Meridian HomeOffice II
Planning Guide

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Meridian HomeOffice II
Planning Guide

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Publication history

July 1999

This is the Standard 01.02 issue of the *Planning Guide* for Release 2.1 of Meridian HomeOffice II. The *Planning Guide* has been updated with information about new features added since July 1998.

July 1998

This is the Standard 01.01 issue of the *Planning Guide* for Release 2.1 of Meridian HomeOffice II. Written for the network administrator at the corporate host site, it explains what is needed to incorporate this product into the corporate network.

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Preface

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Overview

Introduction

This document describes the requirements and overall process for incorporating the HomeOffice II product into your organization's network. Topics discussed include many units are required, the role Meridian HomeOffice II plays in the network, and deployment planning.

Who should read this guide

This guide is intended for

- Nortel Networks distributors
- network managers and administrators at the corporate host site

Assumptions

This guide assumes that you are familiar with the following:

- Meridian 1 or SL-100 PBX
- data networking concepts and operation
- Windows PCs
- digital telephones

Version and issue of HomeOffice II documentation

The version and issue of Meridian HomeOffice II documents are indicated by a four-digit document release number (for example, 01.01). The first two digits indicate the version or release of the product. The second two digits indicate the issue of the documentation.

The first two digits increase by one each time the document content is changed to support a new HomeOffice II release. For example, the first release of a document is 01.01, and the next release of the document in a subsequent HomeOffice II release is 02.01.

The second two digits increase by one each time a final document is revised and re-released for the same HomeOffice II release.

HomeOffice II documentation release 01.02 is assigned to the second issue of this guide to support HomeOffice II Release 2.1.

About this guide

Introduction

This *Planning Guide* provides an overview of the following:

• the telecommunication and data network requirements for Meridian HomeOffice II

• the tasks that you need to perform

• the configuration process

How to use this guide

Read this guide first before beginning Meridian HomeOffice II implementation. This guide provides an overview of Meridian HomeOffice II and what you need to do to successfully install it.

Once you are familiar with the overall installation requirements, you can refer to the rest of the Meridian HomeOffice II documents for detailed instructions. See "Related documents" on page xvi for more details.

In this guide

This guide is organized into the following chapters:

Chapter 1, "Introduction to HomeOffice II"
This chapter describes the product, features, supported configurations, and configuration tools.

Chapter 2, "Network planning"
This chapter describes what you need to incorporate the product into both your telecommunication and data networks. Topics discussed include how many units are required, trunk requirements, supported platforms and releases of Meridian 1 or SL-100 PBXs, and remote user requirements.

Chapter 3, "Meridian HomeOffice II deployment"

This chapter provides checklists that identify the tasks that you must perform throughout Meridian HomeOffice II implementation. It also provides data entry forms that you can use to plan for the HomeOffice II Line Card and HomeOffice Router configuration.

Appendix A: "HomeOffice II part codes"

This appendix provides ordering codes for HomeOffice II field-replaceable components.

Index

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

Skills you need

Introduction

This topic identifies the skills and knowledge you need to use this guide effectively.

Nortel Networks product knowledge

Knowledge of, or experience with, the following Nortel Networks products will be of assistance when installing and using HomeOffice II:

- the HomeOffice Router
- the Meridian 1 PBX
- the SL-100 PBX

PC experience or knowledge

Knowledge of, or experience with Microsoft Windows 3.1, Windows NT, or Windows 95 will be of assistance when administering HomeOffice II.

Telecommunications knowledge

If you are a telecom administrator, knowledge of or experience with the following tasks will be of assistance when installing and administering HomeOffice II:

- call routing and blocking in your telecommunications network
- configuration of voice and data ports
- provisioning of incoming and outgoing ISDN trunks
- line card installation on the PBX

Data networking knowledge

If you are a data network administrator, knowledge of or experience with the following products and principles will be of assistance when installing and administering HomeOffice II:

- data networking products such as
  — remote access switches
  — routers
  — bridges
- data networking principals such as
  — network, subnet, and host addressing
  — routing over TCP/IP or IPX
  — security authentication
- knowledge about how your data network is set up (structure, addresses, etc.)

Other experience or knowledge

Other types of experience or knowledge that may be of use include the following:

- troubleshooting skills
- analytical skills
- ability to interpret network analyzer traces

Related documents

Introduction

This topic identifies the documents that are available for:

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

How to obtain the Meridian HomeOffice II documentation

You can order printed versions 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, then download the files you need.

Network administrator documents

Meridian HomeOffice II Planning Guide (NTP 555-8321-101)
This document, written for both the telecommunications network and data network administrators, explains what you need 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.

A condensed version of the *Release Notes* is included in the HomeOffice Router package. The HomeOffice Router CD-ROM includes a version with more detailed information.

Note: The printed copy may supersede the copy provided on the CD-ROM. You can 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, written for the corporate data network administrator, describes data networking concepts and features, and explains how to configure the HomeOffice Router for operation within the data network.

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

This document, written for data network administrators and advanced users, 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, written for the Meridian 1 or SL-100 installer and/or administrator, 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 the 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, written primarily for the telecommuter, explains how to install and configure the HomeOffice Router and digital telephone. It includes the information you need 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 comes with the HomeOffice II CD-ROM, which is provided inside the HomeOffice II package. It explains what is on the CD-ROM and provides a quick reference installation procedure.

Chapter 1

Introduction to HomeOffice II

In this chapter

What is Meridian HomeOffice II?

Introduction

Meridian HomeOffice II is a telecommuting product that allows your corporate telecommuters to connect their digital telephone to the corporate PBX and the PC to the office LAN via a digital connection in their home office.

System components

The connection of corporate telecommuters requires the following equipment:

- on the corporate PBX:
  - — general purpose trunks (T1/E1 or PRI), which support Direct Inward Dialing (DID)
  - — PBX voice and data ports (TNs) for each telecommuter
  - — a HomeOffice II Line Card (HLC) installed on an Intelligent Peripheral Equipment (IPE) shelf or Option 11 cabinet
- at the telecommuter's home:
  - — an ISDN Basic Rate Interface (BRI) line
  - — a Meridian digital telephone
  - — a HomeOffice Router connecting the telecommuter's PC to the corporate LAN and the digital telephone to the corporate telephone network
- at the data network host site:
  - — a suitable remote access switch running the IP or IPX protocols

What the telecommuter can do with Meridian HomeOffice II

HomeOffice II allows telecommuters to take full advantage of your company's telephone network by providing them with a fully functional digital telephone. The telephone, using services such as coordinated dialing, voice mail, call forward, conference, and so on, works exactly the same at the telecommuter's home as it does at the office.

The HomeOffice Router allows the telecommuter to connect the PC to the corporate LAN. Once connected, the telecommuter can upload or download files, send and receive e-mail, and browse Internet or intranet web pages.

Supported protocols

The HomeOffice Router supports both Internet Protocol (IP) and Internetwork Packet Exchange (IPX) routing, as well as multi-protocol bridging, making it ideal for connecting to the Internet or corporate LANs.

Two 64 Kbps ISDN B-channels deliver a total of 128 Kbps of throughput, which results in

- 512 Kbps of bandwidth using STAC compression when the digital telephone is in offline mode
- 256 Kbps of bandwidth using STAC compression when the digital telephone is in online mode

How it works

The following illustration shows the connections between the telecommuter's home office (remote location) and the corporate office (host location).

ISG624_i
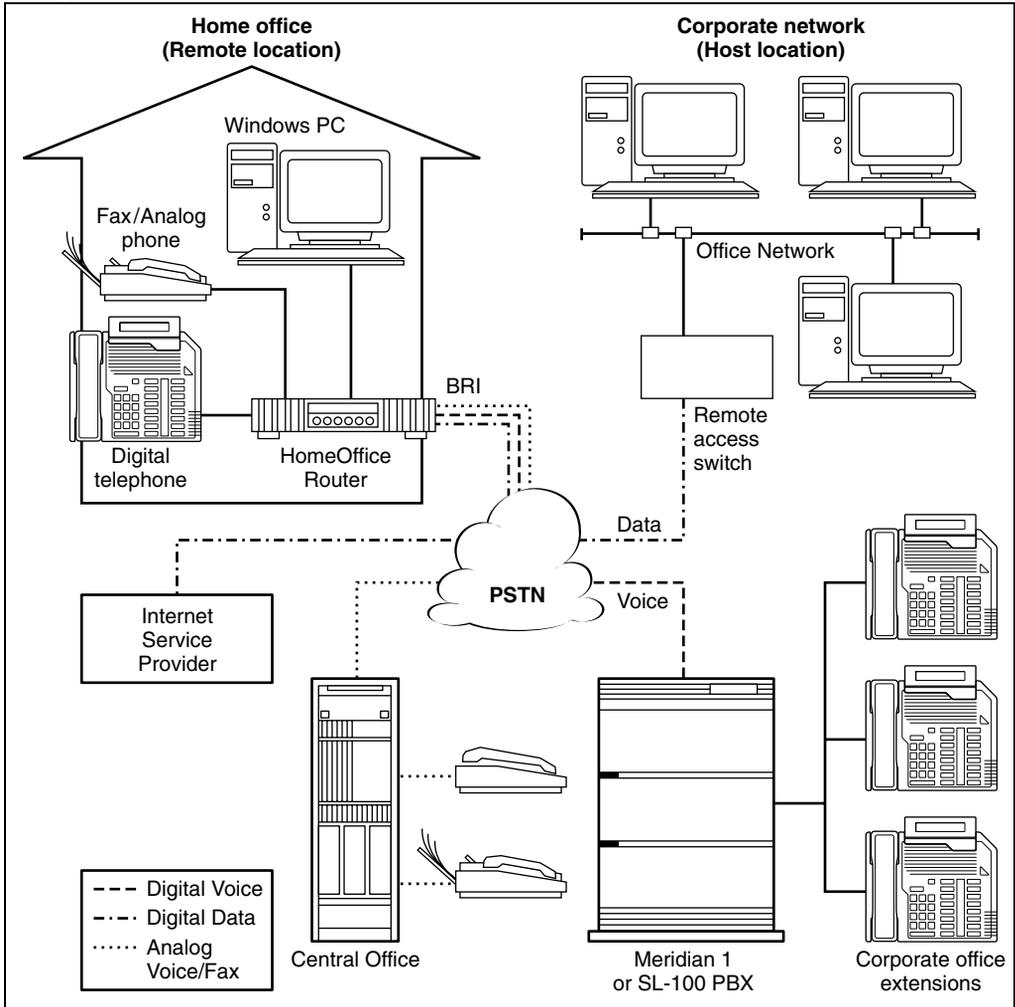
ISDN BRI line

Communication between the telecommuter's home office and the corporate office takes place over an ISDN BRI line connected to the HomeOffice Router. The ISDN BRI line connects the telecommuter's home office through the public telephone network to

- the corporate telephone network (using a Meridian 1 or SL-100 PBX)

- the corporate LAN or WAN

Once the ISDN connection is established, you can use both ISDN B-channels simultaneously to make data and voice calls.

HomeOffice Router and digital telephone

To provide digital telephone functionality, the HomeOffice Router is equipped with a telephone extender daughterboard. The digital telephone connects to the corporate PBX through the HomeOffice Router's daughterboard, over ISDN, to a host extender line card (HomeOffice II Line Card) installed on the corporate Meridian 1 or SL-100 PBX IPE shelf.

HomeOffice II Line Card

The HomeOffice II Line Card on the Meridian 1 or SL-100 PBX emulates an Extended Digital Line Card (XDLC), supporting 16 PBX voice ports and 16 PBX data ports over 16 physical interfaces. One PBX voice port is associated with the telecommuter's digital telephone. One PBX data port is associated with the telecommuter's HomeOffice Router to carry the voice call. The HomeOffice II Line Card associates each PBX voice port with a PBX data port, providing support for up to 16 telecommuters.

How Meridian HomeOffice II works in online mode

If the telecommuter is in online mode (that is, working from home), all calls directed to the telecommuter's corporate directory number are routed over ISDN, across the public telephone network to the telecommuter's home office. All calls made by the telecommuter are directed in the same manner to the corporate PBX. For example, see Call A in the illustration on the next page.

How Meridian HomeOffice II works in offline mode

If the telecommuter is in offline mode (that is, either not accepting calls or actually working at the corporate office), calls to the telecommuter's corporate directory number are directed as follows:
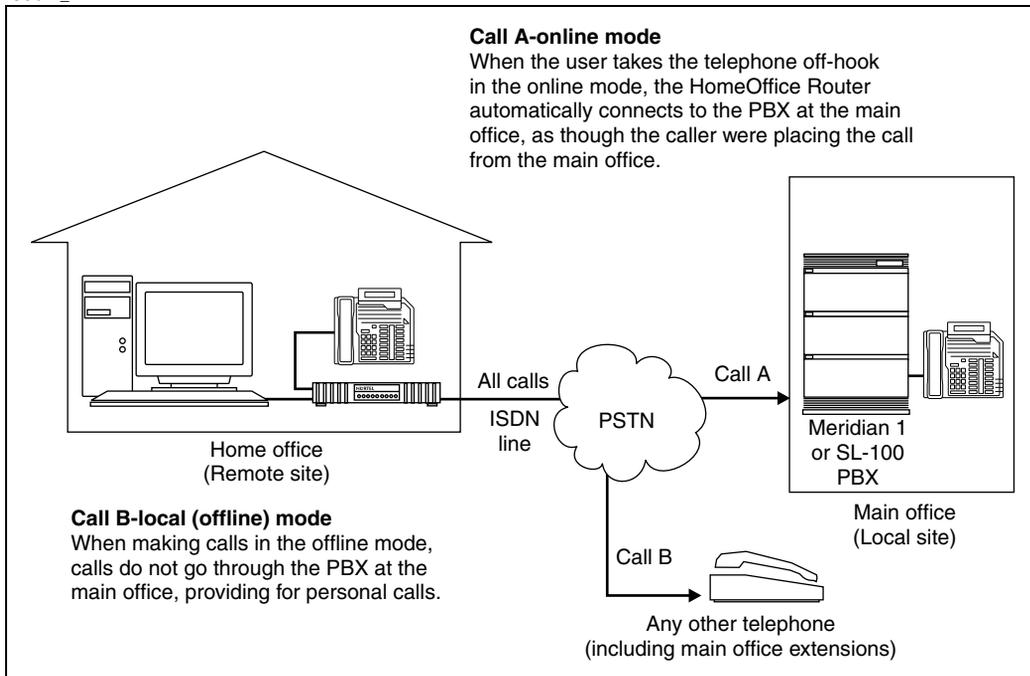
- to the telecommuter's telephone set at the corporate office
- if the telecommuter is a full-time telecommuter with no office space, to the corporate voice mail system

Local calling in offline mode

If the telecommuter is permitted to make calls in offline mode (in which case, local calling is enabled and the telephone is functioning like an analog telephone), calls initiated from the telecommuter's home office are directed over ISDN to the public telephone network. The corporate PBX is not involved in the call, resulting in any long-distance or ISDN usage charges incurred on that ISDN service to be charged to the telecommuter's location. Based upon policy setup within your corporation, these charges are either expensed back to, or paid by, your organization. For example, see Call B in the following illustration.

Note: If someone wants to reach the telecommuter while the digital telephone is in offline mode, the caller must dial the ISDN number assigned to the digital telephone.

ISG612_I

Call A-online mode
When the user takes the telephone off-hook in the online mode, the HomeOffice Router automatically connects to the PBX at the main office, as though the caller were placing the call from the main office.

Home office
(Remote site)

All calls
ISDN line
PSTN
Call A
Meridian 1 or SL-100 PBX

Call B-local (offline) mode
When making calls in the offline mode, calls do not go through the PBX at the main office, providing for personal calls.

Call B
Any other telephone
(including main office extensions)

Main office
(Local site)

Year 2000 compliance

All components of Meridian HomeOffice II are compatible with Year 2000.

Meridian HomeOffice II and call centers

Introduction

You can use Meridian HomeOffice II in call centers. The HomeOffice II Line Card (HLC) allows you to assign up to eight ACD agents to share each HLC port. All agents assigned to a particular port must work mutually exclusive hours because each port can be used by only one agent at a time.

You can also use Meridian HomeOffice II may with Computer Telephony Integration (CTI) applications and connectivity devices.

How it works

Each agent assigned to a particular HLC port is identified by a position ID from 0 through 7. (If only one person is assigned to the HLC port, the position ID is automatically 0.) Each position on the port is then configured with the agent's remote ISDN number and, if used, unique security identifier.

When an agent goes online, the appropriate agent position is activated if the agent's Caller ID or security identifier matches one of the remote ISDN numbers or security identifiers configured for the port.

If an agent attempts to connect to the HLC port while the port is being used by another agent, the incoming agent is denied access and receives the HLC Port Already in Use message on the telephone display.

Once activated, the agent can receive calls from the ACD queue, and make outgoing calls using any private DNs assigned to his or her telephone.

Call centers using Computer Telephony Integration

You can use Meridian HomeOffice II in call centers that use the following:

- first party Computer Telephony Integration (CTI) connectivity devices
  — Symposium Communicator card version 1.2 with software version 2.0
  — Meridian Communications Adapter (MCA)

Note: The Symposium Communicator card is not available in all countries. Check with your Nortel Networks distributor for availability.

- first party CTI applications using Nortel Networks Symposium Desktop TAPI Service Provider 1.6
  — Symposium FastView 1.6
  — Symposium FastCall 1.6
  — Symposium Call Manager 5.0
  — other TAPI-compliant applications
- third-party CTI applications using Symposium TAPI Service Provider for Meridian 1 Release 2.1
  — Symposium Agent 1.1
  — Symposium Call Manager 5.0
  — other Symposium Partner products

HomeOffice II components

Introduction

Meridian HomeOffice II consists of the following items:

- HomeOffice Router package
- individual components for use at the corporate office

Each telecommuter requires one HomeOffice Router package. Order components used at the corporate office according to network needs.

HomeOffice Router package

The HomeOffice Router package includes the following components for each telecommuter:

- HomeOffice Router and the cables required for connection to AC power and the ISDN and Ethernet networks
- a CD-ROM containing the following items:
  — *Quick Start Guide* booklet
  — Install Wizard and Local Manager software
  — computer-based training (to provide "getting started" training to the telecommuter)
  — firmware (in case an upgrade or reinstallation is required)
  — user documentation in Adobe Acrobat Reader (.PDF) format
- documentation

  The *User Guide* provides step-by-step instructions for installing, configuring, and using the HomeOffice Router and digital telephone. *Release Notes* provides last-minute information about the product, and identifies known problems and workarounds.

In addition, you must provide each telecommuter with a digital telephone for his or her home office. The digital telephone set can work in conjunction with an office set (that is, twinned), or it can be a stand-alone set with no corresponding host office set (for a user who telecommutes 100%).

You can order the digital telephone as part of the kit for the telecommuter.

Corporate office components

Order each of the following items in quantities required by the network:

*   one HomeOffice II Line Card for the Meridian 1 or SL-100 PBX for every 16 telecommuters

    Each Line Card package includes a cable for daisy-chaining the HomeOffice II Line Card to another HomeOffice II Line Card and connect to the MMI and SDI interfaces.

    Note: If space and length considerations require, customer-supplied MMI or SDI extension cables can be constructed.

*   the following documentation:
    — this guide
    — *Line Card Configuration Guide* (NTP 555-8321-210), which explains how to install and configure the HomeOffice II Line Card
    — *Network Administration Guide* (NTP 555-8321-310), which explains how to incorporate the HomeOffice Router into the data network

Note: It is assumed that your networks already use a Meridian 1 or SL-100 PBX, and one or more remote access switches.

HomeOffice Router data networking features

Introduction

This topic highlights some of the data networking features that the HomeOffice Router provides.

Dynamic IP Address Translation

Dynamic IP Address Translation (DIAT for IP) allows the HomeOffice Router to present its LAN IP network as a single-user dial-in client to the central remote access switch. This simplifies central site configuration, reduces IP address space requirements, isolates the IP addressing used on the HomeOffice Router LAN, and provides less expensive Internet access.

Dynamic IPX Address Translation

Dynamic IPX Address Translation (DIAT for IPX) allows the HomeOffice Router to present its IPX network as a single IPX node to the central remote access switch. This simplifies central site configuration, reduces IPX address space requirements, and isolates the IPX addressing used on the HomeOffice Router LAN. The central site only needs to use a single IPX node and network number to communicate with the devices in the HomeOffice Router LAN.

IP Forwarding

HomeOffice Router IP Forwarding allows users to use their office computer, which is normally connected to the office LAN, at home without having to reconfigure any of the computer's IP properties.

RIP version 2

Routing Information Protocol (RIP) allows IP routing information to be exchanged dynamically between a HomeOffice Router and its ISDN peer. RIP version 2 includes subnetting information, which is required to minimize IP address space requirements.

Dial-on-demand connections with IP static routes

Dial-on-demand automatically brings up the connection when there is data to send and drops the connection when the link is idle.

The HomeOffice Router always supports Dial-on-demand when it initiates the call, regardless of the device at the remote end. However, when the call is initiated in the other direction, the device at the remote end must also support Dial-on-demand.

For Dial-on-demand with IP to function properly, the HomeOffice Router must make the initial call as well as all subsequent calls using IP static routes.

Bandwidth-on-Demand

For Bandwidth-on-Demand to function properly, the HomeOffice Router must make the initial call as well as all subsequent calls.

Multilink PPP (MLP) allows a second channel to be added dynamically during a call to increase the bandwidth of the connection. This is possible only if the number of the second channel is fixed, in which case no extra negotiation is required during the call. This type of Bandwidth-on-Demand is called Aggregation.

The HomeOffice Router decides when to open the second call based on the bandwidth of a call initiated either by itself or by the device at the other end. Dynamic Bandwidth-on-Demand works with any device that supports Dial-on-Demand and MLP. Bandwidth-on-Demand is configurable.

Note: Bandwidth-on-demand is not functional when the digital telephone is in online mode (regardless of whether the ISDN service is incurring charges or not).

Permanent connections

With IP running RIP or static routes

For permanent connections with IP, the IP address of the HomeOffice Router must be on a different IP subnet than the remote access switch.

You can use IP RIP if the HomeOffice Router LAN is a subnetted IP network and the remote access switch has an address from the same IP subnet. If you are not using IP RIP, set up a static route on the remote access switch or the HomeOffice Router to route to the other device's LAN. To use RIP, you must assign the HomeOffice Router its own IP network address.

With IPX running RIP/SAP

For permanent connections with IPX, the IPX addresses of the Ethernet, ISDN, and remote access switch must be different.

Circuit activation and deactivation

This security feature allows individual circuits to be activated and deactivated without the loss of history information. You can use circuit activation to initiate third-party security dialogs.

Authentication methods

Password Authentication Protocol (PAP) and Challenge Handshake Authentication Protocol (CHAP) are standard PPP-based authentication protocols, which must be supported by devices at both ends of the link. In addition, the Shiva Password Authentication Protocol (SPAP) is supported.

SecurID authentication

Through the use of SPAP and circuit activation and deactivation, the HomeOffice Router can use third-party security, such as SecurID, AssureNet, and TACACS when connecting to an Intel Shiva LanRover Access Switch.

Note: The HomeOffice Router does not support SecurID with non-Intel Shiva devices.

AT&T 5ESS multipoint ISDN support

The HomeOffice Router supports the AT&T 5ESS switch multipoint ISDN service. This allows the user to use two SPIDs, giving access to a line that can provide two data or two analog calls. The method for using no SPID or one SPID remains intact.

NetBIOS/IP spoofing

In addition to NetBIOS/IPX spoofing, the HomeOffice Router supports NetBIOS/IP spoofing, which is required for Windows 95 and Windows NT. This prevents unnecessary network traffic from being sent across a link and allows a virtual connection to remain suspended whenever actual network access is not required.

STAC data compression

Compression is the use of special coding to reduce the amount of information being transmitted by eliminating redundancies. The HomeOffice Router negotiates compression at call setup using Compression Control protocol. This feature works with STAC compression used by many other remote access switches.

Callback

Callback allows a user connected to a HomeOffice Router to request a return call from a remote site. This takes advantage of differences in call charges and can provide extra security.

Unnumbered links

By setting up unnumbered LAN/WAN interfaces on HomeOffice Routers, you do not have to assign IP addresses to them. This helps to conserve IP address space.

Multiple static routes

By connecting more than one HomeOffice Router between the LAN and the ISDN service provider, an inbound call can be automatically rerouted to the operating path if the main path becomes inoperative.

Multi-homing

Multi-homing allows a LAN or WAN interface to have more than one logical IP address assigned to it. This allows two remote ISDN networks that use different network addresses to communicate through their HomeOffice Routers to a central site, using a single HomeOffice Router at the central site.

Supported configurations

When used with an Intel Shiva LanRover Access Switch, the HomeOffice Router supports several interoperability configurations.

Two-way CHAP authentication
Two-way CHAP authentication provides security and interoperability by using network isdn2 security within the Local Manager's configuration.

Delta RIP
Delta RIP minimizes ISDN usage between a HomeOffice Router and an Intel Shiva LanRover Access Switch when RIP is used, by only sending updates when there is a call in progress.

Bandwidth Allocation Control Protocol
You can use the Bandwidth Allocation Control Protocol (BACP) can be used to coordinate additional call setup and tear-down according to the bandwidth requirements.

IP RIP updates
The HomeOffice Router can ignore received IP RIP updates when using RIP.

Configuration tools

Introduction

Meridian HomeOffice II includes the following configuration tools:

- for the HomeOffice Router: Local Manager and Install Wizard software
- for the HomeOffice II Line Card: Man Machine Interface (MMI)

HomeOffice Router

The following tools are available for configuring the HomeOffice Router:

- Install Wizard
- Local Manager
- HomeOffice Router command shell

You need to install the Install Wizard and Local Manager applications on the network or administration PC. For instructions on how to install these applications, refer to the *Meridian HomeOffice II User Guide* (NTP 555-8321-205).

For information about accessing and using the HomeOffice Router command shell, refer to the *Meridian HomeOffice II Command Shell User Guide* (NTP 555-8321-910).

Note: You can locate both of these documents in the `docs` directory on the Meridian HomeOffice II CD-ROM.

HomeOffice II Line Card

For the HomeOffice II Line Card, a Man Machine Interface (MMI) allows configuration, maintenance, and diagnostics between the HomeOffice II Line Card and HomeOffice Router. The MMI is an RS-232 connection to a dumb terminal.

Chapter 2

Network planning

In this chapter

Overview

Introduction

This chapter describes what you must consider when planning to incorporate Meridian HomeOffice II into your corporate network. Pay careful attention to ensure that the following factors meet Meridian HomeOffice II requirements:

- your telecommunication network

- your data network

- remote users

Technical support requirements

You must ensure that appropriate personnel in your organization are trained to provide technical support if remote users have problems installing Meridian HomeOffice II or connecting to the network.

Telecom network planning

When planning to install Meridian HomeOffice II in your telephone network, you must consider the following items:

- the number of HomeOffice II Line Cards you need

- PBX hardware and software requirements

- host trunk requirements

- ISDN BRI line requirements

- HLC administration terminal setup

- PBX configuration

Number of HomeOffice II Line Cards

One HomeOffice II Line Card (HLC) is required for every 16 remote users. If you need to support more than 16 users, the HLCs can be daisy-chained (connected to each other) so that all of the HLCs can be administered through a single Man Machine Interface (MMI).

PBX hardware and software

To support Meridian HomeOffice II, the PBX must

- be one of the supported platforms running the minimum software vintage

- support extended digital line cards (XDLCs)

- have one available IPE slot for each HLC you want to install

Host trunks

The Meridian 1 or SL-100 PBX should use general purpose trunks (ISDN PRI or T1/E1 DTI) to process calls from the corporate office site to the central office.

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

ISDN BRI lines

You must 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.

HomeOffice II Line Card administration terminal

To administer the HLC, the HLC must be connected to one of the following items:

- a dumb terminal or PC

  Note: In this case, the dumb terminal or PC is connected to the first HLC in a daisy chain.

- a terminal server on the local area network (LAN)

- a modem (if remote access is required)

PBX configuration

Minimum configuration consists of one PBX voice and data port configured for each remote user, which are then associated with one HLC port.

Data network planning

You can use any existing remote access switch with Meridian HomeOffice II. However, what you need to consider is whether the existing remote access switch

- can accept connections from remote users using HomeOffice Routers
- has the ability to support the required growth in user connectivity

You can connect the HomeOffice Router to the corporate data network in one of the following ways:

- to a remote access switch over IP
- to a remote access switch over IPX
- to other ISDN small office/home office (SOHO) routers

Remote user planning

To use Meridian HomeOffice II, each user needs the following items:

- a HomeOffice Router package
- ISDN BRI service to the home office
- an appropriate power source
- a PC that meets the minimum system requirements
  Note: For a list of the minimum system requirements, page 67.
- a digital telephone

In addition, you must meet the following requirements if Meridian HomeOffice II will be used in a call center:

- The HLC must use firmware release 1.14 or later in conjunction with daughterboard (RDB) firmware release 9.2.3 or later on HomeOffice Routers used by ACD agents.

- All agents assigned to a particular port must work mutually exclusive hours because each port can be used by only one agent at a time.

- All agents who share the same port on the HLC must have exactly the same type of telephone, with exactly the same key configuration and CPND string.

- Agents who use a Symposium Communicator card on the PC to make and receive calls must use card version 1.2 and software version 2.0 with Meridian HomeOffice II. These agents must also install the Online/LC softkey program on their PCs, if no digital telephone is present.

Technical support requirements

Introduction

You must ensure that appropriate personnel or distributor support personnel in your organization are trained to provide technical support if remote users have problems installing Meridian HomeOffice II or connecting to the network.

Note: If your technical support is provided by your Nortel Networks distributor, your distributor will obtain the necessary training.

HomeOffice II Line Card

If remote users cannot make or receive calls on their home office digital telephone, your technical support personnel must be able to identify the cause and resolve the problem.

Ensure that appropriate personnel understand the following:

- what the HomeOffice II Line Card (HLC) is and how calls are processed by it
- ISDN PRI or T1/E1 DTI trunk requirements
- PBX voice and data telephone (TN) requirements
- how HLC addresses are set (DIP switches)
- how to use the HLC MMI
- how HLC ports are assigned to remote users (HLC ports are associated with the PBX voice and data telephones configured on the PBX)
- how ports are configured (remote ISDN number, security identifiers, online/offline table, and so on)
- mandatory versus optional configuration for each port

For more information, refer to the *Meridian HomeOffice II Line Card Configuration Guide* (NTP 555-8321-210).

HomeOffice Router

If remote users cannot make or receive calls on their home office digital telephone or connect to the data network, your technical support personnel must be able to identify the cause and resolve the problem.

Ensure that appropriate personnel understand the following:

Support personnel must understand	For more information, refer to
the HomeOffice Router's relationship to your telecommunication and data networks	this guide
what the HomeOffice Router is and how it works	this guide
how the HomeOffice Router is configured for connection over ISDN, to the corporate PBX, and to the remote access switch	• the *Meridian HomeOffice II User Guide* (NTP 555-8321-205) • the *Meridian HomeOffice II Network Administration Guide* (NTP 555-8321-205)
how to connect to remote HomeOffice Routers to perform remote administration	the *Meridian HomeOffice II Network Administration Guide* (NTP 555-8321-205)
how to use Local Manager	• the *Meridian HomeOffice II User Guide* (NTP 555-8321-205) • the *Meridian HomeOffice II Network Administration Guide* (NTP 555-8321-205)
how to use the HomeOffice Router command shell	the *Meridian HomeOffice II Command Shell User Guide* (NTP 555-8321-910) on the Meridian HomeOffice II CD-ROM

Digital telephone

If remote users cannot make or receive calls on their home office digital telephone, your technical support personnel must be able to identify the cause and resolve the problem.

Ensure that appropriate personnel understand the following:

- how to use the digital telephone with Meridian HomeOffice II
- behavior of display messages and indicators
- special requirements for Symposium Communicator card users

For more information, refer to the *Meridian HomeOffice II User Guide* (NTP 555-8321-205).

Escalating the problem

If you are unable to solve a problem, contact your Nortel Networks distributor for assistance.

ATTENTION   Before you call Nortel Networks, ensure that you have referred to all Meridian HomeOffice II documentation for the information you need. This will help you to minimize down time and reduce costs associated with the Nortel Networks support call.

Section A: Telecom network planning

In this section

Overview

Introduction

This section describes the hardware and software requirements that must be met on the Meridian 1 or SL-100 PBX to use Meridian HomeOffice II.

PBX hardware and software

To support Meridian HomeOffice II, the PBX must

- be one of the supported platforms running the minimum software vintage (see page 29)

- support extended digital line cards (XDLCs)

- have one available IPE slot for each HLC you want to install

Trunks

The Meridian 1 or SL-100 PBX should use general purpose trunks (ISDN PRI or T1/E1 DTI) to process calls from the corporate office site to the central office. The trunks must support Direct Inward Dialing (DID).

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

ISDN BRI lines

You may need to 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.

HomeOffice II Line Card installation

One HLC is required for every 16 remote users. If you need to support more than 16 users, the HLCs can be daisy-chained (connected to each other) so that you can administer all of the HLCs through a single Man Machine Interface (MMI).

Each HLC must have its own unique address, which is configured by DIP switches.

MMI terminal

To administer the HLC, you must connect the HLC to one of the following:

- a dumb terminal or PC

   Note: In this case, the dumb terminal or PC is connected to the first HLC in a daisy chain.

- a terminal server on the local area network (LAN)

- a modem (if remote access is required)

Mandatory configuration

To provide connections between the HLC and remote users, you must configure PBX voice and data ports for each remote user, then associate those ports with an HLC port. Each HLC port is then configured with the remote user's ISDN number assigned to the remote user's home office digital telephone.

If you are using Meridian HomeOffice II in an ACD environment, you can configure up to eight remote ISDN numbers to share each HLC port. The following factors apply:

- The configuration of the PBX voice and data ports must be identical for all agents sharing the HLC port.

- All agents assigned to a particular HLC port must work mutually exclusive hours because each port can be used by only one agent at a time.

Optional configuration

You can further configure each HLC port with the following optional information:

- security identifier (recommended)
- online/offline table
- echo cancellation
- telephone type

PBX hardware and software

Introduction

This topic identifies the hardware and software that must be in place to install and use the HomeOffice II Line Card.

Supported Meridian 1/SL-100 platforms and releases

The following table identifies the supported Meridian 1 and SL-100 platforms and releases.

PBX	Platform	Release
Meridian 1	Option 11(C)	17 and above
	Option 11(E)	(See the note below this table.)
	Option 21(E)	
	Option 51(C)	
	Option 61(C)	
	Option 71(C)	
	Option 81(C)	
	Older Meridian 1 systems that have been upgraded with IPE modules	
SL-100	Options 111 through 211	MSL09
		IPE09AA

Note: You can use the HLC on Meridian 1 platforms using Releases 15 and 16, but PBX data port configuration as MCA adapters is slightly different.

Extended digital line cards

The Meridian 1 or SL-100 PBX communicates with the HLC as it does with an extended digital line card (XDLC). To use Meridian HomeOffice II, your PBX must support XDLCs.

IPE slots

The HLC is a standard IPE line card designed to fit into IPE shelves on the Meridian 1 or SL-100 PBX. Your PBX must contain one available IPE slot for each HLC you want to install.

You can install the HLC in any slot on a Meridian 1 or SL-100 PBX. On an Option 11, you can install the HLC in slots 1 through 10.

Note: NT8D37AA IPE cabinets in older Meridian 1 systems use split-slot wiring. If you are using one of these cabinets, your HLC may reside only in slots 0, 4,8, and 12 without rewiring the slot. To use any other slot, you 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.

Trunks and lines

Introduction

The Meridian 1 or SL-100 PBX should use general purpose trunks (ISDN PRI or T1/E1 DTI) to process calls from the corporate office site to the central office. The trunks must support Direct Inward Dialing (DID).

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

Recommended trunking option

ISDN PRI is preferred trunking method for Meridian HomeOffice II.

ISDN PRI trunks

ISDN PRI trunks from your ISDN service provider must be provisioned with both voice and data capability on both incoming and outgoing PRI routes. You should verify this with your ISDN PRI service provider. If you are planning on using Caller ID as the security method on the HomeOffice II Line Card, the Caller ID service is also required on each ISDN PRI.

Your local and long-distance service providers should provide an end-to-end digital circuit (that is, no analog trunking).

On your corporate PBX, you must configure the incoming and outgoing trunks for voice and data capability.

T1/E1 DTI trunks at the corporate office

If you want to use T1 or E1 DTI instead of ISDN PRI, the T1 or E1 DTI channels used for Meridian HomeOffice II from your service provider must be provisioned as DATA only on both the incoming and outgoing DTI routes.

On the corporate PBX, you must also configure the incoming and outgoing channels as DATA only.

The framing, encoding, signaling, and the data rate on the PBX and CO must be equivalent.

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

ISDN BRI

Trunks

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.

Lines

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.

Capacity

You can use up to two trunks per call. One of the trunks extends the call to the digital telephone at the remote site.

Carefully consider trunk requirements when planning for HomeOffice II implementation. Ensure that your trunks have sufficient capacity to handle the increased traffic that Meridian HomeOffice II will generate on your network.

Call routing and blocking

You should configure the trunks so that calls are appropriately routed through the network. Ensure that calls to or from remote users are not blocked.

HomeOffice II Line Card

Introduction

One HLC is required for every 16 remote users. If you need to support more than 16 users, the HLCs can be daisy-chained (connected to each other) so that you can administer all HLCs through a single Man Machine Interface (MMI).

Each HLC must have its own unique address, which is configured by DIP switches.

Number of users

Each HLC supports 16 PBX voice and data ports, meaning that up to 16 telecommuters can be supported. Therefore, one HLC is required for every 16 telecommuters.

Cabling

Each HLC is shipped with a Multi I/O cable. This cable contains three connectors, which are connected to the following:

- IPE slot in which the HLC is installed (P1)
- MMI terminal (P2)
- SDI port on the Meridian 1 or SL-100 PBX (P3)

See the following illustration.

Multi I/O cable connectors
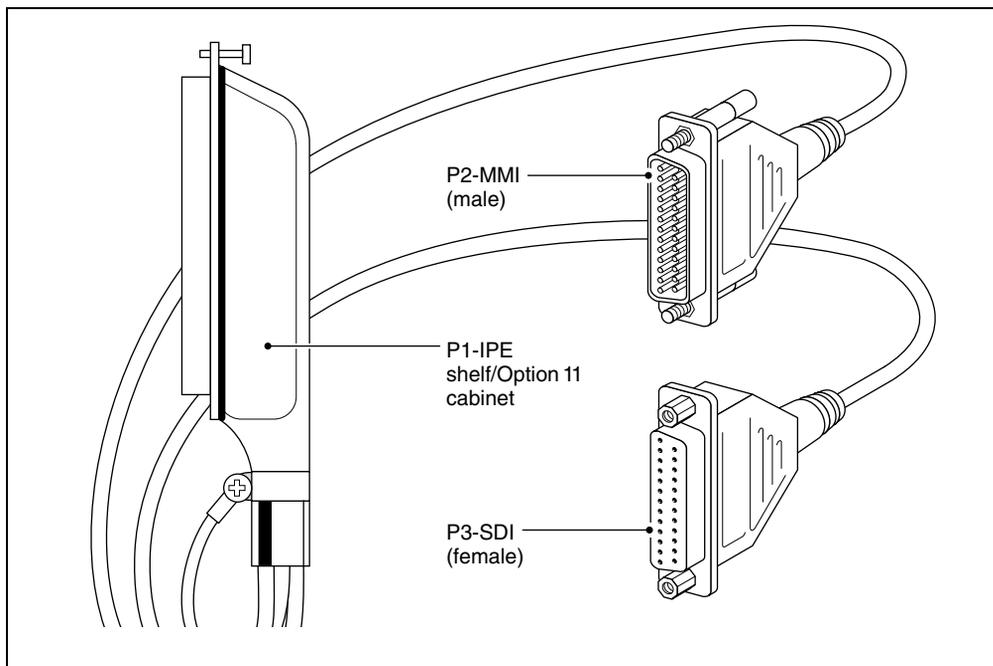
The cable is 1.2 meters (4 feet) in length, as follows:

• from the IPE connector (P1) to the MMI connector (P2): .6 meters (2 feet)

• from the IPE connector (P1) to the SDI connector (P3): .6 meters (2 feet)

Daisy chaining HLCs

If more than one HLC is being installed, the HLCs are connected together in a daisy chain using the MMI and SDI connectors on the Multi I/O cable. You can connect up to 32 HLCs together and administer them through a single MMI terminal.

Extension cables

If the cables supplied with the PBX and the HLC are not long enough, you may do one of the following:

• Purchase MMI or SDI extension cables from Nortel Networks.

• Construct your own MMI or SDI extension cables.

For more details, refer to the *Meridian HomeOffice II Line Card Configuration Guide* (NTP 555-8321-210).

Addressing

Each HLC contains two banks of DIP switches: SW1 and SW2. Each bank has eight switches that must be configured before the HLC is installed into the IPE slot.

The default setting for all switches is OFF. These settings correspond to MMI and SDI connections of 9600 bps, 8 data bits, no parity, 1 stop bit, and one HLC installed on a Meridian 1 PBX. If the HLC is to be installed on an SL-100 PBX, position 4 of SW2 must be set to ON.

If more than one HLC is to be installed in a daisy chain, each HLC must have a unique address for the daisy chain to work properly. The first six positions of SW1 are used to define a unique address on each HLC.

Once the address has been defined for each HLC, you should affix a label to the HLC faceplate identifying its address. You need to know the address to log in to and administer the HLC.

For more information about the DIP switches, refer to the *Meridian HomeOffice II Line Card Configuration Guide* (NTP 555-8321-210).

HLC MMI terminal

Introduction

To administer the HLC, you must connect the HLC to one of the following items:

- a dumb terminal or PC

  Note: In this case, the dumb terminal or PC is connected to the first HLC in a daisy chain.

- a terminal server on the local area network (LAN)

- a modem (if remote access is required)

For more details, refer to the *Meridian HomeOffice II Line Card Configuration Guide* (NTP 555-8321-210).

Dumb terminal

You create a direct connection by connecting the HLC's Multi-I\O cable (or if used, MMI extension cable) to a dumb terminal or PC COM port. You may need a 25-pin to 9-pin adapter.

The distance between the HLC and dumb terminal or PC should be no longer than 15.75 meters (52 feet),

Terminal server

To create a LAN connection, you must supply your own terminal server cable with the following attributes:

- the same pin-outs as the MMI extension cable

- a female 25-pin connector on one end

- the proper interface for connecting to the terminal server on the other end

The HLC's Multi I/O cable is connected to this cable, which in turn is connected to the terminal server.

The distance between the HLC and terminal server should be no longer than 15.75 meters (52 feet).

Modem

If you need to administer the HLC from a remote location, you can create a remote access connection. To do this, you must supply your own modem cable with the following attributes:

- the same pin-outs as the MMI extension cable
- a female 25-pin connector on one end
- the proper interface for connecting to the modem on the other end

The HLC's Multi I/O cable is connected to this cable, which in turn is connected to the modem.

The distance between the HLC and modem should be no longer than 15.75 meters (52 feet).

Required configuration

Introduction

To provide connections between the HLC and remote users, you must configure a PBX voice and PBX data port for each remote user, then associate those ports with an HLC port. Each HLC port is then configured with the remote user's ISDN number assigned to the remote user's home office digital telephone.

If you use Meridian HomeOffice II in an ACD environment, you can configure up to eight remote ISDN numbers to share each HLC port. The following factors apply:

- The configuration of PBX voice and data ports must be identical for all agents sharing the HLC port. (For more details, see "Call center requirements" on page 69.)

- All agents assigned to a particular HLC port must work mutually exclusive hours because each port can be used by only one agent at a time.

PBX slot configuration

The slot in which the HLC is installed is configured on the Meridian 1 or SL-100 PBX as an XDLC slot.

Telephone configuration

You must configure one PBX voice port and one PBX data port for each remote user. Each PBX voice and data port pair is associated with one port on the HLC. (See "Telephone and HLC port association" on page 42.)

PBX voice port configuration

The PBX voice port is configured according to your corporate requirements. However, to support HomeOffice II, you must configure the PBX voice port parameters as follows:

- The telephone type is 2216, 2616, or 3820.
  Note: 3820 is an Orion telephone in Europe.

- The terminal number identifies the HLC slot position on the PBX, and the port assigned to the user.

  (For Meridian 1 Option 11, this is loop unit [lu]. For other Meridian 1 platforms, this is loop shelf card unit [lscu].)

- The directory number is the telecommuter's corporate directory number (that is, internal extension).

- You must leave one feature key blank (key 14 is recommended).

  This feature key is defined on the digital telephone by the telecommuter as the online/offline mode toggle key through the HomeOffice Router software. The HomeOffice Router software supplies key 14 as the default.

PBX data port configuration

The PBX data port is configured according to your corporate requirements. However, to support HomeOffice II, you must configure the PBX data port as follows:

- The PBX data port must support DID.

- The assigned directory number is unique and is used to receive incoming calls over ISDN from the telecommuter's HomeOffice Router.

  This directory number is supplied in dialable format to the telecommuter as the number required to connect the HomeOffice Router to the PBX.

- The terminal number identifies the HLC slot position on the PBX, and the port assigned to the user. (For Meridian 1 Option 11, this is loop unit [lu]. For Meridian 1, this is loop shelf card unit [lscu].)

  Note: The unit number (PBX data port) must map to the voice port, as shown on the Line Card Ports Configuration forms in the "Meridian HomeOffice II deployment" chapter.

- You must configure the PBX data port as an MCA data adapter, with the first line able to make and receive PBX data calls on outgoing digital trunks.

  Note: To configure the MCA adapter on Meridian 1 Releases 15 to 17, the CLS prompt in LD 11 is set to DTA. On Meridian 1 Release 18 and later, the DTAO prompt in LD 11 is set to MCA.

HomeOffice II Line Card port configuration

Non-ACD environments

On the HLC, the port associated with the telecommuter is configured with the ISDN directory number of the telecommuter's digital telephone, including the access codes required to obtain outgoing digital trunks.

Note: The telecommuter's ISDN service provider assigns this directory number. If the telecommuters has arranged his or her own ISDN installation, you must obtain the ISDN numbers from the telecommuter.

If desired, you can also configure a security code and online/offline table for the telecommuter.

ACD environments

If the HLC port will be shared by multiple telecommuters (ACD agents), you can configure the port with the ISDN directory numbers assigned to the digital telephones of up to eight agents. The ISDN directory number configured for each agent includes the access codes required to obtain outgoing digital trunks.

The following factors apply:

*   The agents sharing the HLC port must work mutually exclusive hours because each port can be used by only one agent at a time.
*   The PBX voice and data port configurations must be identical for all agents who share the same HLC port.

Each agent is identified on the port by an agent position ID from 0 through 7. The agent position ID must be specified when entering the remote ISDN number. If you do not specify the agent position ID when configuring the port, the ISDN directory number is configured automatically for agent 0.

HLC port configuration

The following screen example shows port configuration on the HLC. Port 0 has been assigned to three agents.

```
Mon, 09-21-1998  13:19:20
HLC01>DISPLAY REMOTE
Remote numbers for channel  0:
        Agent  0:  617057378725
        Agent  1:  4052
        Agent  7:  4054
Remote number for channel  1: 619058634213
Remote number for channel  2: 615143238436
Remote number for channel  3: 96873543
Remote number for channel  4: 917053270443
Remote number for channel  5: 92446619
Remote number for channel  6: Not Configured
Remote number for channel  7: Not Configured
Remote number for channel  8: Not Configured
Remote number for channel  9: Not Configured
Remote number for channel 10: Not Configured
Remote number for channel 11: Not Configured
Remote number for channel 12: Not Configured
Remote number for channel 13: Not Configured
Remote number for channel 14: Not Configured
Remote number for channel 15: Not Configured

Mon, 09-21-1998  13:19:25
HLC01>_
```

Note: If the port is assigned to only one remote user, the agent ID is automatically 0. On single-user ports, this agent position ID when viewing the port configuration. (See ports 1 through 5 in the preceding example.)

Telephone and HLC port association

Once the PBX voice and data ports and the HLC port have been configured for the telecommuter, the telecommuter can receive incoming and make outgoing calls. The following illustration shows the configuration of all of the HomeOffice II elements.

In this illustration, User 1's corporate office DN (31403) maps to PBX data port DN 32409. User 2's corporate office DN (31404) maps to PBX data port DN 32410. The PBX data port DNs are converted into dialable format, then provided to the telecommuters for configuration as the PBX connection DN on the HomeOffice Routers.

The Meridian 1 PBX is located in the 972 area code and the 653 exchange. User 1 is located in the 705 area code, which is long distance from the Meridian 1 PBX. Therefore, you require access code 9 and long distance code 1 when you configure User 1's ISDN number on the HLC. Similarly, you require long distance code 1 when you configure the PBX connection DN on User 1's HomeOffice Router.

User 2 is located in the 972 area code, which is local to the Meridian 1 PBX. Therefore, you require only access code 9 when you configure User 2's ISDN number on the HLC. On the HomeOffice Router, you require the area code for the PBX connection DN only if you must include the area code when dialing locally.

ISG635_I
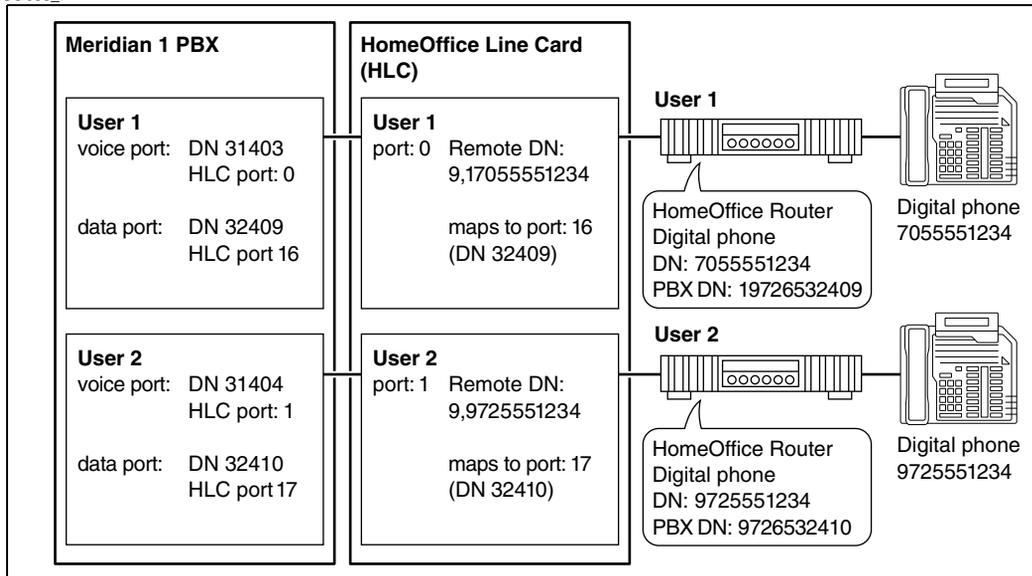
Optional configuration for HLC ports

Introduction

You can further configure each HLC port with the following optional information:

- security identifier (recommended)
- online/offline table
- echo cancellation
- telephone type (corded or cordless)

HLC port security

Security configuration on the HLC is optional, but is strongly recommended to prevent unauthorized use of HLC ports.

Security is defined on the HLC by one of the following security levels for each HLC:

- no security (level 1)
- user Caller ID (level 2)

  The remote user's Caller ID is compared with the remote ISDN number configured for the HLC port.

- personal security code (level 3)

  A unique 10-digit code is assigned to the remote user and is configured on both the HLC port and on the remote HomeOffice Router. When a call is made by the telecommuter, the HomeOffice Router sends its security information to its associated port on the HLC.

The security level and security code, if used, are defined on both the remote HomeOffice Router and on the HLC. When a call is made by the telecommuter, the HomeOffice Router sends its security information to its associated port on the HLC. The HLC checks the information as described in the following table.

IF the security level on the HLC is set to	THEN
1	the HLC does not check the security information sent by the HomeOffice Router.
	The call is allowed even if the security level on the HomeOffice Router is defined as 2 or 3.
2	the HLC compares the Caller ID sent by the HomeOffice Router with the information contained in the remote user's port configuration.
	If the two values match, the call is allowed; otherwise, the call is disconnected.
	In this case, it does not matter which security level is defined on the HomeOffice Router.
3	the HLC compares the security level sent by the HomeOffice Router.
	If the value for the port is 3, the 10-digit security identifier is then compared. If the security identifier matches, the call is allowed; otherwise, the call is disconnected.

HLC port security in ACD environments

In ACD environments, each agent must have a unique security code if security level 3 is enabled on the HLC. When you configure an agent's security code on the HLC port, you must specify the agent position ID. If you do not enter the agent ID when configuring the security code, the agent position ID defaults to 0.

Security is verified and calls are allowed as described in the following table.

IF the security level on the HLC is set to	THEN
1	all incoming calls are permitted, but new outgoing calls are initiated to the default ACD agent (agent 0) configured for the port.
	Multiple ACD agents per port can be supported in this scenario by using permanent ISDN BRI connections, which are initiated by the remote ACD agents.
2	the Caller ID from an agent going online is compared with the remote ISDN number configured for each agent on the port. If one matches, the matching ACD agent is activated.
	Only this agent can receive and make calls until the port goes offline.
3	the incoming security code from an agent going online is compared with the security code configured for each agent on the port. If one matches, the matching ACD agent is activated.
	This ACD agent receives calls from the ACD queue associated with this voice port.

Preventing unwanted long-distance charges

You can configure the HomeOffice Router to allow the telecommuter to make or receive local calls when in offline mode. This option prevents the telecommuter from using the corporate PBX (which may be long distance) for making local calls. (For more information about the differences between online and offline calling, see "How it works" in Chapter 1, "Introduction to HomeOffice II."

Online/offline table

You can configure the HLC with an online/offline table that contains up to eight entries per day for seven days for each port (56 entries per port). The default is an empty table.

Use the table to

- put the remote HomeOffice Router and digital telephone set into online or offline mode
- prevent the telecommuter from staying online permanently, thereby eliminating unwanted telephone access charges

You should provision the table to

- put the HomeOffice Router and telephone set into offline mode at specific times (such as at the end of the business day or on weekends)
- enable the HomeOffice Router to drop ISDN BRI calls periodically throughout the day so that excessive line charges do not accumulate

You may need to work with the remote user's manager or supervisor to identify online/offline table entries.

How the online/offline table works

You should carefully consider online/offline table configuration, especially if Meridian HomeOffice II will be used in ACD environments. To ensure correct operation, you must understand how the online/offline table works.

When an online entry is due to be processed, the HLC does not actually initiate an outgoing call to the HomeOffice Router to put it into online mode. While in offline mode, the HomeOffice Router cannot recognize incoming calls from the HLC, so therefore does not answer them. Instead, the HomeOffice Router maintains a timer that specifies how long it should remain offline before going back online.

What happens when an offline entry is processed

When the HLC processes an offline entry, the HLC instructs the remote HomeOffice Router to go offline for a specified number of hours and minutes. The number of hours and minutes the remote site remains offline is the difference between the offline entry being processed and the next online entry.

For example, an offline entry is configured at 6:00 p.m. The next online entry is configured at 9:00 a.m. the next day. When the HLC processes the 6:00 p.m. offline entry, it instructs the HomeOffice Router to go offline for 15 hours.

When an offline entry is received by the HomeOffice Router from the HLC, the request is processed as described in the *Meridian HomeOffice II User Guide* (NTP 555-8321-205).

How the HomeOffice Router goes back online

When going offline, the HomeOffice Router's offline timer is activated. When the timer expires (in the example above, this is at 9:00 a.m.), the HomeOffice Router automatically initiates a "going online" request to the PBX. If the HLC successfully receives the request, the HomeOffice Router and digital telephone go online.

Implications

If the online/offline table contains only offline entries (no online entries are configured), then the HLC instructs the HomeOffice Router to go offline forever each time an offline entry is processed. To go back online, the telecommuter must press the Online/LC key on the digital telephone.

Online/offline table for ACD environments

You can configure only one online/offline table for each HLC port. Therefore, you must carefully consider how the configuration can impact agents sharing that port. (See "What happens when an offline entry is processed" and "How the HomeOffice Router goes back online" above.)

The agents sharing the HLC port must work mutually exclusive hours because each port can be used by only one agent at a time. To simplify the online/offline table configuration, you should configure only offline entries in the table—one offline entry at the end of each agent shift. These offline entries prevent ISDN charges from being incurred if agents using permanent ISDN connections forget to go offline.

Control of the HLC port is given to the first agent who successfully connects to the HLC port by pressing the Online/LC key on the digital telephone (to go online). All other agents assigned to that port are denied access until one of the following happens:

- the active agent logs off

- the active agent is automatically put offline by the HLC

- the active agent is manually put offline by an offline command entered by the system administrator

Echo cancellation

All ports on NTDF29AB HLCs using firmware version 1.14 or later can provide echo cancellation for telecommuters who need it. You must enable echo cancellation, if it is needed, on a port-by-port basis. The requirement for echo cancellation on the HLC port depends on the following factors:

- the distance between the user's digital telephone and the HLC

- the quality of service between the user's digital telephone and the HLC

- the grade of copper wires used

- whether analog repeaters (inductors) are used

To determine if a particular user requires echo cancellation on the HLC, you must test the quality of calls to the remote digital telephone. If the quality is not satisfactory, then enable echo cancellation on the HLC port.

Telephone configuration

Telephone configuration on the HLC port can be done to

- provide support for cordless telephones (such as the Meridian 2616CT cordless telephone)

- always allow telephone indicator updates for ISDN BRI lines operating in on-demand mode

- allow synchronization of telephone indicators with PBX updates resulting from actions performed by some CTI applications

To configure the telephone on the HLC port, the HLC must be running firmware version 1.15 or later.

Cordless telephone

If a remote user wants to use a cordless telephone (such as the Meridian 2616CT), you must enable cordless telephone support on the port. If cordless telephone support is not enabled, then hookswitch status (that is, whether the telephone is onhook or offhook) may become out-of-sync between the telephone and the PBX. A synchronization error in hookswitch status results in the remote user not hearing the voice path when receiving or making calls when the telephone is in the handsfree mode.

Telephone indicator updates for on-demand ISDN users

If the remote user's HomeOffice Router is configured to use the ISDN BRI line in on-demand mode (as opposed to permanent mode), indicators are not always kept up-to-date. In on-demand mode, the ISDN connection between the PBX and the HomeOffice Router is activated only

- when the remote user initiates an outgoing call
- the HLC needs to ring the digital telephone or update the message waiting indicator

If indicators are not kept up-to-date, the remote user can become confused about the true status of the telephone. When you enable indicator updates on the HLC port, telephone indicators are always updated.

Notes:

- In permanent mode, the ISDN line remains active all the time, allowing indicators to always be updated.
- Indicator update is automatically enabled when cordless telephone support is enabled.

CAUTION

Risk of of unnecessary ISDN line usage

Users who have digital telephones in both their corporate and home offices (and their phone lines set up as Single Call Ring [SCR] or Single Call No Ring [SCN]) should be aware that if they leave their home office telephones in online mode, ISDN connections are established in their home offices each time they use their corporate office telephones.

You can prevent unnecessary ISDN connections by doing the following:

*   Users should put their home office digital telephones into offline/local call mode while at the corporate office.

*   Administrators should configure telecommuter phone lines as Multiple Call Ring (MCR) or Multiple Call No Ring (MCN).

*   Administrators should configure offline entries in the HLC online/offline table for times when users are scheduled to be in the corporate office.

Telephone indicator updates for third-party CTI application users

To initiate a call to the PBX, some third-party CTI applications send a keypress directly to the PBX over one of many PBX interfaces such as Meridian Link. These types of keypresses, referred to as softkeys, were previously not recognized by Meridian HomeOffice II because they were not made through the HomeOffice Router. Softkey functionality (in this context) refers to calls made outside of the traditional means of pressing a key on the digital telephone.

When you enable indicator update, the digital telephone indicators are synchronized with PBX updates resulting from actions performed by the CTI application.

Section B: Data network planning

In this section

Overview

Introduction

To use Meridian HomeOffice II in your data network, you must ensure that your remote access switches can accept connections from remote users using the HomeOffice Router.

Remote access switch

You can use any existing remote access switch with Meridian HomeOffice II. However, what you need to consider is whether the existing remote access switch has the ability to support the required growth in user connectivity.

You must consider the following issues:

• port availability and contention ratios

• networking features supported by the remote access switch

• protocols that are used

• address allocation

Connection scenarios

You can connect the HomeOffice Router can be connected to the corporate data network in one of the following ways:

• to a remote access switch over IP

• to a remote access switch over IPX

• to other ISDN small office/home office (SOHO) routers

Remote access switch considerations

Introduction

You can use any existing remote access switch with Meridian HomeOffice II. However, what you need to consider is whether the existing remote access switch has the ability to support the required growth in user connectivity.

You need to consider the following issues:

- port availability and contention ratios
- networking features supported by the remote access switch
- protocols that are used
- address allocation

Available ports

You must consider the actual number of remote users who require access and what is expected to be the required number of concurrent users.

The number of concurrent users who need to be supported determines

- the number of ports required
- the contention ratio for the access server
- the type and size of RAS server required

Resources need to be available as and when users require. This often means that access to central services is required over varied time zones. As such, you should carefully consider contention ratios with recommendations between 5 and 10:1. A contention ratio of greater than 10:1 is likely to affect user's ability to access resources.

An incorrect contention ratio potentially means:

- prevention of remote users from gaining access due to the unavailability of ports
- spare ports not being used, and therefore, not cost efficient

Analog connections versus ISDN connections

If your current remote access switch supports only analog modem connections, telecommuters can connect the FAX port on their HomeOffice Routers to their PC modems, then dial into the network using a dial-up adapter (such as Dial Up Networking).

Required features

The following features are recommended to ensure that a remote Meridian HomeOffice II user can gain data access into the main Local Area Network:

- PAP or CHAP security
- an available pool of IP addresses for remote users (required if the corporate site is using DHCP or allocating IP addresses locally from the remote access switch)
- available ISDN PRI or ISDN BRI
- redundant power supplies (in chassis servers) (optional)
- Multi-Link PPP support (in standalone servers)
- remote management capability

Note: The availability of a specific feature may depend on whether standalone or chassis servers are used.

Address allocation

In a dialed environment with many remote users, you should consider using a DHCP server to allocate a pool of IP addresses centrally. The server should be accessed through a proxy agent to direct incoming calls to the server for address allocation. Alternatively, some proxy software can allocate addresses without needing an additional server, which may provide some cost savings.

Protocols

Wherever possible, you should only use IP protocol across dialed links. Other protocols require some type of spoofing to minimize bandwidth usage. Avoid broadcast bridged protocols or restrict them to particular destinations.

Routing updates can be an issue because they can bring up dialed links. You should restrict routing to the LAN and use default gateways or static routes across the WAN.

You can incorporate the HomeOffice Router into your network using either Internet Protocol (IP), Internetwork Packet Exchange (IPX), or both.

It is assumed that your organization already has an Ethernet network in place using either or both of the IP or IPX protocols. If remote sites contain a LAN (more than one workstation), you can implement Dynamic IP or IPX Address Translation (DIAT for IP or IPX) at both the remote and network host sites.

Security

When you open up any data network to remote users, you introduce a potential security threat to customer information. Password Authentication Protocol (PAP) and Challenge Handshake Authentication Protocol (CHAP) (described below) provide the first level of security and are part of most remote access switches.

In addition to supporting both PAP and CHAP, the HomeOffice Router also supports the Shiva Password Authentication Protocol (SPAP). You can use SPAP if the HomeOffice Router connects to Intel Shiva devices.

PAP
PAP is a simple password protocol that is part of the IETF suite of protocols. PAP transmits a user's name and password across a phone line to a central server for authentication. PAP's password database on the server is encrypted. A user's password is not encrypted as it travels across the network link.

CHAP

When a remote user calls a server that uses Challenge Handshake Authentication Protocol (CHAP), the server sends back a random challenge (key) to the modem, bridge, or router that initiated the call. The initiating unit uses the key to encrypt the password and return it to the server. Password snooping is very difficult with CHAP, since the password is encrypted before it is transmitted over the network.

SPAP

The Shiva Password Authentication Protocol (SPAP) is a proprietary security authentication mechanism for PPP negotiation. On the HomeOffice Router, SPAP is configurable for all circuits, including the listener and default circuits, on a circuit-by-circuit basis.

If the remote user's HomeOffice Router connects to a device that is using third-party security authentication (such as a SecurID or Digital Pathways server), you must use SPAP on both the HomeOffice Router and the device to which it is connecting. You must also provide the telecommuter with a security card or other device that provides the passcode number needed to access the network.

Note: Outgoing voice calls and incoming data/voice calls are not subject to third-party security authentication.

Common connection scenarios

Introduction

This topic shows some of ways that you can incorporate the HomeOffice Router into your data network. For more detailed descriptions and configuration examples, refer to the *Meridian HomeOffice II Network Administration Guide* (NTP 555-8321-310).

HomeOffice Router to RAS over IP

The following illustration shows an example of a HomeOffice Router connected to a remote access switch using IP.
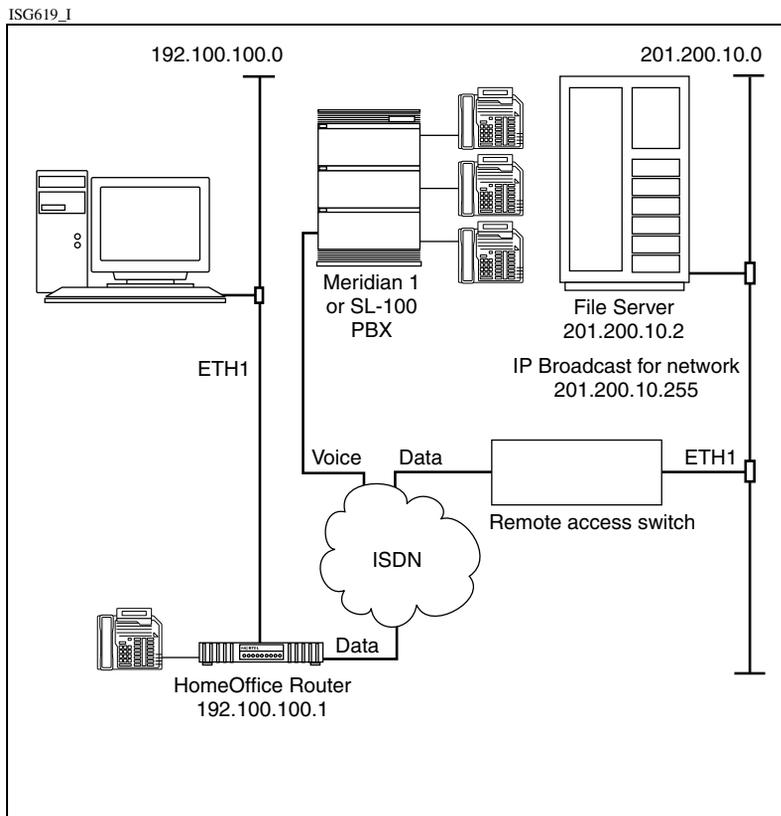
HomeOffice Router to RAS over IPX

The following illustration shows an example of a HomeOffice Router connected to a remote access switch using IPX.

ISG603_I
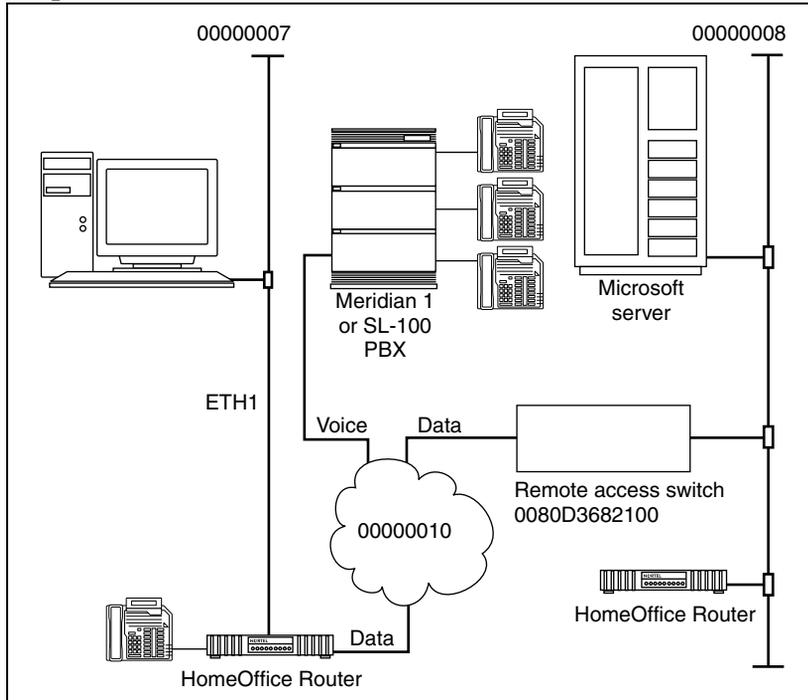
Connecting data networks

In the following illustration, there are two remote data networks that Hosts A, B, and C may want to reach. They are networks 85.0.0.0 and 87.0.0.0. You need to tell each of these networks to send traffic for these destinations to HomeOffice Router 1.

The illustration shows the network with numbered links. You can also use unnumbered links.

ISG608_I
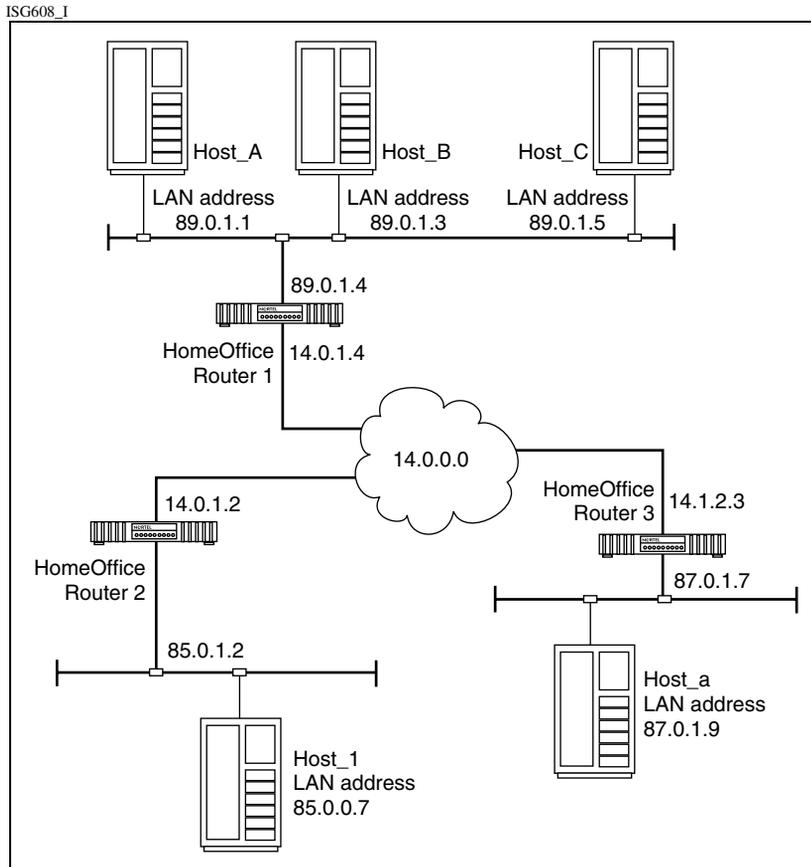
Section C: Remote user planning

In this section

Overview

Introduction

This section describes what each telecommuter needs to use Meridian HomeOffice II. Users who work in call centers have additional requirements.

Requirements for all users

To use Meridian HomeOffice II, each user needs the following

- a HomeOffice Router package
- ISDN BRI service to the home office
- an appropriate power source
- a PC that meets the minimum system requirements (see page 67)
- a digital telephone

Requirements for call centers

In addition, you must consider the following if Meridian HomeOffice II will be used in a call center:

- the firmware versions used on the HLC and HomeOffice Router
- the work schedules for agents who sharing the same HLC port
- the telephone configuration for agents who share the same HLC port on the HLC
- the hardware and software versions used by agents who use a Symposium Communicator card on the PC to make and receive calls
- the online/offline softkey requirement for agents who use a Symposium Communicator card on the PC to make and receive calls

What each remote user needs

Introduction

To use Meridian HomeOffice II, each user needs the following items:

• a HomeOffice Router package

• ISDN BRI service to the home office

• an appropriate power source

• a PC that meets the minimum system requirements

• a digital telephone

HomeOffice Router package

Each telecommuter requires one HomeOffice Router. Ensure that the HomeOffice Router package includes the following components:

• a *User Guide* and *Release Notes*

• a CD-ROM

• all cables required to complete connection to the ISDN and Ethernet networks

• a digital telephone
  For more information, see "Telephone set" on page 67.

• configuration instructions, for users who will configure their own Routers
  For more information, see "Providing information to your users" on page 97.

ISDN service

Each telecommuter requires ISDN service. The ISDN service provider must provide the following:

• two B-channels providing both voice and data capability
  Both B-channels must be Circuit Switched Voice and Data.

- Caller Line Identification (in the United Kingdom, this is known as Calling Line Identity Presentation [CLIP])

- two directory numbers

- two Service Profile Identifiers (SPIDs)

Note: You require Multiple Subscriber Numbering (MSN) in situations where no SPIDs are provided.

Power

The HomeOffice Router requires a grounded power connection for proper operation. In North America and most European countries, electrical outlets are already grounded.

However, in Denmark, electrical outlets may not contain the earth wire necessary for grounding. If the user's electrical outlet does not contain the required earth wire, you must rewire the electrical outlet.

PCs

The HomeOffice Router software applications are supported only on PCs that use Windows 95, Windows NT, or Windows 3.x. UNIX and Macintosh platforms are not supported.

Note: The HomeOffice Router has been designed and tested for use on common network client PC operating systems such as Windows 95, Windows NT and Windows 3.1. Windows 98 is oriented towards use in the home PC environment and is not within the design specifications of the HomeOffice Router. The HomeOffice Router will most likely operate on a Windows 98 platform. However, Nortel Networks supports the HomeOffice Router only on the network-compliant operating systems for which it was designed.

User PCs should be equipped with the following items:

- a CD-ROM drive

  The HomeOffice II Install Wizard and Local Manager software, as well as the computer-based training (CBT), are available from CD-ROM only.

  Note: If your users require floppy diskettes, you must create a set from the CD-ROM yourself.

- a 10BaseT Ethernet interface card

Minimum system requirements

To run the tutorial from the CD-ROM, the user PC must meet the following minimum system requirements:

- 486 33 Mhz PC running Windows 95, Windows NT, or Windows 3.x
  Note: Windows 95 is preferred.

- 8 Mbytes of RAM

- 16 Mbytes of swap (Windows95)

- 2-button mouse/101-key keyboard

- 2-speed CD-ROM drive

- 14-inch SVGA 24-bit graphics card capability

- 640 x 480 resolution and 256 colors
  Note: For best results, set colors to more than 256, if possible.

- 8- or 16-bit sound card and speakers or headphones

The Install Wizard and Local Manager require a minimum of 5 Mbytes of free memory to run.

Telephone set

Each telecommuter needs a Meridian telephone set for his or her home office, in addition to the telephone set used at the corporate office (if office space is also provided to that individual). You can order the telephone separately or as part of a Meridian HomeOffice II kit.

Supported models

The telephone set must be digital. The following models are supported:

- in North America
  — Meridian 2216
  — Meridian 2616
  — Meridian 2616CT cordless telephone

- in Europe
  - — Meridian 2216
  - — Meridian 3820

Other models are not supported.

You can order the HomeOffice II remote kits with or without the digital telephone sets. If you order the kits with digital telephone sets, ensure that appropriate telephone cables and documentation are included.

Firmware requirement

The following table identifies the HomeOffice Router daughterboard (RDB) and HomeOffice II Line Card (HLC) firmware version that you need to support specific telephones:.

Telephone model	Firmware version required
Meridian 2216	HLC 1.12 or later in conjunction with RDB 9.2.0 or later
Meridian 2616 Meridian 3820	HLC 1.12 or later in conjunction with RDB 9.1.6 or later **Note:** You require HLC 1.15 if users want to use a headset with the Meridian 3820 telephone.
Meridian 2616CT cordless telephone	HLC 1.14 or later in conjunction with RDB 9.2.3 or later **Note:** In HLC 1.15, you must configure the HLC port to support the Meridian 2616CT cordless telephone with the SET PHONE command. See the *Meridian HomeOffice II Line Card Configuration Guide* (NTP 555-8321-210) for more details.

Call center requirements

Introduction

In addition to the requirements identified in "What each remote user needs" on page 65, this topic describes the requirements if Meridian HomeOffice II is used in a call center.

Firmware

The HLC must use firmware release 1.14 or later in conjunction with daughterboard (RDB) firmware release 9.2.3 or later on HomeOffice Routers used by ACD agents.

Telephone configuration

To use Meridian HomeOffice II in a call center, all agents who share the same port on the HLC must have exactly the same type of telephone, with exactly the same key configuration and CPND string. For correct HomeOffice II functionality, all ACD telephones must have the Not Ready (NRD) and Make Set Busy (MSB) keys configured.

You can share ports only as follows:

- ACD agents with other ACD agents
- ACD supervisors with other ACD supervisors

From the PBX's point of view, the agents are using the same telephone. Only the login IDs are different.

Symposium Communicator card

Agents who are using a Symposium Communicator card on the PC to make and receive calls must use card version 1.2 and software version 2.0 with Meridian HomeOffice II.

These agents must also install the Online/LC softkey program on their PCs. When it is used, the Online/LC key program mimics the Online/LC key on a physical digital telephone.

Notes:

1.   You can download the Online/LC softkey program from the Nortel Networks web site at http://www.nortelnetworks.com/homeoffice.

2.   Outgoing calls in local mode are not supported for agents using the Symposium Communicator card.

Online/offline table

You can configure each port on the HLC with a schedule that identifies when a remote user is online (connected to the corporate PBX) or offline. You can configure only one online/offline table for the port, so you must carefully consider configuration of entries for agents sharing that port.

The agents sharing the HLC port must work mutually exclusive hours because each port can be used by only one agent at a time. You should configure an offline entry at the end of each shift to prevent ISDN charges from being incurred if an agent who uses a permanent ISDN connection forgets to go offline.

The first agent who goes online and successfully connects to the port has control of the port. All other agents who are assigned to that port are denied access until the active agent

•   logs off

•   is automatically put offline by the online/offline table

•   is manually put offline by an offline command entered by the system administrator

Note: If no one is connected to the port, when an online entry is due to be processed, the online/offline table connects with agent 0 (the default agent for the port).

Chapter 3

Meridian HomeOffice II deployment

In this chapter

Overview

Introduction

This chapter describes how to plan for the distribution and installation of HomeOffice II systems to users' home offices. It describes the information each remote user needs to configure the HomeOffice II system for operation on your network, and suggests a procedure for deployment on the network.

Installation checklists

The implementation of Meridian HomeOffice II into the corporate network requires involvement from the following participants:

- the Project Coordinator

- the Telecom Manager/Administrator

- the Data Network Manager/Administrator

- the telecommuter's manager

A checklist for each participant is provided in this chapter.

Data entry forms

Meridian 1 or SL-100 PBX

Use the Meridian 1 and SL-100 Configuration forms for planning and performing the PBX configuration for each user.

- Use the Line Card Ports Configuration forms (for Meridian 1 and SL-100) to gather the information required to configure the ports for each HLC. PBX voice and data ports are already mapped to HLC ports on the forms.

- Use the Line Card Online/Offline Table Configuration form to record the times when the remote user is to go online or offline. You must complete one form for each remote user.

HomeOffice Router and Windows PC

This chapter contains several forms for recording the information that you must configure on the remote user's HomeOffice Router and Windows PC. If you configure both correctly, the remote user can connect to both the corporate PBX and the data network.

Section A: Installation checklists

In this section

Overview

Introduction

The implementation of Meridian HomeOffice II into the corporate network requires involvement from the following participants:

- the Project Coordinator
- the Telecom Manager/Administrator
- the Data Network Manager/Administrator
- the remote user's manager

A checklist for each participant is provided in this section.

Coordinator's checklist

The Coordinator oversees the entire implementation of Meridian HomeOffice II into the network. The Coordinator works with the following people to ensure that all of the necessary tasks are completed:

- the Telecom Manager/Administrator
- the Data Network Manager/Administrator
- the remote user's manager

Telecom manager's checklist

The Telecom Manager/Administrator performs the following tasks:

- evaluates the telecommunications network for potential changes required to hardware, software, and trunks
- performs installation and configuration of the HomeOffice II Line Card on the Meridian 1 or SL-100 PBX
- ensures that appropriate personnel are trained to provide internal technical support, if required

Data network manager's checklist

The Data Network Manager/Administrator performs the following tasks:

- evaluates the data network for potential changes required to network devices, protocols, security, and configuration
- configures the remote access switches to allow remote users to connect to the network
- configures circuits on both the user and network host HomeOffice Routers to allow remote access connections for performing upgrades, maintenance, and so on (recommended)
- prepares for implementation of Meridian HomeOffice II into the network by doing one of the following:
  — configures HomeOffice Routers with the information needed to connect to network devices
  — provides the information users need to configure their own HomeOffice Routers

    You can achieve this by completing the data entry forms provided later in this chapter.
- ensure that appropriate personnel are trained to provide internal technical support, if required

Remote user's manager's checklist

The remote user's manager performs the following tasks:

- plans the work schedule for each user

  The work schedule is then configured in the online/offline table for each HomeOffice II Line Card port.
- grants local calling permissions

  Local calling permissions, if granted, are configured on the remote user's HomeOffice Router.
- coordinates the distribution of HomeOffice Router packages to the remote users

Checklist samples

Introduction

This section provides samples of the previously discussed checklists.

Form name	For a sample, see
Installation Checklist—Coordinator	pages 79 and 80.
Installation Checklist—Telecom Manager/ Administrator	pages 81 through 83.
Installation Checklist—Data Network Manager/ Administrator	pages 84 and 85.
Installation Checklist—Telecommuter's Manager	page 86.
Installation Checklist—Telecommuter	page 87.

Meridian HomeOffice II   Page 1 of 2
Installation Checklist—Coordinator

Check	Task
☐	Determine how many employees will become telecommuters.
☐	Work with telecom and data network managers to identify Meridian HomeOffice II purchasing requirements.
☐	Discuss the implications of Meridian HomeOffice II to the PBX DID lines. (Extra DID lines will most likely have to be installed.)
☐	Place an order for HomeOffice II Line Cards (HLCs) and HomeOffice Router packages with your Nortel Networks distributor. Include an order for remote access switches, too, if a Nortel Networks product has been selected.
☐	Arrange for the installation of an ISDN BRI line in each telecommuter's home office. The ISDN line must support both voice and data. For more details, refer to the *Meridian HomeOffice II User Guide* (NTP 555-8321-205).
☐	Obtain ISDN directory numbers and SPIDs (if applicable) from the ISDN service provider for each telecommuter.
☐	Obtain local calling permission information from the telecommuter's manager.
☐	Obtain the PBX Direct Inward Dial (DID) number from the telecom manager or administrator for each telecommuter. Each telecommuter needs the PBX DID number for his or her assigned Line Card port for configuration on the HomeOffice Router. The number must be within the company's DID range. The telecom manager/administrator must ensure that a sufficient range of DID numbers is made available (to be coordinated with the service provider).

Meridian HomeOffice II   Page 2 of 2
Installation Checklist—Coordinator

Check	Task
☐	Obtain, from the telecom manager or administrator for each telecommuter, the digital telephone set key position for use as the Online/ Local Call key. The telecommuter must assign this key position on both the telephone set and in the HomeOffice Router during configuration.
☐	Complete a Meridian Interface form for each telecommuter (assign PBX DID numbers to Meridian, data, and fax). Identify the Online/LC key and local calling permission.
☐	Communicate the ISDN directory numbers to the telecom and data network managers/administrators for configuration on the HomeOffice II Line Card and remote access switch.
☐	Obtain completed routing configuration information forms from the data network manager or administrator (including information required for security authentication).
☐	Complete any additional forms required for each telecommuter, including any special instructions to the telecommuter. Include these forms in the Meridian HomeOffice II Router package.
☐	Complete the Package Contents Checklist for each telecommuter. Include this checklist in the Meridian HomeOffice II Router package.
☐	Supply the Meridian HomeOffice II Router packages to the telecommuters' managers.
☐	Plan for and implement internal technical support.

Meridian HomeOffice II   Page 1 of 3
Installation Checklist—Telecom Manager/Administrator

Check	Task
☐	Ensure that your PBX platform and software release support Meridian HomeOffice II. For supported platforms and releases, see "Supported Meridian1/SL-100 platforms and releases" in the *Meridian HomeOffice II Planning Guide* (NTP 555-8321-101).
☐	Ensure that your PBX supports XDLC cards.
☐	Ensure that a slot is available on the PBX IPE shelf for each HomeOffice II Line Card. Order additional shelves if necessary. For older Meridian 1 systems, IPE slots 0, 4, 8, and 12 are the preferred slots to eliminate the need for using an IPE expansion wiring kit (supplied with every line card).
☐	Ensure that ISDN PRI trunks are installed and configured on the PBX for both voice and data. Ensure that there is sufficient capacity on the trunks for the extra traffic involved in telecommuting operations.
☐	Order an adequate supply of HomeOffice II Line Cards according to your requirements: • one per 16 telecommuters if not using the Multi-user ACD feature • if using the Multi-user ACD feature, order one Line Card per 128 telecommuters You can assign up to eight agents to share each HLC channel. Only one agent can use the channel at any given time. All agents assigned to a particular channel must work mutually exclusive hours. One Multi I/O cable is shipped with each HomeOffice II Line Card. The Multi I/O cable is approximately .6 meter (2 feet) in length from the PBX to each of the MMI and SDI ports.

Meridian HomeOffice II
Installation Checklist—Telecom Manager/Administrator

Page 2 of 3

Check	Task
☐	Obtain extension cables to the SDI and MMI ports if the Multi I/O cable is not long enough. You can purchase them locally or order them from Nortel Networks.
	If you order the cables from Nortel Networks, these are the order codes:
	• MMI extension cable: NTDR58AA (A0748519)
	• SDI extension cable: NTDR59AA (A0748520)
☐	Plan the installation of HomeOffice II Line Cards (slot positions and cabling).
	For older Meridian 1 systems, IPE slots 0, 4, 8, and 12 are the preferred slots.
☐	Select the MMI terminal interface. Your options are
	• a dumb terminal connected directly to the first HomeOffice II Line Card in the daisy chain
	• HLC connected to a terminal server on the LAN (use Telnet to access)
	• HLC connected to a modem (use HyperTerminal or Procomm to access)
☐	Set the dip switches on each HomeOffice II Line Card (daisy chain address and MMI terminal settings).
☐	Install and cable each HomeOffice II Line Card.
☐	Configure the PBX to recognize each HomeOffice II Line Card (as an XDLC card).
☐	Verify that the HomeOffice II Line Card is recognized by the PBX (as an XDLC card).

Meridian HomeOffice II   Page 3 of 3
Installation Checklist—Telecom Manager/Administrator

Check	Task
☐	Configure a voice and data port on the PBX for each telecommuter. Identify a blank telephone set key that you can toggle the telephone between Online and Offline/Local Call modes. Communicate this information to the coordinator. Also, print telephone set key labels, if required (for Orion telephone sets).
☐	Assign each telecommuter to a HomeOffice II Line Card channel and complete the Line Card Ports Configuration form for your PBX.
☐	Decide on the security method: no call security, caller ID, or security identifier. If a security identifier is used, assign one. Communicate this information to the coordinator.
☐	Obtain one ISDN directory number for each telecommuter. The HomeOffice II Line Card needs this number to ring the telecommuter's digital telephone at home.
☐	Obtain the completed Line Card Online/Offline Schedule Configuration form from the telecommuter's manager.
☐	Configure the HomeOffice II Line Card channels (remote ISDN number, security identifier, and online/offline table).
☐	Test each HomeOffice II Line Card channel and ensure that it can make and receive calls. Ensure security checking works as expected.

Meridian HomeOffice II   Page 1 of 2
Installation Checklist—Data Network Manager/Administrator

Check	Task
☐	Ensure that a sufficient number of remote access switches supporting ISDN connections are already installed, configured, and working.
☐	Determine which network routing protocol is used: IP, IPX, or Bridging.
☐	Decide on a security authentication method: CHAP or PAP. If using third-party security authentication or an Intel Shiva LanRover Access Switch, use SPAP. Assign passwords.
☐	Configure a user ID and password for each telecommuter in the remote access server.
☐	Assign an IP or IPX address to each telecommuter's HomeOffice Router. This becomes the telecommuter's gateway address in the Windows configuration on his or her PC. This IP/IPX address can be a dummy address if you are using DHCP with DIAT. Or, if not, it can be an actual IP/IPX address from your corporate IP/IPX address pool.
☐	Identify WINS and DNS server addresses.
☐	Obtain ISDN directory numbers and SPIDs (if applicable) for each telecommuter from the coordinator.
☐	Configure a circuit on each user's HomeOffice Router to allow you to establish a connection for performing upgrades, maintenance, and so on (recommended).

Meridian HomeOffice II   Page 2 of 2
Installation Checklist—Data Network Manager/Administrator

Check	Task
☐	If desired, perform an advance configuration of each telecommuter's HomeOffice Router. Test the configuration to ensure that you can establish data and PBX connections. or Complete the network routing and security authentication forms for each telecommuter and give them to the coordinator. The telecommuters perform their own configurations. In either case, ensure that each HomeOffice Router is configured to allow remote administration, maintenance, or upgrades before delivering it to the telecommuter.
☐	Ensure that at least one HomeOffice Router is installed at the network host site for remote upgrades, administration, or troubleshooting purposes. Ensure that the administration HomeOffice Router is configured with remote administration circuits so that you can connect to each remote unit, when needed.
☐	Record each telecommuter's ISDN number that is assigned to "data" somewhere at the network host site so that you can establish a connection with the remote telecommuter's Router for firmware upgrades and technical support. Create outgoing circuits with this information on the remote access switch.

Meridian HomeOffice II   **Page 1 of 1**
Installation Checklist—Telecommuter's Manager

Check	Task
☐	Plan the work schedule for each telecommuter. The telecom manager/ administrator configures this schedule in the online/offline table on the Meridian HomeOffice II Line Card.
☐	Complete the Line Card Online/Offline Schedule Configuration form and supply it to the telecom administrator (for configuration on the HomeOffice II Line Card).
☐	Decide if the telecommuter will be granted local calling permissions. For more details, see "Local calling permissions" in the *Meridian HomeOffice II User Guide* (NTP 555-8321-205). Communicate this information to the coordinator.
☐	Obtain Meridian HomeOffice II packages from the coordinator.
☐	Give the Meridian HomeOffice II packages to the telecommuters. Ensure that a completed Package Contents Checklist is included in each package.

Meridian HomeOffice II   **Page 1 of 1**
Installation Checklist—Telecommuter

For installation and configuration instructions, refer to the following sources:

- the configuration forms provided by your network administrator

- the *HomeOffice II User Guide* (NTP 555-8321-205)

- the Computer-Based Training on the CD-ROM

Section B: Gathering the information

In this section

Overview

Introduction

This section provides several data entry forms for configuring the HomeOffice II Line Card and the remote user's HomeOffice Router and Windows PC.

You should use the forms provided (or a similar method for capturing the information) to achieve a successful, trouble-free implementation.

Meridian 1 or SL-100 PBX configuration forms

Use the Meridian 1 and SL-100 Configuration forms to plan and perform the PBX configuration for each user.

- Use the Line Card Ports Configuration forms (for Meridian 1 and SL-100) to gather information you need to configure the ports for each HLC. PBX voice and data ports are already mapped to HLC ports on the forms.

- Use the Line Card Online/Offline Table Configuration form to record the times when the remote user is to go online or offline. You must complete one form for each remote user.

HomeOffice Router and Windows PC configuration forms

This chapter contains several forms for recording the information that you must configure on the remote user's HomeOffice Router and Windows PC. If you configure both correctly, the remote user can connect to both the corporate PBX and the data network.

Planning Meridian 1/SL-100 configuration

Introduction

A very important piece in the HomeOffice II implementation is the configuration of users' telephones on the PBX, as well as the configuration of ports on the HomeOffice II Line Card (HLC) installed on your Meridian 1 or SL-100 PBX. If these two elements are configured incorrectly, the users cannot use their digital telephones.

Ideally, You should complete the PBX configuration before you give the HomeOffice II package to the user. That way, the first time the user tries to make a call, it will work.

Planning forms

Use the Meridian 1 and SL-100 Configuration forms to plan and perform the PBX configuration for each user.

- Use the Line Card Ports Configuration forms (for Meridian 1 and SL-100) to gather information you need to configure the ports for each HLC. PBX voice and data ports are already mapped to HLC ports on the forms.

- Use the Line Card Online/Offline Table Configuration form to record the times when the remote user is to go online or offline. You must complete one form for each remote user.

For sample forms, see the following pages:

Configuration overview

1 Configure a PBX voice and data port for each telecommuter on the PBX by configuring a 2216, 2616, 2616CT, 3820 telephone set (LD 11 on Meridian 1).

The PBX data ports must

— have Direct Inward Dial (DID) capability

— be configured as MCA adapters

To configure the MCA adapter on Meridian 1 Releases 15 to 17, the CLS prompt in LD 11 is set to DTA. On Meridian 1 Release 18 and later, the DTAO prompt in LD 11 is set to MCA.

— have trunk group access to connect to the external ISDN network

You must reserve a feature key for the Online/LC toggle key on the user's telephone by leaving it blank. Key 14 is recommended since that is the default given by the HomeOffice Router software. However, you can use any key, as long as the configuration matches on both the HomeOffice Router and the corporate PBX.

For instructions, refer to your PBX configuration documentation (for example, the *X11 Input/Output Guide* for Meridian 1).

2 Record the remote user's PBX voice and data port DNs next to their corresponding port numbers on the Line Card Ports Configuration form.

Note: Each PBX voice and data port pair is automatically associated with an HLC port.

3 Record the remote user's remote ISDN number, security identifier (if used), and other information as required for each HLC port.

4 Configure the HLC by using the HLC Man Machine Interface (MMI). For detailed instructions, refer to the *Meridian HomeOffice II Line Card Configuration Guide* (NTP 555-8321-210).

Note: The table on the next page identifies mandatory and optional configuration.

Mandatory and optional configuration

Configuration task	HLC MMI command
Configure the HLC security level. The same security level applies to all of the 16 ports on the HLC. Mandatory if you want security levels 1 or 2. **Note:** 3 is the default.	SET CONFIG
Configure the user's home office ISDN number. This is the primary ISDN number assigned to the user. ISDN service must already be installed at the user's home office. If the user has arranged for his or her own ISDN installation, you need to obtain the ISDN directory number (supplied by the ISDN service provider) from the user. Mandatory	SET REMOTE
Configure the user's security identifier, if required. The security identifier is unique for each user. Mandatory if the security level is 3.	SET IDENTIFIER
Configure the user's online/offline schedule. Refer to the "Line Card Online/Offline Table Configuration" form. Optional	SET ONOFFTABLE COPY ONOFFTABLE
Configure the phone type and indicator update settings on the HLC port. Optional Configure if the user • is using a cordless telephone • always requires indicator updates	SET PHONE
Enable echo cancellation on the HLC port. Optional	SET ECHO

Meridian HomeOffice II   **Page 1 of 1**
Line Card Ports Configuration—Meridian 1

Complete one copy of this form for each Line Card.

HomeOffice II Line Card position:		
Loop:	Shelf:	Card:

HomeOffice II Line Card security level:		
☐ 1 - No security is required	☐ 2 - Caller ID	☐ 3 - Personal Security Code

Unit configuration:

HLC port number	PBX voice port # and DN	PBX data port # and DN	Remote ISDN number	Security identifier	Phone type and Indicator updates?	Echo cancellation?
0	0:	16:				
1	1:	17:				
2	2:	18:				
3	3:	19:				
4	4:	20:				
5	5:	21:				
6	6:	22:				
7	7:	23:				
8	8:	24:				
9	9:	25:				
10	10:	26:				
11	11:	27:				
12	12:	28:				
13	13:	29:				
14	14:	30:				
15	15:	31:				

Meridian HomeOffice II
Line Card Ports Configuration—SL-100

Page 1 of 1

Complete one copy of this form for each Line Card.

HomeOffice II Line Card position:		
Loop:	Shelf:	Card:

HomeOffice II Line Card security level:		
☐ 1 - No security is required	☐ 2 - Caller ID	☐ 3 - Personal Security Code

Unit configuration:

HLC port number	PBX voice port # and DN	PBX data port # and DN	Remote ISDN number	Security identifier	Phone type and Indicator updates?	Echo cancellation?
0	0:	1:				
1	2:	3:				
2	4:	5:				
3	6:	7:				
4	8:	9:				
5	10:	11:				
6	12:	13:				
7	14:	15:				
8	16:	17:				
9	18:	19:				
10	20:	21:				
11	22:	23:				
12	24:	25:				
13	26:	27:				
14	28:	29:				
15	30:	31:				

Meridian HomeOffice II
Line Card Online/Offline Table Configuration

Page 1 of 1

Complete one form for each user.

Day	On	Off	On	Off	On	Off	On	Off
Note: If a schedule is not defined for this user, the digital telephone online/offline status will be defined solely by the user pressing the Online/LC key on the telephone.								
Monday	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____	_____
Tuesday	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____	_____
Wednesday	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____	_____
Thursday	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____	_____
Friday	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____	_____
Saturday	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____	_____
Sunday	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____	_____

Providing information to your users

Introduction

As network administrator, you are responsible for ensuring that the installation and configuration of the HomeOffice Router by your corporate telecommuting users is completed as smoothly as possible.

One of the ways you can ensure a smooth implementation is to use the sample forms included in this chapter to provide your users with the information they need.

Package contents checklist

The "Package Contents Checklist" (see page 102) assures users that they have received all the items and information they need to complete the installation and configuration of the telephone, HomeOffice Router, and Windows PC.

If you have opened the HomeOffice Router package to perform advance configuration (or for any other reason), use this checklist to ensure that *you* provide the user with everything he or she needs.

Configuration instructions

To ensure that the user completes all the tasks necessary for getting the HomeOffice II product operational, you can provide an instruction sheet. The "Configuration Instructions" forms identify the tasks you want the remote user to complete. For a sample of these forms, see pages 103 and 104.

ISDN provisioning information

Your users are probably unfamiliar with ISDN. If remote users must arrange for ISDN installation in their homes, you must tell them

• what information the ISDN service provider needs

• what information the ISDN service provider must give

Before you give the "HomeOffice Router—ISDN Provisioning Information" forms (see pages 105 and 106) to the remote user, *you* must complete Part A. The user completes Part B.

Notes:

The ISDN service provider must provide the following items:

• two B-channels providing both voice and data capability
  Both B-channels must be Circuit Switched Voice and Data.

• Caller Line Identification (in the United Kingdom, this is known as Calling Line Identity Presentation [CLIP])

• two directory numbers

• two Service Profile Identifiers (SPIDs)

You need Multiple Subscriber Numbering (MSN) in situations where no SPIDs are provided.

Meridian interface information

You need to configure the HomeOffice Router with information about the digital telephone to which it will be connected.

You must complete the "HomeOffice Router—Meridian Interface Information" form (see page 107), and include it with the installation package. Ensure that the information matches what has been configured on the PBX. Otherwise, the remote user may not be able to use the telephone.

IP, IPX, or Bridge routing information

Remote users are probably unfamiliar with t networking protocols. *You* must complete one of the following forms before you give it to the remote user:

- "HomeOffice Router—IP Routing Information" (see pages 108 and 109)
- "HomeOffice Router—IPX Routing Information" (see page 110)
- "HomeOffice Router—Bridging Information" (see page 111)

These forms contain the questions the remote user must answer when configuring the HomeOffice Router with the Install Wizard.

To get the information you need to complete these forms, do one or more of the following:

- Read the preceding chapters in this manual.
- Refer to the *Meridian HomeOffice II User Guide* (NTP 555-8321-205) that is provided with the HomeOffice Router, and run the Install Wizard yourself (to get an idea of what the user must do).
- Refer to the Install Wizard Online Help topics.

Security authentication information

If your network is using PAP, CHAP, or SPAP security authentication, *you* must complete the "HomeOffice Router—Security Authentication Information" form (see page 112) before you give it to the remote user.

The login ID and password that you provide must be the same as the login ID and password defined for the user on the network device to which they are connecting.

If the network device is to call the remote user's HomeOffice Router, then the login ID and password used by that device must be the same as the login ID and password defined on that device.

If additional security authentication (such as SecurID) is being used, ensure that

- you instruct the user to configure the HomeOffice Router with SPAP on the form
- you provide the user with a security card (or appropriate device) that contains the passcode needed to access the network
- the user name and passcode are the same as what is defined for the user on the security server

Windows configuration information

To enable a remote user's PC to connect through the HomeOffice Router to your corporate data network, some configuration is required on the Windows PC. The information is recorded on the Windows PC network configuration information forms.

You must configure either one or both of the TCP/IP and IPX/SPX network protocols needs on the PC.

TCP/IP
To configure TCP/IP on the PC, you must configure the following:

- the PC's IP address
- the gateway address
- Windows Internet Naming Services (WINS)
- Domain Name Server (DNS)

IPX/SPX
To configuring IPX/SPX on the PC, you must enter the IPX address.

For Windows NT, the telecommuter will also need to specify the preferred server (if a NetWare 3.x network is used) or default tree and context (if a NetWare 4.x network is used) for logon purposes.

User information form samples

This section provides samples of the previously discussed forms.

Form name	For a sample, see
Package Contents Checklist	page 102.
Configuration Instructions	pages 103 and 104.
HomeOffice Router—ISDN Provisioning Information	pages 105 and 106.
HomeOffice Router—Meridian Interface Information	page 107.
HomeOffice Router—IP Routing Information	pages 108 and 109.
HomeOffice Router—IPX Routing Information	page 110.
HomeOffice Router—Bridging Information	page 111.
HomeOffice Router—Security Authentication Information	page 112.
Windows PC—TCP/IP Network Configuration Information	page 113.
Windows PC—IPX/SPX Network Configuration Information	page 114

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Package Contents Checklist

Check	Item
☐	HomeOffice Router
☐	AC power cord
☐	Universal power supply
☐	RS-232 cable for connection to administration port
☐	Unshielded twisted-pair (UTP) crossover (DTE to DTE) cable for connection to Ethernet card in PC **Note:** This cable may be red from end to end, or gray with a 5.08 cm (2 inches) red sleeve at each end.
☐	ISDN cable (similar in appearance to a telephone cable)
☐	Meridian HomeOffice II CD-ROM
☐	*Meridian HomeOffice II User Guide* and *Release Notes*
☐	Digital telephone set with user guide and cable
☐	Online/LC key cap for digital telephone set in plastic bag
The following forms (or some other method of providing the information) if telecommuters are to perform their own configuration:	
☐	Configuration Instructions
☐	HomeOffice Router—ISDN Provisioning Information
☐	HomeOffice Router—Meridian Interface Information
☐	HomeOffice Router—Security Authentication Information
☐	HomeOffice Router—IP Routing Information and/or
☐	HomeOffice Router—IPX Routing Information or
☐	HomeOffice Router—Bridging Information
☐	Windows PC—TCP/IP Network Configuration Information
☐	Windows PC—IPX/SPX Network Configuration Information

Note: See "Cables you must supply yourself" on page 11 of the *Meridian HomeOffice II User Guide* (NTP 555-8321-205) for additional information.

Meridian **HomeOffice II**   **Page 1 of 2**
Configuration Instructions

Network administrator: Complete one copy of pages 1 and 2 for each telecommuter.

1. Configure the following with the Install Wizard (check all that apply):

    ☐ ISDN information (includes ISDN switch types, directory numbers, and SPIDs)

    ☐ Meridian information (includes telephone interface, PBX connection, and security information)

    If one or more of the following network routing options are not checked on this form, call the network administrator for assistance.

    ☐ IP routing (If checked, refer to the "HomeOffice Router—IP Routing Information" forms for details.)

    ☐ IPX routing (If checked, refer to the "HomeOffice Router—IPX Routing Information" form for details.)

    ☐ Bridging (If checked, refer to the "HomeOffice Router—Bridging Information" form for details.)

    ☐ Security authentication (PAP, CHAP, or SPAP) (If checked, refer to the "HomeOffice Router—
       Security Authentication Information" form for details.)

2. Perform configuration with Local Manager as follows (attach configuration details separately):

    _____

    _____

    _____

    _____

    _____

    _____

    _____

    _____

    _____

    _____

3. Install and configure the following on your PC:

    ☐ TCP/IP (Refer to the "Windows PC—TCP/IP Network Configuration Information" form for details.)

    ☐ IPX address (Refer to the "Windows PC—IPX/SPX Network Configuration Information" form for
       details.)

4. Refer to Page 2 of this form for additional instructions: ☐ yes   ☐ no

Meridian HomeOffice II
Configuration Instructions

Page 2 of 2

Network administrator: Complete one copy of pages 1 and 2 for each telecommuter.

5. Additional information (additional details or tasks that you must perform, if necessary):

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Meridian HomeOffice II   Page 1 of 2
HomeOffice Router—ISDN Provisioning Information

Part A: Get the following information from the network administrator.

Basic requirements (check all that apply):
You require two B-channels, providing both voice and data capability. Both B-channels must be Circuit Switched Voice and Data (CSVD).
☐ Multiple Subscriber Numbering (required if no SPIDs are provided)
Note: If you are in North America, this is for AT&T only.
☐ Calling Line Identification (CLI)
☐ Additional Call Offering (ACO)
Ordering method - North America only (select only one of the following):
☐ Capability package   ☐ EZ-ISDN
Package name: _____

Part B: Get the following information from the ISDN service provider.

Service provider contact name:	Telephone number:	
ISDN line type (check one of the following):		
☐ National ISDN 1 (NI-1)	☐ AT&T 5ESS Custom Multipoint	☐ 1RT6
☐ National ISDN 2 (NI-2)	☐ Euro-ISDN	☐ Hong Kong/Taiwan
☐ AT&T 5ESS Custom Point-to-Point	☐ Austel	☐ Other
Note 1: If the ISDN line type is National ISDN 1, National ISDN 2, or AT&T 5ESS, your service provider may need additional information.		
Note 2: National ISDN 1, AT&T 5ESS Custom Multipoint, and Euro-ISDN are the only line types that support two directory numbers (a requirement for HomeOffice II).		
If you selected Other as the ISDN line type, is phantom power supported?	☐ yes	☐ no

Meridian HomeOffice II   **Page 2 of 2**
HomeOffice Router—ISDN Provisioning Information

Part B (continued): Get the following information from the ISDN service provider.

What is the channel data rate?	☐ 56 Kbps	☐ 64 Kbps

What are the ISDN telephone numbers?	What are the Service Profile IDs (SPIDs)?
Note: Only one number is provided for AT&T Custom. Up to 10 numbers can be provided for Euro-ISDN. Up to two numbers can be provided for all of the other ISDN line types.	**Note:** For NI-1 and AT&T 5ESS Custom Multipoint only.
You require two telephone numbers for HomeOffice II.	You require two SPIDs for HomeOffice II. If SPIDs are not provided, then you require Multiple Subscriber Numbering (MSN).
Line 1: _____	Line 1: _____
Line 2: _____	Line 2: _____
Line 3: _____	
Line 4: _____	
Line 5: _____	
Line 6: _____	
Line 7: _____	
Line 8: _____	
Line 9: _____	
Line 10: _____	

Meridian HomeOffice II
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HomeOffice Router—Meridian Interface Information

1. Assign the ISDN directory numbers (get these from the ISDN service provider).

   Digital telephone (MERIDIAN port calls):

   HomeOffice Router (data calls):

   Analog telephone (FAX port calls):

   Note: The data and fax directory numbers must be the same, but they cannot be the same as the digital telephone number.

Get the following information from the network administrator.

2. PBX connection information

   ISDN directory number to PBX:

   Note: This is the directory number assigned to the data port on the switch. This directory number must be in a format that can be dialed from the home office (that is, a DID number).

   Security level: ☐ No security is required   ☐ Security is required

   10-digit security code (only if security is required):

3. Online/LC key

   You must use this function key (Fkey14 is recommended):

   Note: You cannot use the selected function key for any other PBX feature. If you select a key that is already programmed for another feature, you will lose that feature on your telephone.

4. Local calling permission

   You may enable the FAX port: ☐ yes   ☐ no

   Outgoing local calls are allowed on
   - Digital telephone   ☐ yes   ☐ no
   - Analog telephone (FAX port) only   ☐ yes   ☐ no

   Password for setting local calling permissions in Local Manager:

Meridian HomeOffice II   **Page 1 of 2**
HomeOffice Router—IP Routing Information

Get the following information from the network administrator.

1. Enable Dynamic IP Address Translation (DIAT for IP):	☐ yes (complete sections 2 and 4)	☐ no
If DIAT for IP is enabled, the number of computers connected to HomeOffice Router:	☐ one	☐ more than one
If DIAT for IP is not enabled, use unnumbered links?	☐ yes (complete all of the sections on this form)	☐ no (complete sections 2 and 4)
If unnumbered links are not used, the IP address of the remote interface device at the host network:		
Note: The address must be on the same network as the ISDN interface (see section 3).		
2. Ethernet interface information		
HomeOffice Router Ethernet IP address:		
HomeOffice Router Ethernet subnet mask (if not the default):		
IP broadcast style (default is ones):	☐ ones	☐ zeros
3. ISDN interface information (complete only if DIAT for IP and unnumbered links *are not* being used)		
HomeOffice Router ISDN IP address:		
HomeOffice Router ISDN subnet mask (if not the default):		
4. ISDN circuit information		
Name of the remote circuit:		
Primary ISDN telephone number used to call the network site:		
Caller ID (CLID) of the primary ISDN telephone number:		
Secondary telephone number to call the network site (optional required):		
Caller ID (CLID) of the secondary ISDN telephone number:		
Use two B-channels (instead of one)?	☐ yes	☐ no

Meridian HomeOffice II   **Page 2 of 2**
HomeOffice Router—IP Routing Information

5. Will Microsoft Networking be supported?	☐ yes	☐ no
If yes, IP address of the network server:		
6. DHCP information (Configure this in Local Manager if the HomeOffice Router is to function as a DHCP server.)		
Domain name:		
DNS server IP addresses:		
WINS IP addresses:		

Meridian HomeOffice II   Page 1 of 1
HomeOffice Router—IPX Routing Information

Get the following information from the network administrator.

1. Will Microsoft Networking be supported?	☐ yes	☐ no
2. Enable Dynamic IPX Address Translation (DIAT for IPX):	☐ yes (complete sections 3 and 5)	☐ no (complete all of the sections on this form)
If DIAT for IPX is enabled, the number of computers connected to HomeOffice Router:	☐ one	☐ more than one
3. IPX Ethernet network information IPX network number of HomeOffice Router (8 hex digits):		
IPX frame type: ☐ SNAP ☐ 802.2	☐ 802.3	☐ Ethernet II
4. Complete this section only if DIAT for IPX is not being used. Connecting to: ☐ Intel Shiva LanRover Access Switch	☐ other device	☐ do not know
IPX network number of the ISDN interface:		
Note: You can autogenerate the network number if you are connecting to an Intel Shiva LanRover Access Switch.		
IPX node (MAC) address of the network site (12 hex digits):		
Note: The HomeOffice Router can autodetect the node address of some devices such as the Intel Shiva LanRover Access Switch.		
Use Triggered RIP and SAP?	☐ yes	☐ no
5. ISDN circuit information Name of the remote circuit:		
ISDN telephone number used to call the network site:		
Second telephone number to call the network site (if required):		
Use two B-channels (instead of one)?	☐ yes	☐ no

Meridian HomeOffice II   **Page 1 of 1**
HomeOffice Router—Bridging Information

Get the following information from the network administrator.

Name of the remote circuit:	
ISDN telephone number used to call the network site:	
Caller ID (CLID) of the network site:	
Second telephone number to call the network site (if required):	
Second Caller ID (CLID) of the network site (if required):	
Use two B-channels (instead of one)?	☐ yes ☐ no
HomeOffice Router IP address (for remote administration or troubleshooting only):	
Subnet mask (if not the default):	

Meridian HomeOffice II

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HomeOffice Router—Security Authentication Information

Get the following information from the network administrator.

Type of authentication used:	☐ PAP	☐ CHAP	☐ SPAP	☐ none
Note: None can be selected if Calling Line Identification is being used.				

For PAP, CHAP, and SPAP only:		
Your login ID:		
Your login password:		
Will the network device be able to call the user?	☐ yes	☐ no

Complete only if the network device can call the user:	
Network device login ID:	
Network device login password:	

For SPAP only:
User's ISDN telephone number, if using roaming callback (so the network unit can call the user):

Is additional (third-party) security being used (such as SecurID)?	☐ yes	☐ no
User name:		
Passcode:		

Meridian HomeOffice II   **Page 1 of 1**
Windows PC—TCP/IP Network Configuration Information

Get the following information from the network administrator.

IP Addresses		
IP address assigned or obtained automatically?	☐ assigned	☐ obtained automatically
If assigned, the IP address assigned to the PC:		
Subnet mask:		
Gateway IP address:		
Note: The address recorded here is the HomeOffice Router's Ethernet IP address.		
WINS		
Obtain WINS server IP addresses from a DHCP server?	☐ yes	☐ no
If no, the WINS server IP addresses:		
For Windows NT only:		
Enable DNS for Windows Resolution?	☐ yes	☐ no
Enable LMHOSTS Lookup?	☐ yes	☐ no
DNS		
Disable DNS?	☐ yes	☐ no
If no, the domain name:		
DNS server search order:		
Domain suffix search order:		

Meridian HomeOffice II   **Page 1 of 1**
Windows PC—IPX/SPX Network Configuration Information

Get the following information from the network administrator.

Network configuration				
Frame type:	☐ SNAP	☐ 802.2	☐ 802.3	☐ Ethernet II
Network number:				
Note: The address recorded here is the HomeOffice Router's Ethernet IPX address.				
Logon information (Windows NT only)				
Preferred server (if using NetWare 3.x)				
Default tree and context (if using Netware 4.x)				
Tree:				
Context:				

Appendix A

HomeOffice II part codes

In this appendix

Meridian HomeOffice II Line Card part codes

Introduction

This topic identifies the part codes that were in effect when this guide was printed. These part codes may change. Check the Nortel Networks Price Book or contact your sales representative for the latest codes.

Part codes

Component	Description	CPC	PEC
HomeOffice II Line Card (HLC)	Digital line extender card for IPE shelf in either Meridian 1 or SL-100 PBX	A0767419	NTQR02AA
Multi I/O cable	Cable for daisy chaining multiple HLCs, with SDI and MMI connections	A0743799	NTDR50AB
MMI extension cable	Cable for connecting the Multi I/O cable to the MMI terminal	A0748519	NTDR58AA
SDI extension cable	Cable for connecting the Multi I/O cable to the SDI port on the PBX	A0748520	NTDR59AA

HomeOffice Router part codes—U version (North America)

Introduction

This topic identifies the part codes that were in effect when this guide was printed. These part codes may change. Check the Nortel Networks Price Book or contact your sales representative for the latest codes.

Part codes

Component	Description	CPC	PEC
HomeOffice Router	HomeOffice Router with digital line extender daughterboard	A0767421	NTQR03AA
power cord	power cord, 3 cond 18 AWG,100 volts = 125 10 AMPS	A0292928	NPS50160L2
power supply	universal power supply	A0739604	NTDR52AA
ISDN cable	RJ-45 cable for connection to ISDN wall jack	A0669334	NTDJ66AA
Ethernet cable	RJ-45 10BaseT crossover cable *Note:* Based on availability, the cable can be red from end to end, or grey with a 5.08 cm (2-inch) red sleeve at each end.	A0669335	NTDJ67AA
RS-232 cable	DB9 serial cable for connection to COM port on PC	A0669333	NTDJ65AA

HomeOffice Router part codes—ST version (Europe)

Introduction

This topic identifies the part codes that were in effect when this guide was printed. These part codes may change. Check the Nortel Networks Price Book or contact your sales representative for the latest codes.

Part codes

Component	Description	CPC	PEC
HomeOffice Router	HomeOffice Router with digital line extender daughterboard	A0779371	NTDR01AC
power cord	Ireland	A0381306	NPS50160-04L21
	United Kingdom	A0393246	NTBK02AA
power supply	Universal power supply	A0739604	NTDR52AA
ISDN cable	RJ-45 cable for connection to ISDN wall jack	A0669334	NTDJ66AA
Ethernet cable	RJ-45 10BaseT crossover cable *Note:* Based on availability, the cable can be red from end to end, or grey with a 5.08 cm (2-inch) red sleeve at each end.	A0669335	NTDJ67AA
RS-232 cable	DB9 serial cable for connection to COM port on PC	A0669333	NTDJ65AA

HomeOffice Router part codes—ST version (CALA)

Introduction

This topic identifies the part codes that were in effect when this guide was printed. These part codes may change. Check the Nortel Networks Price Book or contact your sales representative for the latest codes.

Part codes

Component	Description	CPC	PEC
HomeOffice Router	HomeOffice Router with digital line extender daughterboard	A0773317	NQR04AA
power supply	Universal power supply	A0739604	NTDR52AA
ISDN cable	RJ-45 cable for connection to ISDN wall jack	A0669334	NTDJ66AA
Ethernet cable	RJ-45 10BaseT crossover cable *Note:* Based on availability, the cable can be red from end to end, or grey with a 5.08 cm (2-inch) red sleeve at each end.	A0669335	NTDJ67AA
RS-232 cable	DB9 serial cable for connection to COM port on PC	A0669333	NTDJ65AA

Digital telephone part codes

Introduction

This topic identifies the part codes that were in effect when this guide was printed. These part codes may change. Check the Nortel Networks Price Book or contact your sales representative for the latest codes.

Part codes

Note: Ensure that documentation and required accessories are provided with the digital telephone.

Component	Description	CPC	PEC
key cap	Online/LC (online/offline mode toggle)	P0879401	-
telephone cable (Europe)	Line cord, 6 cond plug both ends; 1.5 m (7 feet), silver satin	A0346862	NPS50318-04L02
M2616 digital telephone - North America only	Meridian 2616 Performance-Plus Telephone with Display (Grey)	A0682303	NT9K16AC93
M2616CT cordless digital telephone			
North America only	Meridian 2616 Performance-Plus Cordless Telephone with Display (Grey)	A0646663	NT2K36AA93
	Meridian 2616 Performance-Plus Cordless Telephone with Display (Black)	A0646661	NT2K36AA-03
	Meridian 2616 Performance-Plus Cordless Telephone with Display (Ash)	A0646662	NT2K36AA-35

Component	Description	CPC	PEC
M2216 digital telephone			
North America	Meridian M2216 ACD Telephone (Grey)	A0682306	NT9K18AC93
Belgium, Germany, Greece, Ireland, Portugal, Spain	M2216 - Display 1 (Grey)	A0404395	NT2K18AK-93
Austria, Denmark, Finland, Norway	M2216 - Display 2 (Grey)	A0404398	NT2K18NL-93
France	M2216 - Display 1 (Grey)	A0404416	NT2K18PK-93
Switzerland	M2216 - Display 1 (Black)	A0404394	NT2K18AK-35
Italy, Middle East	M2216 - Display 1 (Grey)	A0404371	NT2K18XM-93
CIS, Turkey	M2216 - Display 2 (Grey)	A0404371	NT2K18XM-93
United Kingdom	M2216 - Display 1 (Grey)	A0404407	NT2K18CJ-93
Holland	M2216 - Display 1 (Grey)	A0408489	NT2K18UJ-93
Sweden	M2216 - Display 2 (Grey)	A0404440	NT2K18VL-93
M3820 digital telephone			
Germany, Italy, Ireland, Belgium, Portugal, Spain, Greece, Middle East	M3820 - Display 1 (Grey)	A0676174	NTDL13AC-93
Finland, Norway, CIS, Turkey	M3820 - Display 2 (Grey)	A0676180	NTDL23AC-93
United Kingdom	M3820 - Display 1 (Grey)	A0676189	NTDL03BC-93
Switzerland	M3820 - Display 1 (Grey)	A0676198	NTDL03CC-93
France	M3820 - Display 1 (Grey)	A0676207	NTDL03EC-93
Holland	M3820 - Display 1 (Grey)	A0676216	NTDL03KC-93

Documentation and training codes

Introduction

This topic identifies the part codes that were in effect when this guide was printed. These part codes may change. Check the Nortel Networks Price Book or contact your sales representative for the latest codes.

Part codes

Component	Description	CPC	PEC
Meridian HomeOffice II Planning Guide	NTP 555-8321-101 For Nortel Networks distributors and network managers and administrators at the corporate site	A0779380	NTDR05AC
Meridian HomeOffice II Network Administration Guide	NTP 555-8321-310 For network managers and administrators	A0779379	NTDR06AC
Meridian HomeOffice II Line Card Configuration Guide	NTP 555-8321-210 For Meridian 1/SL-100 technicians and administrators	A0779378	NTDR07AC
Meridian HomeOffice II User Guide	NTP 555-8321-205 For telecommuters and network managers and administrators	A0779376	NTDR15AC

Component	Description	CPC	PEC
CD-ROM with Quick Start Guide	CD-ROM containing HomeOffice Router firmware, software, NTPs, and Computer-Based Training; for telecommuters and network managers and administrators	A0779374	NTDR16AD
Meridian HomeOffice II Release Notes	NTP 555-8321-102 For all audiences listed above	P0906344	not applicable
Meridian HomeOffice II Line Card Installer's Notes	Quick reference sheet for Meridian 1/SL-100 technicians and administrators	P0908758	-
Meridian HomeOffice II Technical Training Course 100	Web-based training for Nortel Networks distributors and network managers and administrators at the corporate site	A0788672	NTDR60AB

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Meridian HomeOffice II
Planning Guide

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