p>Do not reboot or power down the MIRAN card during the software upgrade process. When the upgrade is complete, the system acknowledges with an 'OK'. After 'OK' is displayed, do a COLD REBOOT on the card to activate the software upgrade.</p>
---	--

To perform a software upgrade, do the following:

- 1 At the 'Filename:' prompt, enter the file to be downloaded from the PCMCIA card to the MIRAN internal Flash memory (drive C:), to upgrade the current software. Select **Browse** to scan the list of available upgrade files.
- 2 Select **Upgrade** to place the selected file into the internal Flash memory of the MIRAN card.

Note: The upgrade can take awhile. Wait for the "Upgrade successful" message before proceeding.

- 3 After the upgrade is complete, select **Exit** to return to the Pack Administration menu.
- 4 Access the Keycode Entry screen to enter the keycode for the software upgrade. See “The Keycode Entry screen” on page 172.
Note: Step 4 is not necessary for a simple bug fix.
- 5 Go to the Cold Reboot screen to cold reboot the MIRAN card. See “Maintenance and Diagnostics” on page 187. This activates the software upgrade.

The System Information screen

At the Pack Administration screen, select **-4-** to access the System Information screen, which Figure 57 shows.

Figure 57
The System Information screen

```
[10047402]          - System Information -          [Admin]

                Hardware Configuration

                        CPU : 4860X4-100
                Level 2 Cache : 128 KBytes
                System Memory : 16 MBytes
Disk A: (External ATA) : 2482176 Bytes Free
Disk B: (Internal ATA) : Not Installed
Disk C: (Internal PCI) : 4 MBytes (2121728 Bytes Free)

                Software Configuration

                Application : NTAG37AB Version 2.0.15d (Rls 1)
                Codec Driver : Version 1.38i (0)
                8051XA Firmware : UPS Firmware Rls 7.0
                        DSP Info : NG0225c1,02/05/98 (Mu-Law)
                        DSP Status : OK
                Time & Date Sync : Download disabled

                Press Enter to continue.█
```

The System Information screen displays the following information:

- **Hardware Configuration** - including the CPU, the system memory, and the status of the drives
- **Software Configuration** - including the application and firmware releases

Use this information to help diagnose hardware or software issues that relate to a particular release of the product. When finished reviewing the system information, press **Enter** to return to the Pack Administration menu.

The Configuration Variables menu

Configuration variables are variables that control certain aspects of the operation of the MIRAN Release 2.0 pack. These variables aren't immediately visible to the user, and the default settings are usually sufficient. However, an administrator can view and change these variables when non-standard options are necessary. Table 20 lists the configuration variables along with their values and descriptions.

Table 20
MIRAN Release 2.0 configuration variables (Part 1 of 3)

Variable	Values/(Default)	Description
AnalogLevel0	0 – 63 / (7)	Loudness level for the Analog0 cross connect channel. (0 = loudest)
AnalogLevel1	0 – 63 / (7)	Loudness level for the Analog1 cross connect channel. (0 = loudest)
AutoSave	True or False / (True)	When True, any change to Descriptors, Calendar Assignments or Configuration Variables are automatically saved. Note that any change to user configurations are always saved automatically regardless of this variable. Changes during a telset session are always saved automatically at the end of the session.
BatchFileLog	True or False / (False)	Batch file log. Enables the logging of the output when running a batch file.
BatchFileRun	Valid filename / (A:AUTORUN.BAT)	If this is a valid filename, then this file will be run on startup.

Table 20
MIRAN Release 2.0 configuration variables (Part 2 of 3)

Variable	Values/(Default)	Description
CalendarFile	Valid filename / (_ASSIGNS.CAL)	Default Calendar file to load on startup.
CodecLaw	A-Law, Mu-Law, Auto / (Auto)	Companding law used for the analog input and output ports. If Auto is selected, the law is taken from the Meridian system. (Should only be set by the Administrator).
Com2BootState	Shell, SLIP, or VLAN / (VLAN)	Determines how Com2 is to be initialized on boot-up. (Should only be set by the Administrator).
DefaultDrive	A:, B:, or C: / (C:)	Determines the drive used when files are automatically loaded/saved; for example, Calendar, Descriptors, Operational Statistics.
DescriptorFile	Valid filename / (_DESCRIP.CAL)	Default Calendar Descriptor file to load on startup.
DspReceiveGain	0 - 0xffff / (2052)	DSP DTMF Tone Detection Sensitivity. (Should only be set by the Administrator).
FileSortType	Name, Type, Size, Time / (Name)	Sort method used when in File Explorer.
PackName	(MIRANII)	Name of Pack (Appears on Command Line)
Polling	True or False / (True)	XA8051 Polling.
SetBasedAccess	True or False / (True)	Telset User Interface access.
SlipHost	(0.0.0.0)	SLIP Host Address. (Should only be set by the Administrator).
SlipRemote	(0.0.0.0)	SLIP Remote Address. (Should only be set by the Administrator).
StatsSaveFreq	1 – 7 / (1)	Frequency (in days) at which to save Operational Statistics automatically.
StatusUpdateFreq	0 – 60 / (0)	Frequency (in seconds) at which to update Status Screen for TTY. Enter 0 to disable.

Table 20
MIRAN Release 2.0 configuration variables (Part 3 of 3)

Variable	Values/(Default)	Description
SysDownloadFreq	1 – 7 / (1)	Frequency (in days) at which to automatically download System Time & Date. (Should only be set by the Administrator).
SysDownloadTime	00:00 – 23:59 / (00:00)	Time at which to automatically download System Time & Date. (Should only be set by the Administrator).
SysIPAddress	(0.0.0.0)	IP Address of the Meridian1. Used to download System Time & Date. (Should only be set by the Administrator).
SysLoginEnabled	True or False / (True)	System & Date automatic download enabled/disabled. (Should only be set by the Administrator).
SysPassword	(MiranII)	Password for System PDT session. (Should only be set by the Administrator).
SysTtyPassword	0000	Password for System TTY session. (Should only be set by the Administrator).
SysTtyUsername	MiranII	Username for System TTY session. (Should only be set by the Administrator).
TuiPromptDir	ENGLISH	Directory to use for TUI voice prompts. (Should only be set by the administrator).
TuiSeizeAck	0 – 127 / (87)	A07 Seize Acknowledge code. (Should only be set by the Administrator).
TuiSeizeDelay	0 – 15 / (1)	Delay (in seconds) after which to send TuiSeizeAck. (Should only be set by the Administrator).

At the Pack Administration screen, select **-5-** to access the Configuration Variables menu, which Figure 58 shows.

Figure 58
The Configuration Variables menu

```
[10047402]           - Configuration Variables -           [Admin]

  1  View Configuration Variables
  2  Edit Configuration Variable
  3  Save Configuration Variables

  9  Back to previous Menu...

Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

At the Configuration Variables menu, the following options are available:

- **View Configuration Variables** – enables the current values of all the configuration variables to be viewed. Refer to “The View Configuration Variables screen” on page 180.
- **Edit Configuration Variables** – enables the current values of the configuration variables to be edited. Refer to “The Edit Configuration Variables screen” on page 181.
- **Save Configuration Variables** – enables any changes made to the configuration variables to be saved. The MIRAN saves the current configuration variables as soon as this option is selected (option **-3-**). There is no separate screen for this function; a confirmation message is simply received.

Note: This function saves the configuration variables to the default drive with the filename “_CONFIG.DAT”.

- **Back to previous Menu...** – returns to the Pack Administration screen. Be sure to save any changes made to the configuration variables *before* exiting.

The View Configuration Variables screen

At the Configuration Variables screen, select **-1-** to access the View Configuration Variables screen, which Figure 59 shows.

Figure 59
The View Configuration Variables screen

```

[10047402]          - View Configuration Variables -          [Admin]

Variable Name      Value
AnalogLevel0      7
AnalogLevel1      7
AutoSave           True
BatchFileLog       False
BatchFileRun       A:AUTORUN.BAT
CalendarFile       _ASSIGNS.CAL
CodeClaw           Auto
Com2BootState      Shell
DefaultDrive       A:
DescriptorFile     _DESCRIP.CAL
DspReceiveGain     2052
FileSortType       Name

```

[Page 01 of 03 (29)]

Press Space for more or Enter to Exit

At the View Configuration Variables screen, the following options are available:

- Press **Space bar** to see more of the configuration variables.
- Press **Enter** to return to the Configuration Variables menu.

The Edit Configuration Variables screen

At the Configuration Variables screen, select **-2-** to access the Edit Configuration Variables screen, which Figure 60 shows.

Figure 60
The Edit Configuration Variables screen

```
[10047402]          - Edit Configuration Variable -          [Admin]

Variable Name :   AnalogLevel0
                - Browse Variables -
New Value :      8
                -> - Set Variable - <-
                    - Exit -
```

To edit the configuration variables, do the following:

- 1 At the 'Variable Name:' prompt, enter the name of the variable to be edited. Select **Browse Variables** to scan and select from the list of available variables.
- 2 At the 'New Value:' prompt, enter the new value of the variable selected in step 1. Make sure that the value falls within the range of acceptable values according to Table 20 on page 176.
- 3 Select **Set Variable** to set the new value of the variable.
Note: Steps 1-3 can be repeated for as many variables as needed.
- 4 Select **Exit** to return to the Configuration Variables menu.

- 5 At the Configuration Variables menu, select **-3-** to save the current (new) set of configuration variables.



CAUTION

Loss of Data

After configuration variables are edited at the Edit Configuration Variables screen, select **-3-** (Save Configuration Variables) at the Configuration Variables menu to save the changes. Otherwise the changes won't take effect.

The Ethernet Configuration screen

At the Pack Administration menu, select **-6-** to access the Ethernet Configuration screen, which Figure 61 shows.

Figure 61
The Ethernet Configuration screen

```
[10047402]           - Ethernet Configuration -           [Admin]

Current Configuration
MAC Address : 00.60.38.01.03.12
IP Address  : 47.85.15.60
Subnet Mask : 255.255.240.0
Gateway     : 47.85.0.1
IP Method   : static

New Configuration
IP Address  : ->47.85.15.60 <-
Subnet Mask : 255.255.240.0
Gateway     : 47.85.0.1
IP Method   : static

- Set -
- Exit -
```

LAN access to the MIRAN Release 2.0 card is optional, but it is necessary to do any of the following:

- Use the embedded browser user interface to perform OA&M
- Telnet into the MIRAN Release 2.0 card from a remote site
- Transfer files to and from the MIRAN Release 2.0 card through File Transfer Protocol (FTP).

The IP address, the subnet mask, the Gateway, and the IP method for the MIRAN Release 2.0 card must be configured correctly to enable LAN access to the card. The MAC address is unique to each MIRAN Release 2.0 card; it cannot be changed.

**CAUTION****System Failure**

Confer with the network administrator before setting the LAN parameters. Incorrect parameters can cause problems to other users in the network and can even lead to network outages.

To configure the MIRAN Release 2.0 card for LAN access, do the following:

- 1 Under 'New Configuration:', enter the IP address at the appropriate prompt.
- 2 Enter the subnet mask at the appropriate prompt.
- 3 Enter the gateway at the appropriate prompt.

Note: The gateway IP address tells the MIRAN card where the local gateway router is. This enables access from networks outside of the MIRAN card's subnet. There is no need to enter a gateway IP address if only accessing a local subnet.

- 4 Enter the IP method at the appropriate prompt.

Note: 'disabled' is the default, which makes the card inaccessible from the network even if the other parameters have been configured. Enter 'static' if using a static IP address that corresponds to the IP address that was entered on this screen. Enter 'bootp' to indicate that the card must request its IP address from a bootp server on the network.

- 5 Select **Set** to register the new IP address, subnet mask, gateway, and IP method. A valid LAN configuration receives an 'Ethernet Configuration Set' acknowledgment.
- 6 Select **Exit** to return to the Pack Administration menu.

Note: The card must be rebooted for the new LAN configuration parameters to take effect.

The Time & Date Configuration menu

Note: To use the Time & Date Synchronization feature, LAN access for the Meridian 1 must be configured. For instruction on how to configure LAN access for the Meridian 1, refer to "Configuring Ethernet for Time & Date Synchronization" on page 86.

At the Pack Administration menu, select **-7-** to access the Time & Date Configuration menu, which Figure 62 shows.

Figure 62
The Time & Date Configuration menu

```
[10047402]                - Time & Date -                [Admin]
  1 Local Time & Date
  2 System Time & Date Synchronisation
  9 Back to previous Menu...

Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

At the Time & Date Configuration menu, the following options are available:

- **Local Time & Date** – enables the time and date to be set on the MIRAN card manually. Refer to “The Local Time & Date screen” on page 185.
- **System Time & Date Synchronization** – enables the MIRAN Release 2.0 card to be configured to retrieve the time and date information automatically from the Meridian 1 system. Refer to “The System Time & Date Synchronization screen” on page 186.

The Local Time & Date screen

At the Time & Date Configuration menu, select **-1-** to access the Local Time & Date screen, which Figure 63 shows.

Figure 63
The Local Time & Date screen



To set the time and date for the MIRAN card manually, do the following:

- 1 Enter the current time at the 'Time:' prompt.
- 2 Enter the current date at the 'Date:' prompt.
Note: MIRAN automatically calculates the day of the week.
- 3 Select **-Set-** to set the time and date.
- 4 Select **-Exit-** to return to the Time & Date Configuration menu.

Note: This procedure performs the same operation as the SETTIME and SETDATE commands.

The System Time & Date Synchronization screen

At the Time & Date Configuration menu, select **-2-** to access the System Time & Date Synchronization screen, which Figure 63 shows.

Figure 64
The System Time & Date Synchronization screen

```
[10047402]      - System Time & Date Synchronisation -      [Admin]

Enabled : ->true<-
IP Address : 47.85.3.82
Username : miranii
Password : 0000
Frequency : 1
Time : 12:00

      - Set -
      - Exit -
```

To enable time and date synchronization with the Meridian 1 system, do the following:

- 1 Set the 'Enabled:' prompt to **true**.
- 2 Enter the IP address of the Meridian 1 system.
Note: The Meridian 1 system must be on the same subnet as the MIRAN Release 2.0 card.
- 3 Enter the username is used to access the Meridian 1 switch through the embedded LAN.
- 4 Enter the password used to access the Meridian 1 switch through the embedded LAN.
Note: The configuration variable 'SysPassword' must also be set to this password.
Note: Confirm what this password is for the given release of Meridian 1 software.

- 5 At the 'Frequency:' prompt, enter the number of days between each synchronization attempt. For example, enter **1** to synchronize every day.
- 6 At the 'Time:' prompt, enter the time of day the MIRAN card will attempt to synchronize with the Meridian 1 system.

Note: It is very important to schedule the time for synchronization during the period of *lowest* technician use; for example, *not* during midnight routines.

Note: The MIRAN card makes one attempt to synchronize per scheduled attempt. If synchronization fails, the MIRAN keeps its current time and date configuration and tries to synchronize again at the next scheduled attempt.
- 7 Select **-Set-** to set the time and date synchronization.
- 8 Select **-Exit-** to return to the Time & Date Configuration menu.

Note: System Time & Date Synchronization requires the MIRAN card to log into the Meridian 1 system. This can affect other operations on the switch. Therefore, careful staging of the synchronization process is necessary.

Maintenance and Diagnostics

At the Main menu, select **-3-** to access the Maintenance and Diagnostics menu, which Figure 65 shows.

At the Maintenance and Diagnostics menu, with the proper level of access, the following actions can be performed:

- Select **-1-** to access the System Information screen. This is the same screen accessed from the Pack Administration menu. Refer to “The System Information screen” on page 175 for details.
- Select **-2-** to perform a warm reboot of the MIRAN card. The 8051XA microcontroller resets the host.
- Select **-3-** to perform a cold reboot of the MIRAN card. This is a full system reboot.

Figure 65
The Maintenance and Diagnostics menu

```
[10047402]           - Maintenance & Diagnostics -           [Admin]
  1 System Information
  2 Warm Reboot
  3 Cold Reboot
  4 Command Line Access (Host)
  5
  9 Back to previous Menu...

Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

- Select **-4-** to open the Host Command Line Access. Use this CLI to perform PI testing and debugging. This CLI includes a periodic timestamp output, which is useful for such testing.
- Select **-5-** to return control of the maintenance port to the 8051XA microcontroller that interfaces with the Meridian 1. This CLI provides its own set of message monitoring facilities.
- Select **-9-** to return to the Main menu.

The User Administration menu

At the Main menu, select **-4-** to access the User Administration menu, which Figure 66 shows. This MIRAN Release 2.0 feature enables the configuration of multiple users for a single MIRAN system. Only users with administrator privileges and above have access to this menu.

There are five options at the User Administration menu:

- Select **-1-** to add or edit a user. Refer to “The Add/Edit User screen” on page 189.

Figure 66
The User Administration menu

```
[10047482]           - User Administration -           [Admin]
  1 Add/Edit User
  2 View Users
  3 Delete User
  4 Save Users

  9 Back to previous Menu...

Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

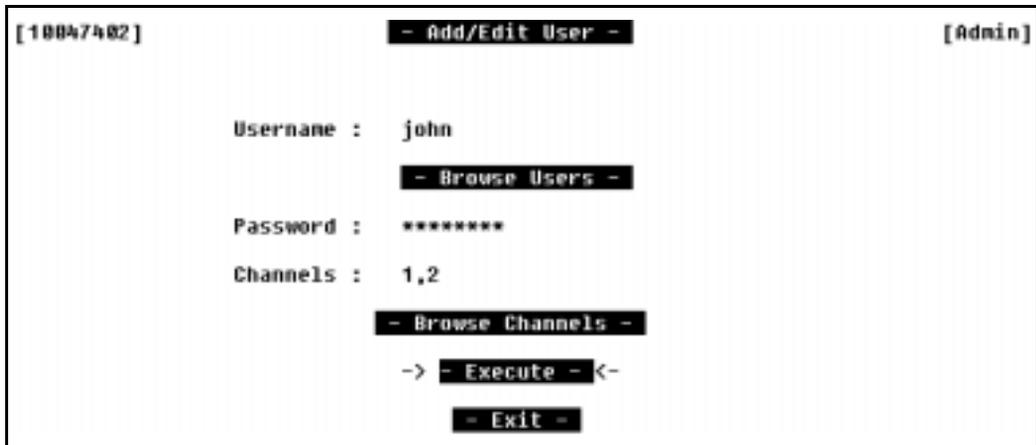
- Select **-2-** to view a list of the users and their corresponding channel assignments. Refer to “The View Users screen” on page 191.
- Select **-3-** to delete a user. Refer to “The Delete User screen” on page 192.
- Select **-4-** to save the current configuration of users. This must be done before exiting to save any changes are made to the users list.
- Select **-9-** to exit and return to the Main menu.

When a new user is defined, give the user a password and a group of channels that the user can access.

The Add/Edit User screen

At the User Administration menu, select **-1-** to access the Add/Edit User screen, which Figure 67 shows.

Figure 67
The Add/Edit User screen



To add or edit a user, do the following:

- 1 Enter the user name, which can be any combination of alphanumeric characters. If adding a new user, select **Browse** to ensure that the user name does not already exist. If editing an existing user, select **Browse** to select a name from the list of users.
- 2 Enter the new password for the user. The password *must* be at least eight alphanumeric characters. The maximum length is 12 characters.
- 3 Enter the channels that the user is allowed to access. Select **Browse Channels** to view and select from the list of available channels. Use 's' to toggle the selection of a channel.
- 4 Select **Add User** to save the new user information. This step updates the information on drive C: automatically.
- 5 Select **Exit** to return to the User Administration menu.

Note: MIRAN saves all user information in a file named "C_USERS.DAT". All default users and passwords can be restored by deleting the C:_USERS.DAT file.

The View Users screen

At the User Administration menu, select **-2-** to access the View Users screen, which Figure 68 shows. This screen lists the users' names and the channels that each one has access to.

Figure 68
The View Users screen

```
[10047402]                - View Users -                [Admin]

Username      Password      Channels
super        ???          *,A0,A1
admin        admin000     *,A0,A1
distrib      distrib00
user         user0000
sales        salesman     3-4

█

[Page 01 of 01 (5)]

Press Enter to Exit.
```

At the View Users screen, the following actions can be performed:

- Press the **Space bar** to view more users if they don't all appear on the initial screen.
- Press **Enter** to exit and return to the User Administration screen.

The Delete User screen

At the User Administration menu, select **-3-** to access the Delete User screen, which Figure 69 shows. This screen lists the users' names and the channels that each one is allowed to access.

Figure 69
The Delete User screen

```
[10047402]                - Delete User -                [Admin]

-->  Username      Password      Channels
      super        ???          *,A0,A1
      admin        admin000     *,A0,A1
      distrib      distrib0
      user         user0000    0
      sales        salesman     3-4

<--|

[Page 01 of 01 (5)]

Use Up/Down arrows to select. Press 'D' to delete.
Press Enter to Exit.
```

To delete a user, do the following:

- 1 Use the up/down arrows to select the user to be deleted. If the user does not appear on the initial screen, press the **Space bar** for more users.
- 2 Press **D** to delete the selected user. This step updates the information on drive C: automatically.
- 3 Press **Enter** to exit and return to the User Administration menu.

MIRAN OA&M command set

Instead of using the menu structure described in the first half of this chapter, commands can be entered on the command line in the Main Menu. This is advantageous to an experienced user who knows what command to use.

Most of these commands can also be used in batch files to allow complex configurations to be executed in a single command.

Files are specified using the DOS filenaming convention of an 8-character filename followed by a 3-character extension. The filename is normally preceded by a device descriptor as shown in Table 21.

Table 21
MIRAN disk drives

Drive name	Designation
External PCMCIA Drive	A:
Internal PCMCIA Drive	B:
Internal Flash Drive	C:

The MIRAN channels are named as shown in Table 22:

Table 22
Channel designations

Channels	Designation
Internal	0-7
External (cross-connect)	A0, A1
Analog Inputs	ANALOG0, ANALOG1

These designators are used on the command line when executing MIRAN commands.

OA&M Command summary

OA&M commands are used instead of using different menus to perform system applications configuration. A command is entered on the command line at the bottom of the Main Menu screen. See Figure 22 on page 139. For example:

```
MIRAN[00]>CON_WAV_PCM PLSWAIT.WAV ANN00005.ULW
```

Table 23 lists MIRAN OA&M commands along with their descriptions, parameters, and syntax definitions. It also lists terminal-based OA&M access commands that can be entered on the command line on the terminal screen.

Table 23
OA&M command summary (Part 1 of 5)

Command	Parameters	Function
BACKUP	[Device]	Back-up the assignment/configuration information.
CAL_ADD	[Channel list] [Device:Filename.Type] [Descriptor] or [Channel list] [Device:Filename.Type] [Time Entry] [Date Entry]	Add a Calendar assignment.
CAL_CLEAR		Clear all Calendar assignments.
CAL_LOAD	[Device:Filename.Type]	Load Calendar assignments from a file.
CAL_REMOVE	[Calendar Entry Number]	Remove a Calendar assignment.
CAL_SAVE	[Device:Filename.Type]	Save Calendar assignments to a file.
COLD_RESET		Perform a cold reset on the pack.
CONV_PCM_WAV	[Input Device:Filename.ULW] [Output Device:Filename.WAV]	Convert a file from PCM (.ALW or .ULW) to WAV.

Table 23
OA&M command summary (Part 2 of 5)

Command	Parameters	Function
CONV_WAV_PCM	[Input Device:Filename.WAV] [Output Device:Filename.ULW]	Convert a file from WAV to PCM (.ALW or .ULW).
COPY	[Source Device:Filename.Type] [Destination Device:Filename.Type]	Copy a file.
CVREAD	[Configuration Variable]	Show the value of a configuration variable.
CVSAVE		Save Configuration Variables to the drive specified by the variable 'DefaultDrive'.
CVSET	[Configuration Variable] [value]	Set the value of a configuration variable. MIRAN will save values if 'AutoSave' is TRUE.
DELETE	[Device:Filename.Type]	Delete a file.
DESC_ADD	[Descriptor Name] [Time Entry] [Date Entry]	Add/change Calendar Descriptor.
DESC_CLEAR		Clear all Calendar Descriptors.
DESC_LOAD	[Device:Filename.Type]	Load Calendar Descriptors from a file.
DESC_REMOVE	[Descriptor Name]	Remove a Calendar Descriptor.
DESC_SAVE	[Device:Filename.Type]	Save Calendar Descriptors to a file.
ERASE_DIR	[Device:Directory]	Remove a directory and its contents.
IPCONFIG	[IP Address] [Subnet Mask] [Gateway Address] [IP Method]	Configure the IP information on the pack.
KEYCODE	[Keycode]	Capacity upgrade by means of a keycode.
LIST	[Device:Filename.Type]	List files for a given drive.

Table 23
OA&M command summary (Part 3 of 5)

Command	Parameters	Function
LOCAL_TIME	[Time hh:mm] [Date dd/mm/yyyy]	Set the time and date on the pack.
LOGOFF		Log off and bring user back to the login screen.
MKDIR	[Device:Directory name]	Create a directory.
MOVE	[Source Device:Filename.Type] [Destination Device:Filename.Type]	Move a file.
PLAY	[External Channel] [Device:Filename.Type]	Play an announcement on an external channel.
PLAYLEV	[External Channel] [Level]	Set the playback (attenuation) level (0-63) for an external channel.
PLAYSTOP	[External Channel]	Stop playback of a file on an external channel.
POLLING_OFF		Turn 8051XA polling off.
POLLING_ON		Turn 8051XA polling on.
RECORD	[External Channel] [Device:Filename.Type] [Duration]	Record from an external channel to a file for a given duration.
RECORDSTOP	[External Channel]	Stop recording on an external channel.
RENAME	[Device:Old_File_Name.Type] [New_File_Name.Type]	Rename a file.
RESETSTAT		Reset channel statistics.
RESTORE	[Device]	Restore the backed-up assignment/configuration information.
RMDIR	[Device:Directory]	Removes an empty directory.
RUN	[Device:Filename.BAT]	Run a batch file.

Table 23
OA&M command summary (Part 4 of 5)

Command	Parameters	Function
SAVESTATS	[Device:Filename.Type]	Save channel statistics to a file.
SERIAL_PORT		Hands control of the serial port to the 8051XA for debugging purposes.
SETDATE	[dd:mm:yyyy]	Set the date on the pack.
SETTIME	[hh:mm]	Set the time-of-day on the pack.
SETUP_C	[Device]	Copies MUSIC.SBC and MIRANII.PDF to drive C:
SETUP_PROMPTS	[Device:Directory]	Copy TUI voice prompts to a directory.
SHELL		Enter the vxWorks shell for debugging.
STATS		Show the channel statistics screen.
STATUS		Show the pack status screen.
SWAP_LAW		Swap the companding law of the external channels between A-law and μ -law.
SW_UPGRADE	[Device:Filename.Type]	Upgrade the MIRAN software.
SYSINFO		Show the system information screen.
SYSTEM_TIME	[Enabled] [IP Address] [TTY Username] [TTY Password] [Frequency] [Time]	Set the parameters for System Time & Date Synchronization.
SYSTEM_TIME_SY NC		Initiate the download of the System Time & Date from the M1.
TIME		Show the current day, time, and date

Table 23
OA&M command summary (Part 5 of 5)

Command	Parameters	Function
TUI_ASSIGN	[Channel] [Device:Filename.Type]	Make a TUI calendar assignment.
TUI_UNASSIGN	[Channel]	Unassign a TUI assignment.
UPGRADE_ERASE		Erase the current MIRAN software load to force a boot from BIOS.
USER_ADD	[User Name] [Password] [Channel List]	Add a new User.
USER_REMOVE	[User Name]	Remove a User.
USER_SAVE		Save Users.
VIEW	[Device:Filename.Type]	View a text file.
VNEXT		Move to the next pack in the V-LAN chain.
VPREV		Move to the previous pack in the V-LAN chain.
WARM_RESET		Perform a warm reset of the pack.

OA&M Commands

The command syntax explains in detail each command and its parameters.

Access the next MIRAN card

Use this command to access the next card in the VLAN chain.

Syntax **VNEXT**

Access the previous MIRAN card

Use this command to access the previous card in the VLAN chain.

Syntax **VPREV**

Read configuration variable

Use this command to show the value of a particular configuration variable.

Syntax **CVREAD** [Configuration Variable]
[Configuration The configuration variable to be read.
Variable]

Save configuration variables

Use this command to save the configuration variables to the drive specified by the variable 'DefaultDrive'.

Syntax **CVSAVE**

Set configuration variable

Use this command to set the value of a configuration variable. MIRAN will save the value if the variable 'AutoSave' is 'TRUE'.

Syntax **CVSET** [Configuration Variable] [Value]
[Configuration The configuration variable to be read.
Variable]
[Value] The desired value of the configuration variable.

Keycode entry

Enter a keycode to upgrade/activate software functionality.

Syntax **KEYCODE** [keycode]
[keycode] The keycode received in the upgrade/installation kit.

Operational Statistics

Use this command to display a report of the RAN statistics.

Syntax **STATS**

System Information

Use this command to display a report of the system hardware configuration.

Syntax **SYSINFO**

View text file

Use this command to view a text file.

Syntax	VIEW [dev:filename.type]
[dev:filename.type]	Device indicates on which drive the file resides. The filename is 8 characters.

Remove MIRAN upgrade software

Use this command to erase the current MIRAN software load to force a boot from BIOS.

Syntax	UPGRADE_ERASE
--------	----------------------

Configure IP information

Use this command to configure the IP information for the MIRAN pack.

Syntax	IPCONFIG [IP address] [subnet mask] [gateway address] [IP method]
[IP address]	The IP address for the MIRAN pack.
[subnet mask]	The subnet mask for the MIRAN pack.
[gateway address]	The gateway on which the MIRAN pack resides.
[IP method]	The method the MIRAN pack uses to obtain the IP address. The choices are: bootp – to take an IP address upon bootup static – to have a constant IP address disabled – to disable IP capability

Allow 8051XA debugging

Use this command to hand control of the serial port to the 8051XA for debugging purposes.

Syntax	SERIAL_PORT
--------	--------------------

Allow vxWorks debugging

Use this command to enter the vxWorks shell for debugging purposes.

Syntax	SHELL
--------	--------------

Synchronize time and date

Use this command to initiate the download of time and date information from the Meridian 1 system.

Syntax **SYSTEM_TIME_SYNC**

Announcement Commands

The following commands deal with announcements.

Announcement Record

This command records an announcement and stores it in a file. Recording starts immediately and terminates after the specified duration.

Syntax: **RECORD** [source] [device:filename] [duration]
[source] ANALOG1, ANALOG2, CHANNEL 7 (for set)
[device:filename] Device indicates on which device the file resides. The file name is a maximum of 8 characters with a 3 character extension.
[duration] Maximum play duration in seconds.

Stop Recording Announcement

This command halts all announcement recording.

Syntax: **RECORDSTOP**

Play Announcement

This command plays an announcement file through the specified port.

Syntax: **PLAY**[destination] [device:filename] [duration]
[destination] A0 or A1 (.ULW or .ALW files only)
channel 7 (OA&M channel))
[device:filename] Device indicates on which device the file resides. The file name is a maximum of 8 characters with a 3 character extension.
If ANALOG0 or ANALOG1 is specified, the analog input ports are used as announcement source.

[duration] Maximum play duration in seconds. If duration is omitted then all the announcement will be played.

Stop Playback Announcement

This command stops playback of an announcement file through the specified port. This can be used to stop playback of a long announcement before making a new assignment.

Syntax **PLAYSTOP** [channel]
[channel] 0-7, A0, A1

Set Playback Level Announcement

This command sets the playback level for the given channel.

Syntax: **PLAYLEV** [channel] [level]
[channel] A0, A1 (external channels)
[level] Integer in range 0-63. "0" allows the loudest playback, "63" the softest.

Convert Announcement File

This command converts audio files from one format to another. Raw PCM (.ULW or .ALW) is the default format used by the MIRAN card. This utility allows conversion between any combination of the following formats:

WindowsTM format audio file .WAV

Raw PCM .ULW, .ALW

Syntax and description of announcement files

Syntax: **CONV_PCM_WAV** [src
dev:filename.ULW (or .ALW)] [dest
dev:filename.WAV]
[src dev:filename.ext] Device indicates on which device the file resides. Filename, max 8 characters.
[dest dev:filename.ext] Device indicates on which device the converted file will be placed. Filename, max 8 characters.

Calendar commands

The following commands deal with the calendar function.

Add a calendar assignment

This command creates a calendar assignment using either a descriptor or a time & date entry to determine when the announcement plays.

Syntax:	CAL_ADD [channel list] [dev:filename.type] [descriptor] <u>or</u> CAL_ADD [channel list] [dev:filename.type] [time entry] [date entry]
[channel list]	Specifies on which channels the announcement will play
[dev:filename.type]	Device indicates on which drive the file resides. The filename is 8 characters.
[descriptor]	A previously defined descriptor that describes the times and date the announcement will play.
[time entry]	This is the time of day the announcement will play. Refer to Table 3 on page 29 for available formats.
[date entry]	This is the days or dates the announcement will play. Refer to Table 4 on page 29 for available formats.

Remove a calendar assignment

This command deletes a calendar assignment from the list of calendar assignments.

Syntax:	CAL_REMOVE [calendar entry number]
[calendar entry number]	Specifies which calendar assignment to delete from among the list of calendar assignments.

Load calendar assignments from a file

Use this command to load a group of calendar assignments that were previously saved in a file.

Syntax:	CAL_LOAD [dev:filename.type]
[dev:filename.type]	Device indicates on which drive the file resides. The filename is 8 characters.

Save a calendar list to a file

Use this command to save the active list of calendar assignments to a file.

Syntax: **CAL_SAVE** [dev:filename.type]
[dev:filename.type] Device indicates on which drive the file is to be saved. The filename is 8 characters.

Clear current calendar assignments

Use this command to clear the currently active list of calendar assignments.

Syntax: **CAL_CLEAR**

Assign TUI announcement

Use this command to assign a TUI announcement to a group of channels.

Syntax **TUI_ASSIGN** [channel] [dev:filename.type]
[channel] The channel, or channels, on which the assignment is to be made. Use '*' for all channels.
[dev:filename.type] Device indicates on which drive the file resides. The filename is 8 characters.

Unassign TUI announcement

Use this command to unassign a TUI announcement from a group of channels.

Syntax **TUI_UNASSIGN** [channel]
[channel] The channel, or channels, from which the assignment is to be removed. Use '*' for all channels.

Descriptor commands

The following commands deal with the descriptor function.

Add a descriptor

Use this command to create a descriptor, which can be used for multiple calendar assignments.

Syntax: **DESC_ADD** [descriptor name] [time entry] [date entry]

[descriptor name] The name for the descriptor, from one to 16 characters in length.

[time entry] This is the time of day an announcement with this descriptor will play. Refer to Table 3 on page 29 for available formats.

[date entry] This is the days or dates an announcement with this descriptor will play. Refer to Table 4 on page 29 for available formats.

Remove a descriptor

Use this command to delete a descriptor from the current list of descriptors.

Syntax: **DESC_REMOVE** [descriptor name]

[descriptor name] The name of the descriptor to be removed.

Load descriptors from a file

Use this command to load a group of descriptors that was previously saved in a file.

Syntax: **DESC_LOAD** [dev:filename.type]

[dev:filename.type] Device indicates on which drive the file resides. The filename is 8 characters.

Save current descriptors to a file

Use this command to save the active list of descriptors to a file.

Syntax: **DESC_SAVE** [dev:filename.type]

[dev:filename.type] Device indicates on which drive the file is to be saved. The filename is 8 characters.

Clear current descriptors

Use this command to clear the currently active descriptors.

Syntax: **DESC_CLEAR**

User commands

The following commands deal with the list of users.

Add a user

Use this command to define a user.

Syntax: **USER_ADD** [user name] [password] [channel list]
[user name] The name of the user (the login ID).
[password] The password the user must enter to access the
 MIRAN Release 2.0 card. The password *must* be
 eight characters long.
[channel list] The list of channels that the user twill be able to
 access. For access to all channels, enter '*'.

Note: MIRAN saves all user information in a file named
“C_USERS.DAT”. All default users and passwords can be restored by
deleting the C:_USERS.DAT file.

Remove a user

Use this command to delete a user from the current list of users.

Syntax: **USER_REMOVE** [user name]
[user name] The name of the user to be removed.

Save users

Use this command to save all changes to the users list.

Syntax: **USER_SAVE**

File Commands

Control RAN and music files.

List Files

Use this command to list all the files on the specified device or drive:.

Syntax: **LIST** [device:] [filename] [.extension]
[device:] Device indicates on which device the file resides.
[filename:] Filename, max 8 characters or wildcard “*”. If a filename is omitted then all files on the specified device will be listed.
[.extension:] The extension can be max 3 characters or wildcard “*”. If an extension is omitted then all files with a null extension on the specified device will be listed.

Copy File

Use this command to copy files:

Syntax: **COPY** [src device:filename.ext] [dest device:filename.ext]
[src dev:filename.ext] Device indicates on which device the file resides. Filename is a maximum of eight characters and the extension a maximum of three characters.
[dest dev:filename.ext] Device indicates on which device the copied file will be placed. Filename is a maximum of eight characters and the extension a maximum of three characters.

Move File

This command moves files from a source to a destination location:

Syntax: **MOVE** [src device:filename.ext] [dest device:filename.ext].
[src dev:filename.ext] Device indicates on which device the file resides. Filename is a maximum of eight characters and the extension a maximum of three characters.
[dest dev:filename.ext] Device indicates on which device the moved file will be placed. Filename is a maximum of eight characters and the extension a maximum of three characters.

Delete file

This command deletes a file:

Syntax: **DELETE** [dev:filename.ext]
[dev:filename.ext] Device indicates on which device the file resides.
Filename is a maximum of eight characters and the
extension a maximum of three characters.

Rename File

This command renames a file:

Syntax: **RENAME** [old dev:filename.ext] [new filename.ext].
[old dev:filename.ext] Device indicates on which device the original file
resides. Filename is a maximum of eight characters
and the extension a maximum of three characters.
[new filename.ext] The new filename is a maximum of eight characters
and the extension a maximum of three characters.

Backup configuration

This command copies all active configuration announcement files to the specified destination.:

Syntax: **BACKUP** [destination]
[destination] This can be one of the following, device: - logical
storage device A:, B: or C:.
ANALOG0 - Analogue output port 0
ANALOG1 - Analogue output port 1

Restore configuration

This command restores files that were backed up using the BACKUP command. Only files that were backed up to a logical device can be restored:

Syntax: **RESTORE** [device:]
[device:] Device indicates on which device the backed up file
resides.

Software upgrade

This command upgrades the MIRAN operating system and application software to the version stored on the specified device:

Syntax: **SW_UPGRADE** [device:]
[device:] Device indicates on which device the new software resides.

Run Batch File

This command runs batch files:

Syntax: **RUN** [device:filename.BAT]
[device:filename] Device indicates on which device the file resides. Filename is a maximum of eight characters. The extension.BAT will be assumed.

Make a directory

Use this command to create a directory on a particular drive.

Syntax **MKDIR** [device:directory]
[device: The drive where the directory is to be made, either A:, B:, or C:.
directory] The name for the directory

Remove a directory

Use this command to remove a directory from a particular drive.

Syntax **RMDIR** [device:directory]
[device: The drive from where the directory will be removed, either A:, B:, or C:.
directory] The name of the directory to be removed

Erase a directory

Use this command to remove a directory *and* its contents from a particular drive.

Syntax	ERASE_DIR [device:directory]
[device:	The drive from where the directory is to be removed, either A:, B:, or C:.
directory]	The name of the directory to be erased.

Copy royalty-free music and online NTP to drive C:

Use this command to copy the files, MUSIC.SBC and MIRANII.PDF, from drive A: or drive B: to drive C:.

Syntax	SETUP_C [device]
[device]	The drive from where the files are to be copied, either A: or B:.

Copy TUI voice prompts to a directory

This command copies the TUI voice prompts to a directory.

Syntax:	SETUP_PROMPTS [device:directory]
[device:	The drive to which the prompts will be copied, either A:, B:, or C:.
directory]	The name of the directory where the prompts are to be copied.

Change the companding law

Use this command to change the companding law (A-law or μ -law) of the external channels.

Syntax	SWAP_LAW
--------	-----------------

Comment

Use this command to write comments:

Syntax:	#
	If the first character of a command string is “#” then the string is assumed to be a comment and is ignored.

Miscellaneous Commands

These commands configure and display time and date parameters.

Set Time and Date

This command sets the time *and* date on the MIRAN pack:

Syntax: **LOCAL_TIME** [Time] [Date]
[Time] Time of day in hours and minutes (hh:mm).
[Date] The date (dd/mm/yyyy).

Set Time of Day

This command sets the time of day:

Syntax: **SETTIME** [HH:MM]
[HH:MM] Time of day in hours and minutes.

Set the date

This command sets the date for the internal calendar:

Syntax: **SETDATE** [day of month / month / year]

Configure System Time & Date synchronization

This command sets the parameters for System Time & Date synchronization.

Syntax: **SYSTEM_TIME** [enabled] [IP address] [TTY
username] [TTY password] [frequency] [time]
[enabled] Must be 'true' for System Time & Date
synchronization to work.
[IP address] The IP address of the Meridian 1 system.
[TTY username] The username used to access the Meridian 1 switch
through the embedded LAN.
[TTY password] The password used to access the Meridian 1 switch
through the embedded LAN.
[frequency] The number of days between each synchronization
attempt, from 1 to 7 days.
[time] The time of day for the MIRAN to attempt to
synchronize with the Meridian 1 switch. Set the time
for the period of *lowest* technician use.

Display Day and Time

This command shows the current day-of-week and time.

Syntax: **TIME**

Show Pack Status

This command shows the pack status screen.

Syntax: **STATUS**

Show Statistics

This command shows the current statistics for channel usage.

Syntax: **STATS**

Save Statistics

Saves the current operational statistics to a file.

Syntax: **SAVESTATS** [dev:filename.type]
[dev:filename.type] Device indicates to which drive the file will be saved. The filename is 8 characters.

Clear Statistics

This command resets all of the statistics values to zero.

Syntax: **RESETSTAT**

Cold reset

This command activates a cold reset of the MIRAN pack.

Syntax: **COLD_RESET**

Warm reset

This command activates a warm reset of the MIRAN pack.

Syntax: **WARM_RESET**

Turn polling on

This command turns 8051XA polling on.

Syntax: **POLLING_ON**

Turn polling off

This command turns 8051XA polling off.

Syntax: **POLLING_OFF**

Logoff

This command logs the user out of the terminal OA&M.

Syntax: **LOGOFF**

MIRAN Batch File Support

The MIRAN batch files are used to execute sequences of frequently used commands. The syntax of these commands is the same as for the command line. Comments are indicated by a “#” character in the left-most column.

Restrictions

The maximum number of lines per batch file (including comments) is limited to 255.

Commands and comments can not be mixed on the same line.

Batch file Example

```
# Batch file INIT.BAT
# Initial channel assignments
# Copy speech file pls_hold from device A: to internal flash device C:
COPY A:PLS_HOLD.ULW C:
# Assign “please hold” announcement to channel 0
ASSIGN MON 0 C:PLS_HOLD.ULW 00:00
# Assign music connected to analogue port 0 to channel 1
ASSIGN MON 1 ANALOG0 00:00
```

Setting up emergency announcements quickly

Situations can arise where an emergency announcement must be set up that must play on all channels and override all other announcements. MIRAN Release 2.0 provides an easy way to do this, using TUI.

To set up an emergency announcement on all channels, do the following:

- 1 Log into the TUI.
- 2 Record the emergency announcement.
- 3 Assign the emergency announcement to all channels.
Note: This assignment through the TUI overrides any previous assignments.
- 4 Once the emergency has passed, delete the TUI assignment through the browser or text-based user interface screens. This returns the MIRAN to normal operation.

Note: For instructions on using the TUI, refer to “RAN Application: Telephone User Interface” on page 215.

RAN Application: Telephone User Interface

Contents

This section contains information on the following topics:

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This chapter describes the MIRAN Telephone User Interface (TUI), which can be used to perform certain OA&M functions.

To enable the TUI, the following actions must be performed first:

- load LD 16 to build a DID route. See “Configuring the DID route for the TUI” on page 84.
- load LD 14 and configure port/channel 7 of the MIRAN card as a DID trunk. See “Configuring the MIRAN trunks” on page 85.

- enter the keycode for the MIRAN card. See “The Keycode Entry screen” on page 172.
- ensure that the configuration variable, ‘SetBasedAccess’, is set to TRUE. See “The Configuration Variables menu” on page 176.

The TUI reduces the number of MIRAN ports available for RAN or music from eight to seven. Because there is no messaging between MIRAN cards, port 7 must be reserved for the TUI on each MIRAN card that requires this interface.

Note: If a MIRAN card does not require the TUI, then all eight ports on the card are available for RAN or music.

Description

A TUI within the MIRAN application allows the application to be accessed from any local Dual Tone Multiple Frequency (DTMF) telephone.

Note: The DTMF telephone must have an ‘unrestricted’ Class of Service’ to access the TUI.

The TUI uses a series of simple voice menus and prompts for quick modification of announcements and other simple tasks. Extensive changes must be implemented through the text-based user interface or the Browser User Interface (BUI).

The TUI enables the following actions:

- record new announcements
- play announcements
- assign and unassign announcements to MIRAN ports
- access the MIRAN card security ID

The following *cannot* be done through the TUI:

- set the MIRAN card clock
- assign time-of-day restrictions to announcements

- access system configuration functions
- change passwords

The TUI cannot be accessed while another uses the text-based user interface.

The TUI allows a user to login and issue specific commands through the dialpad of a Meridian Digital Telephone or any standard DTMF telephone. For security, login requires a valid user name and password, which the administrator supplies. The MIRAN card does not identify itself until a valid user name and password is entered. The following pages describe the TUI menus.

Restrictions on TUI access

Toll calls (i.e., dialing 0 or 1 as the first digit) to the TUI channel disconnect automatically if the NATL response in LD 16 is YES. The same thing happens when the NFCR response is YES in LD 15. Set *both* prompts to NO to allow toll calls to the TUI.

Set **CLS = UNR** in LD 11 to enable a DTMF telephone access to the TUI.

Using the telephone user interface

To perform application tasks over the DTMF telephone, the dialpad must be used. Press specific digits on the dialpad to login and issue specific commands, which the following paragraphs describe.

Login

To login to the MIRAN card, do the following:

- 1 Go off-hook.
- 2 Dial the DID route access code of the MIRAN card.
- 3 At the voice prompt, enter '#', then a user name followed by '*' (star). The default user name is "8737" (= "user").
- 4 At the next voice prompt, enter the password followed by '*' (star). The default password is "87370000" (= "user0000").

If the login is valid, the TUI accesses the Main menu. If the login is *not* valid after three attempts, the system disables further access attempts for 20 minutes.

There are four conditions that can prevent a user's access to the MIRAN card through the TUI:

- Another person is using the text-based user interface.
- The user has made three invalid login attempts.
- NCOS, TGAR, or the Class of Service (for example, CLS = TENA) is restricted.
- The configuration variable 'SetBasedAccess' is set to 'FALSE'.

Navigating the Main menu

When the Main menu is accessed, a recorded announcement lists the options for this menu. At the Main Menu, the following actions can be performed:

- Dial 1 to assign the current announcement to a channel.
- Dial 2 to play the current announcement.

Note: When login first occurs, the current announcement is the same as the first announcement within the available disk volumes.

- Dial 3 to review channel assignments.
- Dial 4 to go to the previous announcement.
- Dial 5 to record an announcement.
- Dial 6 to go to the next announcement.
- Dial 76 to delete the current announcement.

Note: When 76 is dialed to delete the current announcement, all channel assignments that use the announcement must be removed.

- Dial 8 to hear the 8-digit MIRAN security ID.
- Dial * to stop an announcement that is playing.

Note: If no announcement is playing, dialing * saves any announcements that have been credited logs the user off of the TUI.

- Dial 9 to repeat the list of options.

Recording an announcement

Through the TUI, an announcement can be recorded which can be assigned to channels either through the TUI, the text-based user interface, or the BUI. To record an announcement, do the following:

- 1 At the Main menu, dial 5 to enter the Record menu.
- 2 At the Record menu, dial 5 to begin recording.
- 3 Dial * to end recording.

Note: If the drive capacity is reached *while* recording, the recording stops automatically.

- 4 Dial 2 to review the announcement, and/or dial 5 to record the announcement again. This step is optional.
- 5 Dial 1 to save the announcement.

When the announcement is saved, MIRAN assigns it a filename “ANNxxxxx”, where “xxxxx” is the announcement number. MIRAN adds the announcement to the first disk volume with available space of at least 64 kbytes or 8 seconds of recording. Then the TUI returns to the Main menu.

Note: Except while recording an announcement, dial 9 for help and * (star) to return to the Main menu.

Assigning an announcement

Through the TUI, an announcement can be assigned to one or more channels (0 to 7, 90, or 91). Nortel Networks does not recommend that an announcement be assigned to channel 7, because the MIRAN card uses channel 7 for the TUI.

Note: An announcement can be assigned to channel 7, but it won't play unless channel 7 is reprogrammed as a RAN trunk.

Table 24 lists the internal and cross-connect MIRAN ports/channels.

Table 24
Port/channel number assignments for the telephone user interface

Channel Number	Description
0	Internal one-to-one port/channel
1	Internal one-to-one port/channel
2	Internal one-to-one port/channel
3	Internal one-to-one port/channel
4	Internal one-to-one port/channel
5	Internal one-to-one port/channel
6	Internal one-to-one port/channel
7	Internal one-to-one port/channel (used for TUI access).
90	Cross-connect channel (A0 for text-based access configuration)
91	Cross-connect channel (A1 for text-based access configuration)

To assign an announcement to a channel, do the following:

- 1 At the Main menu, dial 2 to learn what the current announcement is. (This step is optional.)
- 2 At the Main menu, dial 1 to enter the Assignment menu.
- 3 Enter the list of channels to which the announcement must be assigned. Dial * (star) after each channel to separate it from the next channel.
- 4 Dial * (star) a second time to end the list.

For example, at the Assignment menu enter

2*3*90**

to assign the current announcement to internal channels 2 and 3 and external channel 90 (A0).

If the channel assignment is not valid, the TUI prompts the user to try again. If the channel assignment is valid, the MIRAN card clears *all* TUI assignments for the selected channels and assigns the current announcement to them. The TUI announces a successful assignment and returns to the Main menu.

Note: Announcement assignments through the TUI cannot include time and date restrictions. To restrict an announcement on a channel to particular times and days, make the assignment through the text-based user interface or the BUI.

Retrieving channel information

Through the TUI, the MIRAN card can be queried for information about its channels. In the Channel Information menu, the announcements can be heard that are assigned to each channel.

Dial 3 at the Main menu to enter the Channel Information menu. At the Channel information menu, the following options are available:

- Dial 4 to go to the previous channel.
- Dial 6 to go to the next channel.
- Dial 76 to unassign any announcement from the current channel.
- Dial 9 for help.
- Dial * to return to the Main menu.

Unlike deleting an announcement in the Main menu, dialing 76 in the Channel Information menu only unassigns the announcement from the current channel. Dialing 76 in the Channel Information menu does not delete the announcement.

Example of using the TUI

Table 25 lists the steps to follow to record and assign an announcement through the TUI.

Table 25
An example of using the TUI (Part 1 of 2)

Step	User action	MIRAN response	Comments
1	Go off-hook.	Not Applicable	
2	Dial the access code for the MIRAN card.	Voice prompt for user name	
3	Enter #, followed by the user name and *.	Voice prompt for user password	
4	Enter the password, followed by *.	"Main Menu"	A "Login incorrect" message is received for wrong input.
5	Dial 5 to access the Record menu.	Voice menu of options available	
6	Dial 5 to record the announcement.	<BEEP>	Records one announcement into a temporary file.
7	Dial * to stop recording.	Menu of available options	Recording stops.
8	Dial 2 to verify the announcement.	Plays announcement from temporary file	If the announcement is acceptable, save it.
9	Dial 1 to save the announcement.	"Announcement saved as announcement xxxx"; "Main Menu"	The announcement is saved to storage and becomes the currently selected announcement.
10	Dial 1 to assign the announcement to MIRAN port(s).	"Assignment menu. Enter a list of channels separated by star. End the list with an extra star."	
11	Enter list of channels separated by *. (Follow last channel by **)	"Assignments made"; "Main Menu"	The MIRAN assigns the announcement to the selected channels(s).

Table 25
An example of using the TUI (Part 2 of 2)

Step	User action	MIRAN response	Comments
12	Dial * to exit MIRAN.	"Good-bye"	The TUI disconnects the user from the MIRAN.
13	Go on-hook.	Not Applicable	

Voice prompts

Table 26 lists voice prompts and corresponding voice prompt IDs.

Table 26
TUI voice prompts (Part 1 of 4)

Prompt ID	Prompt content
0-31	"Zero" to "thirty one"
32	"Analog..." as in " Analog Zero. "
33	"Channel..." as in " Channel 5. "
34	<BEEP>
35	"Access is currently disabled."
36	"Please try again later."
37	"Goodbye."
38	"Please enter your user name followed by star."
39	"Please enter your password followed by star."
40	"Three login attempts have failed. Access will be temporarily disabled."
41	"Login incorrect."
42	"Please try again."
43	"Main menu."

Table 26
TUI voice prompts (Part 2 of 4)

Prompt ID	Prompt content
44	"Commands you can use are: Assign 1, play 2, record 5, delete 7-6, ID 8."
45	"To go to the next announcement, press 6."
46	"To go to the previous announcement, press 4."
47	"To exit, press star."
48	"There are no announcements available."
49	"Start of list."
50	"End of list."
51	"Pack ID is..." as in " Pack ID is 1-0-0-0-1-2-3-4."
52	"That option is not available."
53	"For help, press 9."
54	"Assignments saved."
55	"Assignment menu."
56	"Enter a list of channels, separated by star. End the list with an extra star."
57	"Invalid assignment."
58	"You do not have access to the following channels:"
59	"Assignments made."
60	"Record menu."
61	"To begin recording, press 5. To end recording, press star."
62	"Drive capacity exceeded."
63	"Error saving announcement."
64	"Recording stopped."

Table 26
TUI voice prompts (Part 3 of 4)

Prompt ID	Prompt content
65	"To save the announcement, press 1. To review it, press 2. To re-record it, press 5."
66	"Announcement saved as announcement..."
67	"Error deleting announcement."
68	"Announcement deleted."
69	"Channel Information Menu."
70	"For Channel Information, press 3."
71	"To review the current channel, press 2."
72	"To go to the next channel, press 6."
73	"To go to the previous channel, press 4."
74	"To unassign the current channel, press 7-6."
75	"There is no announcement assigned to this channel."
76	"Assignment cleared."
77	"Welcome to Marian."
78	"Assignment cleared on channel..."
79	"OK"
80	"... and..."
81	"... to..."
82	"You have access to the following channels:"
83	"Invalid channel assignment."
84	"All internal channels."
85	"All external channels."
86	"Channels..."

Table 26
TUI voice prompts (Part 4 of 4)

Prompt ID	Prompt content
87	"Analog Zero."
88	"Analog One."
89	"Assignments cleared on channel..."
90	"Assignments cleared on..."

TUI flowcharts

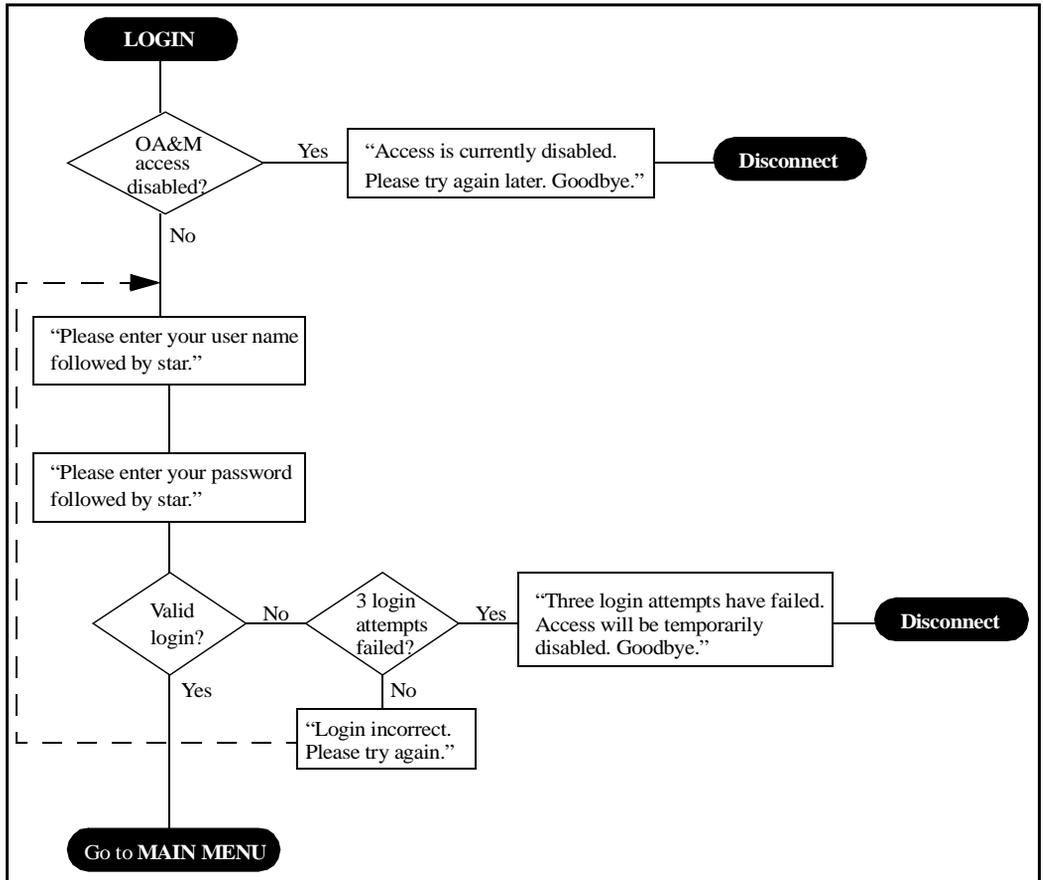
Refer to the TUI flowcharts on the following pages for further information on these TUI functions:

- Login (Figure 70 on page 227)
- Main menu (Figures 71 and 72 on page 228 and page 229)
- Record menu (Figures 73 and 74 on page 230 and page 231)
- Assignment menu (Figure 75 on page 232)
- Channel Information menu (Figure 76 on page 233)
- Delete menu (Figure 77 on page 234)

Login flowchart

Enter the user name and password to access the MIRAN TUI.

Figure 70
TUI Login flowchart



Main menu

Figure 71
TUI Main menu flowchart (Part 1 of 2)

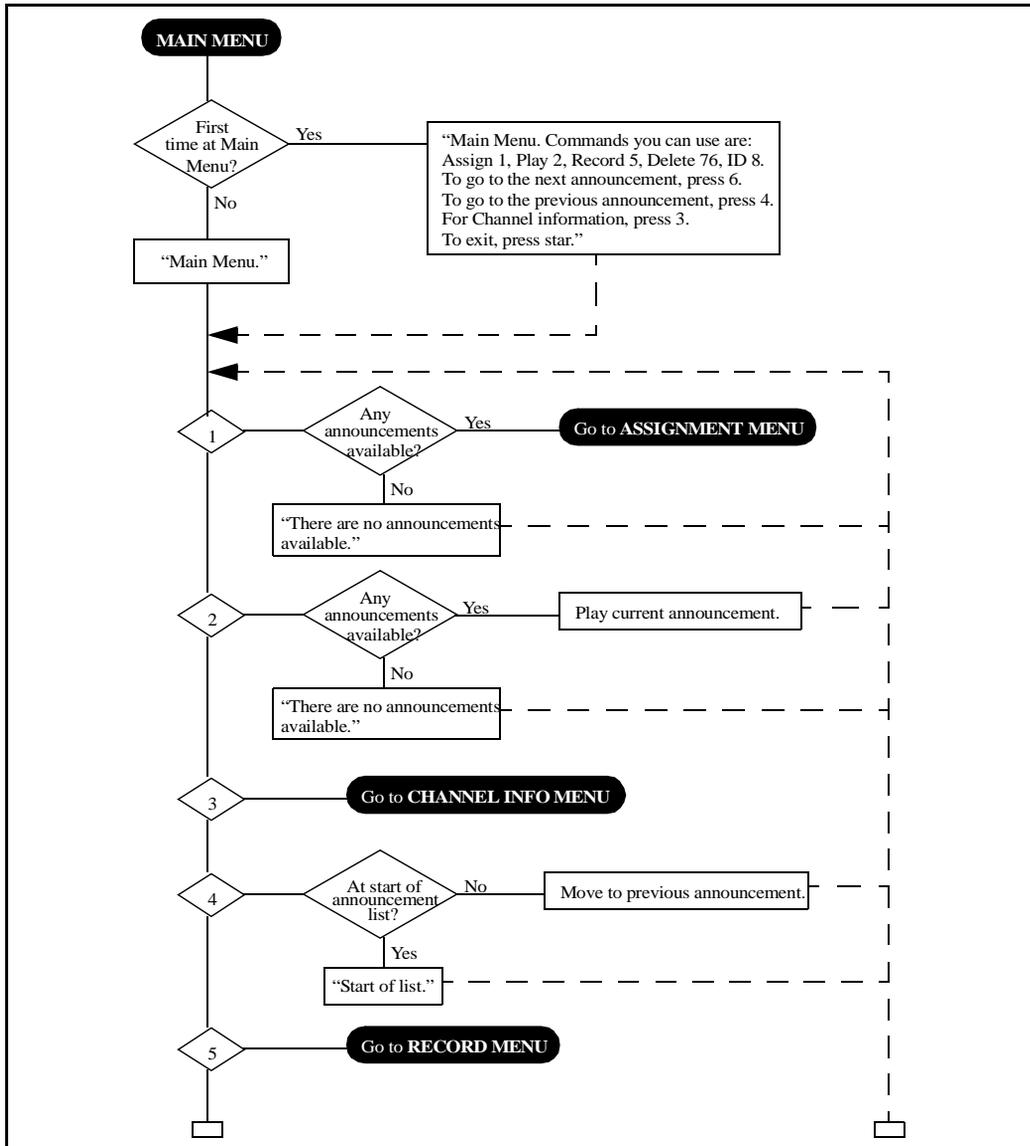
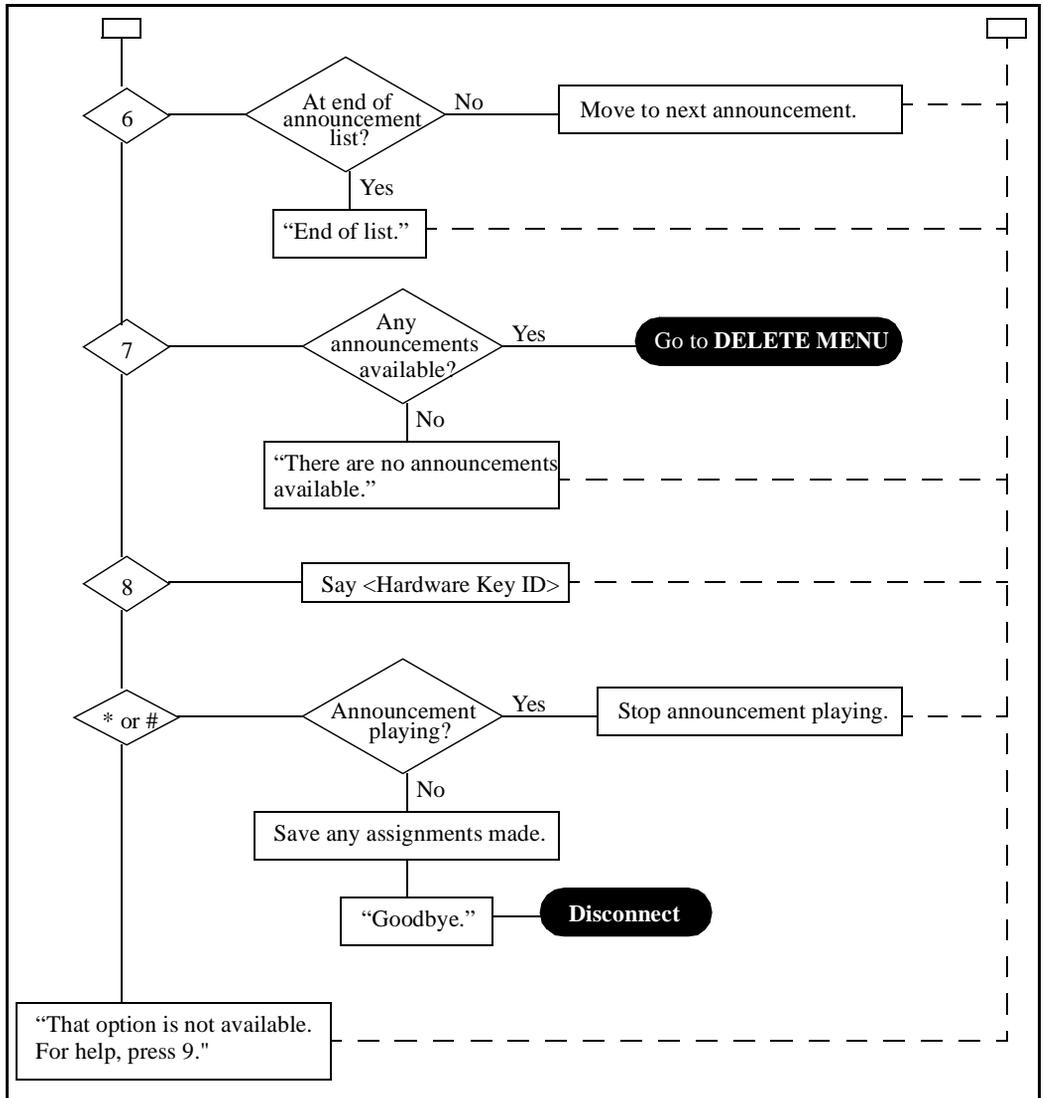


Figure 72
TUI Main menu flowchart (Part 2 of 2)



Record menu

Dial 5 in the Main menu to access the Record menu. This function allows announcements to be recorded.

Figure 73
TUI Record menu flowchart (Part 1 of 2)

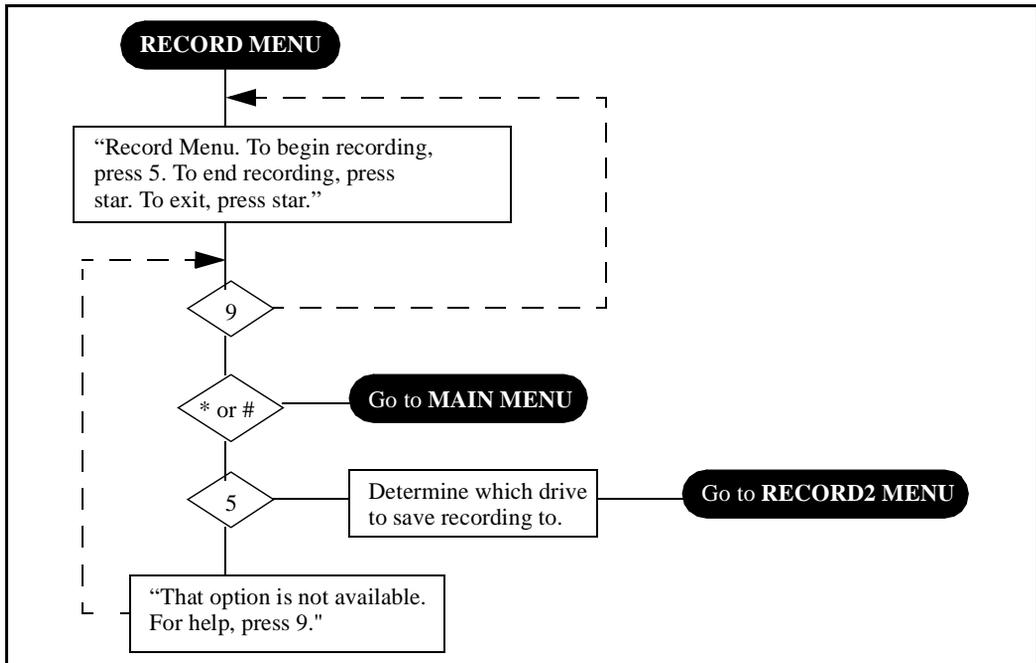
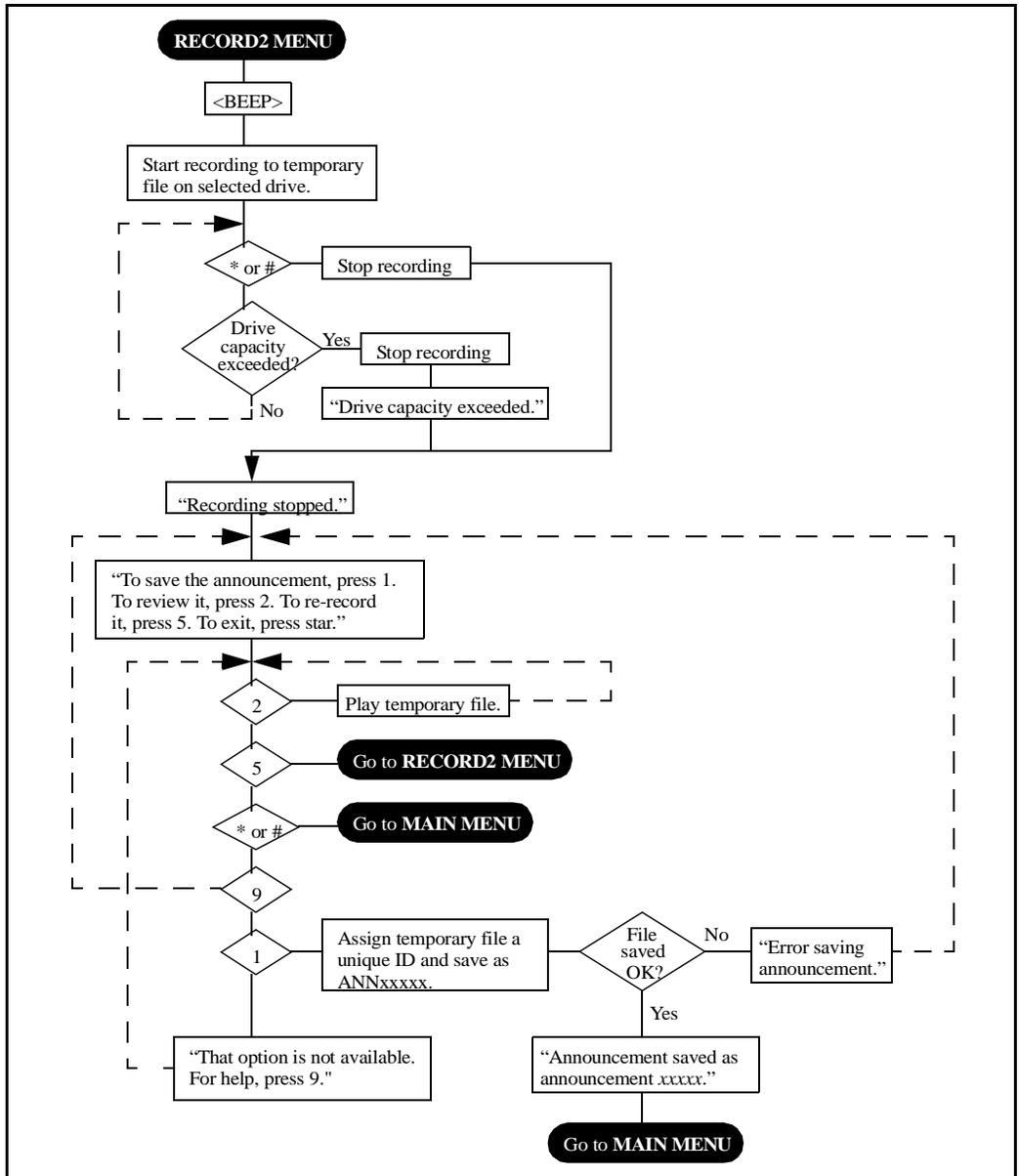


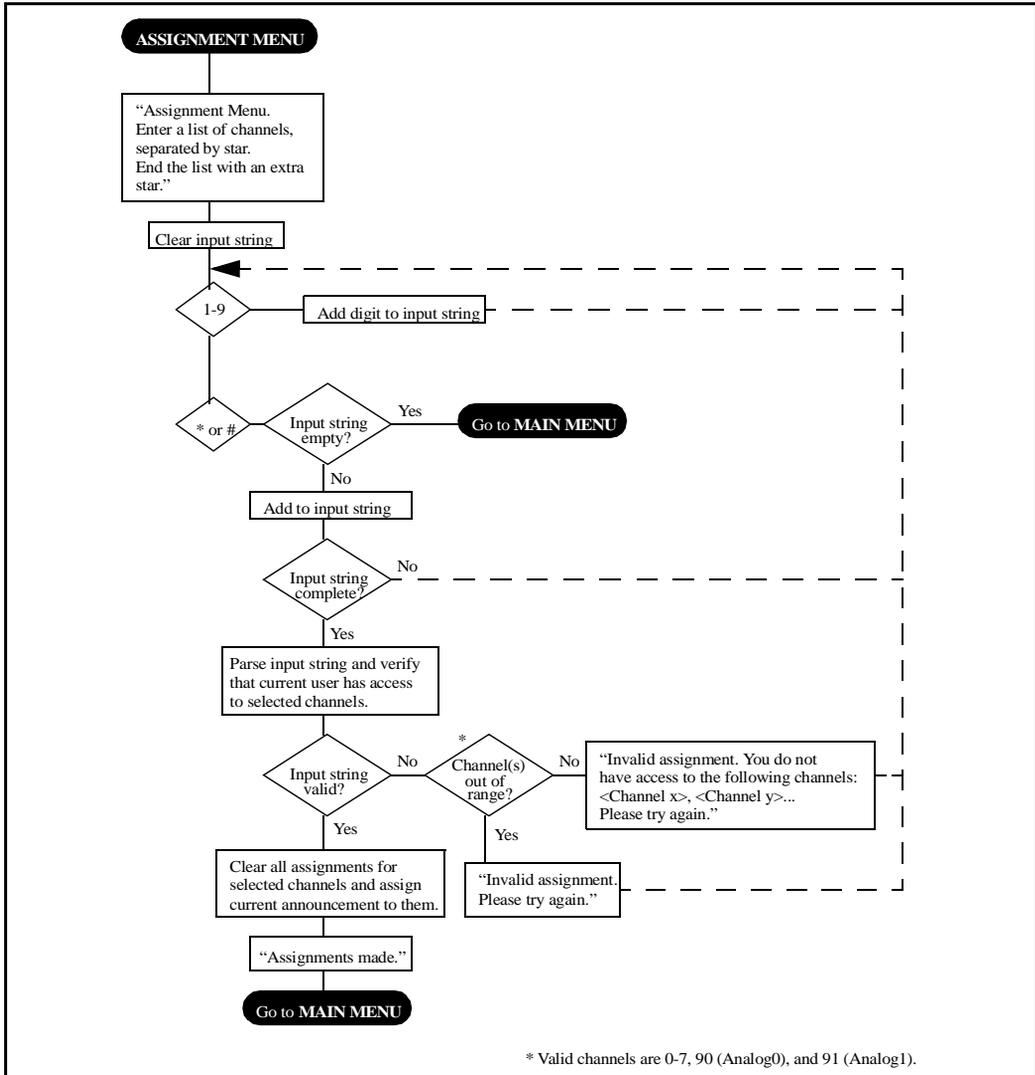
Figure 74
TUI Record menu flowchart (Part 2 of 2)



Assignment Menu

Dial 1 in the Main menu to access the Announcement menu. This function allows announcements to be assigned to MIRAN channels.

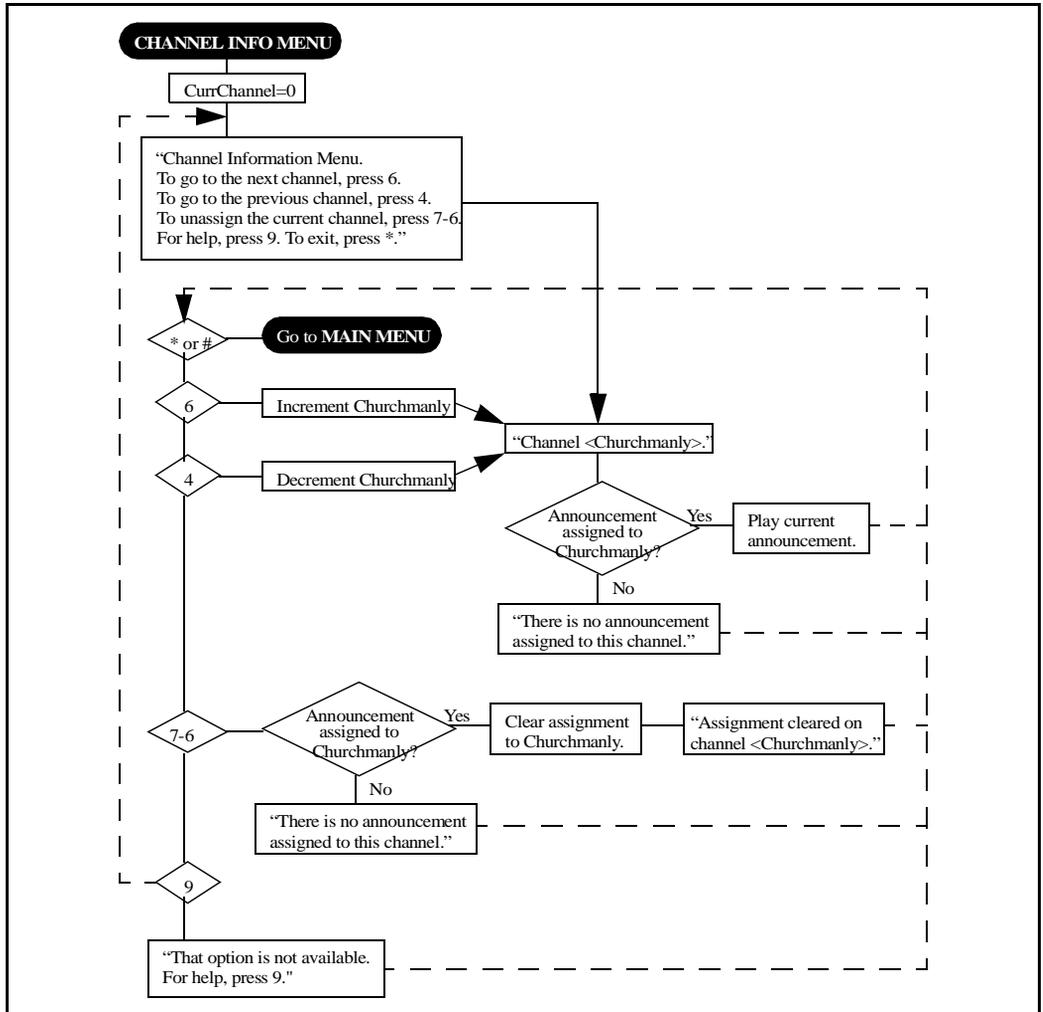
Figure 75
TUI Assignment menu flowchart



Channel Information menu

Dial 3 at the Main menu to access the Channel Information menu. This function allows the announcement that is assigned to a MIRAN channel to be heard. This function also allows an announcement to be removed from a channel.

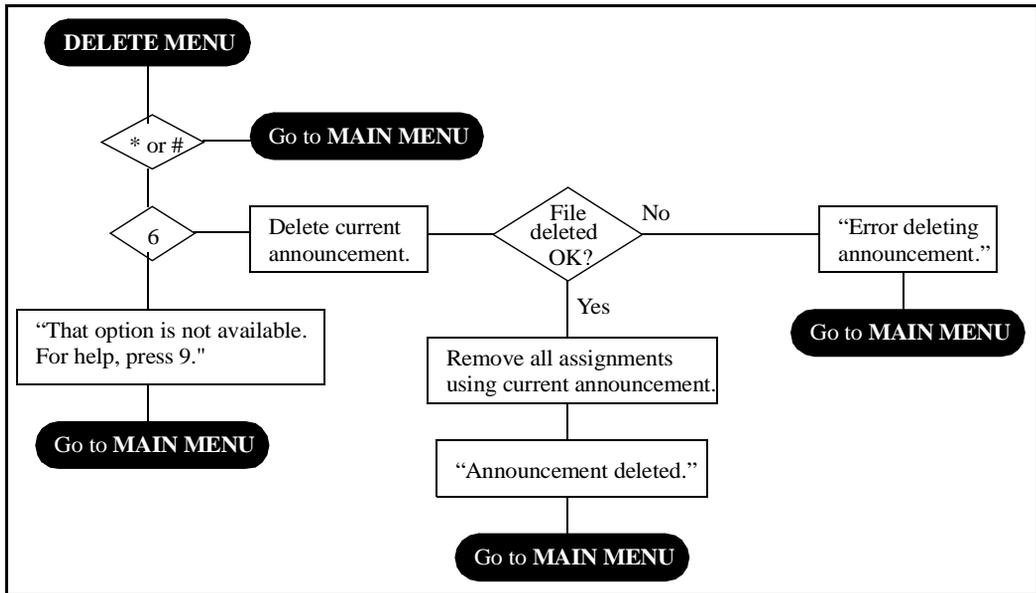
Figure 76
TUI Channel Information menu flowchart



Delete Menu

Dial 7 in the Main menu to access the Delete menu. This function allows the announcement to be deleted.

Figure 77
TUI Delete menu flowchart



RAN Application: The Browser User Interface

Contents

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This section describes the Browser User Interface (BUI) for the MIRAN Release 2.0 card. The BUI is an option available to MIRAN Release 2.0 users who have connected the MIRAN card(s) to their LAN through the necessary Ethernet adapter. For equipment and configuration information regarding the MIRAN BUI, refer to “LAN access installation and setup” on page 110.

The BUI is not required to perform OA&M for the MIRAN Release 2.0 card. All of the OA&M functions can be performed through the text-based user interface and the TUI. See “RAN Application: Text-based user interface” on page 131 and “RAN Application: Telephone User Interface” on page 215. The MIRAN BUI allows the MIRAN Release 2.0 card to be accessed through the LAN using a common web browser. For a web browser, Nortel Networks recommends using Netscape 3.0 or later, or Internet Explorer 3.0 or later.

Note: Any web browser use must support HTML frames and JavaScript V1.1.

Accessing the BUI

To access the MIRAN Release 2.0 card through the web browser, enter the IP address of the card in the URL address field. Figure 78 on page 237 shows the initial screen that appears when entering the MIRAN Release 2.0 BUI.

The initial screen consists of two frames. The left frame provides hyperlinks to common features. The right frame is the login screen and is equivalent to the login screen of the text-based user interface.

The hyperlinks in the left frame of the initial screen are as follows:

Telnet launches the browser-based telnet client. This link provides LAN access to the text user interface.

Login brings up the Login screen in the right frame if it is not already there.

Pack Status provides information on the current state of the MIRAN card. It is not necessary to login to access this information.

System Information provides details of the current MIRAN hardware configuration and software version. Refer to “System Information” on page 248 for further information.

NTPs opens the MIRAN Release 2.0 NTP, which is stored on the C: drive. To open the NTP, the browser must contain an Adobe Acrobat reader. Refer to the browser documentation for details on how to open Adobe Acrobat (.pdf) files.

Figure 78
MIRAN Release 2.0 BUI, initial screen



Note: The NTP (filename = MIRAN.PDF) can be deleted to open additional storage space on drive C:. Refer to “The Delete File screen” on page 169 for details on how to do this.

Logging into the BUI

To log into the MIRAN Release 2.0 BUI, do the following:

- 1 Select the user name from the drop down list.
- 2 Enter the appropriate password. The initial default user names and passwords are the same as those for the text-based user interface.
- 3 Click on the **Login** button. If the user name and password are valid, a confirmation message appears.

- 4 Click on **Main Menu** to access the Main Menu, which Figure 79 on page 238 shows.

Figure 79
MIRAN Release 2.0 BUI, MIRAN Administration screen



Note: If there are three unsuccessful login attempts, the BUI locks the user out for 20 minutes.

Navigating the BUI

The main OA&M page consists of two frames. The left frame is always the same and provides links to the MIRAN OA&M functions. Notice that there are more links available after logging in than before logging in. The links in the left frame fall under the following categories:

- **Logout** – goes to the logout screen.
- **Menus** – is a collection of links to the main MIRAN OA&M menus. These menus provide further links to OA&M screens. Refer to “The BUI menus” on page 239 for more information.
- **Quick Links** – a collection of links to the most common OA&M screens. Refer to “The BUI quick links” on page 252 for more information.
- **Documentation** – a link to the online documentation. To open the NTP, the browser must contain an Adobe Acrobat reader. Refer to the browser documentation for details on how to open Adobe Acrobat (.pdf) files.

The right frame of the main OA&M page shows the MIRAN menus and screens where OA&M functions can be performed. These menus and screens can be accessed by clicking on the appropriate link either in the left frame or in the selected menu. The MIRAN Administration menu appears first when logging in.

The following sections describe the menus and screens in the MIRAN Release 2.0 BUI.

The BUI menus

The Menu links in the left frame of the MIRAN Release 2.0 BUI consist of the following:

- MIRAN Administration
- Pack Administration
- User Administration
- Logout

From any place in the BUI, one of these menus can be accessed by clicking on its link.

MIRAN Administration menu

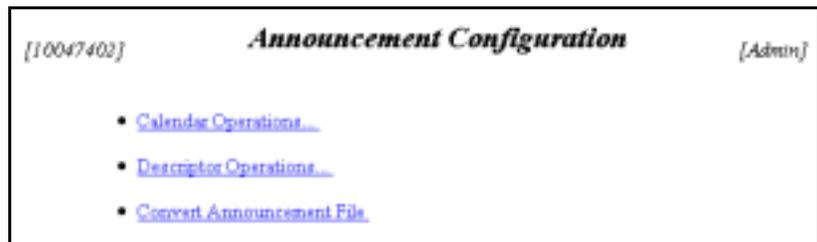
The MIRAN Administration menu appears first when logging in. Refer to Figure 79 on page 238 for a picture of this menu. The MIRAN Administration menu consists of links to the following:

- Announcement Configuration
- Operational Statistics
- Backup Configuration
- Restore Configuration
- Run Batch File

Announcement Configuration

Figure 80 shows the Announcement Configuration screen.

Figure 80
MIRAN Release 2.0 BUI, Announcement Configuration screen



Calendar Operations menu

In the Announcement Configuration screen, click on Calendar Operations to access the Calendar Operations screen, seen in Figure 81 on page 241.

In the Calendar Operations screen, click on Calendar Assignment with Descriptor to access that particular screen, which Figure 82 on page 241 shows. Use this screen to make descriptor-based assignments to any of the available channels. The operation of this screen is identical to its text-based equivalent. For convenience, this screen also provides a drop-down list of all available announcement files.

Figure 81
MIRAN Release 2.0 BUI, Calendar Operations screen

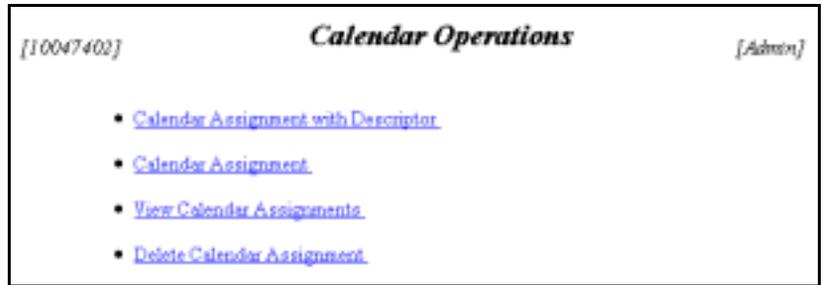
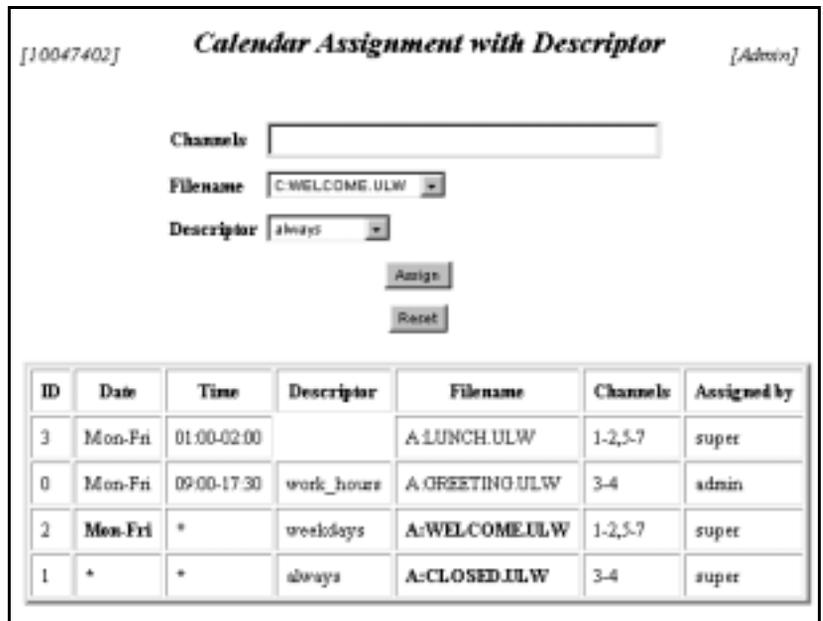


Figure 82
MIRAN Release 2.0 BUI, Calendar Assignment with Descriptor screen



In the Calendar Operations screen, click on **Calendar Assignment** to access that particular screen, seen in Figure 83. Use this screen to make time and date-based assignments to any of the available channels. The operation of this screen is identical to its text-based equivalent. For convenience, however, this screen also provides a drop-down list of all available announcement files.

Figure 83
MIRAN Release 2.0 BUI, Calendar Assignment screen

ID	Date	Time	Descriptor	Filename	Channels	Assigned by
3	Mon-Fri	01:00-02:00		A:LUNCH.ULW	1-2,5-7	super
0	Mon-Fri	09:00-17:30	work_hours	A:GREETING.ULW	3-4	admin
2	Mon-Fri	*	weekdays	A:WELCOME.ULW	1-2,5-7	super
1	*	*	always	A:CLOSED.ULW	3-4	super

In the Calendar Operations screen, click on [View Calendar Assignments](#) to view the current calendar assignments. Click on [Delete Calendar Assignment](#) to delete a particular calendar assignment. The operation of these functions is similar to their text-based equivalents.

Descriptor Operations screen

In the Announcement Configuration screen, click on [Descriptor Operations](#) to access the Descriptor Operations screen, which Figure 84 on page 243 shows. Use this screen to add, modify, or delete calendar descriptors. The same restrictions apply as for the text-based version of this screen.

Convert Announcement screen

In the Announcement Configuration screen, click on [Convert Announcement File](#) to access that particular screen, which Figure 85 on page 243 shows. The operation of this screen is identical to its text-based equivalent.

Figure 84
MIRAN Release 2.0 BUI, Descriptor Operations screen

[10047402]
Descriptor Operations
[None]

Action

New Descriptor or choose

Date

Time

Descriptors

Descriptor	Date	Time	Creator
always	*	*	admin
christmas	25/12	*	admin
every_man	Mon	*	admin
weekdays	Mon-Fri	*	admin

Figure 85
MIRAN Release 2.0 BUI, Convert Announcement screen

[10047402]
Convert Announcement File
[None]

Action

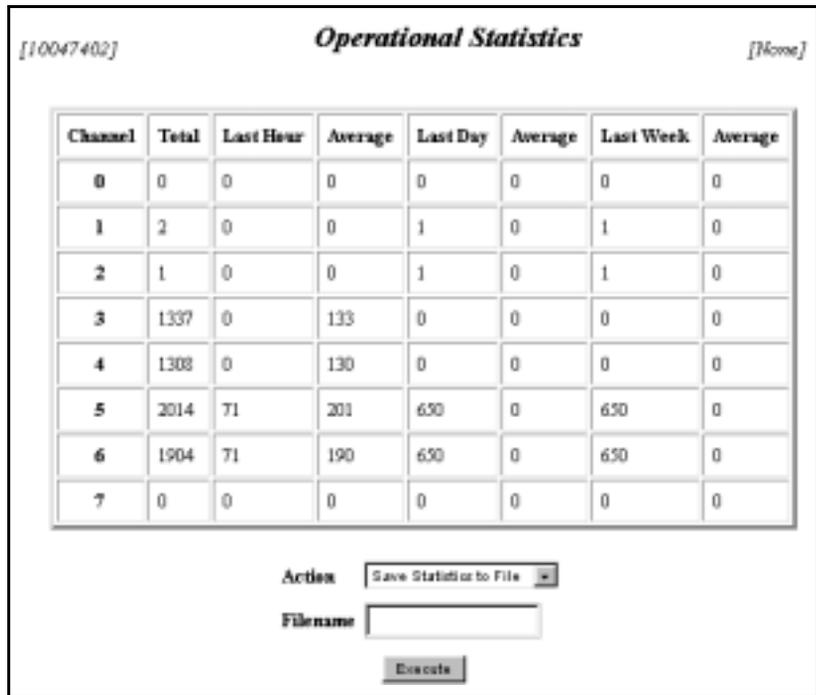
Source Filename

Output Filename

Operational Statistics

In the MIRAN Administration menu, click on **Operational Statistics** to access that particular screen, which Figure 86 on page 244 shows. The operation of this screen is identical to its text-based equivalent.

Figure 86
MIRAN Release 2.0 BUI, Operational Statistics screen



Backup Configuration

In the MIRAN Administration menu, click on **Backup Configuration** to access that particular screen, which Figure 87 on page 245 shows. The operation of this screen is identical to its text-based equivalent. Remember to select the appropriate destination drive from the drop-down box before clicking on the **Backup** button.

Figure 87
MIRAN Release 2.0 BUI, Backup Configuration screen



Restore Configuration

In the MIRAN Administration menu, click on **Restore Configuration** to access that particular screen, which Figure 88 on page 245 shows. The operation of this screen is identical to its text-based equivalent. Remember to select the appropriate destination drive from the drop-down box before clicking on the **Restore** button.

Figure 88
MIRAN Release 2.0 BUI, Restore Configuration screen



Run Batch File

In the MIRAN Administration menu, click on **Run Batch File** to run a batch file. The operation of this function is identical to its text-based equivalent.

Pack Administration menu

Click on **Pack Administration** in the left frame to access the Pack Administration menu, which Figure 89 on page 246 shows.

The Pack Administration menu consists of links to the following:

- Keycode Entry
- System Information

Figure 89
MIRAN Release 2.0 BUI, Pack Administration menu



- Configuration Variables
- Ethernet Configuration

Note: To avoid potential problems, the BUI does not support the Software Upgrade function. To perform a software upgrade, the text-based user interface must be used. This can be done remotely through a telnet session.

Keycode Entry

In the Pack Administration menu, click on **Keycode Entry** to access that particular screen, which Figure 90 on page 247 shows.

To register a new keycode, enter the keycode in the **New Keycode** field and click on the **Set** button. A successful registration automatically updates the **Current Configuration** fields with the appropriate settings for internal and external ports.

Figure 90
MIRAN Release 2.0 BUI, Keycode Entry screen

The screenshot displays the 'Keycode Entry' interface. At the top left is the identifier '[10047402]' and at the top right is '[Admin]'. The main title is 'Keycode Entry'. Below the title, the section 'Current Configuration' contains a table with the following data:

Internal Ports	8
External Ports	2
Keycode	244834204 45554371 17048253

Below the table, there is a horizontal line. Underneath the line, the text 'New Keycode' is followed by three empty input fields. Below these fields are two buttons: 'Set' and 'Reset'.

System Information

In the Pack Administration menu (or in the left frame), click on **System Information** to see details of the current hardware configuration and software version. An example appears in Figure 91.

Figure 91
MIRAN Release 2.0 BUI, System Information screen

[10047402]
System Information
[Admin]

Hardware	Info
CPU	486DX4-100
Level 2 Cache	128 KBytes
System Memory	16 MBytes
Disk A: (External ATA)	2482176 Bytes Free
Disk B: (External ATA)	Not Installed
Disk C: (Internal PCI)	2121728 Bytes Free

Software	Info
Application	NTAG37AB Version 2.0.15d (Rls 1)
Codec	1.38i(0)
XA8051 Firmware	VPS Firmware Rls 7.0
DSP Load	NG0225c1,02/05/98 (Mu-Law)
DSP Status	OK
Time & Date Sync	Download disabled

Note: It is not necessary to log in to access the System Information screen.

Configuration Variables

In the Pack Administration menu, click on **Configuration Variables** to access that particular screen, seen in Figure 92.

Figure 92
MIRAN Release 2.0 BUI, Configuration Variables

The screenshot shows the 'Configuration Variables' web interface. At the top left is the user ID '[10047402]' and at the top right is '[Admin]'. The main heading is 'Configuration Variables'. Below this is a form with a 'Variable' dropdown menu currently showing 'AnalogLevel0', a 'New Value' text input field, and two buttons: 'Set' and 'Reset'. A horizontal line separates this form from a section titled 'Current Values'. This section contains a table with the following data:

Variable Name	Value
AnalogLevel0	7
AnalogLevel1	7
AutoSave	True
BatchFileLog	False
BatchFileRun	A:AUTORUN.BAT
CalendarFile	_ASSIGNS.CAL

To change a configuration variable, do the following:

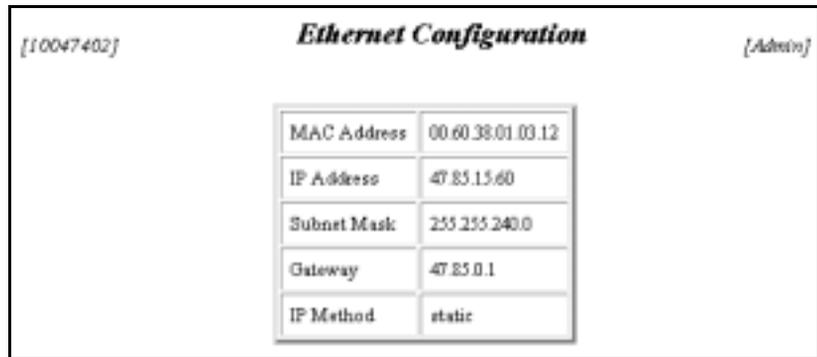
- 1 Enter the variable to be changed.
- 2 Enter the new value of the variable.
- 3 Click on the **Set** button.

If the new value is valid, it appears automatically in the Current Values table. For a description of each of the configuration variables, refer to “The Configuration Variables menu” on page 176.

Ethernet configuration

In the Pack Administration menu, click on **Ethernet Configuration** to view the current Ethernet parameters. Figure 93 shows the Ethernet Configuration screen.

Figure 93
MIRAN Release 2.0 BUI, Ethernet Configuration screen



<i>Ethernet Configuration</i>	
MAC Address	00 60 38 01 03 12
IP Address	47 85 15 60
Subnet Mask	255 255 240 0
Gateway	47 85 0 1
IP Method	static

The Ethernet Configuration screen only *displays* the LAN parameters. To *change* these parameters, the text-based user interface must be used.

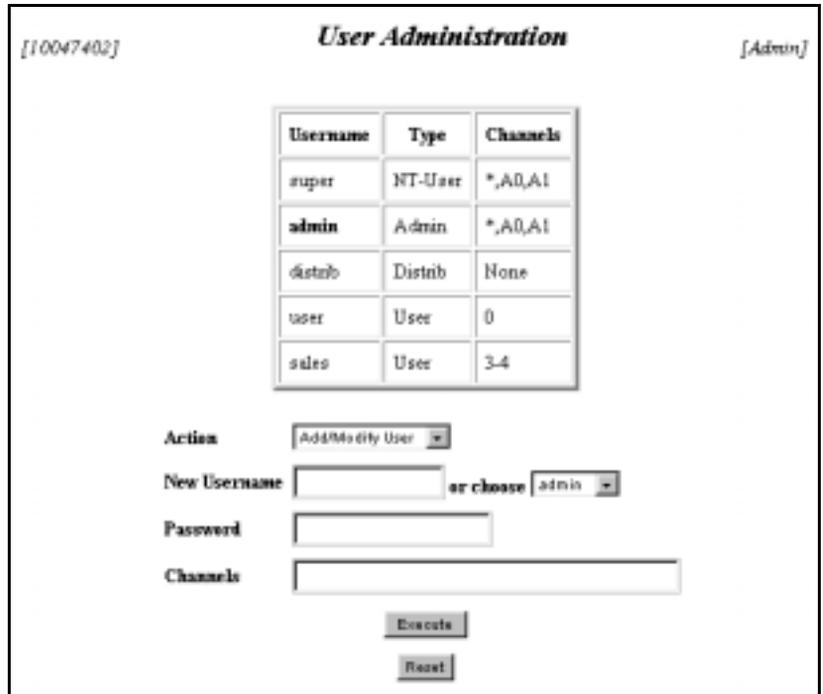
User Administration

Normally, the first OA&M function performed on the MIRAN card is to configure users. Click on **User Administration** in the left frame to access that particular screen, seen in Figure 94 on page 251.

Use the User Administration screen to add, modify, or delete users. The current user information appears in a table on this screen. To add, modify, or delete a user, do the following:

- 1 Select the appropriate action from the drop-down menu.
- 2 Enter a new surname or select an existing username.
- 3 Enter the password of the user.
- 4 Enter the MIRAN channels for the user to access.
- 5 Click on the **Execute** button.

Figure 94
MIRAN Release 2.0 BUI, User Administration screen



If the command is successful, the MIRAN card automatically updates the user information on its C: drive. The new information appears in the user table on this screen.

Note: For security reasons, the user table on the User Administration screen does not display the user passwords. If necessary, the user passwords can be viewed from the text user interface.

Logout

To log out of the BUI, click on **Logout** in the left frame. Figure 95 shows the screen that appears.

Figure 95
MIRAN Release 2.0 BUI, MIRAN Logout screen



Click the **Logout** button to confirm log out. Otherwise, click on the **Back** button on the browser to return to the previous screen.

After logging out, a confirmation screen appears. Click on the browser's **Reload** button to log in again, or select another MIRAN Release 2.0 card to log into.

The BUI quick links

The Quick Links in the left frame of the MIRAN Release 2.0 BUI consist of the following:

- Pack Status
- System Information
- File Explorer
- Calendar Assignments
- Command Line

From any place in the BUI, one of these screens can be accessed simply by clicking on its link.

Pack Status

Click on **Pack Status** for information on the current state of the MIRAN card. It is not necessary to login to access this information.

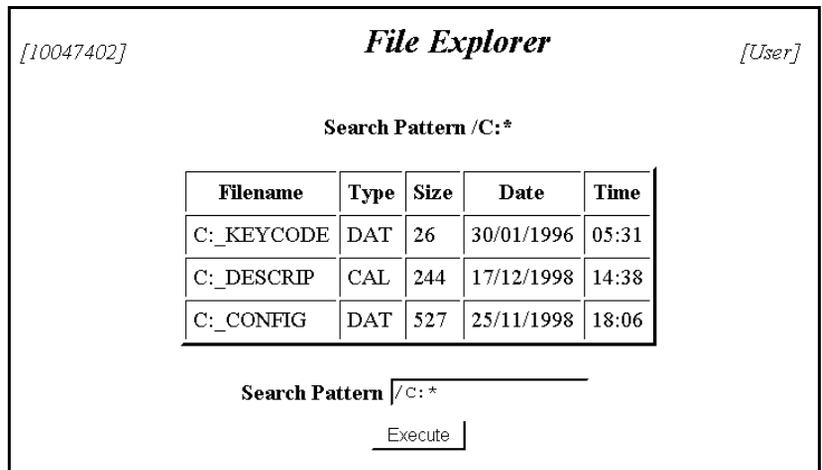
System Information

Click on **System Information** for details of the current MIRAN hardware configuration and software version. Refer to “System Information” on page 248 for further information. It is not necessary to login to access this information.

File Explorer

Click on **File Explorer** to access the File Explorer screen, which Figure 96 shows. The File Explorer screen can also be accessed by clicking on **Pack Administration**, then **File Commands**, then **File Explorer**.

Figure 96
MIRAN Release 2.0 BUI, File Explorer screen



In the File Explorer screen, the files can be listed that conform to a particular search pattern. To do this, enter the search pattern in the available space and click on the **Execute** button.

Calendar Assignments

Click on **Calendar Assignments** to access the Calendar Assignments screen. See Figure 83 on page 242.

Note: This screen can also be accessed by clicking on **MIRAN Administration**, then **Announcement Configuration**, then **Calendar Operations**, then **Calendar Assignment**.

Use this screen to make time and date-based assignments to any of the available channels. The operation of this screen is identical to its text-based equivalent. For convenience, this screen also provides a drop-down list of all available announcement files.

Command Line

Click on **Command Line** to access the Command Line Interface (CLI). The CLI accessed through the BUI is equivalent to the CLI accessed through the text-based user interface. The CLI provides a higher level of control of the MIRAN card than is available through the BUI or the text-based user interface. However, Nortel Networks does not recommend using the CLI if not familiar with the card. For more information on the CLI, refer to “MIRAN OA&M command set” on page 193.

Figure 97 on page 255 shows the Command Line screen.

View a list of all available commands by scrolling through the Command Information table at the bottom of the screen. To execute a command, do the following:

- 1 Select a command from the drop-down menu by the **Command** prompt.
- 2 Enter the appropriate parameters for the selected command in the parameters line.
- 3 Click on the **Execute** button.

If the **Execute** button is clicked, the results of the command appear in a framed box below the data entry area. Click on the **Reset** button to clear the command and parameter lines.

Figure 97
MIRAN Release 2.0 BUI, Command Line screen

[10047402]
Command Line
[Admin]

Command

Parameters

Command	CAL_ADD *
Error	Too few parameters entered
Format	[Channels] [[Device:Filename.Type]/[External Channel]] [[Descriptor]/[Date] [Time]]

Command Information

Command	Parameters	User	Access
BACKUP	[Device]	User	TTY,Web
CAL_ADD	[Channels] [[Device:Filename.Type]/[External Channel]] [[Descriptor]/[Date] [Time]]	User	TTY,Web,Batch
CAL_CLEAR		Admin	TTY,Web
CAL_LOAD	[Device:Filename.Type]	User	TTY,Web,Batch
CAL_REMOVE	[Calendar Entry ID]	User	TTY,Web
CAL_SAVE	[Device:Filename.Type]	User	TTY,Web
CONV_PCM_WAV	[Device:Filename.Type] [Device:Filename.WAV]	User	TTY,Web

Maintenance

Contents

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Overlay commands	261
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MIRAN fault isolation using the menu system	264
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Reference list

The following are the references in this section:

- *General Maintenance Information* (553-3001-500)
- *Hardware Replacement* (553-3001-520)
- *Fault Clearing* (553-3001-510)
- *X11 Administration* (553-3001-311)
- *Hardware Replacement* (553-3001-520)

This chapter describes Meridian Integrated RAN (MIRAN) maintenance tools and procedures to help in identifying MIRAN faults, locating defective equipment, correcting problems by fixing or replacing defective equipment, and verifying the operation of the MIRAN after corrections or replacements have been made.

Maintenance overview

Problem identification should be approached systematically. A problem may have more than one cause. To isolate the cause, a knowledge of MIRAN operation is required. Once the cause is identified, the problem can be corrected by replacing the defective card, connecting accidentally disconnected cables, or correcting the software security problem.

The system and the MIRAN provide built-in self-diagnostic indicators and software and hardware tools. These diagnostic facilities simplify system troubleshooting and reduce Mean-Time-To-Repair (MTTR).

This document focuses on the maintenance of the MIRAN equipment. It requires that system be operating correctly before starting a diagnosis of the MIRAN problems.

The system installation and maintenance guide documents: *General Maintenance Information* (553-3001-500), *Fault Clearing* (553-3001-510), and *Hardware Replacement* (553-3001-520) describe how to maintain the entire system. This chapter describes how to maintain the MIRAN as an integral part of the system.

Diagnostic tools

Diagnostic tools are used to troubleshoot problems in the system including problems with the MIRAN. When diagnosing MIRAN problems, more than one of these tools can be used.

System diagnostic tools consist of:

- LED indicators
- display codes
- card self-tests

- sanity monitoring
- overlay commands

LED indicators

System cards are equipped with red LED indicators and module power supplies are equipped with green LED indicators. These indicators show the status of each card or power supply.

MIRAN maintenance LED indicator

The MIRAN has a red card LED indicator at the top of the faceplate. It indicates the status of the card. If the LED is ON, the card can be faulty or disabled. The LED turns OFF when the card is software enabled.

Display codes

The MIRAN is equipped with a 4-digit alphanumeric hexadecimal display on the faceplate.

The hexadecimal display indicates the progress of the internal self-test in the form of T:xx. Refer to *Appendix A, MIRAN hexadecimal codes*. Upon successful completion of the test and the start-up of the RAN application, it will display the code “**RAAn**”, where **n** is the LAN card number (in hexadecimal). If cards are not connected in a LAN configuration the display will show RAA0.

The maintenance display on the MIRAN faceplate provides detailed maintenance information. The display includes the following types of information:

- self-test results on power-up
- maintenance routine results
- upgrade and backup information
- Reading and writing to and from Drives A:, B:, or C:

Self-test

A self-test is automatically performed by each MIRAN card when it is inserted into an operating system module, when the card is enabled, or when the system is powered up or reset. A self-test on a card can also be performed using software commands or menus.

The self-test checks general MIRAN functions and determines if they are operating correctly. When the cards are first installed, the card automatically starts the self-test and gives an immediate indication of its operating status.

Self-test performs a detailed test and analysis of the installed hardware, both to determine the integrity of the hardware and to establish the configuration of the MIRAN card. See Table 27. If the detected configuration is different from that stored in the Flash memory, the difference is logged on the maintenance terminal and the Flash configuration information is updated. Results of the self-test can also be displayed on the hex display on the MIRAN faceplate.

Table 27
MIRAN self-test sequence (Part 1 of 2)

Item tested	Description of action
Processor/Coprocessor	Read and store processor ID. Run processor self-test.
Onboard Flash memory	Check the amount of Flash installed. Perform checksum testing of diagnostics, application, configuration areas, BIOS, and OS.
DRAM	Check the amount of DRAM installed. Perform R/W test.
PCI Chipset	Perform R/W test on selected registers.
System I/O Controller	Perform R/W test on selected registers.
PCMCIA Controller	Perform R/W test on selected registers.
DS-30X Interface	Test shared memory and perform loopback test over SD-30 LCA.
CE-MUX Interface	Test shared memory and perform loopback test over CE-MUX LCA

Table 27
MIRAN self-test sequence (Part 2 of 2)

Item tested	Description of action
PCMCIA DSP card(s)	Check the presence of DSP cards and initiate diagnostic tests on DSP cards, if present.
PCMCIA Flash card(s)	Check the presence of Flash memory and the MIRAN check configuration information.

Sanity monitoring

Sanity monitoring is a background routine that checks the operation of system resources, such as CPU activity memory allocation.

This background routine attempts to restore normal system operation if the system performance has degraded to an unacceptable level. If all else fails, this routine will restart the system to try to restore it to normal operation. If the soft reset is not effective, a full board level reset is initiated. If the .reset is not successful, the permanent error code is displayed on the MIRAN hex display.

Overlay commands

Diagnostics are performed for every card as part of the daily routines. It can be invoked from a maintenance TTY or the SMP (when equipped). See *Hardware Replacement* (553-3001-520).

The MIRAN card appears as an Enhanced Universal Trunk card to a system in which it is installed. All relevant system maintenance commands for a Enhanced Universal Trunk card can therefore be used with MIRAN. Enabling and disabling of RAN channels is done in Network and Peripheral Equipment Diagnostics program LD 32. To test the music and RAN device, use the Trunk Diagnostics program LD 36.

Table 28 lists some of the commands used to control the MIRAN status and functions.

Table 28
Commands to enable/disable and test MIRAN channels

Overlay	Command	Operation performed
LD 32	DISC / ENLC	Disable / Enable specified card
LD 32	DISU / ENLU	Disable / Enable specified channel
LD 36	MUS	Test music device for specified customer and route
LD 36	RAN	Test RAN device for specified customer and route
LD 32	STAT	Get status of specified card /channel

All the above commands are handled by the MIRAN card exactly as they are by the Enhanced Universal Trunk card, transparently to the system.

MIRAN fault isolation and correction

Fault clearing procedures for the MIRAN are the same as for other IPE cards; refer to *Fault Clearing* (553-3001-510) for more information.

Table 29 on page 263 deals specifically with MIRAN service problems. To diagnose these problems, the table refers to the test procedures in this manual that will most likely fix these problems, based on the symptoms.

If the problem cannot be resolved after using all available diagnostic tools and test procedures, make a list of all the symptoms observed, and contact the field service representative. Refer to Appendix A “Sound recording, codes, and interfaces” on page 267 to identify the HEX codes that indicate possible problems with the MIRAN.

Table 29
MIRAN equipment problems

Symptoms	Diagnosis	Solution
Red card LED on the MIRAN is permanently on.	Card is disabled or faulty.	Go to <i>Procedure 1</i> , in this chapter to check the card status and perform self-test.
Display on the MIRAN card shows fault codes.	Card faulty, failed self-test or problem communicating with peripheral equipment.	Go to <i>Procedures 1</i> and <i>2</i> to check self-test and self-test on reset. Also refer to <i>Hex codes in Appendix A</i> for a list of error codes. Based on the maintenance display codes description, take the appropriate action and resolve the problem.
Error messages printed on the terminal or the Meridian 1 TTY.	Hardware or software problems with the MIRAN.	Note various error messages. Refer to <i>X11 Administration (553-3001-311)</i> for a list of these messages and their description. Based on the code's description, take the appropriate action to resolve the problem.

Procedure 1
MIRAN self-test steps

- 1 The card self-tests.
- 2 Card LAN polls the card.
- 3 If self-test passed, the card sends back "powered-up occurred" message.
- 4 Card LAN requests configuration data.
- 5 The card returns configuration data (card type, A07 signaling type, and TN mapping type 2).
- 6 Card LAN enables the DS-30X signaling channel.
- 7 The MIRAN card waits until it receives configuration data (trunk type, signaling type, balance impedance, etc.)through the DX-30X, but then discards this data.
- 8 The card goes into its main program loop.

Procedure 2

Reset MIRAN card command

- 1 Software sends a reset message to the card if no channels are busy.
- 2 The card sets all appropriate resources to disabled state and turns on the faceplate LED.
- 3 The MIRAN card resets and self-tests. Self-test results are stored in case a later query is performed by the Meridian 1. Refer to hex codes in Appendix A.
- 4 Card LAN polls the card.
- 5 If self-test passes, the card sends back a message: "power-up occurred".
- 6 Card LAN requests configuration data.
- 7 The card returns configuration data (card type, A07 signaling type, and TN mapping type 2) and enable DS-30X link.
- 8 Card LAN enables the DS-30X signaling channel
- 9 The card waits until it receives download configuration data (trunk type, signaling type, balance impedance, etc.) through the DS-30X, but then discards this data.
- 10 The card goes to its main program loop.

MIRAN fault isolation using the menu system

Refer to "RAN Application: Text-based user interface" on page 131 for details on using the menu system. The Main Menu is seen when accessing the text-based OA&M. Each option listed on the Main Menu leads to another task screen or submenu.

Main menu

Log into the text-based user interface to access the Main Menu. This OA&M screen presents the highest level of end-user maintenance access and provides all functions needed to configure, maintain, and upgrade the MIRAN card.

Maintenance & Diagnostics menu

To troubleshoot the MIRAN using the menu system, select **3** in the Main Menu and press the Enter key to display the Maintenance and Diagnostics sub-menu.

```
[10047402]                - Main Menu -                [Admin]

  1  MIRAN Administration...
  2  Pack Administration...
  3  Maintenance & Diagnostics...
  4  User Administration...

  9  Log Off...

Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

```
[10047402]                - Maintenance & Diagnostics -        [Admin]

  1  System Information
  2  Warm Reboot
  3  Cold Reboot
  4  Command Line Access (Host)

  9  Back to previous Menu...

Choose a Menu Option or 9 to Exit :
HUGH[00]>
```

Card replacement

The MIRAN is based on Flash EPROM technology. This allows the MIRAN to be removed from the IPE shelf indefinitely without losing the configuration data.

To replace the MIRAN card:

- 1 Disable the MIRAN card by loading LD 32 and executing the **DISC I s c** command, where **I**= loop, **s**= shelf or module, **c**= card in the module.
- 2 Remove the card from its card slot in the IPE module.
- 3 Remove all PCMCIA cards from the faulty MIRAN card – the internal PCMCIA card and the PCMCIA cards installed into the MIRAN faceplate slots.
- 4 Transfer the Security Device from the faulty MIRAN to the replacement.
- 5 Transfer all PCMCIA cards to the new MIRAN card.
Note: This procedure moves all software, configuration, and records to the replacement MIRAN card.
- 6 Install the new MIRAN card into the IPE module card slot.
- 7 Enter the same keycode to enable the new MIRAN card.
- 8 Enable the new card by executing the **ENLC I s c** command.
- 9 Configure the newly installed MIRAN card.
- 10 Package the faulty MIRAN card and ship it to the repair center.

Appendix A: Sound recording, codes, and interfaces

Contents

This section contains information on the following topics:

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This appendix describes a typical sound recording configuration, lists the Meridian Integrated RAN (MIRAN) hexadecimal codes that are displayed on the four-digit display on the MIRAN faceplate, and describes the external connectors and their pin assignments. The hex codes provides the status of the card during power-up and on the operational status when in service.

Sound recording configuration

The following is an example of a PC-based digital sound recording. Alternate configurations can be used that produce the 8kHz A-law or U-law PCM format output files required by the MIRAN either in .ULW or .WAV format.

Minimum PC requirements:

- 100MHz Pentium processor

- 32Mbytes of RAM
- 1Gbyte hard drive
- x4 CD ROM
- Windows 95
- Speakers

Recommended sound card:

- Creative Labs AWE 32 Plug and Play audio card Model CT3601 (comes with the microphone)

PCMCIA drive:

- DATABOOK ThinCard Drive Model TMB-240

Software:

- GOLDWAVE sound editor.

Note: When recording announcements, use the following recommendations. To remove sharp transitions at the boundaries of an announcement, add fade-in (from 0) at the start of the announcement and fade-out (to 0) at the end of announcement. One second of silence must be added to the beginning and to the end of each announcement.

When the internal RAM test, ALU test, address mode test, boot ROM test, timer test, or external RAM test fails, the MIRAN will go into a maintenance loop and no further processing will be possible. A failure message is displayed to indicate which test failed. The message changes to **F:xx** Example; if the timer test fails, F:05 is displayed.

MIRAN hexadecimal codes

T:00	Initialization
T:01	Testing Internal RAM
T:02	Testing ALU
T:03	Testing address modes

T:04	Testing Boot ROM
T:05	Testing timers
T:06	Testing watchdog timer
T:07	Testing external RAM
T:08	Testing Host DPRAM
T:09	Testing DS30 DPRAM
T:10	Testing security device
T:11	Testing Flash memory
T:12	Programming PCIFPGA
T:13	Programming DS30 FPGA
T:14	Programming CEMUX FPGA
T:15	Programming DSP FPGA
T:16	Testing CEMUX interface
T:17	Testing EEPROM
T:18	Booting 486, waiting for response with self-test information
T:19	Waiting for application start-up message from 486
T:20	CardLan enabled, waiting for Request Config. Message
T:21	CardLan operational, A07 enabled under host control
T:22-99	Reserved for future diagnostic tests
RAAn	RAN application active and enabled for terminal OA&M (n = MIRAN V-LAN card number 0-F).
RA-S	RAN application active with Set Based OA&M running. (Terminal is locked out until this clears)

When any other test fails including the EEPROM test, a message will be displayed for three seconds after the T:17 message to indicate the problem. If more than one test fails, the message displayed indicates the first fault.

MIRAN interface connectors

The interface connectors connect the MIRAN to the external equipment at the faceplate and the backplane or MDF connectors.

Port A and port B pinout

Two serial ports are provided on the MIRAN board for maintenance functions. Access to both ports is over tip/ring pairs on the MDF. A permanently connected terminal should be connected at the MDF. Both ports are also accessible through the MIRAN faceplate 8-pin mini-DIN connector for occasional OA&M purposes. Port B connects the terminal and port A connects to port B in a V-LAN configuration.

Table 30 displays pinouts for the MIRAN faceplate 8-pin mini-DIN connector.

Table 30
Faceplate 8-pin mini-DIN connector signals

Pin No.	Signal	Description
1	BDTRB-	Port B Data Terminal Ready
2	BSOUTB-	Port B Serial Data Out
3	BSINA-	Port B Serial Data In
4	SGRD	Signal Ground
5	BSINA-	Port A Serial Data In
6	BCTSA-	Port A Clear To Send
7	BSOUTA-	Port A Serial Data Out
8	BDTRA-	Port A Data Terminal Ready

Table 31 lists the port A and port B connections at the I/O panel 50-pin connector. It lists the pins signal assignments, wire color code, and the description of the signals. Total distance from the MIRAN to the MDF and from the MDF to the terminal must not exceed 50 feet.

Table 31
Port A and port B pinout and wire color code on the 50-pin connector

I/O Panel 50-pin connector pin assignment and wire color code	MIRAN signal name	MIRAN signal description
16 (BL-Y)	Reserved	Future use
41 (Y-BL)	BDCDA-	Port A Data Carrier Detect
17 (O-Y)	BSINA-	Port A Serial Data In
42 (Y-O)	BSOUTA-	Port A Serial Data Out
18 (G-Y)	BDTRA-	Port A Data Terminal Ready
43 (Y-G)	SGRD	Signal Ground
19 (BR-Y)	BDSRA-	Port A Data Set Ready
44 (Y-BR)	BRTSA-	Port A Request to Send
20 (s-y)	BCTSA-	Port A Clear to Send
45 (Y-S)	BSINB-	Port B Serial Data In
21 (BL-V)	BSOUTB-	Port B Serial Data Out
46 (V-BL)	BDCDB-	Port B Data Carrier Detect
22 (O-V)	BDTRB-	Port B Data Terminal Ready
47 (V-O)	BDSRB-	Port B Data Set Ready

Analog ports and pinouts

The MIRAN supports two analog input ports in order to connect external sources for recording announcements and/or music, or to provide two analog channels that can be mapped into up to eight logical RAN units.

The 3.5 mm Audio jack provides access to a single analog input and a single analog output. On the backplane, however, two analog inputs and two cross-connect analog outputs are available for backing up stored announcements onto audio cassette tape, or for connecting to an external paging amplifier.

Table 32 lists the 50-pin I/O panel connector pins and their signal assignment for the analog ports.

Table 32
Analog port backplane signals

I/O Panel 50-pin connector pin assignment and wire color code	MIRAN signal name	MIRAN signal description
5 (S-W)	AGND	Analog Ground
30 (W-S)	AGND	Analog Ground
7 (O-R)	AIN0	Analog In, Port 0
32 (R-O)	AIN1	Analog In, Port 1
9 (BR-R)	AGND	Analog Ground
34 (R-BR)	AGND	Analog Ground

Note: Cross-connect audio pairs can be used to connect to external recording devices for the purpose of backing up announcements to a tape.

MIRAN cross-connect channels

The MIRAN supports two cross-connect channels to provide connection to callers on multiple incoming lines.

Table 33 lists the 50-pin I/O panel connector pin assignments for the MIRAN cross-connect channels.

Table 33
MIRAN cross-connect port MDF signals

25-pair pinout and color code	Signal	Description
1 (BL-W)	RANAR0	Port 0 Audio RING
26 (W-BL)	RANAT0	Port 0 Audio TIP
2 (O-W)	RANB0	Port 0 Signaling RING to Port 0 busy (GRD)
3 (G-W)	RANAR1	Port 1 Audio RING
28 (W-G)	RANAT1	Port 1 Audio TIP
4 (BR-W)	RANB1	Port 1 Signaling RING to Port 1 busy (GRD)

MIRAN faceplate to modem cabling

Table 34 shows the modem cable RS-232 connector pin assignments.

Table 34
NTAG81CA/DA modem cable RS-232 pinouts

Signal name	9-pin male (MIRAN side) Pin No.	25-pin male (Modem side) Pin No.
TX	2	2
RX	3	3
DTR	4	20
GRN	5	7

I/O panel to modem cable

Table 35 shows the I/O panel to modem cable pin assignments.

Table 35
I/O panel connector to modem cable pinouts

Signal name	50-pin I/O panel parallel connector Pin No.	25-pin male (RS-232) (Modem side) Pin No.
TX	21	2
RX	45	3
DTR	22	20
GRN	43	7

Modem setup

To setup the modem, use a terminal connected to the modem. Set up the terminal for 9600 bps, 8 bits, 1 start, 1 stop, and no parity.

- 1 Setting the modem to auto answer
 - Connect the terminal to the modem
 - Type "AT" for a Hayes compatible modem. If the modem is connected properly, it will reply "OK".
 - Type "ATS0=1"
 - Type "AT&W0" to save the settings.
- 2 Disable result codes.
 - Type "AT" for a Hayes compatible modem. If the modem is connected properly, it will reply "OK".
 - Type "ATQ1"
 - Type "AT&W0" to save the settings.
- 3 Connect the modem to MIRAN using one of the cable configuration tabulated above.

Appendix B: Product integrity

Contents

This section contains information on the following topics:

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Electro-magnetic compatibility (EMC)	279

This chapter presents information about MIRAN reliability, environmental specifications, and electrical regulatory standards.

Reliability

Reliability is measured by the Failure Rate (in FITS), Mean Time Between Failures (MTBF), and the Return Rate.

- **Failure Rate (FITS)** – predicted failure rate per billion hours of operation is 1168.
- **Mean Time Between Failures (MTBF)** – expected mean hours of operation between failures is 98 years.
- **Return Rate (% per year)** – expected return rate per year for the first 2 years is 1% per year.

Environmental specifications

This section describes the operating and storage temperature ranges and humidity for MIRAN. The ideal operating temperature is obtained when the environmental temperature is regulated using air-conditioning, however MIRAN is design to operate in the standard telephony equipment accepted temperature and humidity ranges.

Table 36 displays acceptable temperature and humidity ranges for the MIRAN card.

Table 36
Temperature-related specifications

Specification	Minimum	Maximum
<i>Normal Operation</i>		
Recommended	15° C	30° C
Relative humidity	20%	30% (non-condensing)
Absolute	10 ° C	45° C
Relative humidity	20% to 80% (non-condensing)	

Table 36
Temperature-related specifications

Specification	Minimum	Maximum
Rate of change	Less than 1° C per 3 minutes	
Storage		
Long Term	-20° C	60° C
Relative Humidity	5%	95% (non-condensing)
	-40° C to 70° C, non-condensing	
Short Term (less than 72 hr)	-40° C	70° C
Temperature Shock		
In 3 minutes	-40° C	25° C
In 3 minutes	70° C	25° C
	-40° to 70° C, non-condensing	

Electrical regulatory standards

The following three tables list the safety and electro-magnetic compatibility regulatory standards for the MIRAN, listed by geographic region. Specifications for the MIRAN meet or exceed the standards listed in these regulations.

Safety

Table 37 provides a list of safety regulations met by the MIRAN, along with the type of regulation and the country/region covered by each regulation.

Table 37
Safety regulations

Regulation Identifier	Regulatory Agency
UL 1459	Safety, United States, CALA
CSA 22.2 225	Safety, Canada
EN 41003	Safety, International Telecom
EN 70950/IEC 950	Safety, International
BAKOM SR 784.103.12/4.1/1	EMC/Safety (Switzerland)
AS3260, TS001 - TS004, TS006	Safety/Network (Australia)
JATE	Safety/Network (Japan)

Electro-magnetic compatibility (EMC)

Table 38 lists electro-magnetic emissions regulations met by the MIRAN, along with the country's standard that lists each regulation.

Table 38
Electro-Magnetic Emissions

Regulation Identifier	Regulatory Agency
FCC part 15 Class A	United States Radiated Emissions
CSA C108.8	Canada Radiated Emissions
EN50081-1	European Community Generic Emission Standard
EN55022/CISPR 22 CLASS B	Radiated Emissions (Basic Std.)
BAKOM SR 784.103.12/4.1/1	EMC/Safety (Switzerland)
SS-447-20-22	Sweden EMC standard
AS/NZS 3548	EMC (Australia/New Zealand)
NFC 98020	France EMC standard

Table 39 lists electro-magnetic immunity regulations met by the MIRAN, along with the country's standard that lists each regulation.

Table 39
Electro-Magnetic Immunity

Regulation Identifier	Regulatory Agency
CISPR 22 Sec. 20 Class B	I/O conducted noise
IEC 801-2 (level 4)	ESD (Basic Standard)
IEC 801-3 (level 2)	Radiated Immunity (Basic Standard)
IEC 801-4 (level 3)	Fast transient/Burst Immunity (Basic Standard)
IEC 801-5 (level 4, preliminary)	Surge Immunity (Basic Standard)
IEC 801-6 (preliminary)	Conducted Disturbances (Basic Standard)
BAKOM SR 784.103.12/4.1/1	EMC/Safety (Switzerland)
SS-447-20-22	Sweden EMC standard
AS/NZS 3548I	EMC (Australia/New Zealand)
NFC 98020	France EMC standard

Appendix C: NT8D37 cable connections

Contents

This section contains information on the following topics:

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NT8D81BA cable removal procedure	283
NT8D81BA cable installation procedure	284

NT8D37 cable connections

Cables are designated by the letter of the I/O panel cutout (A, B, C and so on) where the 50-pin cable connector is attached. Each cable has three 20-pin connectors (16 positions are used) designated 1, 2 and 3, that attach to the backplane.

Using the designations given for the connectors, the backplane ends of the first cable are referred to as A-1, A-2, and A-3. Locations of the cable connectors on the backplane are designated by the slot number (L0 through L9 for NT8D11; L0 through L15 for NT8D37) and the shroud row. Using these designations, the slot positions in the first slot are referred to as L0-1, L0-2, and L0-3.

In NT8D37BA and NT8D37EC (and later vintage) modules, all 16 IPE card slots support 24-pair cable connections.

In earlier vintage modules, slots 0, 4, 8, and 12 support 24 pair cable connections. This eliminates the need to rewire if the slots are free.

Table 40 on page 282 shows the cable connections from the backplane to the inside of the I/O panel.

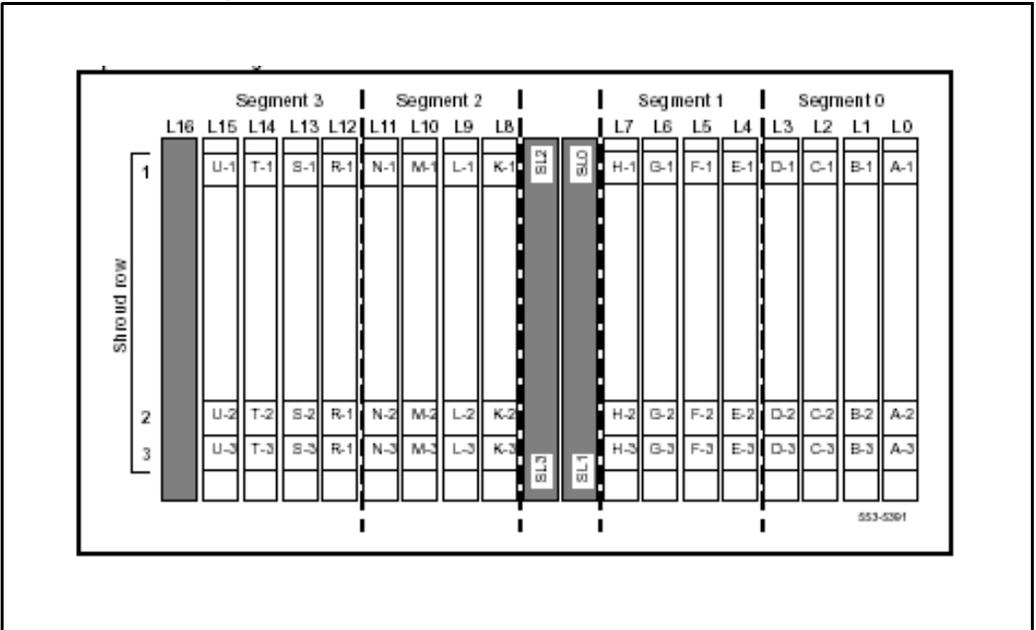
Figure 98 on page 283 shows the following:

- the designations for the backplane end of the cables
- the backplane slot designations for the cable connections
- the associated network segments for the backplane slots

Table 40
NT8D37 cable connections

Backplane slots – shroud rows	I/O panel/cable designation
L0-1,2,3	A
L1-1,2,3	B
L2-1,2,3	C
L3-1,2,3	D
L4-1,2,3	E
L5-1,2,3	F
L6-1,2,3	G
L7-1,2,3	H
L8-1,2,3	K
L9-1,2,3	L
L10-1,2,3	M
L11-1,2,3	N
L12-1,2,3	R
L13-1,2,3	S
L14-1,2,3	T
L15-1,2,3	U

Figure 98
Backplane slot designations



Tools list

The following tools are required:

- Ty-wrap cutter
- Ty-wraps
- Needle nose pliers
- Slotted screwdriver

NT8D81BA cable removal procedure

- 1 Identify the I/O panel and backplane designation that corresponds to the slot in which the MIRAN card was installed.
- 2 Power down the IPE shelf.
- 3 Remove the IPE module I/O safety panel.

- 4 Remove the ribbon cables from the IPE backplane:
 - Apply gentle pressure on the tab on the right side of the shroud until the connector pulls free from the shroud.
 - Remove connector 1 first. Then remove connector 2 and connector 3.

NT8D81BA cable installation procedure

- 1 Install the NT8D81BA ribbon cable connectors in the IPE module backplane. Install the connector so that the label is facing to the right with the arrow pointing up.
 - Install connector 1 (labelled UP1^A) into backplane shroud 1.
 - Install connector 2 (labelled UP2^A) into backplane shroud 2.
 - Install connector 3 (labelled UP3^A) into backplane shroud 3.
- 2 Dress ribbon cables back individually inside the rear of the IPE module, and restore the original arrangement. Start with the cables that are going to be underneath.
- 3 Attach the NT8D81BA 50-pin connector to the IPE filter using bail clips.
- 4 Restore power to the IPE module.
- 5 Replace the I/O safety panel.

List of terms

ALU

Arithmetic Logic Unit.

API

Application Programming Interface. High level language software used as components in the development of an application. Also, graphics routines that perform basic graphics tasks or other functions when called by high-level application programs.

ASIC

Application-Specific Integrated Circuit. A microprocessor chip designed to do specific tasks; providing graphics capability is one such task.

ATA

AT Attachment interface. Normally used to refer to the PCMCIA version of the IDE disk drive interface found in a PC. For MIRAN, standard ATA based cards are required instead of the simpler memory based cards. The later are lower cost but require custom driver software both at the PC and MIRAN.

AUI

Autonomous/Attachment User Interface. Refers to the 15-pin, D-type connector and cables used to connect single- and multiple-channel equipment in an Ethernet transceiver.

BIOS

Basic Input/Output System. A set of permanently stored program outlines in buffers that allow software to interact with hardware components (e.g., keyboard) in a device-independent manner.

bootp

An IP protocol that allows the automatic assignment of an IP address to a client device upon bootup.

Boundary scan

Test methodology for integrated circuits that provides visibility and control of on-chip logic.

BUI

Browser User Interface. The interface a user can use to interact with the MIRAN Release 2.0 card through the web.

Card option

Low-end Meridian Mail platform that is packaged in the same cabinet with the Meridian 1/Option 11 switch.

CD-ROM

Compact Disk Read-Only Memory.

CE-MUX

Common Equipment bus with MULTipleXed address and data.

CPE

Customer Premise Equipment. Equipment that resides on a customer's premises and is controlled by the customer as opposed to the Central Office

CPU

Central Processing Unit. A chip that performs logic, control, and arithmetic functions. The part of the switch that performs these functions and any others needed to carry out call processing.

DIN

A German Standardization Organization.

DS-30X

Parallel serial transmission from a superloop (XNET) card to a Controller Card in an IPE shelf.

DRAM

Dynamic Random Access Memory. A type of semi-conductor memory that is characterized by its high density (smaller packages for a given amount of memory). It typically has slower access time as compared with SRAM and requires external memory refresh circuitry.

DSP

Digital Signal Processing. A specialized computer chip that performs speedy and complex operations on digitized waveforms. Useful in processing sound and video.

DTMF

Dual Tone Multi-Frequency. A term describing push-button or touch-tone dialing.

EIDE

Enhanced IDE (*see* IDE). This feature provides a significant improvement in performance over the standard IDE; it is comparable to standard SCSI in terms of throughput.

EMC

Electro-Magnetic Compatibility. Refers to equipment units that are collectively performing each of their functions without causing or suffering unacceptable degradation due to electromagnetic interference from other equipment/systems in the same environment.

EMI

(ElectroMagnetic Interference) - Unwanted electromagnetic coupling, such as a ham radio heard on an electric organ or church music heard in hearing aids. Also known as “static”.

EPLD

Erasable Programmable Logic Device. An electronic device for performing logical operations that can easily be erased and reprogrammed.

ESS

Environmental Stress Screening

EST

Environmental Stress Testing.

EXUT

Enhanced Universal Trunk card. See *XUT*.

Field programmable

A program to which changes can be made while it is installed.

Firmware

Hardwired logic, software, data, and programming instructions such as that stored by threading wires through ferrite cores. May also refer to software programmed in the factory or burnt in the field, and is semipermanently stored within ROM.

Flash memory

Electrically erasable memory that is non-volatile (not affected by power disruptions).

FPGA

Field Programmable Gate Array.

FTP

File Transfer Protocol. This is an industry standard protocol for transferring files between a server and a client on a TCP/IP network.

Gate array

A circuit consisting of an array of logic gates (network nodes) aligned on a substrate (piece of silicon) in a regular pattern.

IDE

Integrated Drive Electronics. A low-cost hard disk drive interface.

IP

Internet Protocol.

IPE

Intelligent Peripheral Equipment - A range of cards that contain micro-processors that provide off-loading of the CPU function and the flexibility to make changes to the system's parameters without revising the hardware.

ISA

Industry Standard Architecture. A particular type of bus architecture on an IBM-DOS motherboard.

IVR

Interactive Voice Response. An application that allows telephone callers to interact with a host computer through pre-recorded announcements and prompts.

Kernel

That part of a computer's operating system that performs basic functions like switching between tasks.

LCA

Logic Cell Array) - A Xilinx product that is a form of Field Programmable Gate Array. See *FPGA*.

Loader

A device that moves a program or data from a floppy or hard disk and stores it into a computer's RAM memory.

MAT

Meridian Administration Tool. A Nortel Networks WindowsTM application that is available for configuring the Meridian 1 PBX.

MAU

Media Access Unit. A device used to allow connection of the Ethernet AUI signals on MIRAN to an external LAN.

MDS

Modular Documentation System

MIRAN

Meridian Integrated Recorded Announcer.

MINT

Message INTerrupt. This occurs when a message being transmitted receives an interrupt signal from an outside device, which must process a task of its own. Then the transmission of the original message can resume, or be resent.

M1

Meridian 1 PBX.

Mmail

Meridian Mail. Nortel's proprietary voice processing platform.

MOH

Music On Hold. Refers to telephony equipment, supplied by a Nortel switch through one or more trunk cards, to provide recorded music or radio to each caller on hold until the called party becomes available.

MTBF

Mean Time Between Failure. A measure of reliability: the time that a user may reasonably expect a device or system to work before an incapacitating fault occurs. Also, the average number of hours between one random failure and the next under stated conditions.

MTTR

Mean Time To Repair. The average time required for corrective maintenance.

NTP

Nortel Networks Publications; customer documentation. Each NTP is identified by a unique ten-digit publication number.

OA&M

Operations, Administration, and Maintenance.

OEM

Original Equipment Manufacturers.

PAS

Product Administration System.

PBX

Private Branch eXchange. A telephony switch that is privately owned.

PCB

Printed Circuit Board.

PCI

Peripheral Component Interconnect. An Intel device that enables high performance in an interface between a CPU bus and a peripheral device. A high-speed PC local expansion bus, capable of interconnecting ICs and plug-in boards to the host processor.

PCM

Pulse Code Modulation. A method for encoding an analog voice signal into a digital bit stream.

PCMCIA

Personal Computer Memory Card International Association. This organization has defined a credit card sized plug-in board for use in PCs. These cards are the only way to get to a laptop bus without using a docking station. In addition, application software can be stored on the card into system address space so that the software can run directly from the card, resulting in a faster start and less memory required from the host computer.

PDF

Portable Document Format.

RAN

Recorded ANnouncement trunks - A trunk that provides a link between the PBX and a recorded announcement device, used to provide recorded information to callers.

RTC

Real Time Clock. System clocking influenced/determined by connection to a time process external to processing by the system.

SBC

Sub-Band Coding. Algorithm used by Meridian Mail for compressing speech data down to just over a quarter of its original size.

Scalable architecture

A way of designing a system that allows it to be resized with relative ease; the cost required to increase its size in proportion to the new size.

SDI

Serial Data Interface. For some Meridian switches, provides ports between the CPU and external devices like a teletype or maintenance telephone. More generally, an SDI is a mechanism for changing the parallel arrangement of data within computers to the serial form used on transmission lines, and vice versa.

SL-1

Generic term given to Nortel digital switches. Meridian 1 refers specifically to the current series of Nortel PBX's.

STA

Single Terminal Access.

Telnet

An IP-based protocol for accessing a host computer over a network. Telnet can be used to access the MIRAN text-based user interface over an LAN.

TUI

Telephone User Interface. The interface a user can use to record, play, and assign and unassign announcements over a DTMF telephone.

VxWorks

Wind River RTOS (Real Time Operating System). See RTOS.

.WAV

File format used for storing voice files created under Microsoft Windows.

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Meridian 1 and Succession Communication
Server for Enterprise 1000

Meridian Integrated RAN

Description, Installation, and
Operation

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