555-8321-210

Meridian HomeOffice II

Line Card Configuration Guide

Product release 2.1 Standard 01.02 July 1999

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Meridian HomeOffice II

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Publication history

July 1999

This is the Standard 01.02 issue of the *Line Card Configuration Guide* for product release 2.1 of Meridian HomeOffice II. This issue adds descriptions of new features of the Meridian HomeOffice II Line Card, enhances descriptions included in the previous issue, and includes more detailed information on configuring the card for specific situations.

July 1998

This is the Standard issue of the *Line Card Configuration Guide* for product release 2.1 of Meridian HomeOffice II. This issue describes the Meridian HomeOffice II Line Card and its features, and explains how to install and configure it.

Contents

Preface

About this guide

In this preface

Overview

Introduction

This document describes the Meridian HomeOffice II Line Card (HLC). It provides specific information on how the card is installed, configured, and maintained as an integral part of a Meridian HomeOffice II system.

Version and issue of Meridian HomeOffice II documentation

A four-digit document number (for example, 01.01) indicates the version of the Meridian HomeOffice II hardware and issue of Meridian HomeOffice II documentation. The first two digits indicate the release or version of the product. The second two digits indicate the release or issue of the documentation.

The first two digits refer to the product itself. They increase by one each time the product is rereleased. For example, the first issue of the documentation discussing the first version of the Meridian HomeOffice II Line Card receives document number 01.01. The first issue of the documentation covering the second version of the Meridian HomeOffice II Line Card receives document number 02.01.

The second two digits refer to the documentation. They increase by one each time the documentation is altered and reissued for the same version of the product. If the first issue of the documentation, number 01.01, changes to enhance its description of the functionality of the first version of the Meridian HomeOffice II Line Card, the new issue of the documentation receives document number 01.02.

Application of version and issue in this documentation release

The second issue of this guide in support of Meridian HomeOffice II Release 2.1, Meridian HomeOffice II Line Card, AC vintage, Release 1, carries documentation issue Standard 01.02.

Skills required

This guide is intended for Meridian 1 and SL-100 installation technicians with at least a basic knowledge of

- telecommunications terminology
- RS-232 signaling
- switch maintenance (SDI operation)

How this guide is organized

Chapters contained in this guide

Chapter 1, “Description”
This chapter describes the HomeOffice II Line Card and its interoperability features.

Chapter 2, “Hardware installation”
This chapter describes how to install and cable Meridian HomeOffice II Line Cards in Meridian 1 and SL-100 PBXs.

Chapter 3, “Software configuration”
This chapter describes how to configure a Meridian HomeOffice II Line Card’s features for optimum performance of Meridian HomeOffice II according to individual telecommuters’ specific needs.

Chapter 4, “Maintenance”
This chapter describes the Meridian HomeOffice II Line Card man-machine interface (MMI) commands, which are accessible through the Meridian 1 or SL-100 MMI terminal. This chapter explains command meanings and usage, and gives an example of the on-screen display for each command.

Chapter 5, “Troubleshooting”
This chapter contains hints at possible solutions to commonly reported difficulties.

Appendix, “Man-Machine Interface (MMI) commands”
The Appendix provides a quick reference to the MMI commands available through the Meridian HomeOffice II Line Card.

Index
The Index provides an alternate method for locating information in this guide.

Related documents

Introduction

This topic identifies documents available for:

- network administrators
- Meridian 1 or SL-100 technicians
- telecommuters

How to obtain Meridian HomeOffice II documentation

You can order printed versions of the documents from Nortel Networks.

You can download soft copy versions (in Adobe Acrobat PDF format) from the Nortel Networks web site at http://www.nortelnetworks.com/homeoffice. When you reach this site, click Software and Documentation Distribution Center, and then download the files that you need.

Network administrator documents

Meridian HomeOffice II Planning Guide (NTP 555-8321-101)

This document is written for both the telecommunications network and data network administrators. It explains what is needed to incorporate Meridian HomeOffice II into the corporate network. It also provides installation checklists and data entry forms.

Meridian HomeOffice II Release Notes (NTP 555-8321-102)

The *Release Notes* describe the features and known problems for Meridian HomeOffice II.

The HomeOffice Router package includes a condensed version of the *Release Notes*. The Meridian HomeOffice II CD-ROM provides a version containing more detailed information.

Note: The printed copy may supersede the copy provided on the CD-ROM. You may obtain the most up-to-date version from the Nortel Networks web site.

Meridian HomeOffice II Network Administration Guide (NTP 555-8321-310)

This document is written for the corporate data network administrator. It describes data networking concepts and features, and explains how to configure the HomeOffice Router for operation within the data network. It also provides configuration instructions for interoperability with other devices on the data network.

Meridian HomeOffice II Command Shell User Guide (NTP 555-8321-910)

This document is written for data network administrators and advanced users. It explains how to use the command shell to configure the HomeOffice Router.

This document is available on the HomeOffice II CD-ROM and the Nortel Networks web site only. It is unavailable in printed format.

Meridian 1 or SL-100 installer/administrator documents

Meridian HomeOffice II Line Card Configuration Guide (NTP 555-8321-210)

This document is written for the Meridian 1 or SL-100 installer and/or administrator. It explains how to install and configure the HomeOffice II Line Card on the Meridian 1 or SL-100 PBX.

Meridian HomeOffice II Line Card Installer's Notes

The *Installer's Notes* is a quick reference document that is provided inside the HomeOffice II Line Card package. This document summarizes installation and configuration procedures, and provides cross-references to other documents for more detailed information.

Note: You cannot order this document separately.

Telecommuter documents

Meridian HomeOffice II User Guide (NTP 555-8321-205)

This document explains how to install and configure the HomeOffice Router and digital telephone. It also includes the information needed to configure the HomeOffice Router for operation on the corporate networks.

This document is included inside the HomeOffice Router package.

Meridian HomeOffice II Quick Start Guide (NTP 555-8321-900)

This document explains what is on the HomeOffice II CD-ROM and provides a quick reference installation procedure.

This document comes with the CD-ROM inside the HomeOffice II package.

Meridian 1 and SL-100 documents

The following documents can provide more detailed information to help you complete installation and configuration:

- *Meridian 1 Installation planning* (NTP 553-3001-120)
- *Meridian 1 System engineering* (NTP 553-3001-151)
- *Meridian 1 Power engineering* (NTP 553-3001-152)
- *Meridian SL-100 Intelligent Peripheral Equipment (IPE) Reference Manual* (NTP 555-4001-129)

You may also find it helpful to browse the Nortel Networks home page on the World Wide Web at http:\\www.nortelnetworks.com.

Chapter 1

Description

In this chapter

System overview

Introduction

Meridian HomeOffice II provides telecommuters with a Meridian digital telephone, a fax port, and connection to their company's Ethernet network over a single Basic Rate Interface (BRI) line to the telecommuter's home office (the remote site). The BRI line terminates in an ISDN connection at a HomeOffice Router in the telecommuter's home office. These communications links are illustrated on page 3.

Meridian HomeOffice II Line Card

The Meridian HomeOffice II Line Card (HLC) is a standard IPE line card designed to fit into IPE shelves a Meridian 1 or SL-100 switch located at the corporate office (the local site). Each HLC maintains up to 16 virtual telephones on 16 channels. Using the voice and data paths of each of these 16 channels, a single HLC manages up to 16 telecommuters' home offices (remote sites).

The voice channels provide communications links between the digital telephones and the host PBX at the local site. The voice channels also provide the communications links between the digital telephone and the Remote Daughterboard (RDB) inside the HomeOffice Router at each remote site.

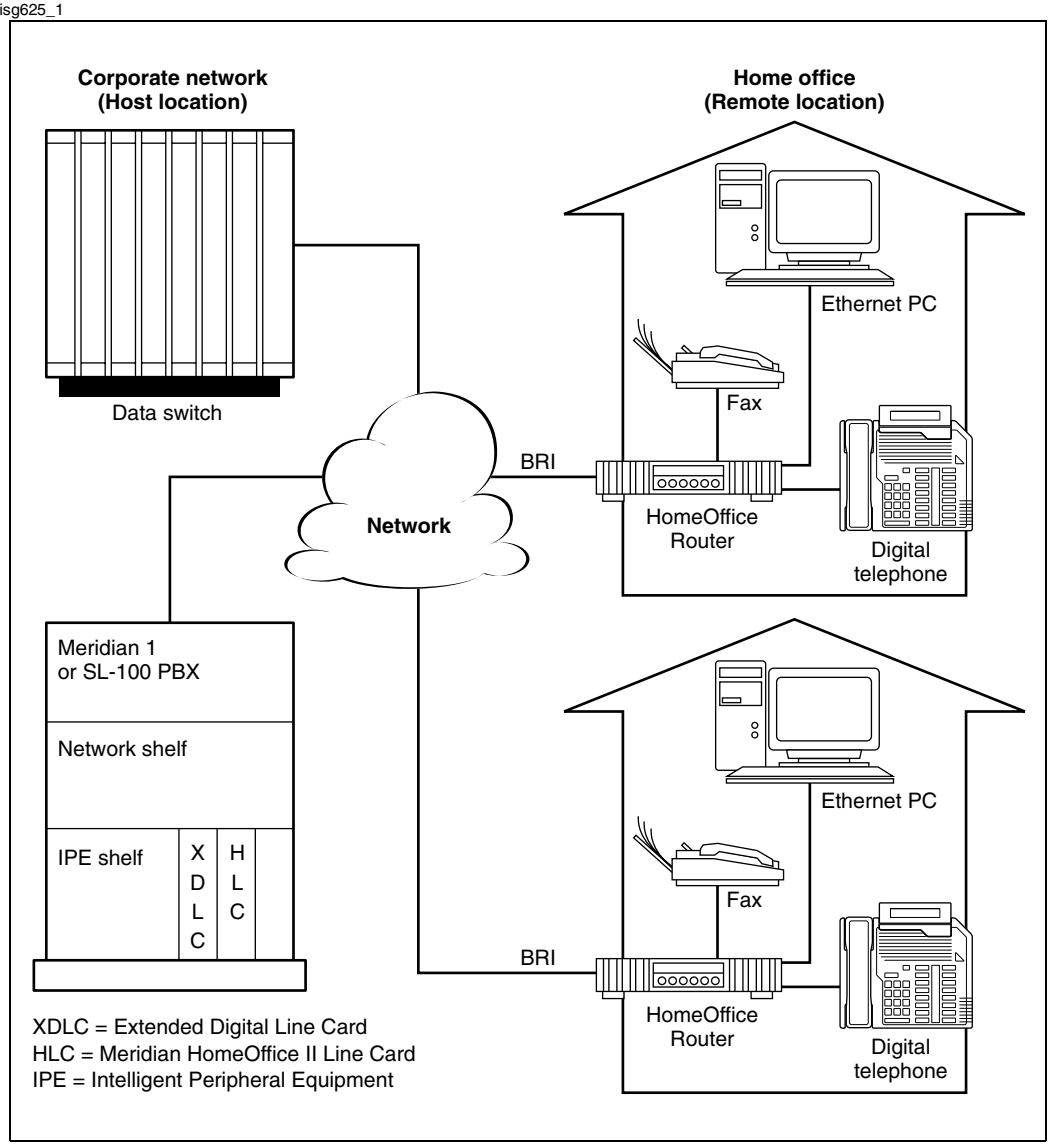
The data channels, which are normally idle in the Meridian telephone, provide the communications links between the HLC at the local site and the RDBs at remote sites.

Through the 16 virtual telephones, the HLC connects with up to 16 RDBs. Thus, the HLC manages up to 16 actual Meridian digital telephones at up to 16 remote sites. There is one port on the HLC for each HomeOffice Router it serves.

The PBX communicates with the HLC in the same way it does with an extended digital line card (XDLC). The HLC utilizes a dedicated, all-digital data channel to communicate with the HomeOffice Router through the RDB. The communications links of a Meridian HomeOffice II system are shown in the following illustration.

Communication links of a Meridian HomeOffice II system

isg625_1



Features

Digital telephone emulation

By emulating HLC-compatible models of the Meridian digital telephone, the HLC allows telecommuters to function at their home offices as though they were at their corporate offices. HLC-compatible models of the Meridian digital telephone include the following models:

- Meridian 2216
- Meridian 2616
- Meridian 2616CT (for firmware releases HLC 1.15 and later)
- Meridian 3820

Variable security levels

Three security levels allow controlled access to HLC channels on a per-card basis. See “HLC security” on page 11 for further details. The following list describes these three levels:

- Level 1: no call security
  Access to the HLC’s channels is not restricted.
- Level 2: calling party ID (CPID)
  The HLC identifies the number of the caller requesting access to one of its channels. If that number matches the remote number of the HomeOffice site configured for that channel, access is granted. If the number of the incoming call does not match, access is denied.
  See “SET REMOTE (S R)” on page 131 for a discussion of this feature.
- Level 3: security identifier
  The HomeOffice Router sends the security identifier configured for the remote office from which the caller requests access. The HLC compares that number to the eight security identifiers configured for the HLC. When it finds a match, it grants access to that channel corresponding to that security identifier. (Security Level 3 is the default security level.)

  See “Security level and security identifier” on page 17.

Online/Offline table

This table allows you to schedule times that the ISDN connection is made available to the HomeOffice II user, and times at which the telephone in the user's home office reverts to normal telephone service.

Note: This feature takes users online or offline on the specified day at the specified time. It does not prevent the user from accessing the Meridian HomeOffice II system.

See "SET ONOFFTABLE (S O)" on page 124.

Echo canceling

Echo canceling filters unwanted signals caused by echoes of the main signal. These unwanted signals often occur in long-delay communications, causing the speaker to hear an echo of his or her own speech in the receiver.

Firmware releases prior to HLC 1.15 supported echo canceling on any four HLC channels. HLC firmware releases 1.15 and above, shipped on AB-vintage and later HLCs, support echo canceling on all 16 HLC channels.

See "SET ECHO (S E)" on page 120.

Configurable password

You can change the HomeOffice II login password to control access to the HLC maintenance terminal.

Note: The Host password (HOST) is non-configurable, and may not be changed from its default setting.

See "SET CONFIG (S C)" on page 114.

HomeOffice II troubleshooting

You can run the following system tests from a man-machine interface (MMI) terminal:

- Connectivity test

  This test verifies the connection between the HLC and the RDB

- Phone test

  This test verifies the connection between the RDB and the Meridian digital telephone.

See “TEST (T) menu” on page 153 for test procedures.

Daisy chain capability

Daisy chaining allows multiple HLCs to share a single maintenance terminal and a single SDI port.

See “Installing and cabling multiple HLCs” on page 53.

SDI access

Through the HOST (HO) command, you have the ability to access the switch configuration port via the MMI terminal.

See “HOST (HO)” on page 94.

Firmware upgrades

The UPLOAD (U) command allows you to upgrade the software capabilities of the HLC.

See “UPLOAD (U) command” on page 159.

Physical architecture

Introduction

At the corporate office (local site), the HLC requires all-digital trunking through a T1, E1, or PRI link. The HLC is a digital line card designed to fit into a Meridian 1 or SL-100 IPE shelf or Option 11 cabinet. The HLC meets the electrical and bus interface requirements of this shelf. It has two serial ports: a Man-machine Interface (MMI), and a Serial Data Interface (SDI). You can daisy chain, or link, multiple HLCs through these ports, using one HomeOffice II Line Card Multi-I/O Cable per HLC, so that all HLCs in the daisy chain can share a single maintenance terminal. See page 28 for an illustration of a daisy-chained system.

Corporate office (local) site

At the telecommuter's corporate office site, the HLC plugs into an IPE module or an Option 11 cabinet. The HomeOffice II Multi-I/O cable (see page 45) supplies MMI and SDI connections to the HLC, and links multiple HLCs in daisy-chained systems.

Home office (remote) site

At the telecommuter's home office site, the all-digital line terminates into an ISDN connection at the HomeOffice Router. The HomeOffice Router supplies a MERIDIAN port (for connectivity to the digital telephone), the system's Ethernet port, and an analog port (for an optional, user-supplied fax machine). The HomeOffice Router contains a Remote Daughterboard (RDB), which supplies the system with its digital telephone interface.

The HLC allows as much as 65 milliseconds (ms) of network delay between telecommuters' corporate offices and their home offices. See page 3 for an illustration of the elements of the HomeOffice II system and their relationships to one another.

Functionality

Introduction

This topic summarizes the features provided by the HLC. Refer to Chapter 2 of this guide, “Hardware installation,” for step-by-step setup instructions.

Self-test

The HLC performs test functions to guarantee system integrity. The board completes a self-test each time it is turned on or reset. The faceplate LED blinks three times, then remains on until the switch enables the card, indicating a successful Self-Test.

If the LED blinks repeatedly at one-second intervals, try reseating the card at the switch by lifting the ejector tabs and pulling the HLC out. This breaks the connection between the card and the backplane. Then reinsert the card.

If the HLC still does not complete a successful Self-Test, see “Unsatisfactory Flash” on page 175 for instructions on how to revert the HLC to the factory default firmware load residing in the E-PROM module.

If the card still does not pass its Self-Test, it must be returned to the factory for service. See “Caution” on page 18.

User tests

You can choose from several available testing options. The HLC supports the following tests:

- all switch tests supported by an XDLC
  See documentation for your specific switch for further details.
- a Connectivity Test to verify the connection between the HLC and the RDB
  See “Connectivity test” on page 155.
- a Phone Test to verify signaling between the digital telephone and the RDB
  See “Phone test” on page 156.

Circuit pack

The HLC conforms to the Common Features Specification for IPE line cards.

LED

The LED indicates card enabled/disabled status. The LED indicates a successful Self-Test by blinking three times each time you start or reset the card. If, after passing its self-test, the card's LED remains lit, check the switch to see if the card is enabled. If the card is enabled and the LED remains lit, this indicates a problem at the switch.

Echo canceling

The Digital Signal Processor (DSP) provides echo canceling to all 16 channels of HLCs equipped with firmware load HLC 1.15 and later. Echo canceling isolates and filters unwanted signals, or echoes, from the main transmitted signal.

Echo is often experienced in long-delay communication when a person's speech echoes in the receiver. A *tail,* in echo canceling terms, is the portion of your speech that returns to you in an echo. You usually measure tail length in milliseconds. (1000 ms = 1 second). See "SET ECHO (S E)" on page 120.

Note: The particular routing of each call through the public switched telephone network (PSTN) can effect the need for echo canceling.

Multiple-agent (user) access

Each HLC has 16 channels (numbered 0–15). Each channel has access to only one ISDN connection. Multiple-agent functionality allows the you to assign up to eight different users (agents) to a single HLC channel. However, only one of these users (agents) can have access to the channel at any one time.

Through remote number configuration, see “SET REMOTE (S R)” on page 131, you can enable up to eight different users (agents) to access the same HLC channel with the understanding that *only one agent can have access to the channel (and the channel’s ISDN connection) at any one time.* Without multiple-agent access, the company must reserve an entire channel for each user (agent), even if the agent only uses the connection for part of the day.

Multiple-agent access allows several different people to use the same channel at different times during the same day. However, when a particular user (agent) attempts to go online, the channel must not be in use by another agent. If the channel is in use when an agent attempts to log in, the agent’s digital telephone will display an `“HLC Port Already in Use”` message. In other words, the HLC supports only one ACD agent per channel online at any one time.

An example configuration for a single channel at a business that must have operators standing by around the clock to serve a global clientele is three individual agents, each assigned to one eight-hour shift.

You can assign a unique remote number and security identifier to each ACD agent. However, in a shift arrangement where each user works from the same telephone, this is not required.

Going online as an ACD agent

When an ACD agent attempts to go online, the HLC receives a data call from the agent’s HomeOffice Router requesting access to the appropriate channel.

- If the channel is in use, the agent receives a message on the display of the digital telephone stating “HLC Port Already in Use,” and is denied access to the HLC.
- If the channel is not in use, the HLC checks the security ID sent by the RDB in the agent’s HomeOffice Router against the security ID that you have configured for this agent number on this channel.

  If the security IDs match, the agent is now active and can receive calls from the ACD queue.

ACD agents can also place calls in local mode (if authorized) while waiting for access to their channels. The agent who is active on a particular channel remains active until either the agent, the HLC (via the Online/Offline table), or the system administrator (via the OFFLINE FORCE command, see "OFFLINE FORCE (O F)" on page 146) places the channel offline. Agents who attempt to access an HLC channel in use by another user are denied access or receive a message on their display stating "HLC Port Already in Use."

HLC security

Security is provisioned on a per-HLC basis. For security validation, the HLC stores a database of eight Calling Party Identification numbers (compiled from the Remote numbers) and eight Security Identifiers per channel. There are three levels of security, as described below.

Security Level 3 (Security ID)

Security Level 3 is the default security level. When this level is provisioned, the incoming Security ID from an agent going online is compared with the eight provisioned IDs, and the appropriate ACD agent is activated. This ACD agent now receives calls from the ACD queue associated with this channel.

Security Level 2 (CPID)

When Security Level 2 is provisioned, the incoming calling party identification (CPID) for the call going online is compared against the eight CPID numbers, and the appropriate user or ACD agent is activated. Only this agent can receive and place calls until the channel goes offline.

Security Level 1 (no call security)

When provisioned for Security Level 1 (no call security), all incoming data calls are permitted, but new outgoing data calls are only initiated to the default (first available) user or ACD agent. This scenario can support multiple ACD agents per channel via permanent BRI connections initiated by the remote ACD agent.

CTI applications

First-party support

Meridian HomeOffice II Line Cards that are equipped with firmware releases 1.15 and RDB 9.2.8 and later provide full support for first-party Computer Telephony Integration (CTI) applications, such as Symposium FastView 1.6.0.3, Symposium Call Manager 5.0.32.29, and Desktop TAPI Server Provider 1.6.0.9c.

Some of these applications communicate to a Meridian Communications Adapter (MCA) installed in the base of the digital telephone or to the Symposium Communicator Card installed on the PC. While the MCA cannot place calls to other devices, it can support these first-party CTI applications.

Note: *First-party* applications are computer applications that can provide a screen pop and on-screen telephone set control to the agent, and can route a telephone call.

Third-party support

Meridian HomeOffice II Line Cards that are equipped with firmware releases 1.15 and RDB 9.2.8 and later provide full support third-party Computer Telephony Integration (CTI) applications, such as Symposium TAPI Server Provider Release 2.1 for M1, and Symposium Agent 1.1.0.3.

Debug capability

HLCs equipped with firmware releases 1.15 and later allow troubleshooters to perform call traces, which trace the activity of the Meridian HomeOffice II system as it processes individual calls. The debug commands require special passwords. You can obtain these passwords from customer service technicians in troubleshooting situations only.

Note: Only use the debug features of the Meridian HomeOffice II Line Card when instructed to do so by a customer service technician.

Cabling

Introduction

This section describes cables that are unique to the Meridian HomeOffice II system.

HomeOffice II Multi-I/O cable

The HLC provides the following ports:

- an MMI port to enable you to configure the HLC according to the individual circumstances of the company and each user
- an SDI port for you to communicate with the switch.

The Meridian HomeOffice II Line Card Multi-I/O cable brings these connections outside the IPE shelf or Option 11 cabinet (see page 45).

The following table shows the function of each plug of the HomeOffice II Line Card Multi-I/O cable and the type of connector:

Plug	Function	Connection
P1	IPE connection	25-pair Telco
P2	MMI	DB-25 male
P3	SDI	DB-25 female

Extension cables

The HomeOffice II Multi-I/O cable may be unable to reach between the HLC and the MMI terminal or the SDI port on the switch. Because local site configuration varies, you may need the MMI extension cable and/or the SDI extension cable to supply connectivity between these elements of the HomeOffice II system.

You can purchase the extension cables from your Nortel Networks distributor. If you prefer to build the cables yourself, this guide provides the pin-out configuration for each. See “MMI extension cable” on page 47, and “SDI extension cable” on page 48 for detailed information on these cables.

Daisy chaining

If you require multiple HLCs at the corporate office, you can install them in a daisy chain to enable maintenance and configuration of all HLCs through a single maintenance terminal. For a detailed description of daisy chaining procedures and required daisy chain address DIP switch settings, see “Understanding the DIP switches” on page 33 and “Installing and cabling multiple HLCs” on page 53.

Compatibility

Introduction

This section lists Meridian HomeOffice II Line Card-compatible hardware systems and software releases.

Hardware

The HLC is compatible with the following systems:

- any system capable of supporting the XDLC circuit pack
- Meridian 1 Options 11(C), 11(E), 21(E), 51(C), 61(C), 71(C), and 81(C)

  Note: Older Meridian 1 systems that have been upgraded with IPE modules can also utilize Meridian HomeOffice II.
- SL-100 options 111 and 211

Software

The HLC is compatible with the following software:

- Meridian 1 software Release 17 and above.

  Note: You can use the HLC with Release 15 and above, but the configuration of data ports is slightly different. See the table on page 78 for further details.
- SL-100 system software release MSL 09 and above, and IPE 09AA

Card configuration: required elements

Introduction

Before you begin to use Meridian HomeOffice II, you must configure the following parameters for the HLC and the HomeOffice Router to be able to communicate with each other:

- voice and data ports
- remote number
- security level and security identifier

Voice and data ports for each HLC channel

You must configure a voice and a data port for each HLC channel at the switch. This is basic to the operation of the HLC. The card will not function if these ports are not configured. See “Voice and data port configuration” on page 58.

Remote number

You must configure each channel’s HomeOffice ISDN number as its remote number. This allows for the transfer of voice and data information between the HLC and the Remote Daughterboard (RDB). For help configuring a channel’s remote number, see “SET REMOTE (S R)” on page 131.

Security level and security identifier

There are three security levels for controlling access to corporate ISDN connections. The default security level (Security Identifier verification, level 3) requires that you configure a security identifier (up to 10 digits) for a channel before the HLC allows access to that channel. For help on how to change to a different security level, see “SET CONFIG (S C)” on page 114.

If you choose not to change the HLC’s security level, you must configure security identifiers for each channel. For help on how to configure a security identifier, see “SET IDENTIFIER (S I)” on page 122.

Note: You must configure a Security Identifier for each HomeOffice site served by the HLC if you choose security level 3, the default security level.

For information on how to configure full HLC functionality, see “Optional HLC configuration” on page 84.

Environmental and safety considerations

Introduction

This section lists the specific environmental and safety standards met by the Meridian HomeOffice II Line Card.

Safety

The Meridian HomeOffice II Line Card meets the safety requirements set forth by the following standards:

- EN60950
- EN41003

CAUTION

Risk of equipment damage

The HLC does not contain any field-serviceable components. You must return the HLC to Nortel Networks for repair, replacement, or disposal. See your distributor for information on returns.

EMC

The Meridian HomeOffice II Line Card meets the electromagnetic compatibility requirements set forth by the following standards:

- EN550022 Class B-Emissions standard
- EN50082-1-Immunity standard

Temperature requirements

The Meridian HomeOffice II Line Card operates in a temperature range of 0° C to 40° C (32° F to 104° F).

Chapter 2

Hardware installation

In this chapter

Overview

Introduction

This chapter contains basic installation procedures, from preparation and setting DIP switches properly, to installation and cabling. Procedures in this chapter cover the following systems:

- single-HLC
- daisy-chained, multiple-HLC

Planning the installation

This section describes necessary planning and preparation for Meridian HomeOffice II systems at both local and remote sites; basic configurations that are possible, both single- and multiple-HLC configurations; as well as understanding and setting DIP switches prior to HLC insertion.

Configuring the DIP switches

This section describes the function and proper configuration of HLC DIP switches, including configuration requirements for one-HLC, two-HLC, and more than two-HLC systems.

Performing the installation

This section describes installing and cabling your HLC system, including discussions of the cables themselves, establishing an MMI terminal connection, and procedures necessary for single- and multiple-HLC systems.

Section A: Planning the installation

In this section

Overview

Introduction

This section describes:

- necessary planning and preparation for Meridian HomeOffice II systems at both local and remote sites
- basic installation scenarios that are possible for the following configurations:
  - single-HLC
  - multiple-HLC

Preinstallation preparation

This topic describes the planning and preparation processes that you should complete before installing your Meridian HomeOffice II system to help you get the most out of your company's investment.

Installation scenarios

Meridian HomeOffice II system installation can be categorized into three basic scenarios. Each of these scenarios requires specific cabling patterns and DIP switch settings. This topic concentrates on the necessary cabling patterns for each scenario.

Preinstallation preparation

Introduction

To get the most out of your company's investment in Meridian HomeOffice II, you must plan and prepare. This topic describes the preparation process.

Preinstallation preparation consists of

- planning for the telecommuting needs of the company
- preparing the site
- unpacking and inspecting the equipment
- taking inventory

Planning for the telecommuting needs of the company

Begin the installation plan by determining the number of telecommuters that your Meridian HomeOffice II system will support and, therefore, the number of HLCs you will need in your corporate office (local site) switch. The installation plan should include an outline of cable routing between the IPE shelf or Option 11 cabinet, the SDI port, and the MMI terminal at the corporate office.

The deployment plan should include the HLC configuration settings for each telecommuter. Data entry forms provided in the *Meridian HomeOffice II Planning Guide* (NTP 555-8321-101) facilitate planning.

Before MMI configuration can take place, you must configure PBX voice and data ports for each HLC channel. See "Configuring voice and data ports" on page 77 of this guide, and "Voice telephone configuration" and "Data telephone configuration," in the *Meridian HomeOffice II Planning Guide* (NTP 555-8321-101).

Deployment planning

Data forms

The *Planning Guide* provides the following forms on which you can record your configuration plans:

- Line Card Ports Configuration — Meridian 1
- Line Card Ports Configuration — SL-100
- Line Card Online/Offline Schedule Configuration

Checklists

The *Planning Guide* also provides checklists for the following people to help ensure complete installation and configuration:

- Coordinator
- Telecom Manager/Administrator

You can also find these deployment planning forms on the Nortel Networks web site at: http://www.nortelnetworks.com/homeoffice

Preparing the site

Site preparation involves considering environmental, structural, and electrical factors. System planners and installers must consider site-specific limitations, as well as company-specific guidelines in this process. More information is available in the following documents:

- *Meridian 1 Installation and Planning* (NTP 553-3001-120)
- *Meridian 1 System Engineering* (NTP 553-3001-151)
- *Meridian 1 Power Engineering* (NTP 553-3001-152)
- *Meridian SL-100 Intelligent Peripheral Equipment-IPE* (NTP 555-4001-129)

Unpacking and inspecting the equipment

Unpack the equipment and inspect it for damage. When you unpack, follow these general precautions recommended by computer and telephone equipment manufacturers:

- Remove items that generate static charge from the installation site.
- Use antistatic spray if the site is carpeted.
- Ground yourself before handling any equipment.
- Remove the equipment carefully from its packaging.
- Visually inspect the equipment for obvious faults or damage.

  You must immediately report any damaged component to your sales representative and the carrier who delivered the equipment.
- Hold any non-enclosed circuit cards by their non-conducting edges, and keep them in their antistatic bags until you are ready for to install them.
- Do not stack the non-enclosed circuit cards on top of each other.

Taking inventory

After you unpack and visually inspect the equipment, and before you begin installation, verify that all the equipment is at the site. Check equipment received against the shipping documents. Report any shortages to your sales representative immediately.

Installation scenarios

Introduction

There are two types of general installation for a local site (corporate office) Meridian HomeOffice II system:

- single-HLC
- multiple-HLC (daisy chain)

Both of the above installations are outlined in the following pages.

Basic scenarios

Meridian HomeOffice II system installation can be categorized into three scenarios according to the number of HLCs at the site.

- one HLC
- two HLCs
- more than two HLCs

Each of these scenarios require specific DIP switch settings and cabling patterns This topic concentrates on the needed cabling patterns. DIP switch settings are discussed in Section B: “Configuring the DIP switches,” on page 31.

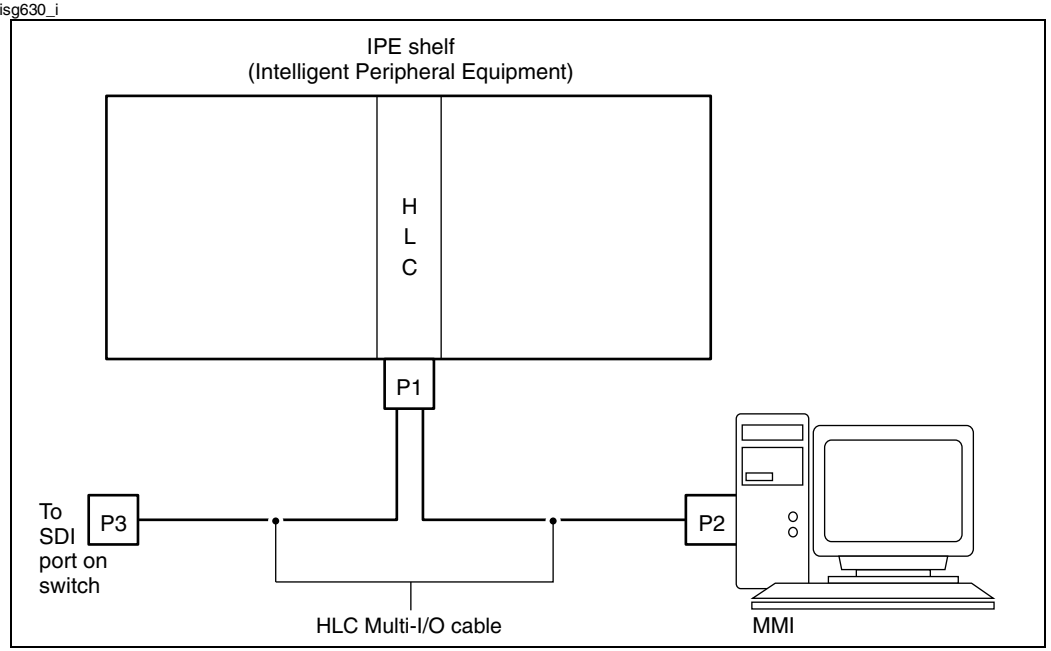
Note: NT8D37AA IPE cabinets utilize split-slot wiring. If you have one of these cabinets, your HLCs can only reside in slots 0, 4, 8, and 12 without rewiring the slot.

To use any other slot, you will need to rewire part of the IPE backplane using cable NT8D81AA (A0359946). Refer to the *Meridian 1 System Installation and Maintenance Manual* (NTP 553-3001-210) for details.

Installing a single-HLC

If your company has 16 or fewer telecommuters, a single Meridian HomeOffice II Line Card will provide HomeOffice II functionality to all of the current telecommuters. In this type installation, the single HLC provides connectivity to both the MMI and the SDI, each of which require specific cabling and DIP switch settings. The following illustration outlines the necessary cabling for this arrangement. For the unique DIP switch settings for a one-HLC system, see the table that lists DIP switch 1 (SW1) settings on page 34.

isg630_i



Installing multiple-HLCs

If your company has 17 or more telecommuters, your Meridian HomeOffice II system requires more than one HLC. Multiple HLCs can be daisy chained so that they can share one maintenance connection. Daisy chains with two HLCs require slightly different cabling from daisy chains with more than two HLCs. These differences are discussed in the following subsections.

Two HLCs

If there are two HLCs present in your switch, configure them in a daisy chain to allow both cards to share the same maintenance (MMI and SDI) connections. The card nearest the man-machine interface (MMI) terminal provides connectivity to the MMI, which allows for maintenance of the HLC. This card is the MMI end of the daisy chain.

The other card, the card nearest the switch's serial data interface (SDI) port provides connectivity to the SDI, which allows for limited maintenance of the switch. This card is the SDI end of the daisy chain.

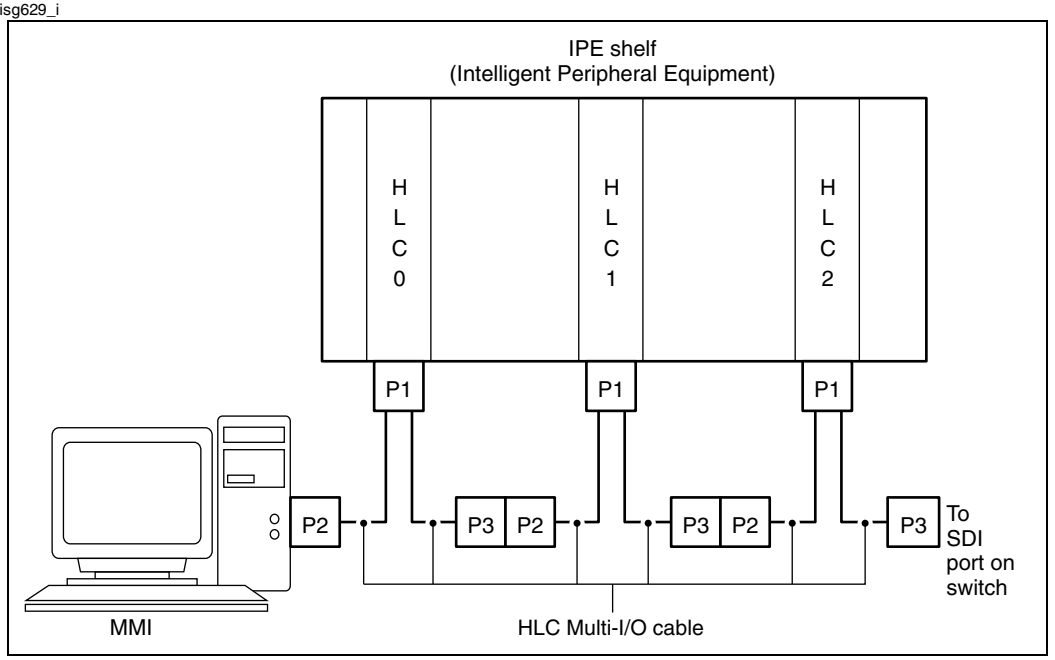
Each of these cards also requires a specific DIP switch setting. For more details, see "Setting the DIP switches for multiple HLCs" on page 37.

More than two HLCs

If there are three or more HLCs present in your switch, the information in the preceding paragraphs applies to the cards on either end of the daisy chain, the MMI end and the SDI end, for maintenance access. The cards that are not on either end are called *intermediate cards*. All intermediate cards are not directly connected to either the MMI or SDI and require different DIP switch settings from the cards on each end. For more details, see “Intermediate cards” on page 39.

The following illustration shows the general cable configuration of a multiple-HLC site.

isg629_i



Note: This illustration shows three HLCs in a daisy chain to demonstrate the pattern of cabling connections required for a successful daisy chain. Meridian HomeOffice II systems can involve daisy chains of from 2 to 32 HLCs.

Section B: Configuring the DIP switches

In this section

Overview

Introduction

This section describes the functions and proper settings of HLC DIP switches, including required DIP switch settings for the following system configurations:

- one HLC
- two HLCs
- more than two HLCs

Understanding the DIP switches

Use DIP switches to identify the daisy-chain address of the HLC and to select the HLC's functional settings. One HLC has two banks of DIP switches, each bank with eight positions. Settings that you can configure via DIP switch are shown in the tables on pages 34 and 35.

Setting the DIP switches for one HLC

All one-HLC systems require unique DIP switch settings. These settings are explained on page 36.

Setting the DIP switches for multiple HLCs

All two-HLC and more than two-HLC systems also require unique DIP switch settings. These settings are explained on pages 37–42.

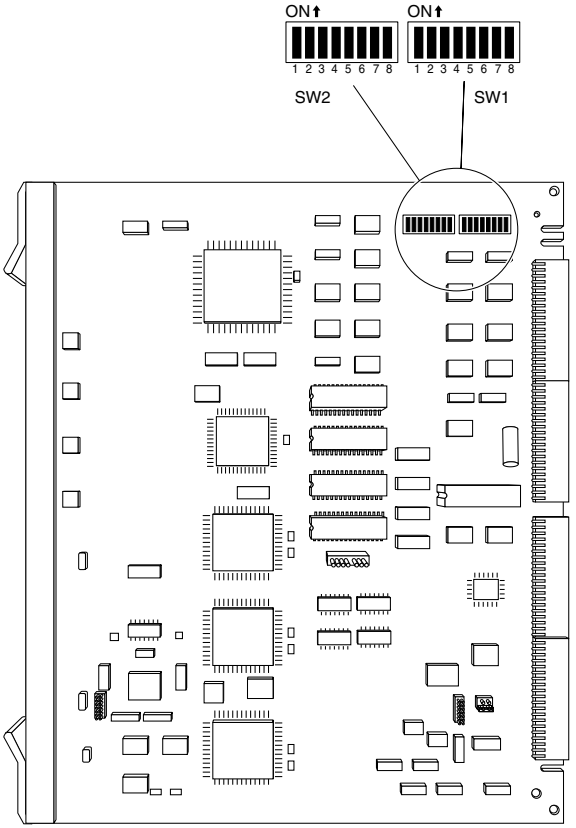
Understanding the DIP switches

Introduction

This topic concentrates on understanding HLC DIP switches. One HLC has two banks of DIP switches, each bank with eight positions. You must configure these DIP switches before inserting the HLC into its card slot. HLC functions that you can configure via DIP switch are shown in the tables on pages 34 and 35.

DIP switch location

The following illustration shows the location of the two banks of DIP switches on the Meridian HomeOffice II Line Card



Default settings

The default setting of all 16 DIP-switch positions on an HLC is OFF. This corresponds to a single HLC in a Meridian 1 switch with terminal settings of 9600 and N81 (no parity, eight data bits, and one stop bit).

DIP switch settings for HLCs in an SL-100 PBX

You must set position 4 of SW2 to ON if the HLC is in an SL-100 switch. See page 35 for a table that lists all DIP switch 2 (SW2) settings.

DIP switch 1 settings

If multiple HLCs are present, each HLC must have a unique address for the daisy chain to function properly. The first six positions on DIP switch 1 (SW1) define the unique daisy chain address of that HLC.

On the HLC whose HLC Multi-I/O cable is connected either to the MMI terminal or the MMI Extension cable, set SW1 position 7 to OFF. This HLC is at the MMI end.

On the HLC whose HLC Multi-I/O cable is connected to either the SDI port on the switch or the SDI Extension cable, set SW1 position 8 to OFF. This card is at the SDI end.

The following table lists the function of each position on DIP Switch 1 (SW1)

Position	Determines	Setting
1–6	binary daisy chain address	0–31 (see “SW1 settings for addressing multiple HLCs in a daisy chain configuration” on page 40)
7	MMI-end (HLC directly linked to MMI)	OFF = MMI end (HLC attached to MMI or MMI extension cable) ON = all other HLCs
8	SDI-end (HLC directly linked to SDI)	OFF = SDI end (HLC attached to SDI or SDI extension cable) ON = all other HLCs

Note: For every card *not* on either end of the daisy chain, positions 7 and 8 of SW1 must be ON. See “Intermediate cards” on page 39 for more information.

DIP switch 2 settings

DIP switch (SW2) position 1 selects the daisy chain’s baud, 9600 or 2400 bps. SW2 position 2 selects the daisy chain’s parity, number of data bits, and number of stop bits—the daisy chain’s terminal settings. SW2 position 3 selects the HLC’s firmware execution mode: allow FLASH or force E-PROM. SW2 position 4 designates the PBX as either a Meridian 1 or an SL-100 switch. SW2 positions 5–8 of are not used for release 4 of the HLC.

Note: For firmware upgrades, SW2 position 2 must be OFF, providing for terminal settings of N81 (no parity, 8 data bits, and 1 stop bit). See “UPLOAD (U) command” on page 159 for further requirements to execute a firmware upgrade via this MMI command.

The following table lists the function of each position on DIP Switch 2 (SW2).

Position	Determines	Setting
1	baud	OFF = 9600 ON = 2400
2	terminal settings	OFF = N, 8, 1 ON = M, 7, 1
3	execution mode	OFF = allow Flash ON = force E-PROM
4	switch type	OFF = Meridian 1 ON = SL-100
5–8	reserved	OFF

Setting the DIP switches for one HLC

Introduction

If your system consists of a single Meridian HomeOffice II Line Card, daisy-chain settings are not applicable. Since there is no daisy chain address, positions 1–6 remain in the default OFF setting. Since the card provides both maintenance connections (that is, it serves as both the MMI end *and* the SDI end), positions 7 and 8 also remain in the default OFF setting.

SW1 settings for one HLC

The following table lists the SW1 settings for one HLC that has its own maintenance connections and is *not* part of a daisy chain.

Position	Determines	Setting	Default
1	Address	OFF	OFF
2	Address	OFF	OFF
3	Address	OFF	OFF
4	Address	OFF	OFF
5	Address	OFF	OFF
6	Address	OFF	OFF
7	MMI end	OFF	OFF
8	SDI end	OFF	OFF

Setting the DIP switches for multiple HLCs

Introduction

If your system consists of more than one Meridian HomeOffice II Line Card, the cards must be set up in one of the two following configurations to be a functioning daisy chain:

- a two-card configuration
- a more than two-card configuration

For the daisy chain to function properly, each card must have a unique address, as set with positions 1–6. Also, one card in the daisy chain must be designated as the MMI end, using position 7, and one card must be designated as the SDI end, using position 8.

Two HLCs

In any HLC daisy chain, the first card, HLC 0, is located at the MMI end. That is, it provides connectivity to the MMI for all cards in its daisy chain. Plug 2 of HLC 0's HLC Multi-I/O cable (see the illustration on page 45) connects either directly to the MMI, or to the MMI Extension cable. (See "MMI extension cable" on page 47.) DIP Switch 1, position 8, of HLC 0 must be set to ON.

The last card in any HLC daisy chain is located at the SDI end. That is, it provides connectivity to the SDI for all cards in its daisy chain. Plug 3 of its HLC Multi-I/O cable (see the illustration on page 45) connects either directly to the SDI, or to the SDI Extension cable. (See SDI EXTENSION CABLE, on page 48.) DIP Switch 1, position 7, of this HLC must be set to ON.

SW1 settings for two daisy-chained HLCs

The following table lists the DIP switch settings for two HLCs in a daisy chain.

Position	Determines	HLC 0	HLC 1	Default
1	Address	OFF	ON	OFF
2	Address	OFF	OFF	OFF
3	Address	OFF	OFF	OFF
4	Address	OFF	OFF	OFF
5	Address	OFF	OFF	OFF
6	Address	OFF	OFF	OFF
7	MMI end	OFF	ON	OFF
8	SDI end	ON	OFF	OFF

More than two HLCs

In an HLC daisy chain with more than two HLCs, the first card in the daisy chain, HLC 0, provides the MMI connection. That is, HLC 0 is located at the MMI end. Plug 2 of its HLC Multi-I/O cable (see the illustration on page 45) connects either directly to the MMI or to the MMI Extension cable. (See “MMI extension cable” on page 47.) SW1, position 7 of HLC 0, must be set to OFF. SW1, position 8 of HLC 0, must be set to ON.

In an HLC daisy chain with more than two HLCs, the last card in the daisy chain (HLC 2 in the illustration on page 29) is located at the SDI end. That is, it provides the SDI connection. Plug 3 of its HLC Multi-I/O cable (see the illustration on page 45) connects either directly to the SDI, or to the SDI Extension cable. (See “SDI extension cable” on page 48.) SW1, position 7, of this HLC must be set to ON. SW1, position 8, of this HLC must be set to OFF.

Intermediate cards

The difference between a two-HLC configuration and a more than two HLC configuration is the introduction of *intermediate* cards. An *intermediate* card is a card that is neither at the MMI end, nor at the SDI end. For example, in the three-HLC configuration illustrated on page 29, the middle HLC is the intermediate card. Its Multi-I/O cable is not on either end of the daisy chain and is not directly connected to the MMI or to the SDI.

All intermediate cards (cards *not* on the ends) must have SW1, both positions 7 *and* 8 set to ON.

SW1 settings for three HLCs in a daisy chain

The following table lists the DIP switch settings for three HLCs in a daisy chain.

Position	Determines	HLC 0	HLC 1	HLC 2	Default
1	Address	OFF	ON	OFF	OFF
2	Address	OFF	OFF	ON	OFF
3	Address	OFF	OFF	OFF	OFF
4	Address	OFF	OFF	OFF	OFF
5	Address	OFF	OFF	OFF	OFF
6	Address	OFF	OFF	OFF	OFF
7	MMI end	OFF	ON	ON	OFF
8	SDI end	ON	ON	OFF	OFF

SW1 settings for addressing multiple HLCs in a daisy chain configuration

Correct functioning of a daisy chain requires that each HLC have a unique address set via DIP switch. Position determines proper addressing in the daisy chain. The following table correlates the DIP switch settings of SW1, positions 1–6 to address numbers for a daisy chain of up to 32 HLCs.

Notes: The following points pertain to addressing daisy-chained HLCs.

1. These settings define the binary address which, when converted to decimal, creates the HLC address. Therefore, when displayed using the DISPLAY CONFIG (D C) command (see “DISPLAY CONFIG (D C)” on page 102), the settings will be shown in reverse, as in 6–1, instead of 1–6.
2. Positions 7 and 8 are determined by which cards are at the MMI and SDI ends.

Address	Position 1	Position 2	Position 3	Position 4	Position 5	Position 6
0	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF
11	ON	ON	OFF	ON	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF

Address	Position 1	Position 2	Position 3	Position 4	Position 5	Position 6
13	ON	OFF	ON	ON	OFF	OFF
14	OFF	ON	ON	ON	OFF	OFF
15	ON	ON	ON	ON	OFF	OFF
16	OFF	OFF	OFF	OFF	ON	OFF
17	ON	OFF	OFF	OFF	ON	OFF
18	OFF	ON	OFF	OFF	ON	OFF
19	ON	ON	OFF	OFF	ON	OFF
20	OFF	OFF	ON	OFF	ON	OFF
21	ON	OFF	ON	OFF	ON	OFF
22	OFF	ON	ON	OFF	ON	OFF
23	ON	ON	ON	OFF	ON	OFF
24	OFF	OFF	OFF	ON	ON	OFF
25	ON	OFF	OFF	ON	ON	OFF
26	OFF	ON	OFF	ON	ON	OFF
27	ON	ON	OFF	ON	ON	OFF
28	OFF	OFF	ON	ON	ON	OFF
29	ON	OFF	ON	ON	ON	OFF
30	OFF	ON	ON	ON	ON	OFF
31	ON	ON	ON	ON	ON	OFF

Labeling the HLC

In situations where multiple HLCs are present, label each HLC faceplate with the card's shelf, slot, and daisy-chain address. You must know the card's address to log in to and administer it.

Section C: Performing the installation

In this section

Overview

Introduction

This section describes installing and cabling your HLC system, including discussions of

- the cables
- establishing an MMI terminal connection
- necessary procedures for
  - single-HLC systems
  - multiple-HLC systems.

Cable descriptions

The Meridian HomeOffice II system uses three unique cables and gives pin-out information for the cables that must be ordered separately, giving you the option of building these cables yourself.

MMI terminal connection scenarios

There are three possible methods of connecting an MMI terminal to a Meridian HomeOffice II Line Card for maintenance access.

Installing and cabling a single HLC

Use these procedures to install and cable single-HLC systems.

Installing and cabling multiple HLCs

Use these procedures to install and cable multiple HLCs in the following configurations:

- two-HLC systems
- more than two-HLC systems

Cable descriptions

Introduction

The Meridian HomeOffice II system uses three unique cables and gives pin-out information for the cables that must be ordered separately, giving you the option of building these cables yourself.

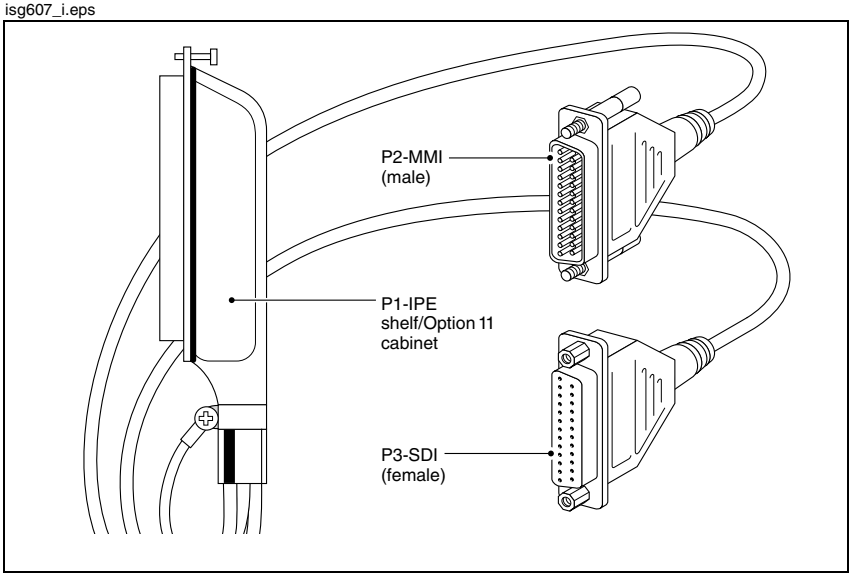
The cables unique to the Meridian HomeOffice II system are:

- Meridian HomeOffice II Line Card (HLC) Multi-I/O cable
  (included with each HomeOffice II Line Card)
- MMI Extension cable
  (ordered separately from Nortel Networks)
- SDI Extension cable
  (ordered separately from Nortel Networks)

HomeOffice II Line Card Multi-I/O cable

The illustration on the next page shows the HomeOffice II Line Card (HLC) Multi-I/O cable. P1 is a 25-Pair Telco connector that links the HLC to the IPE shelf or Option 11 cabinet. P2 is a male 25-pin connector that links the HLC to an MMI terminal for card maintenance. P3 is a female 25-pin connector that links the HLC to an SDI port on the switch for system maintenance. When installing multiple HLCs in a daisy chain, plug P2 into P3 of the card in one direction, and plug P3 into P2 of the card in the other direction. The plugs are labeled on their respective cables just below each connector.

isg607_i.eps



MMI extension cable

The male 25-pin connector (P2) of the Meridian HomeOffice II Line Card (HLC) Multi-I/O cable provides connectivity to the MMI. If the cable is not long enough for P2 to reach the terminal connection, you must use the MMI Extension cable (NTDR58AA) to complete this connection. You can obtain this cable from a Nortel Networks distributor, or you can construct the cable, with a maximum length of approximately 14.5 meters (48 feet), using the following pin-out table:

Signal name	Pin number
HLC Receive	2
HLC Transmit	3
RTS	4
CTS	5
DSR	6
Ground	7
DCD	8
DTR	20

Notes: The following factors may play a role in your individual situation:

1. If you purchase this cable from Nortel Networks, request product number NTDR58AA, order code A0748519.
2. If you use the NTDR58AA cable, you may need a gender changer to make this connection at the terminal.
3. If the cable connects to a PC, you may need a 25- to 9-pin adapter.
4. If you create your own cable, you can build it to suit your exact needs.

SDI extension cable

The female 25-pin connector (P3) of the HomeOffice II Line Card (HLC) Multi-I/O cable provides connectivity to the SDI port on the switch. If the Multi-I/O cable is not long enough for P3 to reach the SDI port on the switch, you must use the SDI Extension cable (NTDR59AA) to complete this connection. You can obtain this cable from a Nortel Networks distributor, or you can construct the cable, with a maximum length of approximately 14.5 meters (48 feet), using the following pin-out table:.

Signal name	Pin number
HLC Transmit	2
HLC Receive	3
RTS	4
CTS	5
DSR	6
Ground	7
DCD	8
DTR	20

Notes: The following factors may play a role in your individual situation:

1. If you purchase this cable from Nortel Networks, request product number NTDR59AA, order code A0748520.
2. If you use the NTDR59AA cable, you will need a null modem adapter for connectivity to an Option 11 system.
3. If you create your own cable, you can build it to suit your exact needs.

MMI terminal connection scenarios

Introduction

There are several methods of connecting an MMI terminal to a Meridian HomeOffice II Line Card for maintenance access. MMI terminal connection may be made via:

- dumb terminal (or PC COM port)
- terminal server on a LAN
- modem

Dumb terminal or PC COM port

In order to connect an HLC to a dumb terminal, such as a PC COM port, to provide a man-machine interface (MMI) terminal for the system, attach the male 25-pin connector of the Meridian HomeOffice II Line Card Multi-I\O cable (Plug 2) to the female 25-pin connector of the dumb terminal (or PC COM port). This connection may require a 25-pin to 9-pin adapter.

If the HLC Multi-I/O cable is too short, attach Plug 2 of the HLC Multi-I/O cable to the female 25-pin connector of the MMI extension cable (see page 47). Then attach the male 25-pin connector of the MMI extension cable to the female connector of the dumb terminal. This connection may also require a 25-pin to 9-pin adapter.

The maximum distance between the HLC and the dumb terminal is approximately 15 meters (50 feet). This allows approximately 0.5 meter (2 feet) for the HLC Multi-I/O cable and up to approximately 14.5 meters (48 feet) for the MMI extension cable.

Terminal server

To connect an HLC to a terminal server to provide a man-machine interface (MMI) terminal to the system, attach the male 25-pin connector of the Meridian HomeOffice II Line Card Multi-I\O cable (Plug 2) to a terminal server providing access to the corporate LAN. This connection requires a customer-supplied cable having the same pin-out as the MMI extension cable (see page 47), with a female 25-pin connector on one end, and the proper interface for connecting to the terminal server on the other end.

The maximum distance between the HLC and the terminal server is approximately 15 meters (50 feet). This allows approximately 0.5 meter (2 feet) for the HLC Multi-I/O cable and up to approximately 14.5 meters (48 feet) for the MMI extension cable.

Modem

To connect an HLC to a modem to provide a man-machine interface (MMI) terminal to the system, attach the male 25-pin connector of the Meridian HomeOffice II Line Card Multi-I\O cable, Plug 2, to the female 25-pin connector on the back of the modem.

To complete this connection, you need a customer-supplied cable having the same pin-out as the MMI extension cable (see page 47), a female 25-pin connector on one end, and the proper interface for connecting to the modem on the other end.

The maximum distance between the HLC and the modem is approximately 15 meters (50 feet). This allows approximately 0.5 meter (2 feet) for the HLC Multi-I/O cable and up to approximately 14.5 meters (48 feet) for the MMI extension cable.

Installing and cabling a single HLC

Introduction

Preparing the switch and actually placing the HLCs into their slots are identical procedures, no matter how many HLCs there are in your system. However, cabling is different for one-, two-, and more than two-HLC systems.

In all systems, the switch's SDI connection is provided by either a 25-pin male SDI port or a cable kit with a 25-pin male connection. Establish your system's SDI link by attaching P3 of the HomeOffice Line Card (HLC) Multi-I/O cable, or the female 25-pin connector of the SDI extension cable to the switch's SDI connection.

For details on the potential methods of connecting to an MMI terminal, see "MMI terminal connection scenarios" on page 49.

This topic explains how to install and cable one HLC in a single-card system. Refer to the illustration on page 27 for help in making the proper connections. If you are installing multiple HLCs, see "Installing and cabling multiple HLCs" on page 53.

To prepare for installation

1. Configure the slot into which the HLC is to be inserted as if it were to hold an extended digital line card (XDLC). Refer to the documentation specific to your switch for the exact procedures.
2. Set the DIP switches for the appropriate HLC configuration. See "Understanding the DIP switches" on page 33.

To install a single HLC

1 Insert the HLC into its card slot.

Ensure that the lower tips of the ejector tabs are positioned properly inside the front edges of the shelf.

2 Lock the HLC into position by pushing the handles toward one another until they touch the faceplate.

If you meet with inappropriate resistance, stop and reposition the card.

See “Self-test” on page 8 for the exact sequence of events that signify a successful HLC installation.

3 Verify that the switch recognizes the presence of the HLC.

Refer to the documentation specific to your switch for exact procedures.

To cable a single HLC

1 Plug the 25-Pair Telco connector, P1, of the HomeOffice II Line Card (HLC) Multi-I/O cable into the connector associated with the slot occupied by the HLC.

Note: This step applies to both IPE modules and Option 11 cabinets.

2 If cable lengths allow, plug the male 25-pin connector, P2, of the HLC Multi-I/O cable into the MMI terminal.

If the cable is too short, plug P2 into the female 25-pin connector of the MMI extension cable, and plug the other end of this cable (the male 25-pin connector) into the MMI terminal.

Note: Obtain the MMI extension cable from your Nortel Networks distributor by requesting item number A0748519, or you can build this cable using the pin-out configuration provided on page 47.

3 If cable lengths allow, plug the female 25-pin connector, P3, of the HLC Multi-I/O cable into the SDI port on the switch or into the cable kit provided with the switch.

If the cable is too short, plug P3 into the male 25-pin connector of the SDI extension cable, and plug the other end of this cable (the female 25-pin connector) into the SDI connection on the switch.

Note: Obtain the SDI extension cable from your Nortel Networks distributor by requesting item number A0748520, or you can build this cable using the pin-out table provided on page 48.

Installing and cabling multiple HLCs

Introduction

Preparing the switch and actually placing the HLCs into their slots are identical procedures, no matter how many HLCs there are in your system. However, cabling is different for one-, two-, and more than two-HLC systems.

In all systems, the switch's SDI connection is provided by either a 25-pin male SDI port or a cable kit with a 25-pin male connection. Establish your system's SDI link by attaching P3 of the HomeOffice Line Card (HLC) Multi-I/O cable, or the female 25-pin connector of the SDI extension cable to the switch's SDI connection.

For details on the potential methods of connecting to an MMI terminal, see "MMI terminal connection scenarios" on page 49.

This topic explains how to install and cable multiple HLCs into the same system. Refer to the illustration on page 29 for help in making the proper connections. If you are installing a single HLC, see "Installing and cabling a single HLC" on page 51.

To prepare for installation

1. Configure each slot into which an HLC is to be inserted as if it were to hold an extended digital line card (XDLC). Refer to the documentation specific to your switch for the exact procedures.
2. Set the DIP switches for the appropriate HLC configuration. See "Understanding the DIP switches" on page 33.
3. Verify that each HLC to be installed in the daisy chain has a unique address and that all HLCs have the same terminal settings by checking each HLC's DIP switch configurations. See "Setting the DIP switches for multiple HLCs" on page 37.

To install multiple HLCs

1 Insert each HLC into its card slot.

Ensure that the lower tips of the ejector tabs are positioned properly inside the front edges of the shelf.

2 Lock the HLC into position by pushing the handles toward one another until they touch the faceplate.

If you meet with inappropriate resistance, stop and reposition the card. DO NOT FORCE THE HANDLES INTO POSITION!

See “Self-test” on page 8 for the exact sequence of events that signify a successful HLC installation.

3 Verify that the switch recognizes the presence of the HLC.

Refer to the documentation specific to your switch for exact procedures.

To cable multiple HLCs

1 For each HLC in your system, plug the 25-Pair Telco connector, P1, of an HLC Multi-I/O cable into the shelf connector associated with that HLC’s card slot.

Note: This step applies to both IPE modules and Option 11 cabinets.

2 If cable lengths allow, plug the male 25-pin connector, P2, of the HLC Multi-I/O cable associated with the HLC in the lowest-numbered slot in the daisy chain into the MMI terminal. Go to step 3.

If the cable is too short, plug P2 into the female 25-pin connector of the MMI Extension cable and plug this cable’s male 25-pin connector into the MMI terminal.

Obtain the MMI Extension cable from your Nortel Networks distributor by requesting item number A0748519. Or, you can build the cable using the pin-out configuration provided on page 47.

Note: See “MMI terminal connection scenarios” on page 49 for optional methods of establishing the MMI connection for an HLC system.

3 Do the following:

IF you are cabling	THEN
only two HLCs together	go to step 4.

IF you are cabling	THEN
more than two HLCs together	plug P3 of this HLC's Multi-I/O cable into P2 of the HLC Multi-I/O cable for the next HLC in the daisy chain. If the next HLC is occupying the highest-numbered slot in the daisy chain, go to step 4. Otherwise, repeat this step until all intermediate HLCs are cabled together.

4 If you are cabling the HLC occupying the card slot with the highest number in the daisy chain, connect the female 25-pin connector, P3, of its Meridian HomeOffice II Line Card Multi-I/O cable to the SDI port on the switch.

If the cable is too short, plug P3 into the male 25-pin connector of the SDI extension cable.

Note: Obtain the SDI extension cable from your Nortel Networks distributor by requesting item number A0748520, or you may build the cable using the pin-out configuration provided on page 48.

To verify the installation

1 Log in to the HLC using the procedure for logging in to daisy-chained installations. See "LOGIN (L)" on page 91.

Result: A successful installation produces a system prompt in the following format: "HLCXX," where "XX" is the daisy-chain address of the active card.

If the proper daisy-chain address does not appear in the system prompt, log out of the system and check the card for proper DIP switch 1 (SW1) address configuration. Pay close attention to the settings for positions 7 and 8 (MMI end and SDI end).

If the proper daisy-chain address still does not appear in the system prompt, log out of the system and check for proper cabling connections.

2 Repeat step 1 for every HLC in the daisy chain.

If there are cards for which the proper daisy-chain address did not appear after confirming proper daisy-chain address settings and cabling connections, contact technical support.

Chapter 3

Software configuration

In this chapter:

Overview

Introduction

This chapter contains background information and procedures used to correctly configure HomeOffice II signaling paths, with cross-references to the MMI commands used in this process.

Configuring a slot

For the switch to communicate properly with the Meridian HomeOffice II Line Card (HLC), it must recognize each HLC as an extended digital line card (XDLC). This requires that each card slot occupied by an HLC is configured at the switch as an XDLC card slot.

Trunk configuration

Trunk configuration the following elements of your Meridian HomeOffice II system:

- ISDN PRI trunks
- ISDN BRI lines

Voice and data port configuration

This section explains the function of the voice and data ports in a Meridian HomeOffice II system and how to configure these ports for your HomeOffice II Line Card (HLC).

HomeOffice II Line Card configuration

This section explains how to configure your Meridian HomeOffice II Line Card to serve up to 16 telecommuters. and includes the following sections:

- mandatory HLC configuration
- optional HLC configuration

Configuring a slot

Introduction

For the switch to communicate properly with the Meridian HomeOffice II Line Card (HLC), it must recognize each HLC as an extended digital line card (XDLC). This requires that each card slot occupied by an HLC must be configured at the switch as an XDLC card slot.

Note: You can configure a slot either before or after the HLCs are inserted into the switch.

To configure an HLC slot

Slot configuration requires configuring the switch via the SDI connection. Refer to the documentation for the particular switch in which the HLC will reside to complete slot configuration.

1 Log in to the system. See “LOGIN (L)” on page 91.

Result: The MMI presents you with the logged-on command prompt (see “Command prompts” on page 91.)

2 Enter the HOST command to access the SDI connection. See “HOST (HO)” on page 94.

Result: After you complete the sequence outlined on page 94, the switch presents you with a "CONNECTED" message.

3 Follow the instructions in the switch’s documentation for configuring a card slot as an XDLC slot.

4 Repeat step 3 for each slot that holds or will hold an HLC.

5 Print the switch’s slot configuration according to procedures outlined in the switch’s documentation to verify that the switch recognizes each HLC slot as an XDLC slot.

6 Log out of the switch’s SDI connection by entering the HOST logout command, **@@@**, once correct configuration is confirmed.

Section A: Trunk configuration

In this section

Overview

Introduction

Trunk configuration involves arranging proper ISDN service between the local site's Meridian 1 or SL-100 switch and the public switched telephone network (PSTN). You must tell your service provider the configuration parameters that should be configured on your system and the type of ISDN connection you need.

- Primary Rate Interface (PRI)
- Basic Rate Interface (BRI)

  Note: ISDN BRI trunk access is not supported in North America.

Host trunk configuration

Host trunk configuration for the Meridian HomeOffice II system requires telling your service provider the type of ISDN connection (PRI or BRI) you need and what parameters to configure. In some situations, under strict limitations, a T1/E1 trunk may be used.

ISDN BRI configuration

ISDN BRI configuration, whether for host trunks or remote site connections, involves identifying the ISDN telephone numbers and the SPIDs assigned to each involved site. Your service provider will require a description of the ISDN service features (such as caller ID) that you want configured on your system.

Host trunk configuration

Introduction

Host trunk configuration for the Meridian HomeOffice II system requires telling your service provider the type of ISDN connection (PRI or BRI) you need and what parameters to configure. In some situations, under strict limitations, a T1/E1 trunk may be used.

Recommended trunking option

ISDN PRI is the recommended trunking method for a Meridian HomeOffice II system.

ISDN PRI configuration

ISDN PRI trunks at the host site are used to transport calls between the host site and the public switched telephone network (PSTN). To ensure full functionality for all remote sites served by each HLC, verify with your service provider that the following elements are configured on each trunk:

- two-way voice and two-way data capability
- Caller ID (allows the security level for the HLC to be Level 2 - Caller ID)
- end-to-end digital circuitry, no analog segments (check with both long-distance and local service providers)
- non-blocking configuration (ensure that configuration will not block HomeOffice II traffic)

T1/E1 DTI configuration

When the digital trunks used by the Meridian HomeOffice II system are T1 or E1, certain characteristics *must* be included for proper functionality of the system. Those features are included in the following list:

- The connection must be digital end-to-end with no analog segments.

- The T1/E1 DTI connections from your service provider must be provisioned as two-way DATA trunks only.
- The corporate PBX also must be configured with two-way DATA trunks.
- The framing, encoding, signaling, and data rate on the PBX and CO must be equivalent.
- The PBX configuration record must have the MODE set as TRK, with trunk route settings as follows:
  - ISDN to NO
  - DSEL to DTA
  - NDEC/FEDC to EITHER

  Note: IBNT2 is an example of a DMS trunk with data capability.

ISDN BRI configuration

Some locations may require ISDN BRI service from the Meridian 1 or SL-100 switch (the host trunk connection) instead of PRI for geographical reasons. ISDN BRI configuration is identical to ISDN PRI configuration so, if your host trunk configuration must be BRI, the same configuration elements are needed to ensure full functionality for all remote sites served. Verify this with your service provider.

Note: In North America, ISDN BRI can only be ordered as a subscriber line and, therefore, cannot be used as a trunking option.

ISDN BRI line requirements at the corporate office

Introduction

You may need to also arrange for ISDN BRI service from your corporate PBX to the desks of corporate employees. The following examples illustrate why this may be required:

- Data network administrators want to test a HomeOffice Router's configuration before giving it to a telecommuter.
- Data network administrators want to use the HomeOffice Router to administer or support a Router at a telecommuter's home office.
- ACD agents are connected to a PBX that does not provide ACD capability

  For this scenario, the ISDN BRI line connects the ACD agents to the corporate PBX where the call center is located.

Configuration requirements

Ensure that the ISDN BRI service to the data network administrator's desk is configured with the following items:

- two B-channels providing both voice and data capability
- Both B-channels must be Circuit Switched Voice and Data.
- two directory numbers
- Caller Line Identification
- two Service Profile Identifiers (SPIDs)

Note: If SPIDs are not provided, then you need Multiple Subscriber Numbering (MSN).

More information

For more details about ISDN BRI provisioning, refer to the *Meridian HomeOffice II User Guide* (NTP 555-8321-205).

For a sample configuration on a Meridian 1 PBX, see “Configuration example—North America” below or “Configuration example—Europe” on page 70. For instructions on completing the configuration on your Meridian 1 or SL-100 PBX, refer to your switch documentation.

Configuration example—North America

The following example shows an ISDN BRI line card configuration on an Option 11C PBX using the following:

- Software Release 23 Issue 35
- Enterprise Business Feature Set

Prompts may change depending on software version and packages (feature set) installed.

System limits

Ensure enough DSLs and TNs are available. You can check this using LD 22.

```
>ld 22
REQ  slt
TNS    1000  LEFT  955   USED  45
AGNT   1000  LEFT  1000  USED  0
ACDN   300   LEFT  300   USED  0
AST    100   LEFT  100   USED  0
BRI DSL100LEFT97USED3
LTID   100   LEFT  100   USED  0
DCH    64    LEFT  61    USED  3
AML    16    LEFT  16    USED  0
RAN CON12LEFT12USED0
RAN RTE9999LEFT9999USED0
MUS CON100LEFT100USED0
MOPT   00000
```

BRI configuration

```
>ld 15              //Customer Data
REQ    chg
TYPE   cdb
CUST   0
AML_DATA
ANI_DATA
ATT_DATA
AWU_DATA
CCS_DATA
CDR_DATA
FCR_DATA
FFC_DATA
FTR_DATA
HSP_DATA
ICP_DATA
IMS_DATA
INT_DATA
LDN_DATA
MPO_DATA
NET_DATA
 OPT
 AC2
 FNP
 ISDN yes           //ISDN BRI
    PNI
    PINX_DN
    MMSN
    MBG
    BSGC
    PFX1
    PFX2
    HLOC
    LSC
    RCNT
    PSTN
    TNDM
    PCMC
    SATD
    OCLI
 TIDM
 DASC
```

```
 ROPT
 DITI
 TRNX
 EXTT
 FTOP
 APAD
 VNR
 NIT
 NAS
 NAS
 FOPT
 CNDN
 CNAT
 PCAT
 CNIP
 DMWM
 MWNS
NIT_DATA
OAS_DATA
RDR_DATA
ROA_DATA
TIM_DATA
TST_DATA

>LD 27              //LAPD
REQ    new
TYPE   lapd
PGPN   0            //Used in DSL below
LAPD   yes
T200
T203
N200
N201
K
N2X4
PGPN

>LD 27              //MISP
REQ    new
TYPE   misp
LOOP   1            //Card Number
APPL   bril
APPL
```

```
DPSD

>LD 27              //UILC
REQ    new
TYPE   card
TN     2            //Card Number
MISP   1
CTYP   uilc

>LD 27              //UILC:DSL
REQ    new
TYPE   dsl
DSL    2 0          //Slot, unit
APPL   bril
DES    mho1
CUST   0
B1CT   vce dta
B2CT   vce dta
LDN
MTEI
MCAL
MTSP
LAPD   0            //PGPN entry in LAPD above
PRID   6            //NI-1 ISDN
PDCA
FDN
EFD
HUNT
EHT
TGAR   0
NCOS
SGRP
CLS

>LD 27              //UILC: TSP
REQ    new
TYPE   tsp
DSL    2 0
USID   1
SPID   0012000      //BChan1
SPID   0012001      //BChan2
SPID
```

```
FEATID
DN      2000        //BChan1
CT      vce dta     //Voice & Data
MCAL
CLIP
PRES
COLP
TRANS
FEAT
SSRV_NI
DN      2001        //BChan2
CT      vce dta
MCAL
CLIP
PRES
COLP
TRANS
FEAT
SSRV_NI
DN
DFDN    2000        //Used in HLC remote config
```

Configuration example—Europe

```
>LD 27              //SILC
REQ     new
TYPE    card
TN      3           //Card Number
MISP    1
CTYP    silc


>LD 27              //SILC: DSL
REQ     NEW
TYPE    DSL
DSL     3 0
APPL    BRIL
DES     HOII
CUST    0
MODE    NTAS
B1CT    VCE DTA     //Voice and Data
B2CT    VCE DTA
```

```
LDN
MTEI
MCAL
MTSP
LAPD    0
PRID    2           //Euro ISDN(ETSI)
PDCA
FDN
EFD
HUNT
EHT
TGAR    0
NCOS
SCPW
SGRP
CAC
CLS     UNR

>LD 27              //SILC: TSP
REQ     NEW
TYPE    TSP
DSL     3 0
USID    0
SUPL_SVC
DN      3000        //First ISDN no.
CT      VCE DTA
MCAL
CLIP
PRES
COLP
TRANS
FEAT
SSRV_ETSI
DN      3001        //Second ISDN no.
CT      VCE DTA
MCAL
CLIP
PRES
COLP
TRANS
FEAT
SSRV_ETSI
```

```
DN
DFDN    3000        //Used in HLC remote config
```

Section B: Voice and data port configuration

In this section

Overview

Introduction

This section explains the relationship of the voice and data ports in a Meridian HomeOffice II system and how to configure these ports for yourHomeOffice II Line Card (HLC).

Understanding port relationships

There are three main types of ports in the set up and configuration of a fully functioning Meridian HomeOffice II Line Card. These types of ports are:

- voice
- data
- HLC

Configuring voice and data ports

For Meridian HomeOffice II to function properly, you must configure voice and data ports for each channel on the HLC. This is a switch configuration process. Information on the following topics will aid your completion of the configuration process:

- port mapping
- how the voice and data ports work together
- accessing the switch via the HOST (H) command

Understanding port relationships

Introduction

This topic describes the relationship between the main types of ports of a fully functioning Meridian HomeOffice II Line Card:

- voice
- data
- HLC

Voice and data ports

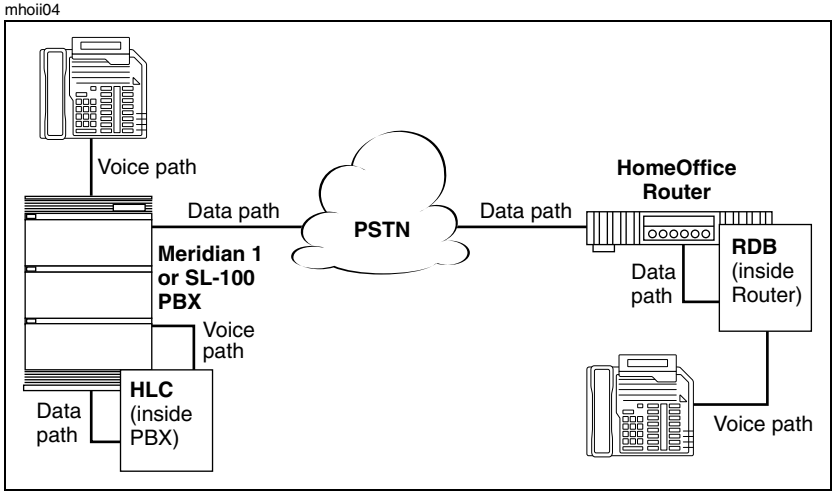
The voice ports in a Meridian HomeOffice II system provide the communication paths at both the local and remote sites.

At the local site, communication between the switch and the HomeOffice II Line Card (HLC) travels a path provided by the voice port. At the remote site, communication between the Remote Daughterboard (RDB) in the HomeOffice Router and the Meridian digital telephone also travels a path provided by the voice port.

The data port in a Meridian HomeOffice II system provides the communication path between the HLC at the local site and the RDB at the remote site.

Communication paths in a Meridian HomeOffice II system

The illustration on the next page shows the functional relationships of voice and data communication paths in a HomeOffice II system.



HLC

The HLC port is actually the HLC channel mapped to specific voice and data ports (see “Configuring voice and data ports” on page 77.) The HLC port refers to the specific voice-and-data port pairing through which the assigned user (or in multiple-user or ACD environments, the logged-in user) accesses the corporate switch.

Configuring voice and data ports

Introduction

This topic discusses essential voice and data port configuration. For Meridian HomeOffice II to function properly, you must configure voice and data ports for each channel on the HLC. This configuration takes place at the switch.

Port mapping

The following table shows the correct mapping between voice and data ports and HLC channels on both Meridian 1 and SL-100 switches.

	Meridian 1		SL-100	
HLC channel	Voice port	Data port	Voice port	Data port
0	0	16	0	1
1	1	17	2	3
2	2	18	4	5
3	3	19	6	7
4	4	20	8	9
5	5	21	10	11
6	6	22	12	13
7	7	23	14	15
8	8	24	16	17
9	9	25	18	19
10	10	26	20	21
11	11	27	22	23
12	12	28	24	25

HLC channel	Meridian 1		SL-100	
	Voice port	Data port	Voice port	Data port
13	13	29	26	27
14	14	30	28	29
15	15	31	30	31

As shown in the preceding table, the first channel configured for a Meridian 1 switch is channel 0. With channel 0, the corresponding voice port is port 0 and the corresponding data port is port 16.

The first channel on an SL-100 switch is also channel 0 and the corresponding voice port is port 0; with channel 0 of an SL-100 switch, the corresponding data port is port 1.

Voice port configuration

On a Meridian 1 switch, configure the voice port as a Meridian 3820 or 2616CT digital telephone with all the features (such as voice mail, call transfer, and so on) that are configured on the telecommuter's local site telephone.

On an SL-100 switch, refer to switch documentation for the actual parameter if you are using a cordless telephone.

Data port configuration

Configure the data port as an MCA data adapter with the first line able to make and receive data calls. To configure the data port as an MCA adapter, make the following settings in LD 11:

Meridian 1 software release	Setting
15 - 17	CLS prompt = DTA
18 and above	DTA0 prompt = MCA

For further details, refer to the section on LD 11 in the *Meridian 1 X11 I/O Guide* (NTP 553-3001-400).

How the voice and data ports work together

If a phone call is placed to voice port 0 on a completed system, the HLC places a call to the RDB over the associated data port. (Confirm that the data port is configured to place calls.) If the HLC status is then queried from the SDI port, HLC ports 0 and 16 on a Meridian 1 system (ports 0 and 1 on an SL-100 system) appear busy.

Online/Local Calling key

For the voice and data ports on the Meridian HomeOffice II Line Card to function together, you must properly configure the Online/Local Calling (Online/LC) key.

The Online/LC key toggles the Meridian digital telephone on and off the ISDN connection at the corporate switch. This key turns the Meridian HomeOffice II system on and off, allowing telecommuters' telephones in the local calling mode to operate as normal telephones in the public switched telephone network (PSTN).

Proper operation requires a feature key to be reserved for the Online/LC function at the switch. To do this, simply leave the key blank. Any feature programmed on this key at the switch is overridden and lost when the key is programmed as the Online/LC key via Local Manager at the remote site.

Refer to documentation for your specific switch for details on the proper procedure for configuration.

To configure voice and data ports

Because this is a switch configuration procedure, the exact procedures will be contained in documentation for your particular switch. The first step in port configuration on any switch, however, is accessing the Host SDI connection.

Note: The HLCs should be in their card slots while completing voice and data port configuration.

1 If you are not already logged in to the system, log in to the MMI. See “LOGIN (L)” on page 91.

Result: The HLC command prompt appears as shown on page 91.

2 Enter the HOST command to access the SDI connection. See “HOST (HO)” on page 94.

Result: After you complete the sequence outlined on page 94, the switch presents you with a "CONNECTED" message.

3 Complete voice and data port configuration as per the documentation for your particular switch.

4 Log out of the switch’s SDI connection by entering the HOST logout command, **@@@**, once correct configuration is confirmed.

Section C: HomeOffice II Line Card configuration

In this section

Overview

Introduction

This section explains how to configure your Meridian HomeOffice II Line Card to serve up to 16 telecommuters.

Mandatory HLC configuration

Mandatory HomeOffice II Line Card (HLC) configuration involves those features on the HLC that *must* be configured for basic Meridian HomeOffice II functionality. These features include:

- a remote number for each channel
- a voice port and a data port for each channel
- a security level for the HLC

Note: If you choose security level 3, you must configure a security identifier for each channel.

Optional HLC configuration

Optional HomeOffice II Line Card (HLC) configuration involves those features that enable complete Meridian HomeOffice II functionality but are not required for basic operation of the HLC. These features include:

- HLC-wide configuration settings
  - autoclock
  - site name
  - system password (HOST password not configurable)
- telephone characteristics for each channel
- echo canceling for each channel
- ISDN-access schedules for each channel
- time maintained by the HLC
- date maintained by the HLC

Mandatory HLC configuration

Introduction

This topic identifies the settings that *must* be configured for proper functioning of Meridian HomeOffice II at a particular remote site.

Voice and data ports

You must assign voice and data ports to each channel being configured on the HLC before the Meridian HomeOffice II can function.

See “Configuring voice and data ports” on page 77.

Remote number

You must configure the ISDN number to which the telecommuter’s traffic from the corporate office is to be forwarded. (This is the ISDN number of the telecommuter’s home office.)

See “SET REMOTE (S R)” on page 131.

Security level and security identifier

You must set determine what level of call security that you wish to maintain for the entire HLC. If you choose the maximum level of security, Level 3 (the default security level), you must set a Security Identifier for each telecommuter served by the HLC.

See “SET CONFIG (S C)” on page 114, to change the card’s security level.

See “SET IDENTIFIER (S I)” on page 122, for information on the Security Identifier.

Optional HLC configuration

Introduction

This topic identifies optional features on the Meridian HomeOffice II Line Card. Configuring these features enables complete Meridian HomeOffice II functionality.

Card-wide configuration settings using SET CONFIG (S C)

See “SET CONFIG (S C)” on page 114.

Security level (1, 2, or 3)

This setting controls variable access to the corporate switch on a per-card basis

Autoclock

This setting synchronizes the clock on the HLC to the clock on the corporate switch or enables the HLC’s clock to keep its time separately.

Site name

This setting names or renames the site(s) served by the HLC being configured.

Password

It redefines the password required for gaining access to the HLC.

Note: The HOST password required for gaining access to the switch via the SDI connection is not configurable.

Channel-specific configuration settings using various commands

SET PHONE (S P)

This command allows you to establish certain characteristics of the HomeOffice II telephone at the remote site. These characteristics are:

- cordless or corded
- indicator update enabled or disabled

See “SET PHONE (S P)” on page 128.

SET ECHO (S E)

This command allows you to individually enable or disable echo canceling for each HomeOffice II channel.

See “SET ECHO (S E)” on page 120.

SET ONOFFTABLE (S O)

This command establishes the times when users receive access to their channel’s ISDN connection from the HLC.

See “SET ONOFFTABLE (S O)” on page 124.

SET TIME (S T)

This command establishes the time kept on the HLC’s clock. This feature may only be used when Autoclock has been disabled through the `SET CONFIG (S C)` command, as discussed on page 84.

See “SET TIME (S T)” on page 134.

SET DATE (S D)

This command establishes the date kept by the HLC.

See “SET DATE (S D)” on page 118.

Capturing the information

Preinstallation planning (see “Planning for the telecommuting needs of the company” on page 23) recommends recording this information on the following forms:

- Line Card Ports Configuration — Meridian 1
- Line Card Ports Configuration — SL-100

You can find each of these forms in the “Deployment Planning” chapter of the *Meridian HomeOffice II Planning Guide* (NTP 555-8321-101).

Chapter 4

Maintenance

In this chapter

Overview

Introduction

This chapter describes the processes for configuring and maintaining Meridian HomeOffice II software for individual users' remote sites (home offices). This chapter contains the MMI commands used for configuration, with in-depth descriptions and samples of the onscreen displays produced by each variation of the commands.

You can invoke each command by typing the entire command or by typing to the first unique letter in the command. (For example, L for LOGIN, HO for HOST or HE for HELP), and pressing Enter. For two-word commands, leave one space between the letters corresponding to each word (such as, S D for SET DATE).

Single-variation commands

The following commands have only one variation:

LOGIN (L)

The LOGIN (L) command enables you to access an HLC or the switch to perform maintenance functions.

HELP (HE or ?) menu

The HELP (HE or ?) menulists all the MMI commands that are available for HLC maintenance.

HOST (HO)

The HOST (HO)command enables you access the SDI connection to perform switch maintenance.

COPY ONOFFTABLE (C O)

The COPY ONOFFTABLE (C O)command enables you to enter Online/Offline Table settings for multiple users or channels simultaneously.

QUIT (Q)

The QUIT (Q) command ends your MMI session.

Multiple-variation commands

The following commands have several variations:

DISPLAY (D) commands

The DISPLAY (D) commands display the HLC's configuration settings on your MMI screen.

ERASE (E) commands

The ERASE (E) commands enable you to remove the HLC's configuration settings.

OFFLINE (O) commands

OFFLINE (O) commands enable you to manage ISDN costs by disconnecting users from the PBX.

PROVISION (P) commands

PROVISION (P) commands enable you to save and erase HLC configuration settings.

SET (S) commands

SET (S) commands enable you to establish configuration settings on a card-wide or user-specific basis, depending on the command variation.

TEST (T) menu

The TEST (T) menu presents test commands that enable you to verify the communication paths of the Meridian HomeOffice II system.

UPLOAD (U) command

UPLOAD (U) command enables you to update HLC firmware as upgrades become available.

Repair and replacement

Important notice

The following points are critical for dealing with card failure:

1. The Meridian HomeOffice II Line Card (HLC) is field-*replaceable* only. *The HLC must NOT be serviced in the field.*
2. In the event of failure, you must return the HLC to Nortel Networks for repair or disposal.

DANGER

Risk of personal injury

The HLC contains a lithium battery and there is a danger of explosion if the battery is incorrectly replaced. Nortel Networks will recycle or dispose of the battery.

LOGIN (L)

Introduction

The LOGIN (L) command enables you to access an HLC or the switch to perform maintenance functions.

Command prompts

- When you are not logged in, the MMI prompt is HLC>.
- When you are logged in to a one-card system, the MMI prompt is HLC::>.
- When you are logged in to a multi-card daisy-chained system, the MMI prompt is HLC<XX>, where <XX> is the address of the card into which you are logged.

To log in to an HLC

1 For one-card installations, log in by typing LOGIN or L and pressing Enter.

For daisy-chained installations, log in by typing LOGIN <XX> or L <XX>, where <XX> is the one- or two-digit HLC address, and pressing Enter. See “Installing multiple-HLCs” on page 28.

The LOGIN command and the address must be separated by a space. For example, to log in to an HLC with an address of 03, type the command LOGIN 03, L 03, LOGIN 3, or L 3 and press Enter.

Result: The MMI prompts you for the system password.

2 Type the password and press Enter. The default password is *HLCLINK.*

a. You can change the password later through the SET CONFIG command. See “SET CONFIG (S C)” on page 114.

b. The password is case-sensitive.

c. The MMI gives you three chances to enter the correct password before returning you to the command prompt.

Result: When you enter the correct password, the MMI presents you with the logged-on command prompt. (See “Command prompts” on page 91.) The on-screen display is similar to the following figure.

```
Wed, 05-26-1999  0:56:03
HLC:>l
Enter Password *******

Wed, 05-26-1999  0:56:11
HLC::>
```

The command prompt verifies a successful login. Command prompts are discussed on page 91.

Note: You will be logged out after any fifteen-minute period of inactivity.

HELP (HE or ?) menu

Introduction

The HLC MMI provides a help menu, which lists the various MMI commands available for HLC maintenance and the use of each.

To view the HLC Help menu

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

Result: The MMI presents you with the logged-on command prompt (see “Command prompts” on page 91.)

2 At the command prompt, type HELP, HE, or ?, and press Enter.

Result: The Help menu appears. It is similar to the following figure:

```
Wed, 06-07-1999  1:59:28
HLC::>?

HELP      USAGE: HElp | ?
HOST      USAGE: HOst (@@@ to terminate)
DISPLAY   USAGE: Display [Config | Remote | Phone | Echo | Onofftable | Status]
SET       USAGE: Set [Config | Remote | Id | Phone | Echo]
                 or Set [Onofftable | Time | Date]
COPY      USAGE: Copy [Onofftable]
ERASE     USAGE: Erase [Remote | Onofftable]
OFFLINE   USAGE: Offline [Normal|Force]
PROVISION USAGE: Provision [Save | Revert | Erase]
TEST      USAGE: Test
UPLOAD    USAGE: Upload
QUIT      USAGE: Quit

Notation Used:
CAPS - Required Letters    [] - Optional    | - Either/Or

Wed, 06-07-1999  1:59:32
HLC::>
```

HOST (HO)

Introduction

The HOST or HO command allows you to access the switch's maintenance port, via the serial data interface (SDI) port, for switch configuration. The HLC at the opposite end of the daisy chain from the MMI connection must be connected to the switch's maintenance port for HOST access. (In one-HLC systems, this is the same HLC.) This HLC is at the SDI end. See page 28 for further explanation of the SDI end.

Log out of the switch when you are finished. Do not leave the connection open indefinitely. Each time you wish to perform system maintenance, log in to the SDI connection again.

To access the switch's maintenance terminal

1. If you are not already logged in, log in to the MMI.

   See "LOGIN (L)" on page 91.

   Result: The MMI presents you with the `logged-on` command prompt, (see "Command prompts" on page 91.)

2. At the command prompt, type HOST or HO and press Enter.

   Result: The MMI prompts you for a password.

   Note: The non-configurable password is "HOST."

3. You must type the case-sensitive password in all uppercase letters and press Enter.

   Result: Five asterisks, one for each letter of the password and one for the Enter keystroke, and the word "CONNECTED" appear, similar to the following figure:

```
Wed, 05-26-1999  17:17:34
HLC::>HO
Enter Password *****
```

4. Proceed with switch maintenance as normal.

5 To exit the switch and return to the HLC MMI, type the host logout command, @@@ .

Result: The MMI command prompt appears on the screen.

Note: The HLC automatically terminates your MMI session after any 15-minute period of inactivity, but does not log out of the switch. If the HLC MMI logs out before you log out of the switch's maintenance terminal, you must do the following to terminate the connection to the switch:

a. Log back in to the HLC MMI.

b. Retype the HOST or HO command and press Enter.

c. Retype the HOST password (HOST) and press Enter.

d. Log out of the switch.

e. Type the HOST logout command, @@@.

COPY ONOFFTABLE (C O)

Introduction

The COPY ONOFFTABLE or C O command allows you to expedite Online/ Offline Table configuration when multiple channels or multiple days (on the same or different channels) have the same schedule.

Note: The Online/Offline Table takes users offline on the specified day at the specified time. It does not prevent users from accessing the Meridian HomeOffice II system.

The COPY ONOFFTABLE or C O command gives you the ability to set only a few table entries and copy them if the same schedule applies to multiple days or channels. The HLC provides the following two ways to copy the table.

- You can copy all seven days of a specific channel's schedule to any or all other channels' schedules.
- You can copy a single day of a specific channel's schedule to any or all other days of that same channel's schedule.

To copy Online/Offline table settings to multiple channels or multiple days

1 If you are not already logged in, log in to the MMI.

See "LOGIN (L)" on page 91.

2 At the command prompt, type COPY ONOFFTABLE or C O and press Enter.

Result: The MMI prompts you for the information you wish to copy. The on-screen display is similar to the following figure:

```
Thu, 05-27-1999  7:48:53
HLC::>c o
Enter  <Channel> <chan,chan,chan>
Or     <Channel> <Day> <day,day,day>
```

3 Copy the information you wish to duplicate using one of the following two formats:

IF you want to copy	THEN
one entire channel's settings to another channel	type ■ the channel from which the settings are to be copied ■ the channel(s) to which the settings are to be copied (If multiple channels are to receive the settings, each channel is separated by a comma) **Example:** `6 7,8` and press Enter. **Result:** A message similar to the following appears: `Channel 6: Copied to Channel 7 8`
one day's settings to another day	enter ■ the channel number ■ the first three letters of the day from which the settings are to be copied ■ the first three letters of each day to which the settings are to be copied, separated by a comma **Example:** `6 Mon Tue,Wed,Thu,Fri` and press Enter. **Result:** A message similar to the following appears: `Channel 6 Mon: Copied to Tue Wed Thu Fri`
more settings	return to Step 2.

Note: Information configured through the previous steps has not yet been saved and is currently stored only in RAM. If the board were to be removed or the power turned off without saving, the information would be lost.

4 If you wish to save the information, type PROVISION SAVE or P S and press Enter. See "PROVISION SAVE (P S)" on page 149.

QUIT (Q)

Introduction

Use the QUIT, or Q, command to end an HLC MMI session.

To end your HLC MMI session:

At the command prompt, type QUIT or Q and press Enter.

Result: The MMI logs out and presents you with the system command prompt. The on-screen display is similar to the following figure:

```
Fri, 05-29-98  19:49:35
HLC::>q
User logout

Fri, 05-29-98  19:49:42
HLC>
```

Note: You are automatically logged out of the MMI after any 15-minute period of inactivity.

Section A: DISPLAY (D) commands

In this section

Overview

Introduction

This topic describes the MMI's DISPLAY commands. Use the DISPLAY commands to display configuration settings and activity information for the HLC into which you are logged. For example, the values displayed by the DISPLAY REMOTE command are configured using the SET REMOTE command. (See "SET (S) commands" on page 111.)

DISPLAY CONFIG (D C)

The DISPLAY CONFIG or D C command displays the configuration settings of the HLC.

DISPLAY ECHO (D E)

The DISPLAY ECHO or D E command displays the echo canceling settings of all channels on the HLC.

DISPLAY ONOFFTABLE (D O)

The DISPLAY ONOFFTABLE or D O command displays the Online/Offline table, which is the schedule of times during the week at which the home office site using the specified channel has primary access to that channel's ISDN connection.

DISPLAY PHONE (D P)

The DISPLAY PHONE command displays the following characteristics of the telephones served by the HLC:

- phone type: cordless or corded
- indicator update status: enabled or disabled

DISPLAY REMOTE (D R)

The DISPLAY REMOTE or D R command displays the remote numbers of all home offices served by the HLC.

DISPLAY STATUS (D S)

The DISPLAY STATUS OR D S command displays the status of each user configured to the HLC.

DISPLAY CONFIG (D C)

Introduction

The DISPLAY CONFIG or D C command displays the configuration settings of the active HLC. Configuration includes the following settings:

- the card's security level
- the card's autoclock setting
- the site name (card name)

The HLC's serial number, firmware version, and DIP switch settings also appear, although this information is not entered with the SET command.

Note: All home office sites served by an HLC have the same configuration settings.

To display the HLC's configuration settings

1 If you are not already logged in, log in to the MMI.

See "LOGIN (L)" on page 91.

Result: The MMI presents you with the logged-on command prompt. (See "Command prompts" on page 91.)

2 At the command prompt, type DISPLAY CONFIG or D C and press Enter.

Result: The MMI displays the configuration settings for the HLC. The on-screen display is similar to the following figure:

```
Wed, 05-26-1999  16:08:07
HLC::>d c
HLC S/N: NNTM183vedat 04
Firmware Version: D1.15d1 FLASH
16 Port Echo Cancellation
Init: Sun, 01-30-2000  5:03:49

Slot Position: 6
Site Name:
Security Level for Card: 1
Autoclock is Disabled

Dip Switch 1 (SW1) Settings
  S6..S1: OFF OFF OFF OFF OFF OFF - Daisy Chain Address 00
  S7:     OFF - MMI End
  S8:     OFF - SDI End

Dip Switch 2 (SW2) Settings
  S1:     OFF - 9600 Baud
  S2:     OFF - N81
  S3:     OFF - Allow Flash Execution
  S4:     OFF - Meridian 1 Switch
  S5..S8: OFF OFF OFF OFF - Unused

Wed, 05-26-1999  16:08:11
HLC::>
```

DISPLAY ECHO (D E)

Introduction

The DISPLAY ECHO or D E command displays the echo canceling configuration that you have set for the HLC. You can enable or disable echo canceling for all 16 HLC channels. Echo canceling has a tail length of 64 milliseconds (ms). See “SET ECHO (S E)” on page 120.

To display the echo canceling settings of each channel

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

Result: The MMI presents you with the logged-on command prompt. (See “Command prompts” on page 91.)

2 At the command prompt, type DISPLAY ECHO or D E and press Enter.

Result: The MMI displays the HLC’s echo canceling settings. The on-screen display is similar to the following figure:

```
Wed, 05-26-1999  16:28:52
HLC::>d e
Echo Cancellation
Channel  0: Active (64ms)
Channel  1: Active (64ms)
Channel  2: Active (64ms)
Channel  3: Active (64ms)
Channel  4: Active (64ms)
Channel  5: Active (64ms)
Channel  6: Active (64ms)
Channel  7: Active (64ms)
Channel  8: Active (64ms)
Channel  9: Active (64ms)
Channel 10: Active (64ms)
Channel 11: Active (64ms)
Channel 12: Active (64ms)
Channel 13: Active (64ms)
Channel 14: Active (64ms)
Channel 15: Active (64ms)

Wed, 05-26-1999  16:32:53
HLC::>
```

DISPLAY ONOFFTABLE (D O)

Introduction

The DISPLAY ONOFFTABLE or D O command displays the schedule of times during the week at which the home office site using the specified channel has primary access to that channel's ISDN connection. The Online/Offline table does not distinguish between agents. Its settings apply channel-wide. For further details on how the Online/Offline table works, see "SET ONOFFTABLE (S O)" on page 124.

Note: The Online/Offline table takes users online or offline on the specified day at the specified time. It does not prevent users from accessing the Meridian HomeOffice II system.

To display the Online/Offline table

1. If you are not already logged in, log in to the MMI.

   See "LOGIN (L)" on page 91.

   Result: The MMI presents you with the logged-on command prompt. (See "Command prompts" on page 91.)

2. At the command prompt, type DISPLAY ONOFFTABLE or D O and press Enter.

   Result: The MMI prompts you for the channel whose Online/Offline table you want to display. The on-screen display is similar to the following figure:

```
Wed, 05-26-1999  16:28:42
HLC::>di o
Enter  <Channel>:
```

3 Type the number of the channel whose Online/Offline Table you would like to see and press Enter.

Result: The MMI displays the Online/Offline table of the channel you requested, similar to the following figure:

```
Wed, 05-26-1999  16:28:42
HLC::>d o
Enter  <Channel>:  6
Online/Offline Table for Channel 6
Mon, Entry 1, Online  at 08:00
Mon, Entry 2, Online  at 08:30
Mon, Entry 3, Offline at 12:00
Mon, Entry 4, Online  at 13:00
Mon, Entry 5, Offline at 17:00

Tue, Entry 1, Online  at 08:00
Tue, Entry 2, Online  at 08:30
Tue, Entry 3, Offline at 12:00
Tue, Entry 4, Online  at 13:00
Tue, Entry 5, Offline at 17:00

Wed, Entry 1, Online  at 08:00
Wed, Entry 2, Online  at 08:30
Wed, Entry 3, Offline at 12:00
Wed, Entry 4, Online  at 13:00
Wed, Entry 5, Offline at 17:00

Thu, Entry 1, Online  at 08:00
Thu, Entry 2, Online  at 08:30
Thu, Entry 3, Offline at 12:00
Thu, Entry 4, Online  at 13:00
Thu, Entry 5, Offline at 17:00

Fri, Entry 1, Online  at 08:00
Fri, Entry 2, Online  at 08:30
Fri, Entry 3, Offline at 12:00
Fri, Entry 4, Online  at 13:00
Fri, Entry 5, Offline at 17:00


Wed, 05-26-1999  16:28:52
HLC::>
```

DISPLAY PHONE (D P)

Introduction

The DISPLAY PHONE command displays the following characteristics of the telephones served by the HLC:

- phone type: cordless or corded
- indicator update status: enabled or disabled

See “SET PHONE (S P)” on page 128 .

To display telephone characteristics

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

Result: The MMI presents you with the logged-on command prompt. (See “Command prompts” on page 91.)

2 At the command prompt, type DISPLAY PHONE or D P and press Enter.

Result: The MMI displays the HLC’s telephone characteristics that are set on a per-channel basis by the set phone command. The on-screen display is similar to the following figure:

```
Wed, 06-07-1999  2:19:02
HLC::>d p

Channel  Phone Type  Indicator Update

   0      Corded        Disabled
   1      Corded        Disabled
   2      Corded        Disabled
   3      Corded        Disabled
   4      Corded        Disabled
   5      Corded        Disabled
   6      Cordless      Enabled
   7      Corded        Disabled
   8      Corded        Disabled
   9      Corded        Disabled
  10      Corded        Disabled
  11      Corded        Disabled
  12      Corded        Disabled
  13      Corded        Disabled
  14      Corded        Disabled
  15      Corded        Enabled

Wed, 06-07-1999  2:27:23
HLC::>
```

DISPLAY REMOTE (D R)

Introduction

The DISPLAY REMOTE or D R command displays the remote numbers of all home offices and agents served by the HLC. The remote number is the home office ISDN number to which the HLC forwards calls that are received by the telecommuter's corporate office telephone. This number includes access numbers necessary to obtain an outside line at the corporate switch, such as 9. See "SET REMOTE (S R)" on page 131.

Note: Each home office site served by the same HLC has a unique remote number that this command displays.

To display remote numbers

1 If you are not already logged in, log in to the MMI.

See "LOGIN (L)" on page 91.

Result: The MMI presents you with the logged-on command prompt. (See "Command prompts" on page 91.)

2 At the command prompt, type DISPLAY REMOTE or D R and press Enter .

Result: The MMI's display of remote numbers for each remote site served by the HLC is similar to the example on the next page.

```
Wed, 05-26-1999  16:18:16
HLC::>d r
Remote numbers for channel  0:
        Agent  0:  7200
        Agent  1:  7202
        Agent  2:  7204
        Agent  3:  7206
        Agent  4:  7208
        Agent  5:  7210
        Agent  6:  7212
        Agent  7:  7214
Remote numbers for channel  1:
        Agent  0:  7202
        Agent  1:  9,9725551212
        Agent  2:  7230
Remote number for channel  2: 7204
Remote number for channel  3: 7206
Remote number for channel  4: 7208
Remote number for channel  5: 7210
Remote number for channel  6: 4542
Remote number for channel  7: 7214
Remote number for channel  8: 7216
Remote number for channel  9: 7218
Remote number for channel 10: 7220
Remote number for channel 11: 7222
Remote number for channel 12: 7224
Remote number for channel 13: 7226
Remote number for channel 14: 7228
Remote number for channel 15: 7200

Wed, 05-26-1999  16:18:35
HLC::>
```

DISPLAY STATUS (D S)

Introduction

The DISPLAY STATUS OR D S command displays the status of each channel served by the HLC. Supervisors who need to know how the HLC is being utilized use this command.

Possible conditions reportable via this command are

- Inactive
- Online, Inactive
- Online, Active

To display the status of each channel on an HLC

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

Result: The MMI presents you with the logged-on command prompt. (See “Command prompts” on page 91.)

2 At the command prompt, type DISPLAY STATUS or D S and press Enter.

Result: The MMI’s display of the status of each channel on the HLC is similar to the following figure:

```
Wed, 05-26-1999  1:28:09
HLC::>di s
Channel  0: Agent  0, Online, Inactive
Channel  1: Online, Active
Channel  2: Inactive
Channel  3: Online, Inactive
Channel  4: Online, Inactive
Channel  5: Online, Inactive
Channel  6: Online, Inactive
Channel  7: Online, Active
Channel  8: Online, Inactive
Channel  9: Online, Inactive
Channel 10: Online, Inactive
Channel 11: Online, Inactive
Channel 12: Online, Inactive
Channel 13: Online, Inactive
Channel 14: Online, Inactive
Channel 15: Online, Inactive

Wed, 05-26-1999  1:30:51
HLC::>
```

Section B: SET (S) commands

In this section

Overview

Introduction

Use the SET commands to configure the HLC according to the needs of the company and its telecommuters.

Note: You must configure each HLC individually, even if it resides in a daisy chain.

SET CONFIG (S C)

Use the SET CONFIG or S C command to assign card-wide configuration settings.

SET DATE (S D)

Use the SET DATE or S D command to set the date maintained by the HLC.

SET ECHO (S E)

Use the SET ECHO, or S E command to enable or disable echo canceling for any or all of the HLC's 16 channels.

SET IDENTIFIER (S I)

Use the SET IDENTIFIER, or S I command to assign a unique Security Identifier for each individual HomeOffice site or user (agent).

SET ONOFFTABLE (S O)

Use the SET ONOFFTABLE or S O command to assign the schedule of times during the week that a telecommuter can have access to a company ISDN connection.

SET PHONE (S P)

Use the SET PHONE, or S P command to determine the characteristics of the telephone or telephones (in multiple-user configurations) used on a specific channel.

SET REMOTE (S R)

Use the SET REMOTE, or S R command to assign the ISDN number to which the HLC must forward calls made to the telecommuter's corporate office telephone.

SET TIME (S T)

Use the SET TIME or S T command to set the HLC's clock to a time other than that kept at the switch's clock.

SET CONFIG (S C)

Introduction

Use the SET CONFIG or S C command to assign the following card-wide configuration settings:

- security level
- autoclock setting
- site name
- password

To change the HLC's configuration settings

1 If you are not already logged in, log in to the MMI.

See "LOGIN (L)" on page 91.

Result: The MMI presents you with the logged-on command prompt. (See "Command prompts" on page 91.)

2 At the command prompt, type SET CONFIG or S C and press Enter.

Result: The MMI's display of the current security level and prompt for a new security level is similar to the following figure:

```
Wed, 05-26-1999  16:44:34
HLC::>s c
Enter Security Level [Current Value - 3]:
```

3 Configure the HLC's security level

Note: Refer to the following forms in the *Meridian HomeOffice II Planning Guide* (NTP 555-8321-101) for the planned security level:

- Line Card Ports Configuration — Meridian 1
- Line Card Ports Configuration — SL-100

See "HLC security" on page 11 for a discussion of the properties of the various Security levels.

IF you wish to	THEN
keep the current security level	press Enter.
change the HLC's security level	type a new security level based on the following table and press Enter:

Level	Description
Level 1	No call security
Level 2	Calling party identification (CPID)
Level 3	Security ID

Result: A message similar to the following appears:

```
Security Level: 2
Set Autoclock [Current value — OFF]:
```

4 Configure the HLC's autoclock setting.

See "Autoclock" on page 84 for a description of this setting.

IF you wish to	THEN
keep the current autoclock setting	press Enter and proceed to step 5.
change the HLC's autoclock setting	type the new setting (ON or OFF) and press Enter. **Result:** The message that appears depends upon the new setting, according to the following table:

IF you entered	THEN a message similar to the following appears
ON	`Autoclock is Enabled` `Change Site Name (YES or NO)`
OFF	`Autoclock is Disabled` `Change Site Name (YES or NO)`

5 Configure the site name for the HLC.

See "Site name" on page 84 for an explanation of this setting.

IF you wish to	THEN type
keep the current site name	NO and press Enter (or just press Enter), then go to step 6. **Result:** a prompt similar to the following appears: `Change System Password (YES or NO)`

change the site name	YES and press Enter.
	Result: A prompt similar to the following appears:
	`Enter Site Name [Current Value - NT1]`
	Type the new site name and press Enter.
	Result: A prompt similar to the following appears:
	`Change System Password (YES or NO)`

6 Configure the system password for the HLC.

See “Password” on page 84 for an explanation of the password setting.

IF you wish to	THEN
keep the current password	type NO and press Enter (or just press Enter).

change the password	type YES and press Enter.
	Result: The following message appears:
	`Enter Current Password`
	a. Enter the current password.
	Result: The following message appears:
	`Enter New Password`
	b. Type the new password and press Enter.
	Result: The following message appears:
	`Verify New Password`
	c. Retype the new password and press Enter.
	Result: The following message appears:
	`Password has been updated.`

Note 1: System password is case-sensitive and has a maximum length of ten characters.

Note 2: Information configured through the previous steps has not yet been saved and is currently stored only in RAM. If the board were to be removed or the power turned off without saving, the information would be lost.

7 If you wish to save the information, type PROVISION SAVE or P S and press Enter. See “PROVISION SAVE (P S)” on page 149.

SET DATE (S D)

Introduction

Use the SET DATE or S D command to set the date maintained by the HLC.

Note: The SET DATE command is only effective if autoclock is disabled through the SET CONFIG (S C) command. See “SET CONFIG (S C)” on page 114.

To change the date kept by the HLC

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

Result: The MMI presents you with the logged-on command prompt. (See *Command prompts,* page 91.)

2 At the command prompt, type SET DATE or S D and press Enter.

Result: The MMI’s display of its current date and prompt for a new one is similar to the following figure:

```
Wed, 05-26-1999  7:40:01
HLC::>s d
Current Date 05-26-1999
Enter  <mm-dd-yyyy>  or  <Return>
```

3 Configure the date kept by the HLC according to the following table.

IF you wish to	THEN
keep the date currently maintained by the HLC	press Enter.
change the date maintained by the HLC	type the date in MM-DD-YY format and press Enter. **Result:** A message similar to the following appears: `Current Date 05-27-1999`

Result: The HLC displays the information that it receives.

Note 1: Year 2000 is supported. Dates in the year 2000 will have the year noted as 00.

Note 2: Information configured through the previous steps has not yet been saved and is currently stored only in RAM. If the board were to be removed or the power turned off without saving, the information would be lost.

4 If you wish to save the information, type `PROVISION SAVE, OR P S` and press Enter. (See “PROVISION SAVE (P S)” on page 149.)

SET ECHO (S E)

Introduction

Use the SET ECHO, or S E command to enable or disable echo canceling for any or all of the HLC's 16 channels.

To turn echo canceling on or off

1 If you are not already logged in, log in to the MMI.

See "LOGIN (L)" on page 91.

Result: The MMI presents you with the logged-on command prompt. (See "Command prompts" on page 91.)

2 At the command prompt, type SET ECHO or S E and press Enter.

Result: The MMI's request for the channel where you want to configure echo canceling and the setting you want to establish on that channel is similar to the following:

```
Thu, 05-27-1999  7:40:05
HLC::>s e
Enter  <Channel> <ON|OFF>:
```

3 Configure echo canceling for the HLC according to the following table.

IF you wish to	THEN
enable echo canceling for a channel	type ■ the channel for which echo canceling is being enabled ■ ON **Example:** `6 ON` and press Enter. **Result:** A message similar to the following appears: `Echo Cancellation for Channel 6: Active (64ms)`

IF you wish to	THEN
disable echo canceling for a channel	type ■ the channel for which echo canceling is being disabled ■ OFF **Example:** `6 OFF` and press Enter. **Result:** A message similar to the following appears: `Echo Cancellation for Channel 6: Inactive`
configure echo canceling for another channel	return to Step 2.

Note: Information configured through the previous steps has not yet been saved and is currently stored only in RAM. If the board were to be removed or the power turned off without saving, the information would be lost.

4 If you wish to save the information, type PROVISION SAVE, or P S and press Enter. (See “PROVISION SAVE (P S)” on page 149.)

SET IDENTIFIER (S I)

Introduction

Use the SET IDENTIFIER, or S I command to assign a unique security identifier for each individual HomeOffice site or user (agent). This identifier is a numeric string of up to ten digits. Identifiers of less than ten digits are padded with leading zeros. For example, the HLC displays a security identifier set as 12345 as 0000012345.

To set a channel's security identifier

1 If you are not already logged in, log in to the MMI.

See "LOGIN (L)" on page 91.

Result: The MMI presents you with the logged-on command prompt. (See "Command prompts" on page 91.)

2 At the command prompt, type SET IDENTIFIER or S I and press Enter .

Result: The MMI's prompt for the channel, agent (optional), and security ID that you want to configure is similar to the following:

```
Wed, 05-26-1999  17:30:46
HLC::>s i
Enter  <Channel> [Agent] <SecurityId>:
```

3 Configure a security identifier according to the following table

IF you wish to	THEN
configure a security identifier for the channel	type the following information: ■ the channel to which the security identifier is to apply ■ the security identifier of no more than ten digits **Example:** `6 0987654321` and press Enter. **Result:** A message similar to the following appears: `Security ID for Channel 6: 0987654321`

IF you wish to	THEN
configure a security identifier for an Agent using channel 6	type the following information: ■ the channel to which the security identifier is to apply ■ the agent number to which the security identifier is to apply ■ the security identifier of no more than ten digits **Example:** `6 3 1234567890` and press Enter. **Result:** A message similar to the following appears: `Security ID for Channel 6 Agent 3:0987654321`
configure another security identifier	return to Step 2.

Note: Information configured through the previous steps has not yet been saved and is currently stored only in RAM. If the board were to be removed or the power turned off without saving, the information would be lost.

4 If you wish to save the information, type PROVISION SAVE, or P S and press Enter. See *PROVISION SAVE (P S),* page 149.

SET ONOFFTABLE (S O)

Introduction

Use the SET ONOFFTABLE or S O command to assign the schedule of times during the week that a telecommuter can have access to a company ISDN connection. The Online/Offline table enables you to arrange for the establishment and the termination of an ISDN connection to the telecommuter's home office or ACD extension at specific times. The Online/Offline table gives you the ability to ensure that costly ISDN telephone calls are disabled after business hours.

Note: This feature takes users online or offline on the specified day at the specified time. It does not prevent the user from accessing the Meridian HomeOffice II system.

For example, the system administrator can configure the Online/Offline table to have the HLC make contact with a specific telecommuter's HomeOffice Router, establishing an ISDN connection at 8:00 a.m. The system administrator can instruct the HLC to terminate the ISDN connection for lunch at 11:30 a.m., reestablish the connection at 12:30 p.m., and terminate the connection for the day at 5:00 p.m.

Overriding OFFLINE commands

The HomeOffice II user has the ability to override the times at which the ISDN connection is terminated, should one of these times occur in the middle of a business call. A brief tone notifies the user 30, 20, and 10 seconds before the call is terminated, giving the user an opportunity to press the Online/LC key to override the termination of the connection.

Determining access

The table determines access on a per-channel basis. It does not differentiate between agents on a given channel. The table allows the system administrator to enter up to 8 actions per day, every day of the week, for each of the 16 HomeOffice *channels.* The channel's ISDN connection is opened according to table entries and is available to the agent using that channel on a first-come, first-served basis.

Table entry increments

The table rounds entries to the most recent quarter-hour (15-minute increments). For example, if the table receives an Online command for 8:10, it interprets the entry as 8:00 a.m. and the Online/Offline table initiates the ISDN connection at that time.

To configure the Online/Offline table

Note: If you are configuring multiple days or channels with identical settings, see "COPY ONOFFTABLE (C O)" on page 96 to expedite the process.

1 If you are not already logged in, log in to the MMI.

See "LOGIN (L)" on page 91.

Result: The MMI presents you with the *logged-on* command prompt. (See *Command prompts,* page 91.)

2 At the command prompt, type SET ONOFFTABLE, or S O and press Enter.

Result: The MMI's prompt for the channel, setting, day, and time of the Online/Offline entry that you want to configure is similar to the following figure:

```
Wed, 05-26-1999  17:38:02
HLC::>s o
Enter  <Channel> ON  <Day> <Time>
Or     <Channel> OFF <Day> <Time>
```

3 Configure the Online/Offline schedule according to the following table.

IF you wish to	THEN
enter an Online command	type the following information: ■ the channel number of the ISDN connection which is to be activated ■ ON ■ the first three letters of the day on which the connection is to be activated ■ the time at which the connection is to be activated (given in 15-minute intervals, such as 8:00, 8:15, 8:30, or 8:45) **Example:** `6 ON Mon 8:00` and press Enter **Result:** A message similar to the following appears: `Channel 6: Online on Mon at 8:00`
enter an Offline command	type the following information: ■ the channel number of the ISDN connection which is to be deactivated ■ OFF ■ the first three letters of the day on which the connection is to be deactivated ■ the time at which the connection is to be deactivated (given in 15-minute intervals, such as 8:00, 8:15, 8:30, or 8:45) **Example:** `6 OFF Mon 11:30` and press Enter **Result:** A message similar to the following appears: `Channel 6: Offline on Mon at 11:30`
enter another Online/Offline command	return to Step 2.

Note: Information configured through the preceding steps has not yet been saved and is currently stored only in RAM. If the board were to be removed or the power turned off without saving, the information would be lost.

4 If you wish to save the information, type PROVISION SAVE, or P S and press Enter. See “PROVISION SAVE (P S)” on page 149.

SET PHONE (S P)

Introduction

Use the SET PHONE, or S P command to configure the channel for the characteristics of the telephone or telephones (in multiple-user environments) used on that channel.

Note: All telephones on one channel share the same SET PHONE settings.

Telephone characteristics

You can use the SET PHONE command to configure the following characteristics:

- `CORDLESS PHONE ATTACHED (YES OR NO)`

  This setting identifies whether a 2616CT cordless telephone is used as the primary telephone at the remote site. A cordless telephone requires slightly different programming to provide complete HomeOffice II functionality.

- `INDICATOR UPDATE MODE (ENABLE OR DISABLE)`

  This setting identifies the status of Indicator Update, an On-demand Mode feature. Indicators on remote telephone sets require a data call every time they change to reflect activity on the local switch.

  When Indicator Update is disabled, indicators go blank when a data call goes down. When Indicator Update is enabled, the HLC places a data call to the RDB to update the remote telephone's indicators whenever there is a change in indicator status.

  This feature allows users operating in the On-demand Mode to receive changes in indicator status as they happen. It is also useful in ACD situations where it is necessary to monitor call flow.

Note: If you answer "Yes" to the first query, `Cordless Phone Attached (YES or NO)`, Indicator Update is automatically enabled for this channel.

To set the characteristics of the telephones on a channel

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

Result: The MMI presents you with the logged-on command prompt. See “Command prompts” on page 91.

2 At the command prompt, type `SET PHONE` or `S P` and press Enter.

Result: The MMI’s prompt for the channel for which you want to set telephone characteristics is similar to the following figure:

```
Mon, 05-17-1999  18:05:20
HLC::>s p
Enter  <Channel>
```

3 Configure the properties of a channel’s telephones according to the following table.

IF	THEN type

the remote telephone is cordless	the number of the channel for which you want to configure telephone characteristics and press Enter.
	Result: A message similar to the following appears:
	`Cordless Phone Attached (YES or NO)`
	Type YES and press Enter.
	Result: A message similar to the following appears:
	`Channel 6: Cordless phone attached`
	`Indicator Update Mode Enabled`
	`Note: Indicator Update Enabled may increase phone charges.`

the remote telephone is corded	the number of the channel for which you want to configure telephone characteristics and press Enter.
	Result: A message similar to the following appears:
	`Cordless Phone Attached (YES or NO)`
	Type NO and press Enter.
	Result: A message similar to the following appears:
	`Indicator Update Mode (ENABLE or DISABLE)`

IF	THEN type

you want to enable indicator update	ENABLE and press Enter.
	Result: A message similar to the following appears:
	`Channel 6: corded phone attached`
	`Indicator Update Mode Enabled`
	`Note: Indicator Update Enabled may increase phone charges.`

you want to disable indicator update	DISABLE and press Enter.
	Result: A message similar to the following appears:
	`Channel 6: Corded phone attached`
	`Indicator Update Mode Disabled`

Note: Information configured through the previous steps has not yet been saved and is currently stored only in RAM. If the board were to be removed or the power turned off without saving, the information would be lost.

4 If you want to save the information, type PROVISION SAVE, or P S and press Enter. See “PROVISION SAVE (P S)” on page 149.

5 If you want to configure the telephones of other channels, return to Step 2.

SET REMOTE (S R)

Introduction

Use the SET REMOTE or S R command to assign the ISDN number to which the HLC must forward calls made to the telecommuter's corporate office telephone.

The remote number includes

- trunk-access digits that are necessary for making an outside call from the corporate office
- the ISDN number of the telecommuter's home office

Separators

The two elements of the remote number are offset by separators. Separators are commas or periods that divide the remote number, separating the *significant digits*—the ISDN number—from trunk-access digits.

The HLC recognizes

- numeric digits (0–9)
- commas (,), periods (.)
- pound signs (#), asterisks (*)
- dashes (-)

Commas are used for separation and to give a two-second delay. Periods are used solely for separation. Pound signs and asterisks are treated as digits, and dashes are ignored.

Separators and caller ID verification

When the security level is set to 2, *calling party identification–CPID),* the HLC compares the telephone number that is the source of the incoming call to the significant digits of the remote number. If they match, the HLC allows access. If the incoming number does not match the significant digits of the remote number, the HLC denies access.

For example, 9.972-555-7612 is configured as a telecommuter's remote number if 9 must be dialed before placing outside calls from the corporate office, the telecommuter's home office is in the 972 area code, and the telecommuter's home office ISDN number is 555-7612. If the security level is set to Security Level 2 calling party identification—CPID, the CPID is compared to 9725557612.

Planning remote number configuration

You can record remote numbers for each remote site on the following forms, found in the *Meridian HomeOffice II Planning Guide* (NTP 555-8321-101):

- Line Card Ports Configuration—Meridian 1
- Line Card Ports Configuration—SL-100

To configure a user's remote number

1 If you are not already logged in, log in to the MMI.

See "LOGIN (L)" on page 91.

Result: The MMI presents you with the `logged-on` command prompt. (See "Command prompts" on page 91.)

2 At the command prompt, type SET REMOTE or S R and press Enter.

Result: The MMI prompts you for the channel number, the agent number (optional), and the remote number. The on-screen display is similar to the following figure:

```
Wed, 05-26-1999  1:15:30
HLC::>S R
Enter  <Channel> [Agent] <HomeOfficeNumber>:
```

3 Configure the remote number according to the following table.

IF you wish to	THEN
configure a remote number for the channel	type the following information: ■ the channel number ■ the ISDN number of the remote site using the channel **Example:** `6 9725551234` and press Enter. **Result:** A message similar to the following appears: `Remote number for channel 6: 9725551234`
configure a remote number for an agent	type the following information: ■ the channel number ■ the agent number ■ the ISDN number of the telephone at this agent's work station **Example:** `6 9 9725551235` and press Enter. **Result:** A message similar to the following appears: `Remote number for channel 6: 9,9725551235`
configure more remote numbers	return to Step 2

Note: Information configured through the above steps has not yet been saved and is currently stored only in RAM. If the board were to be removed or the power turned off, the information would be lost.

4 If you wish to save the information, type PROVISION SAVE, or P S and press Enter. See "PROVISION SAVE (P S)" on page 149.

SET TIME (S T)

Introduction

Use the SET TIME or S T command to set the HLC's clock to a time other than that kept at the switch's clock. This is helpful if, for instance, the company's switch and a user's home office are in different time zones.

Note: The SET TIME command is only effective if autoclock is disabled through the SET CONFIG (S C) command. See "SET CONFIG (S C)" on page 114.

To change the time kept by the HLC

1 If you are not already logged in, log in to the MMI.

See "LOGIN (L)" on page 91.

2 At the command prompt, type SET TIME or S T and press Enter.

Result: The MMI's display of its current time and prompt for a new time is similar to the following figure:

```
Wed, 05-26-1999  17:40:28
HLC::>s t
Current Time 17:30:19
Enter  <hh:mm:ss>  or  <Return>
```

3 Type the time in 24-hour HH:MM:SS format and press Enter.

Result: The HLC displays the information that it receives.

4 Configure the time kept by the HLC according to the following table.

IF you wish to	THEN
keep the time currently maintained by the HLC	press Enter.
change the time maintained by the HLC	type the time in 24-hour HH:MM:SS format and press Enter. **Result:** A message similar to the following appears: `Current Time 17:55:05`

Note: Information configured through the above steps has not yet been saved and is currently stored only in RAM. If the board were to be removed or the power turned off, the information would be lost.

5 If you wish to save the information, enter PROVISION SAVE, or P S and press Enter. See “PROVISION SAVE (P S)” on page 149.

Section C: ERASE (E) commands

In this section

Overview

Introduction

Use the `ERASE` command to remove the settings from HLC channels according to the needs of the company and its telecommuters.

ERASE ONOFFTABLE (E O)

Use the ERASE ONOFFTABLE or E O command to remove individual entries or an entire day's entries from a channel's Online/Offline table.

ERASE REMOTE (E R)

Use the ERASE REMOTE or E R command to permanently remove information (remote sites or individual agents) from HLC channels.

ERASE ONOFFTABLE (E O)

Introduction

Use the ERASE ONOFFTABLE or E O command to remove individual entries or an entire day's entries from a channel's Online/Offline table.

To remove entries from a channel's Online/Offline table

1 If you are not already logged in, log in to the MMI.

See "LOGIN (L)" on page 91.

2 At the command prompt, type ERASE ONOFFTABLE or E O and press Enter.

Result: The MMI's prompt for the Online/Offline table information that you want to erase is similar to the following figure:

```
Thu, 05-27-1999  7:49:08
HLC::>e o
Enter  <Channel> <Day> <Entry>
Or     <Channel> <Day>
```

3 Remove entries from a channel's ISDN Online/Offline schedule in one of the following two formats:

IF erasing	THEN
one entry from one day of a channel's table	type the following information: ■ the channel number from which the entry is to be erased ■ the first three letters of the day from which the entry is to be erased ■ the entry number to be erased **Example:** `6 Mon 2` and press Enter. **Result:** A message similar to the following appears: `Channel 6: on Mon, Entry 2 Deleted`

IF erasing	THEN
one day's entries of a channel's table	type the following information: ■ the channel from which the entry is to be erased ■ the first three letters of the day to be erased **Example:** `6 Fri` and press Enter. **Result:** A message similar to the following appears: `Channel 6: All Entries for Fri Cleared`
more entries of a channel's table	return to Step 2.

Note: Information configured through the previous steps has not yet been saved and is currently stored only in RAM. If the board were to be removed or the power turned off without saving, the information would be lost.

4 If you wish to save the information, type PROVISION SAVE or P S and press Enter. See "PROVISION SAVE (P S)" on page 149.

ERASE REMOTE (E R)

Introduction

Use the ERASE REMOTE or E R command to permanently remove information (remote sites or individual agents) from HLC channels.

To remove information from an HLC channel

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

2 At the command prompt, type ERASE REMOTE or E R and press Enter.

Result: The MMI’s prompt for the channel and optional agent number of the remote telephone number that you want to remove from the HLC is similar to the following figure:

```
Thu, 05-27-1999  7:58:05
HLC::>e r
Enter  <Channel> [Agent]
```

3 Remove information from an HLC channel according to the following table.

IF erasing	THEN
an entire channel	type the number of the channel to be erased **Example:** `6` and press Enter. **Result:** A message similar to the following appears: `Channel 6: Remote Number erased`
a single agent	type the following information: ■ the number of the agent’s channel ■ the number of the agent. **Example:** `6 1` and press Enter. **Result:** A message similar to the following appears: `Channel 6: Agent 1, Remote Number erased`

IF erasing	THEN
more channels or agents	return to Step 2.

Note: Information configured through the preceding steps has not yet been saved and is currently stored only in RAM. If the board were to be removed or the power turned off, the information would be lost.

4 If you wish to save the information, type PROVISION SAVE or P S and press Enter. See “PROVISION SAVE (P S)” on page 149.

Section D: OFFLINE (O) commands

In this section

Overview

Introduction

The OFFLINE commands give you increased control of ISDN usage. They enable you to remove individual users from their channels' ISDN connections at times other than those identified by the Online/Offline table.

Whether the user was unexpectedly called away, or is simply absentminded and left the remote site without releasing the channel's ISDN connection, as long as you are present to exercise this command, the ISDN connections are always accessible.

OFFLINE NORMAL (O N)

Use the OFFLINE NORMAL or O N command to request that a user release the ISDN connection.

OFFLINE FORCE (O F)

Use the OFFLINE FORCE or O F command to terminate an active ISDN connection without delay or warning to the affected user.

OFFLINE NORMAL (O N)

Introduction

Use the OFFLINE NORMAL or O N command to request that a user release the ISDN connection. In effect, entering an OFFLINE NORMAL command is like inserting an Online/Offline table offline entry.

In the same way that the Online/Offline table notifies users that they are about to lose the connection before sending a channel offline, when you enter an OFFLINE NORMAL command, the user receives audible notification (a beep) that the connection is about to go down, 30 seconds, 20 seconds, and 10 seconds before the connection is terminated. This gives the user a chance to end the current call before termination.

Also, in the same way that users can override an offline command from the Online/Offline table by pressing the Online/LC key, a user can override the OFFLINE NORMAL command to continue the call. If it is critical that the agent release the connection immediately, you can enter an OFFLINE FORCE command to terminate the connection without delay (see “OFFLINE FORCE (O F)” on page 146).

To request that a user release the channel’s ISDN connection

1. If you are not already logged in, log in to the MMI.

   See “LOGIN (L)” on page 91.

2. At the command prompt, type OFFLINE NORMAL, or O N and press Enter.

   Result: The MMI’s prompt for the channel whose ISDN connection you want to request be released is similar to the following figure:

```
Fri, 05-28-1999  9:37:00
HLC::>o n
Enter  <Channel>
```

3. Ask a user to end the current call and release the ISDN connection by typing the user’s channel number and pressing Enter.

   Result: The MMI displays a message similar to the following:

   ```
   Channel 6: Offline Requested
   ```

OFFLINE FORCE (O F)

Introduction

Use the OFFLINE FORCE or O F command to terminate an active ISDN connection without delay or warning to the affected user.

To terminate an ISDN connection

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

2 At the command prompt, type OFFLINE FORCE or O F and press Enter.

Result: The MMI’s prompt for the channel whose ISDN connection you want to terminate is similar to the following figure.

```
Fri, 05-28-1999  10:35:39
HLC::>o f
Enter  <Channel>
```

3 Terminate a channel’s ISDN connection without warning to the affected user by typing the channel number and pressing Enter.

Result: The MMI displays a message similar to the following:

```
Channel 6: Offline Forced
```

Section E: PROVISION (P) commands

In this section

Overview

Introduction

The `PROVISION` commands deal with information about specific users configured with the SET command.

PROVISION SAVE (P S)

Use the PROVISION SAVE or P S command to store to machine memory the most recent changes.

PROVISION REVERT (P R)

Use the PROVISION REVERT or P R command to return to the most recently saved information concerning specific telecommuters.

PROVISION ERASE (P E)

Use the PROVISION ERASE OR P E command to reset information concerning specific telecommuters.

PROVISION SAVE (P S)

Introduction

Use the PROVISION SAVE or P S command to store to machine memory information concerning specific telecommuters configured using the SET, COPY ONOFFTABLE, and ERASE commands.

To save information pertaining to HomeOffice sites

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

2 Type P S and press Enter.

Result: The MMI’s notification that the latest changes to the HLC’s provisioning settings is similar to the following figure:

```
Thu, 05-27-1999  8:02:01
HLC::>p s
Provisioning Saved

Thu, 05-27-1999  8:02:03
HLC::>
```

The most recent changes are now stored in machine memory.

PROVISION REVERT (P R)

Introduction

Use the PROVISION REVERT or P R command to return to the most recently saved information. This command discards unsaved changes made with the SET commands.

To discard changes to HLC provisioning settings

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

2 To discard all changes to HLC settings, type P R and press Enter.

Result: The MMI’s notification that it has returned the HLC’s provisioning settings to its last saved settings is similar to the following figure:

```
Thu, 05-27-1999  8:14:46
HLC::>p r
Reverted to Previously Saved Provisioning

Thu, 05-27-1999  8:14:52
HLC::>
```

The most recent changes are discarded and the previously saved entries are retained.

PROVISION ERASE (P E)

Introduction

Use the PROVISION ERASE or P E command to reset information configured using the SET command and currently held in RAM to the original factory defaults. If you wish to erase Flash memory settings, you must execute a PROVISION ERASE command followed by a PROVISION SAVE command.

To reset all provisioning to the original factory default settings

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

2 To reset all provisioning, type P E and press Enter.

Result: The MMI’s notification that it has erased all changes that you have ever made to its provisioning is similar to the following figure:

```
Thu, 05-27-1999  8:14:52
HLC::>p e
Provisioning Erased

Sun, 01-30-1999  23:40:06
HLC::>
```

All changes to HLC provisioning settings are discarded and original, factory default entries are retained.

Section F: TEST (T) menu

In this section

Overview

Introduction

Use the TEST menu to verify communication paths of the Meridian HomeOffice II system. If the Connectivity Test (see page 155) passes but a problem still exists, the Phone Test (see page 156) can isolate the problem.

Connectivity test

Use a Connectivity Test to verify the connection between the HLC and the Remote Daughterboard (RDB) in the HomeOffice Router.

Phone test

Use a Phone Test to verify signaling paths between the digital telephone and the Remote Daughterboard (RDB) in the HomeOffice Router.

Connectivity test

Introduction

Use a Connectivity test to verify the connection between the HLC and the Remote Daughterboard (RDB) in the HomeOffice Router.

To verify the connection between the HLC and the RDB

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

2 At the command prompt, type TEST or T and press Enter.

Result: The MMI displays the Test (T) menu.

```
Thu, 05-28-99  17:53:17
HLC::>T
Test Menu:
1 - Connection to RDB
2 - Remote Phone Status

E - End
```

3 Test the HLC’s connection to the RDB by running a Connectivity test:

a. Type 1 and press Enter.

Result: The following message appears:

```
Enter Channel to test (0—15, ALL)
```

b. Type the number of the channel to be tested (or ALL) and press Enter.

Result: The following message appears:

```
Test in Progress. Please wait...
```

When the Connectivity Test is finished, the MMI displays the channel number tested, the test results, and a `TEST COMPLETED` message.

Note: For a list of possible test results and their meanings, see page 157.

Phone test

Introduction

Use a Phone Test to verify signaling paths between the Meridian digital telephone and the Remote Daughterboard (RDB) in the HomeOffice Router.

To verify the connection between the telephone and the RDB

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

2 At the command prompt, type TEST or T and press Enter.

Result: The MMI displays the Test (T) menu .

```
Thu, 05-28-99  17:53:26
HLC::>T
Test Menu:
1 - Connection to RDB
2 - Remote Phone Status

E - End
```

3 Test the RDB’s connection to the digital telephone by running a Phone test:

a. Type 2 and press Enter.

Result: The following message appears:

```
Enter Channel to test (0—15, ALL)
```

b. Type the number of the channel to be tested and press Enter.

Result: The following message appears:

```
Test in Progress. Please wait...
```

When the Connectivity Test is finished, the MMI displays the channel number tested, the test results, and a `TEST COMPLETED` message.

Note: For a list of possible test results and their meanings, see page 157.

Possible test results

Introduction

The following table lists the messages that the MMI returns after running tests from the TEST (T) menu. When a test is completed, the MMI displays the channel number of the channel tested and one of the items from the "Resulting message" column of the following table, under the `TEST IN PROGRESS` message.

Test results table

Test	Result	Condition
Phone	Phone test passed	The connection between the digital telephone and the RDB is good.
	Phone failed	There is a problem with the telephone at the tested site.
	Phone type invalid	The telephone at this site is not a model supported by HomeOffice.
	Phone not attached	No telephone is attached at the site for which the test was requested.
Both	Site offline	The requested channel is not online.
	Test timed out	Phone: There is a problem with the connection between the RDB and the telephone. Run a Connectivity Test. Connectivity: There is a problem with the connection between the RDB and the HLC.
Connectivity	Local test passed	The connection between the HLC and the RDB is good.

Section G: UPLOAD (U) command

In this section

Overview

Introduction

The UPLOAD (U) command enables you to equip an existing HLC with the latest release of HLC firmware, maximizing Meridian HomeOffice II's functionality. The steps necessary to complete a successful upload are outlined on the following pages.

How the UPLOAD (U) command works

The UPLOAD (U) command instructs the HLC to revert to the E-PROM execution mode to upgrade the firmware on the Flash module. You upgrade the firmware using the following procedures with the firmware file that you specify.

First, enter an UPLOAD (U) command. The MMI asks if it should reboot to E-PROM. Answer NO to cancel the upload process. Answer YES to begin the UPLOAD process.

After rebooting to E-PROM, the card is ready to upgrade its firmware using the Xmodem protocol from your terminal software, which enables the HLC to transfer a new firmware file to the its Flash memory. The exact steps to follow vary according to the specific terminal software used. This guide illustrates the procedure using Procomm Plus, and assumes that the you already have a working knowledge of Procomm Plus.

Upload (U)

Introduction

The UPLOAD (U) command enables you to perform an HLC firmware upgrade. For a description of what you must do before performing the upgrade, see page 161.

Before you begin an upload

The following instructions must be observed for a successful firmware upload:

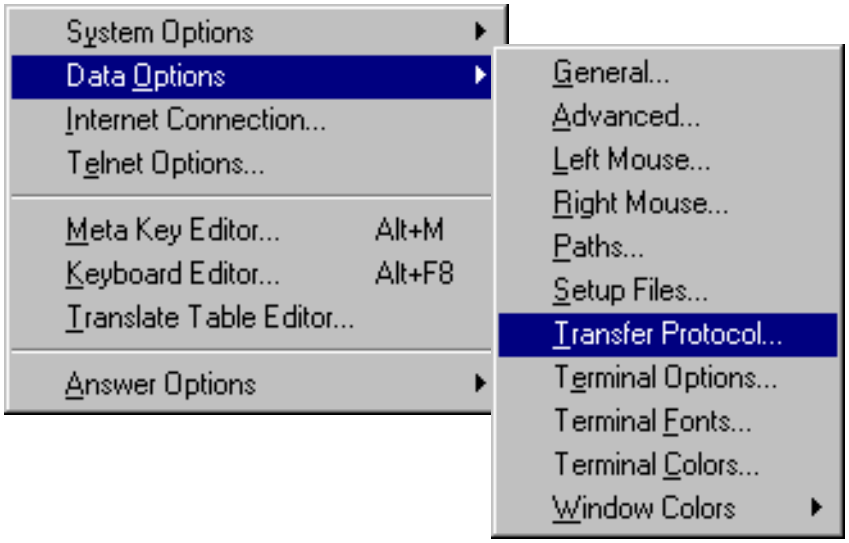
- Do not use the HLC for call traffic during an upload.
- Disable all HLC ports at the switch before attempting an upload.
- Set position 2 of SW2 (terminal settings) on the HLC that is to receive the updated firmware to OFF.
- Execute a PROVISION SAVE (PS) command (see page 149) before you remove the HLC for any reason. This saves the most recent changes to provisioning settings such as remote numbers, security identifiers, Online/ Offline schedules, and so on. If you remove the HLC from its slot, you lose any unsaved changes to these settings.

To upgrade an HLC's firmware using Procomm Plus

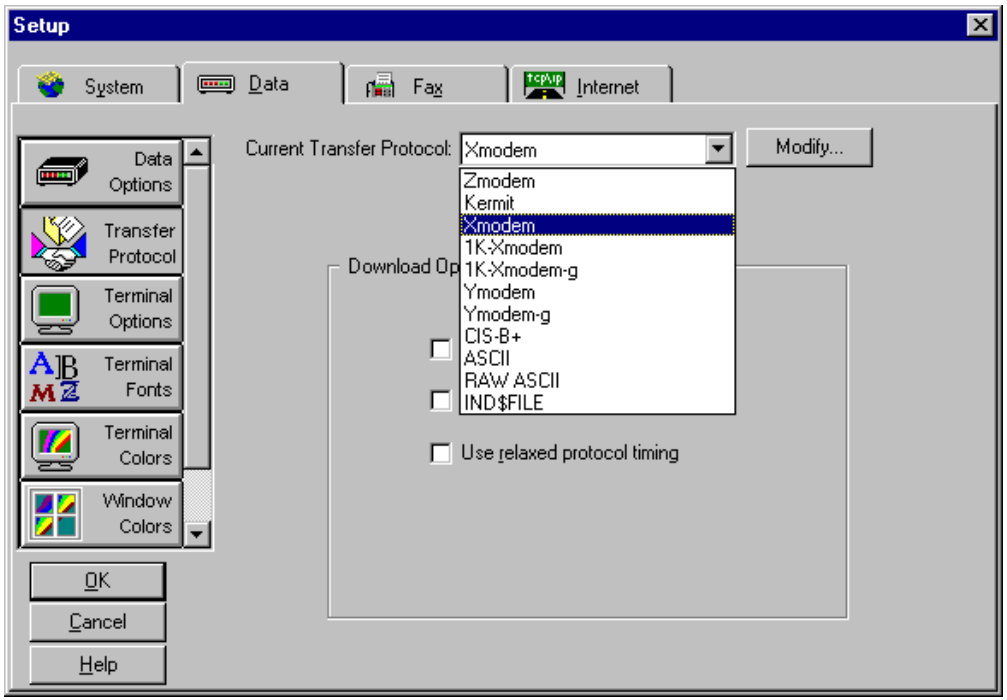
1. Start Procomm Plus in the Data Terminal mode.
2. Open the Connection Directory and connect to the HLC's MMI.
3. Log in to the HLC's MMI.

   See "LOGIN (L)" on page 91.
4. From the Options pull-down menu, select Data Options.

5 From the Data Options menu, select Transfer Protocol.



6 From the Transfer Protocol pull-down menu, select Xmodem.



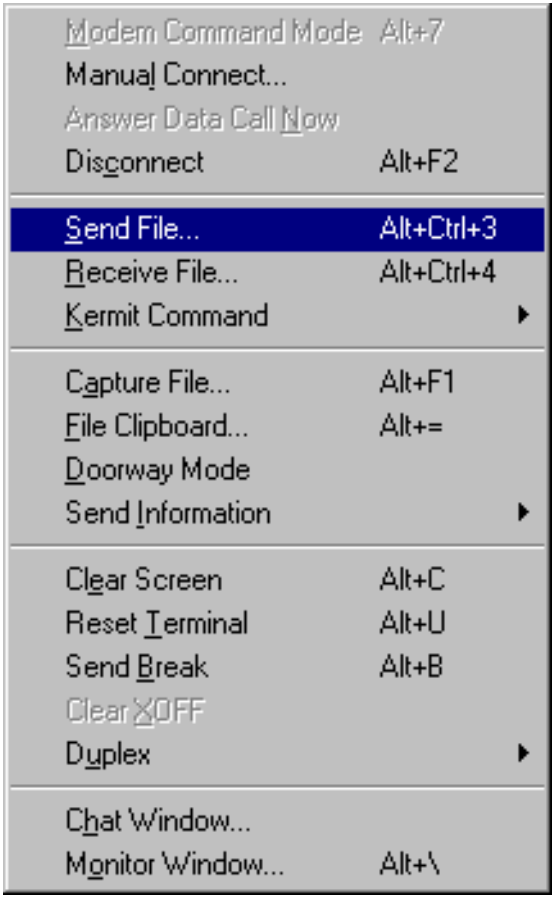
7 Enter the `UPLOAD (U)` command.

IF the HLC is running	THEN

from EPROM	The following message appears:
	`UPLOAD FLASH? (YES OR NO)`
	Type Y and press Enter.
	A message similar to the following appears:
	`Uploading using X-MODEM-CRC.`
	`Hit CTRL-X to abort.`
	`CCCCCC`
	Go to Step 8.
	Note: The advancing row of "C"s at the bottom of the screen serves only to signal that the HLC is waiting for the filename of the firmware file you wish to download to Flash memory.

from Flash memory	The following message appears:
	`Firmware is executing from Flash`
	`Reboot to EPROM?`
	Type N and press Enter to cancel the upload.
	Type Y and press Enter to reboot the system to EPROM.
	Result: The following message appears:
	`Booting EPROM. Please wait...`
	The HLC is rebooted from E-PROM and Flash memory is erased.
	The MMI session ends and you must log in again and reenter the `UPLOAD` command.

8 From the Data pull-down menu, select Send file.



9 In the resulting dialog boxes, locate the file containing the desired firmware load and press Enter.

Result: Your terminal software now uploads the new firmware file to the HLC.

Chapter 5

Troubleshooting

In this chapter

Overview

Introduction

This chapter outlines troubleshooting steps to be taken for a few possible problems. If your problem is not represented in this chapter, contact technical support.

Dropped calls

These are solutions to the most likely sources of dropped calls on your Meridian HomeOffice II system.

No voice path

These are solutions to the most likely sources of the loss of voice path on a Meridian HomeOffice II system.

Echo on line

The solution to the most likely source of echo on a Meridian HomeOffice II system is presented here.

Blocked calls

These procedures give you the solutions to the most likely sources of blocking on a Meridian HomeOffice II system.

Unsatisfactory Flash

This procedure enables you to change the HLC's execution mode to a known, functioning Flash load.

Dropped calls

Introduction

If you are having problems with dropped calls on your Meridian HomeOffice II system, these solutions may resolve them.

To troubleshoot dropped calls

1. Verify the HLC's security level.

   See "DISPLAY CONFIG (D C)" on page 102 for instructions on how to display the HLC's security level.

2. Verify the security identifier of the remote sites where the problem is occurring.

   The remote site's security identifier (security ID) is displayed in Local Manager (the HomeOffice Router software). Check this number against the security ID recorded on the Line Card Ports Configuration form that you completed from the *Meridian HomeOffice II Planning Guide* (NTP 555-8321-101) when you originally configured the HLC.

   If there is a discrepancy, you must reconfigure the security ID. See "SET IDENTIFIER (S I)" on page 122 for the necessary procedure.

3. If the problem persists, contact technical support.

No voice path

Introduction

If you are having a problem with no voice path on a Meridian HomeOffice II system, these solutions may resolve them.

To troubleshoot no voice path

1 Verify the user's remote number.

For the exact procedure for displaying an HLC's remote numbers, see "DISPLAY REMOTE (D R)" on page 108.

If necessary, reconfigure the remote number (see "SET REMOTE (S R)" on page 131.)

2 Verify the cabling connections.

Refer to the figures on pages 27 and 29 for illustrations of the proper cabling connections for one- and multiple-HLC systems, respectively. For the proper procedures used to cable one-HLC and multiple-HLC systems, refer to pages 51 and 53, respectively.

3 If the problem persists, contact technical support.

Echo on line

Introduction

If you are having a problem with echo on your Meridian HomeOffice II system, try these solutions may resolve the problem.

To troubleshoot line echo

1. Check your echo canceling settings.

   For the procedure necessary to display the HLC's echo canceling settings, see "DISPLAY ECHO (D E)" on page 104.

   For the procedure necessary to change an HLC's echo canceling settings, see "SET ECHO (S E)" on page 120.

2. If the problem persists, contact technical support.

Blocked calls

Introduction

If you are having problems with blocked calls on a Meridian HomeOffice II system, these solutions may resolve them.

Cabling and settings

1 Confirm proper cabling connections by comparing your system with the figures on pages 27 and 29.

2 If the problem persists, check settings at the following locations:

- the HLC
- the HomeOffice Router
- the switch

To check settings on the HLC

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

Result: The MMI presents you with the logged-on command prompt. (See “Command prompts” on page 91.)

2 Check signaling connections in a Meridian HomeOffice II system:

TO check	RUN a
the connection between the HLC and the RDB	Connectivity test. See “Connectivity test” on page 155 for the proper procedure.
the connection between the RDB and the digital telephone	Phone test. See “Phone test” on page 156 for the proper procedure.

3 If the system passes both connection tests and the problem still persists, use Local Manager to check the security identifier (security ID) configured for the channel in question. Ensure that it agrees with the security ID on the Line Card Ports Configuration form that you took from the *Meridian HomeOffice II Planning Guide* (NTP 555-8321-101) and filled out when originally configuring the HLC where the problem exists.

IF the security IDs	THEN
agree	the problem is not with the security ID setting. Go to step 4.
don't agree	■ reconfigure the remote site's security ID to agree with the security ID recorded on the Line Card Ports Configuration form for this HLC. See "SET IDENTIFIER (S I)" on page 122 for the exact procedure ■ Check for blocked calls.

4 If the problem persists, check the remote number configured for the remote site in question using the DISPLAY REMOTE (D R) command ("DISPLAY REMOTE (D R)" on page 108. Ensure that the remote number displayed for this channel agrees with the remote number on the Line Card Ports Configuration form mentioned in the previous step.I

IF the remote numbers	THEN
agree	the problem does not reside on the HLC (if the previous steps have been followed). Go to "To check settings on the HomeOffice Router" on page 172.
don't agree	■ reconfigure the remote site's remote number to agree with the Line Card Ports Configuration form for this HLC. See "SET REMOTE (S R)" on page 131 for the exact procedure. ■ Check for blocked calls.

5 If the problem persists, check the settings on the HomeOffice Router, see page 172.

To check settings on the HomeOffice Router

1 If you are not already logged in, log in to the MMI.

See “LOGIN (L)” on page 91.

Result: The MMI presents you with the logged-on command prompt. (See “Command prompts” on page 91.)

2 Use Local Manager to check the security identifier (security ID) configured for the channel in question. Ensure that it agrees with the security ID in the Line Card ports configuration form that was filled out when originally configuring the HLC where the problem exists.

IF the security IDs	THEN
agree	the problem is not with the security ID setting. Go to step 3.
don’t agree	do the following: ■ Reconfigure the remote site’s security ID to agree with the Line Card Ports Configuration form for the HLC where the problem exists. See the *Meridian HomeOffice II Network Administration Guide* (NTP 555-8321-310) for the proper configuration procedure. ■ Check for blocked calls.

3 If the problem persists, check the remote number configured for the remote site in question. Ensure that it agrees with the remote number on the Line Card Ports Configuration form mentioned in the previous step.I

IF the remote numbers	THEN
agree	the problem does not reside on the HLC (if all other steps have been followed). Go to “To check settings on the switch” on page 173.

IF the remote numbers	THEN
don't agree	do the following: ■ Reconfigure the remote site's remote number to agree with the Line Card Ports Configuration form mentioned in the previous step. See the *Meridian HomeOffice II Network Administration Guide* (NTP 555-8321-310) for the proper procedure. ■ Check for blocked calls.

4 If the problem persists, check the appropriate settings at the switch.

To check settings on the switch

1 If you are not already logged in, log in to the MMI.

See "LOGIN (L)" on page 91.

Result: The MMI presents you with the logged-on command prompt. (See "Command prompts" on page 91.)

2 At the command prompt, type HOST or HO and press Enter.

Result: The MMI prompts you for a password.

Note: The non-configurable password is "HOST."

3 You must type the case-sensitive password in all uppercase letters and press Enter.

Result: Five asterisks, one for each letter of the password and one for the Enter keystroke, and the word "CONNECTED" appear, similar to the following figure:

```
Wed, 05-26-1999  17:17:34
HLC::>HO
Enter Password *****
```

4 Refer to documentation specific to your particular switch for appropriate troubleshooting procedures.

5 Upon completion of switch maintenance procedures, to exit the switch and return to the HLC MMI, type the host logout command, @@@ .

Result: The MMI command prompt appears on the screen.

Note: The HLC automatically terminates your MMI session after any 15-minute period of inactivity, but does not log out of the switch. If the HLC MMI logs out before you log out of the switch's maintenance terminal, you must use the following procedure to terminate the connection to the switch:

a. Log back in to the HLC MMI.

b. Retype the HOST or HO command and press Enter.

c. Retype the HOST password (HOST) and press Enter.

d. Log out of the switch.

e. Type the HOST logout command, @@@.

Unsatisfactory Flash

Introduction

If the HLC's firmware load ever becomes corrupted, or for troubleshooting under the direction of a technician, SW2, position 3, allows you to change the HLC's execution mode and force the HLC to execute from the firmware load shipped with the HLC, which resides on the E-PROM module.

To change the HLC's execution mode via DIP switch setting

1 If you are not already logged in, log in to the MMI.

Note: See "LOGIN (L)" on page 91.

If you are already logged in, type PROVISION SAVE (P S) and press enter to save the card's most recent settings (provisioning entries).

2 Remove the HLC from the IPE shelf or Option 11 cabinet.

Set position 3 of DIP switch 2 (SW2) to the desired mode by selecting one of the following options:

- To force the HLC to execute from E-PROM, set SW2 position 3 to the ON position.
- To allow the HLC to execute from Flash, set SW2 position 3 to the OFF position.

3 Reinsert the card.

4 Log in to the MMI.

5 Type DISPLAY CONFIGURATION (D C) and press enter to verify that the HLC is running in the desired execution mode.

Note: You can equip Flash memory with a new firmware load while the DIP switch is set to Force E-PROM, but for the HLC to execute from the new firmware load in Flash memory, the SW2 position 3 must be set to OFF.

Appendix A

Man-Machine Interface (MMI) commands

In this appendix

MMI commands

Introduction

The appendix provides a quick reference the maintenance commands for use with the Meridian HomeOffice II Line Card MMI.

Commands and descriptions

Command	Description	See
C O	Copy Onofftable: Copies entries from one channel of the Online/Offline table to other channels or days.	"COPY ONOFFTABLE (C O)" on page 96
D C	Display Configuration: Displays the security level, autoclock setting, site name, serial number, firmware version, and DIP switch settings for the HLC.	"DISPLAY CONFIG (D C)" on page 102
D E	Display Echo: Displays the echo-canceling status of all 16 channels of the current HLC.	"DISPLAY ECHO (D E)" on page 104
D O	Display Onofftable: Displays the times at which the specified channel will have the ISDN connection, and at which times the specified channel will be removed from the ISDN connection.	"DISPLAY ONOFFTABLE (D O)" on page 105
D P	Display Phone: Displays the characteristics of the telephones configured for each HLC channel.	"DISPLAY PHONE (D P)" on page 107
D R	Display Remote: Displays the ISDN telephone number to which the HLC forwards calls to this channel.	"DISPLAY REMOTE (D R)" on page 108

Command	Description	See
D S	Display Status: Displays the current status of each user configured to the HLC.	"DISPLAY STATUS (D S)" on page 110
E O	Erase Onofftable: Removes all entries from the onofftable.	"ERASE ONOFFTABLE (E O)" on page 139
E R	Erase Remote: Removes a remote user from the HLC.	"ERASE REMOTE (E R)" on page 141
HE or ?	Help. Displays the Help menu.	"HELP (HE or ?) menu" on page 93
HO	Host. Connects the MMI terminal to the Meridian 1 or SL-100 SDI port through the daisy chain. The Login password is "HOST." Type `@@@` to terminate the connection.	"HOST (HO)" on page 94
L	Login. Logs in to the MMI terminal when the system has one HLC installed.	"LOGIN (L)" on page 91
L *xx*	Login <xx>: Logs in to an HLC when the system has more than one HLC, where xx is the address of the HLC in the daisy chain.	"LOGIN (L)" on page 91
O F	Online Force: Terminates an active ISDN connection without delay and without warning to the affected user.	"OFFLINE FORCE (O F)" on page 146
O N	Offline Normal: Inserts an instantaneous Offline command into the Online/Offline table closing the ISDN connection. This command provides a warning to the user of the impending termination of the connection and allows the user to override the termination just as a normal Offline command would.	"OFFLINE NORMAL (O N)" on page 145

Command	Description	See
P E	Provision Erase: Returns HLC configuration settings to factory defaults.	“PROVISION ERASE (P E)” on page 151
P R	Provision Revert: Returns HLC configuration settings to those most recently saved.	“PROVISION REVERT (P R)” on page 150
P S	Provision Save: Saves the most recent changes to HLC configuration settings.	“PROVISION SAVE (P S)” on page 149
Q	Quit: Logs out of the MMI terminal.	“QUIT (Q)” on page 98
S C	Set Configuration: Sets the security level, autoclock configuration, and site name for the HLC.	“SET CONFIG (S C)” on page 114
S D	Set Date: Sets the date on the HLC.	“SET DATE (S D)” on page 118
S E	Set Echo: Sets the echo canceling status, ON or OFF, of each of the 16 channels on the current HLC.	“SET ECHO (S E)” on page 120
S I	Set Identifier: Sets the unique security identifier for the specified channel.	“SET IDENTIFIER (S I)” on page 122
S O	Set Onofftable: Sets the times at which the specified channel will have the ISDN connection and the times at which the specified channel will be removed from the ISDN connection.	“SET ONOFFTABLE (S O)” on page 124
S P	Set Phone: Indicates the presence or absence of a cordless telephone on the specified channel and determines the configuration of the Indicator Update feature.	“SET PHONE (S P)” on page 128

Command	Description	See
SR	Set Remote: Sets the ISDN number to which the HLC must forward calls made to the telecommuter's corporate office telephone.	"SET REMOTE (S R)" on page 131
S T	Set Time: Sets the clock time on the HLC.	"SET TIME (S T)" on page 134
T	Test: Tests the viability of the connection between the HLC and the RDB, or between the HLC and the digital telephone.	"TEST (T) menu" on page 153
U	Upload: Upgrades the HLC with the latest release of HLC firmware from a user-supplied file.	"UPLOAD (U) command" on page 159

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