555-8321-205

Meridian HomeOffice II

User Guide

Product release 2.1 Standard 01.02 July 1999

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Meridian HomeOffice II
User Guide

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Printed in Canada

FCC Regulation and Industry Canada compliance information

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules, and the radio interference regulations of Industry Canada. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and the receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio or TV technician for help.

Publication history

July 1999

This is the Standard 01.02 issue of the *User Guide* for Release 2.1 of Meridian HomeOffice II. The *User Guide* has been updated to reflect new features added since July, 1998.

July 1998

This is the Standard 01.01 issue of the *User Guide* for Release 2.1 of Meridian HomeOffice II. The *User Guide* explains how to install the Meridian digital telephone and the HomeOffice Router, then how to use the Install Wizard or Local Manager software to configure the HomeOffice Router.

Contents

Preface

About this document

In this preface

Overview

Introduction

This document describes how to successfully install and configure the hardware and software for your Meridian HomeOffice II Release 2.1 system.

Who should read this guide

This guide is intended primarily for the use of employees of your organization who work at home. Network administrators will also need to refer to this guide for basic installation and configuration information.

Assumptions

This guide assume that you are familiar with and know how to use the following:

- your Windows PC
- your digital telephone

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 a document is 02.01.

The second two digits increase by one each time a final document is revised and rereleased 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 guide is organized into the following parts:

- Part 1, Installing Meridian HomeOffice II
- Part 2, Using and maintaining Meridian HomeOffice II

How to use this guide

This guide explains, step-by-step, how to install, configure, and use your HomeOffice Router and digital telephone. To ensure a successful installation, follow the steps in the sequence in which they are presented.

Read Chapter 1, which describes Meridian HomeOffice II, then do one of the following:

- Option 1: If you are comfortable with hardware installation and software configuration procedures, follow the instructions in Chapter 2, “Ready? Set! GO!”. Refer to this guide if you need more information.
- Option 2: If you are not used to installing hardware and configuring software, go to Chapter 3, “Obtaining HomeOffice Router configuration information,” and follow the procedures there and in the following chapters until your system is working.

If you have trouble getting your system to work, refer to Chapter 12, “Troubleshooting system problems” for help.

Note: If you are a network administrator, refer to the following guides in addition to this guide:

- *Meridian HomeOffice II Planning Guide* (NTP 555-8321-101)
- *Meridian HomeOffice II Network Administration Guide* (NTP 555-8321-310)

These guides explain how to incorporate Meridian HomeOffice II into your network.

Part 1, Installing Meridian HomeOffice II

Chapter 1, "HomeOffice II description"
This chapter describes HomeOffice II and how it works.

Chapter 2, "Ready? Set! GO!"
This chapter summarizes the major tasks required to get your HomeOffice II system up and running as quickly as possible.

Chapter 3, "Obtaining HomeOffice Router configuration information"
This chapter provides information about the ISDN service packages that are supported by HomeOffice II and explains

- what information you need to give your ISDN service provider when ordering the service
- what information you need to get from your service provider

This chapter also identifies the data network-related information (routing, security authentication, and so on) that you need to get from your network administrator.

All information is recorded on forms that are then used for to configure the HomeOffice Router and for future reference.

Chapter 4, "Installing the hardware and software"
This chapter describes how to

- connect the HomeOffice Router cables to Ethernet, ISDN, digital telephone, and analog device
- install the Install Wizard and Local Manager software
- verify that current firmware and software is installed

Chapter 5, "Configuring the HomeOffice Router"
This chapter describes how to configure the HomeOffice Router by using the Install Wizard.

Chapter 6, "Setting up your PC"
This chapter explains how to configure your Windows software so that your PC can operate with the HomeOffice Router on the network.

Chapter 7, "Testing the connections"
This chapter explains how to verify that the connections to the corporate PBX and data networks are working.

Part 2, Using and maintaining Meridian HomeOffice II

Chapter 8, "Using the digital telephone"
This chapter describes the digital telephone features that are specific to Meridian HomeOffice II. It also explains how to make outgoing calls, and what to do if there is a failure.

Chapter 9, "Local Manager overview"
This chapter provides a brief overview of the Local Manager software which is used to

- monitor Router activities
- perform ISDN and PBX connection troubleshooting
- perform upgrades
- perform configuration backups and restores

Chapter 10, "Performing upgrades"
As changes are made to the hardware and software for your HomeOffice II system, upgrades will be issued. This chapter explains how to perform the upgrades.

Chapter 11, "Performing backups and restores"
This chapter explains how to create a configuration backup and how to restore the configuration of the HomeOffice Router, if required.

Chapter 12, "Troubleshooting system problems"
This chapter provides problem-solving techniques for a variety of possible connectivity problems involving the digital telephone, ISDN connection, LAN, and remote devices. It also provides procedures for performing the following tests:

- Meridian phone test
- Meridian call test
- loopback test

- listening test
- calling test

Appendix A, “Data entry forms”
This chapter provides sample forms your network administrator may use to give you the information you need to configure your HomeOffice Router.

Appendix B, “ISDN cause codes”
ISDN cause codes provide reasons why ISDN tests may fail. You may need to give your ISDN service provider this information if you encounter problems. It is provided for reference only.

Index
The Index provides an alternative method of locating information in this document.

Skills you need

Introduction

This section describes the skills and knowledge you need to use this guide effectively.

PC experience or knowledge

You need knowledge of, or experience with, Microsoft Windows 3.1, Windows NT, or Windows 95 in order to configure the PC for operation with Meridian HomeOffice II.

Other experience or knowledge

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

- analytical skills for troubleshooting
- how to use your digital telephone

Related documents

Introduction

This topic identifies the documents that are available for Meridian HomeOffice II. Each document is written specifically for one or more of the following:

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

How to obtain the Meridian HomeOffice II documentation

Printed versions may be ordered from Nortel Networks.

Soft copy versions (in Adobe Acrobat PDF format) may be downloaded 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 is needed to incorporate Meridian HomeOffice II into the corporate network. It also provides installation checklists and data entry forms.

Meridian HomeOffice II Release Notes **(NTP 555-8321-102)**
The *Release Notes* describe the features and known problems of Meridian HomeOffice II.

A condensed version of the Release Notes is included in the HomeOffice Router package. A version containing more detailed information is provided on the HomeOffice Router CD-ROM and on the Nortel Networks web site.

Note: The printed copy may supersede the copy provided on the CD-ROM. The most recent version can be obtained 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 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, administrator, or both, 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: This document cannot be ordered 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 needed to configure the HomeOffice Router for operation on corporate networks.

This document is included in the HomeOffice Router package.

Meridian HomeOffice II Quick Start Guide **(NTP 555-8321-900)**
This document is provided with the HomeOffice II CD-ROM, which is provided in the HomeOffice II package. It explains what is on the CD-ROM, and provides a quick reference installation procedure.

Part 1

Installing Meridian HomeOffice II

In this part

Chapter 1

HomeOffice II description

In this chapter

What is HomeOffice II?

Introduction

Meridian HomeOffice II is a telecommuting product that allows you to connect your Meridian proprietary digital telephone and PC to the office LAN from your home office. This is accomplished through

- an ISDN Basic Rate Interface (BRI) line installed in your home
- a HomeOffice Router connecting your PC to the corporate LAN and digital telephone to the corporate PBX

What you can do

HomeOffice II allows you to take advantage of your company's telephone network by providing you 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 in your home as it does at the office.

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

Features

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 a maximum of 512 Kbps of bandwidth using STAC compression when the digital telephone is in offline mode, or 256 Kbps of bandwidth using STAC compression when the digital telephone is in online mode.

How it works

Introduction

Key elements of the Meridian HomeOffice II product are:

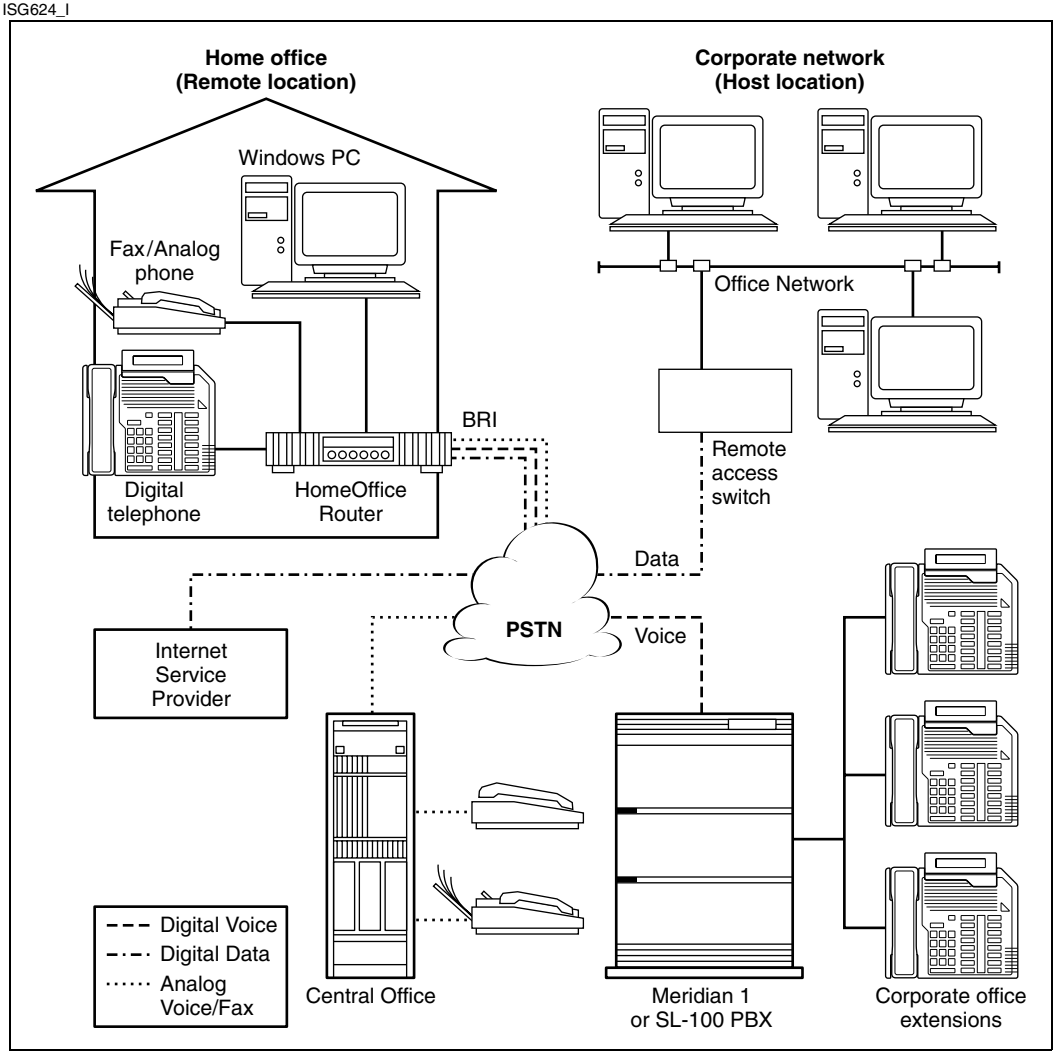
- at your home:
  - — HomeOffice Router
  - — digital telephone
  - — ISDN line
- at the office:
  - — Meridian 1 or SL-100 PBX
  - — remote access server for connection to the corporate LAN (such as an Intel Shiva LanRover Access Switch)

Where you are in the network

The illustration on the next page shows the connections between your home office (remote location) and the corporate office (host location).

Your PC, digital telephone, and optional analog telephone or fax machine are connected to the HomeOffice Router. The HomeOffice Router is connected to the ISDN line.

ISG624_I


Home office
(Remote location)
Corporate network
(Host location)
Windows PC
Fax/Analog
phone
Office Network
BRI
Digital
telephone
HomeOffice
Router
Remote
access
switch
Data
PSTN
Voice
Internet
Service
Provider
Digital Voice
Digital Data
Analog
Voice/Fax
Central Office
Meridian 1
or SL-100 PBX
Corporate office
extensions

ISDN line

Communication between your home office and the corporate office takes place over the ISDN line. The ISDN line can carry both data and voice down the same wire at the same time. This is accomplished by using both of the B-channels that are provided on the ISDN line. This means that you can do the following:

You can	while
talk to someone on the digital telephone	uploading or downloading a file. or maintaining a LAN Ethernet connection. or sending or receiving a fax. **Note:** While you are using the digital telephone, the second B-channel is used to perform these functions and is restricted to 56 Kbps.
upload or download a file	sending or receiving a fax.

The ISDN line is a digital connection so the connection is free of interference and is very fast compared to a conventional telephone line and modem.

Note: When the digital telephone is active with a call, the data connection is restricted to 56 Kbps over the second B-channel. The first B-channel is used by the digital telephone while a connection to the corporate PBX is in progress.

Data network

If you have the correct network information installed on your PC, your PC functions as if it were a part of your organization's local or wide area network (LAN or WAN). Data can travel from your PC through the Ethernet connection, to the HomeOffice Router, over the ISDN line to your organization's network, and back again because your PC is recognized as a node on the network.

Digital telephone

With your digital telephone, you can do the following:

- make and receive telephone calls as if you were part of your organization's internal telephone network

  All telephone features offered (such as voice mail, Caller Line ID, conference calling, call transfer, and so on) are available. When you make a company call, your telephone communicates with the HomeOffice Router. The HomeOffice Router sends the call over the ISDN line to your organization's telephone switch. From the telephone switch, your call is directed to whomever you are allowed to call on your organization's telephone system.
- make and receive calls from the Public Switch Telephone Network (PSTN) on the digital telephone, if you have been given permission to do so by your network administrator

HomeOffice II components

Introduction

Your HomeOffice II product comes with the following components:

- HomeOffice Router
- cables
- CD-ROM
- User Guide
- digital telephone

HomeOffice Router

The HomeOffice Router connects your PC and digital telephone to the corporate network. The HomeOffice Router is equipped with a special daughterboard that allows you to use your digital telephone set from home. For a more detailed description, see “HomeOffice Router description” on page 12.

Cables

Cables are supplied for connection to AC power, the ISDN line, and the Ethernet network interface card in your PC.

Cables supplied with the HomeOffice Router

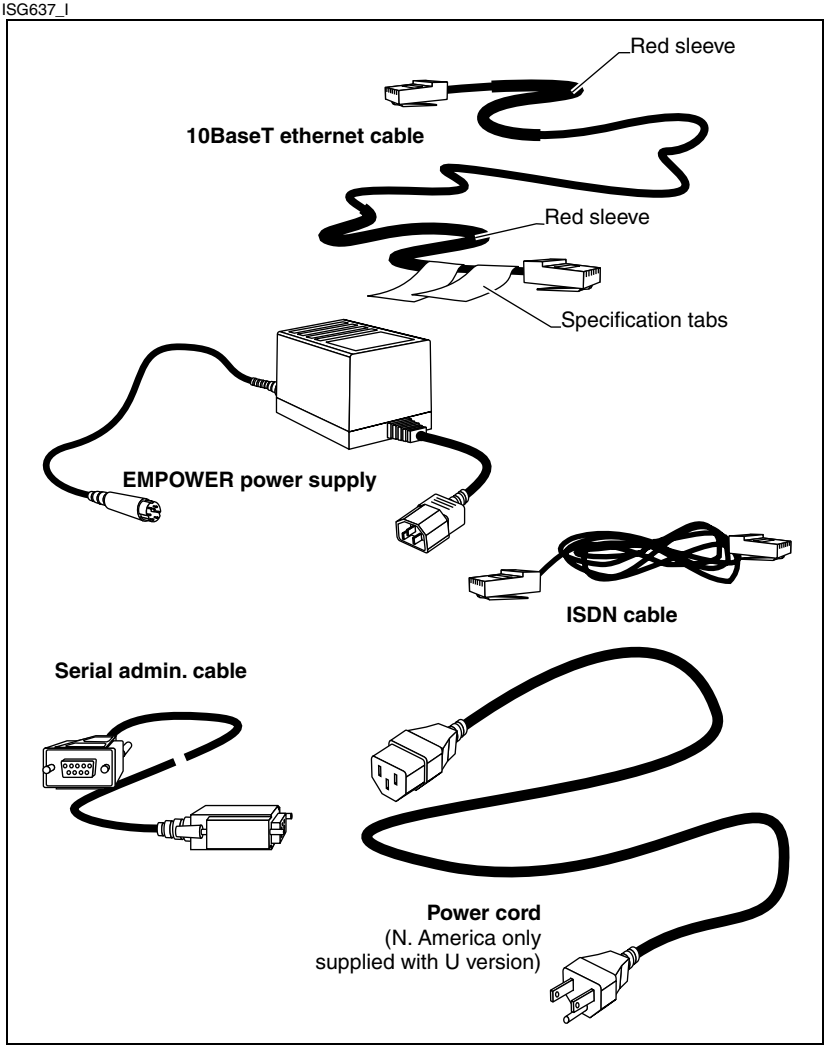
The HomeOffice Router installation package includes the following cables, as shown in the illustration on the next page:

- power cord and universal power supply
- 9-pin RS-232 serial cable for connecting the HomeOffice Router’s ADMIN port to a serial port on the PC
- unshielded twisted-pair (UTP) crossover Ethernet cable
  This cable is used to connect the HomeOffice Router’s ETHERNET port to the Ethernet card on a single PC. Depending on availability, this cable is either red from end to end, or it is gray with a 5.08 cm (2 inch) red sleeve at each end.

- standard gray ISDN cable, (marked ISDN [UTP]) for connecting the HomeOffice Router's ISDN port to an ISDN line

Note: The cable that connects your digital telephone to the HomeOffice Router will be supplied with the digital telephone.

ISG637_I



Cables you must supply yourself

You must supply your own cables if you wish to connect the HomeOffice Router to the following:

- an Ethernet hub
  In this case, you will need to obtain a standard UTP Ethernet cable.
- an analog telephone or fax machine
  In this case, you must provide your own telephone cable.

CD-ROM

The CD-ROM contains the following:

- Quick Start Guide booklet
- Install Wizard and Local Manager software
- Computer-Based Training (to provide you with “getting started” training)
- firmware (in case a re-installation is required)
- documentation in Adobe Acrobat Reader (.PDF) format

User Guide

This User Guide explains how to connect the HomeOffice Router and digital telephone to your PC and ISDN line. The Guide also explains how to configure the HomeOffice Router with the information needed to connect to your corporate office.

Digital telephone

The digital telephone (with its cable and user documentation) is used in addition to the one you have at the corporate office. For more details, see “Digital telephone” on page 16.

HomeOffice Router description

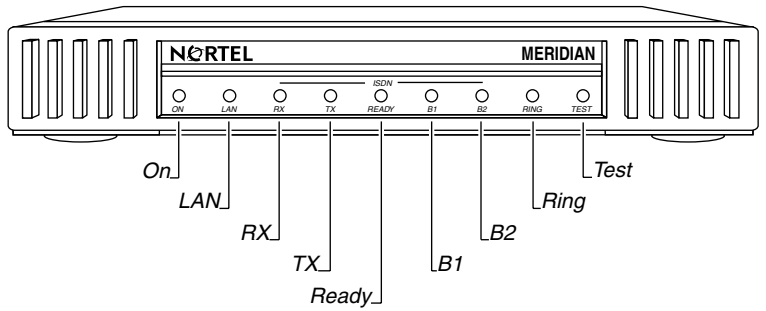
Introduction

The HomeOffice Router contains LEDs on the front panel and connectors on the back panel.

HomeOffice Router front panel

The front of the HomeOffice Router, shown in the following illustration contains LEDs that indicate current operational status. For a description of each LED, see “Status LEDs” on page 13.

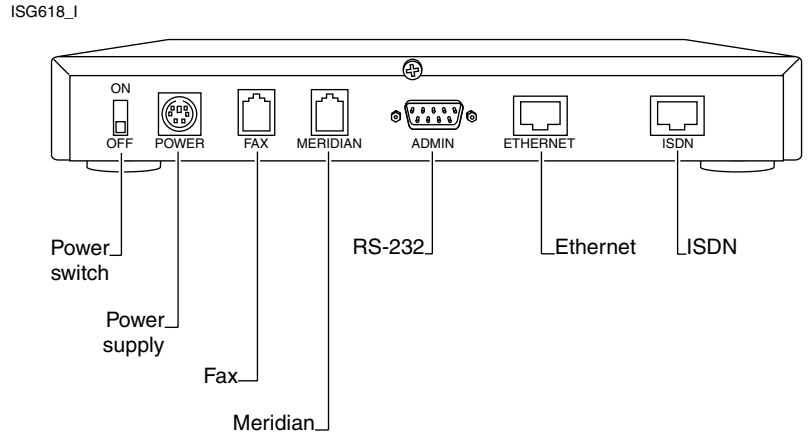
ISG638_i



HomeOffice Router rear panel

The rear of the HomeOffice Router, shown in the illustration on the next page provides the On/Off switch, power supply receptacle, and the following interfaces:

- one 10BaseT Ethernet interface
- one ISDN Basic Rate Interface (BRI) (S/T or U)
- one RS-232 administration (admin) port
- one digital telephone port (labelled MERIDIAN)
- one analog telephone port (labelled FAX)



Status LEDs

The HomeOffice Router's operational status is indicated by LEDs mounted on the front panel. During the boot sequence, the LEDs light up green and in sequence, from left to right. The following table describes each LED.

Note: Obtain more information on LED functions from the Local Manager Statistics window by clicking the LED icon.

LED	Description	Information provided by Local Manager
On	This LED shines solid green when the device is powered on.	When you click the Power LED, details of the status of the physical (Ethernet and ISDN) links appear. This includes the interface name, status of the interface (whether it is up or down), bandwidth used, and call duration.
LAN	This LED flashes green when Ethernet traffic is being transmitted or received. It shines solid red if there is a fault detected on the Ethernet interface.	When you click the LAN LED, the LAN Statistics dialog box appears. This contains four tab pages that display statistics for packets, rates, discards, and errors.

LED	Description	Information provided by Local Manager
ISDN Rx	This LED flashes green when ISDN traffic is received. It shines solid red when an ISDN-receive error is detected.	When you click the Rx LED, the ISDN Statistics dialog box appears. This shows activities monitored on ISDN Circuits, Calls, and Interfaces.
ISDN Tx	This LED flashes green when ISDN traffic is transmitted. It shines solid red when an ISDN transmit error is detected.	When you click the Tx LED, the ISDN Statistics dialog box appears. This shows activities monitored on ISDN Circuits, Calls, and Interfaces.
READY	This LED shines solid green when the ISDN interface is activated. It means that ISDN is ready.	When you click the READY LED, the ISDN Statistics dialog box appears. This shows activities monitored on ISDN Circuits, Calls, and Interfaces.
ISDN B1 and ISDN B2	The LED associated with the B-channel in use shines green during data transmission, and amber during voice calls as follows: Outgoing calls: • flashing green for data • flashing amber for outgoing voice or fax • flashing amber for digital voice Incoming calls: • steady green for data • steady amber for incoming voice or fax	When you click either the B1 or B2 LED, ISDN channel activity appears.

LED	Description	Information provided by Local Manager
RING	This LED flashes red when an incoming call is received on the FAX port.	
Test	This LED is normally off. In other situations, the LED shines solid green during memory operations and successful communication with the internal daughterboard flashes red when a fault is detected flashes amber while some lengthy operations are proceeding **Note:** The device should not be powered off when the Test LED is flashing amber as this may corrupt your device's software and make the device unusable.	This feature is not yet available. The window displays the following message: This feature not available.

Digital telephone

Introduction

Meridian HomeOffice II supports the following:

- analog telephone (connected to the FAX port on the HomeOffice Router)
- digital telephone or Symposium Communicator card (connected to the MERIDIAN port on the HomeOffice Router)

Analog telephone

Use of the FAX port on the HomeOffice Router is optional, and can be connected to an analog telephone, modem, or fax machine. If you choose to connect an analog telephone, be aware that some older bell-type ringer (electro-mechanical) telephones may not be supported.

Role of the digital telephone or Symposium Communicator card

The MERIDIAN port on the HomeOffice Router is used primarily to make and receive company-related voice calls. When connected to a digital telephone or Symposium Communicator card on your PC, it appears as if you are working in the corporate office. Therefore, all the functionality that is available to you at the corporate office is available to you in your home office. For example, you can use voice mail, call transfer, conference calling, and any other features provided by the corporate telephone system.

Supported Symposium Communicator card

Symposium Communicator card version 1.2 with Symposium Communicator software version 2.0 may be used with Meridian HomeOffice II.

If you want to use the Symposium Communicator card, ensure that your HomeOffice Router is using the correct daughterboard (RDB) firmware. See “Verifying the software and firmware release” on page 78 for details.

Supported digital telephones

The telephone set must be digital. The following table lists the supported models.

Continent	Supported models
North America	• Meridian 2216 • Meridian 2616 • Meridian 2616CT cordless telephone • Symposium Communicator card version 1.2 with software version 2.0
Europe	• Meridian 2216 • Meridian 3820

Other models are not supported. If you attempt to use an unsupported model, or a Meridian 2616CT that reports itself to the PBX as MCU, the following message appears on the telephone display:

```
Phone Type Not Supported
```

Notes:

1. If your digital telephone set is provided as part of your Meridian HomeOffice II package, ensure that in addition to your telephone set, you also receive the cable and user guide. Instructions for using your telephone set are not provided in this *User Guide*.
2. In Europe, the 6-pin telephone cable (RJ12) is supplied with the HomeOffice II package.

Firmware requirement

If you want to use the Meridian 2616CT or Meridian 39xx telephone, or a headset with the Meridian 3820 telephone, ensure that your HomeOffice Router is using the correct daughterboard (RDB) firmware. See “Verifying the software and firmware release” on page 78 for details.

Computer Telephony Integration applications

Introduction

You can use one of the supported Computer Telephony Integration (CTI) applications with Meridian HomeOffice II if:

- your PC is equipped with a Symposium Communicator card
- your digital telephone is equipped with a Meridian Communications Adaptor (MCA)

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

Types of Computer Telephony Integration (CTI) applications

There are two types of CTI applications:

- CTI applications that use the Symposium Desktop TAPI Service Provider
- CTI applications that use Symposium TAPI Server Provider for M1

Both types can be used with Meridian HomeOffice II.

Supported CTI applications

TAPI type	Supported CTI application
Symposium Desktop TAPI Service Provider	• Symposium FastView 1.6 • Symposium FastCall 1.6 • Symposium Call Manager 5.0 • other TAPI-compliant applications
Symposium TAPI Server Provider for M1	• Symposium Agent 1.1 • Symposium Call Manager 5.0 • other Symposium Partner products

Software description

Introduction

To get your system working on the voice and data networks, you need to configure the HomeOffice Router. The following tools are available for configuring the HomeOffice Router:

- Computer-Based Training (CBT)
- Install Wizard
- Local Manager
- HomeOffice Router command shell

Computer-Based Tutorial

The Computer-Based Tutorial is an online tutorial. It is highly recommended that you run the CBT as it provides you with the quickest training for getting your Meridian HomeOffice II product up and running. You can run the CBT directly from the CD-ROM.

Install Wizard

Use the Install Wizard to perform the minimum configuration required for operation on the network.

Local Manager

Use Local Manager to perform additional configuration (if required), or to modify an existing configuration of the HomeOffice Router.

HomeOffice Router command shell

Use the command shell to perform a more detailed and customized configuration than that provided by Local Manager. The command shell is usually used only by advanced users such as network administrators. It is unlikely that you will use the command shell.

Where the software is located

The Install Wizard and Local Manager applications are located on the CD-ROM and must be installed on your PC. (Instructions for doing this are provided on page 73.) The command shell is provided in the HomeOffice Router firmware and can be accessed with Local Manager.

Note: Ensure that you are using the most recent software. Updated versions are available from the Nortel Networks web site at: http://nortelnetworks.com/homeoffice.

What you need on your PC

Introduction

To use Meridian HomeOffice II, your PC must

- be a supported platform
- be running Windows 3.x, Windows NT, or Windows 95
- meet the minimum hardware requirements
- be equipped with an Ethernet interface card or be connected to an Ethernet hub

Supported platforms

To use the HomeOffice II product, your PC must be an IBM-compatible PC. UNIX and Macintosh platforms are not supported.

Operating system

To use the HomeOffice Router software applications (Install Wizard and Local Manager), your PC must use Windows 3.x, Windows NT, or Windows 95.

The HomeOffice II product has not been tested with systems using Windows 98, and is therefore not supported. This does not necessarily mean the product will not work with Windows 98.

Hardware requirements

Your PC should be equipped with a CD-ROM drive. The Install Wizard and Local Manager software, as well as the Computer-Based Training (CBT) tutorial, are available from CD-ROM only.

Note: If you do not have a CD-ROM drive, you can obtain the Install Wizard and Local Manager software from the Nortel Networks web site at http://nortelnetworks.com/homeoffice.

In order to run the computer-based tutorial from the CD-ROM, your PC must meet the following minimum system requirements:

- 486 33 Mhz PC running Windows 3.x, Windows NT or Windows 95

  Note: Windows 95 is preferred.
- 8 MB of RAM
- 16 MB of swap (Windows 95)
- 2-button mouse/101-key keyboard
- 2-speed CD-ROM drive
- 14-inch SVGA 24-bit graphics card capability
- 640 x 480 resolution, 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 MB of free memory to run.

Network interface

To connect to your corporate network, your PC must be equipped with a 10BaseT Ethernet interface card or be connected to an Ethernet hub.

Chapter 2

Ready? Set! GO!

This chapter will help you get your HomeOffice II product up and running. It outlines the minimum setup required for working on your corporate network. Perform all steps in sequence until completed.

Are you READY? Get SET! GO!

In this chapter

Run the Computer-Based Tutorial (CBT)

Introduction

The Computer-Based Tutorial is a multimedia presentation that explains what HomeOffice II is and how to install it.

If you are not able to run the CBT due to limitations of your PC, don't worry. This *User Guide* provides you with all the information you need.

To run the CBT

1. Insert the HomeOffice II CD-ROM into your CD-ROM drive. If autorun is activated on your system, the HomeOffice II CBT starts automatically.

   If autorun is turned off on your system, navigate to the root directory on the CD-ROM and double-click the startho.exe file.

   Result: The Welcome screen appears. Follow the instructions.

2. Continue with "Obtain the information you need for configuration" on page 25.

Obtain the information you need for configuration

Introduction

The information you need to configure the HomeOffice Router comes from two sources: your ISDN service provider and your corporate network administrator.

More information

If you need more information, see Chapter 3, “Obtaining HomeOffice Router configuration information.”

ISDN configuration information

Before you receive the information you need to configure ISDN on the HomeOffice Router, tell your ISDN service provider what you need on the service. Your network administrator can provide you with this information.

In return, your ISDN service provider gives you the directory numbers others need to contact you and if applicable, Service Profile Identifiers (SPIDs).

Corporate network configuration information

Your corporate network administrator needs to give you information about

- the PBX connection
  This includes the directory number used by the HomeOffice Router to connect to the corporate PBX and an unused feature key on the telephone.
- the network routing protocol used
  This includes addressing information of both your HomeOffice Router and the device to which you are connecting in an IP or IPX network.
- security authentication
  This includes the type of security being used, your user ID and password, and callback number, if Callback is being used.

How the information is provided

Configuration information may be given to you on the forms shown in Appendix A, “Data entry forms.” Use these forms to enter the information into the HomeOffice Router software.

What’s next?

Once you have received all the information you need, continue with “Install the hardware” on page 27.

Install the hardware

Introduction

When installing the HomeOffice Router, you are connecting it to your ISDN line, PC, and digital (and, if used, analog) telephone.

More information

If you need more information, see Chapter 4, “Installing the hardware and software.”

To install the HomeOffice Router

1 Inspect the package contents and ensure you have all the items you need.

Refer to the HomeOffice Router Package Contents Checklist provided on page 65.

2 Choose a location for the HomeOffice Router.

The HomeOffice Router cables must be able to reach your PC, telephone(s), ISDN jack, and power receptacle.

3 Connect the HomeOffice Router cables to the following:

- power transformer and power receptacle
- digital telephone or Symposium Communicator card
- analog telephone (if one is being used)

Note: The connection of an analog telephone is optional.

- serial port on PC (optional)
- Ethernet card on PC
- ISDN jack

4 Turn on the HomeOffice Router.

5 On the HomeOffice Router, the LEDs flash sequentially from left to right during the bootup process. When bootup is completed, the On and ISDN Ready LEDs shine steady green.

On the digital telephone, Hit RLS to Cancel Auto-Redial is displayed, indicating that connection to the corporate PBX is being attempted. Since you have not yet configured the HomeOffice Router with the information it needs to establish a connection, the connection attempt will not work. Press Rls on the digital telephone to cancel the auto redial.

Note: After you press Rls, Jan 1 12:00 (or equivalent, in your language) appears on the display. This is normal.

6 Install the Online/LC key as follows:

IF you	THEN do the following
have a digital telephone	Replace an empty feature key on the digital telephone set with the Online/LC key cap provided in your installation package. To confirm that the feature key is available for this purpose, refer to the information package provided to you by your network administrator.
do not have a digital telephone (you make telephone calls from your PC instead)	**1** Download the Online/LC softkey installation script from the Nortel Networks web page. **2** Run the script to install the Online/LC softkey on your PC. For more details, see “To install the Online/Offline button on your PC desktop” on page 72.

7 Continue with “Install the software” on page 29.

Install the software

Introduction

Before you can configure the HomeOffice Router, you must install the Install Wizard and Local Manager software on your PC.

More information

If you need more information, see Chapter 4, “Installing the hardware and software.”

To install the software

1. Navigate to the software directory on the HomeOffice II CD-ROM.
2. Locate and run the setup.exe file.
3. Follow the prompts on the screen.
4. Continue with “Configure the HomeOffice Router with Install Wizard” on page 30.

Configure the HomeOffice Router with Install Wizard

Introduction

Use the Install Wizard to configure the HomeOffice Router with the information needed to connect to your corporate telephone and data networks.

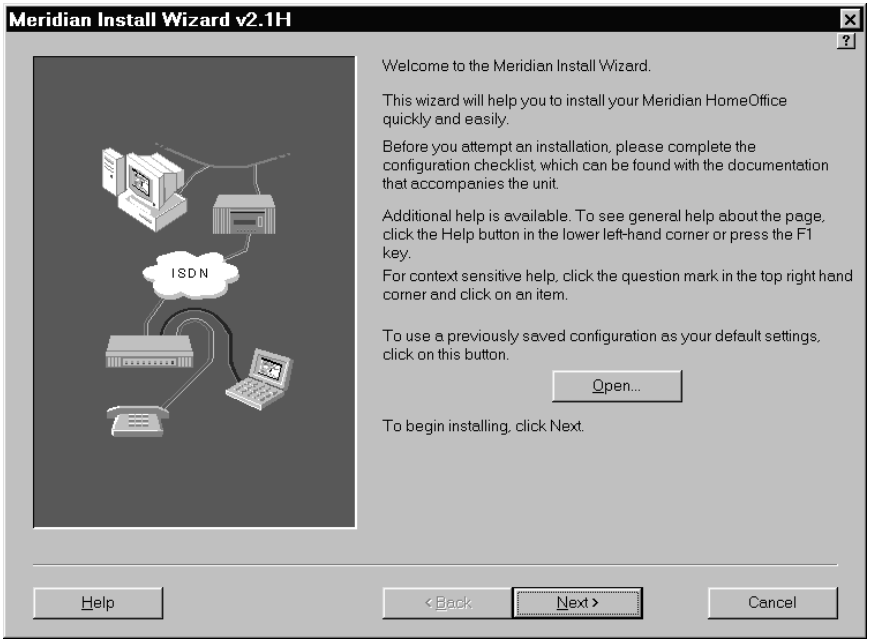
More information

If you need more information, see Chapter 5, “Configuring the HomeOffice Router.”

To configure with the Install Wizard

1 Locate and double-click the Install Wizard icon.

Result: The following screen appears.



2 Follow the screen prompts.

You must enter the following minimum information:

- ISDN directory numbers for connecting to the data network
- SPIDs (if applicable)
- ISDN directory number for others to call you

  Note: This is the number assigned to your digital telephone.
- ISDN directory number for connecting to the corporate PBX
- PBX security code (if used)
- feature key to be programmed as Online/LC

3 When you are finished entering the information from step 2, do one of the following:

- Complete the configuration now.
- Exit the Install Wizard and request that your network administrator complete the configuration. (Your network administrator will provide instructions on what to do.)

4 If you choose to complete the configuration, continue with the Install Wizard until all screens are completed.

5 Continue with “Run Local Manager and complete the configuration” on page 32.

Run Local Manager and complete the configuration

Introduction

Follow this procedure only if you have been instructed to do so by your network administrator.

Note: If your network administrator has restricted access to Local Manager, you will be prompted for a password. If you do not know the password, ignore this procedure.

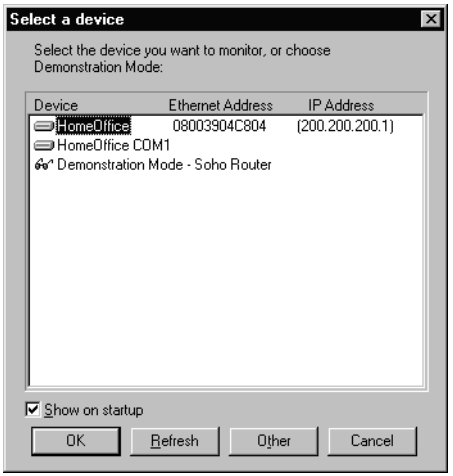
More information

If you need more information, refer to the *Meridian HomeOffice II Network Administration Guide* (NTP 555-8321-310) on your HomeOffice II CD-ROM.

To configure with Local Manager

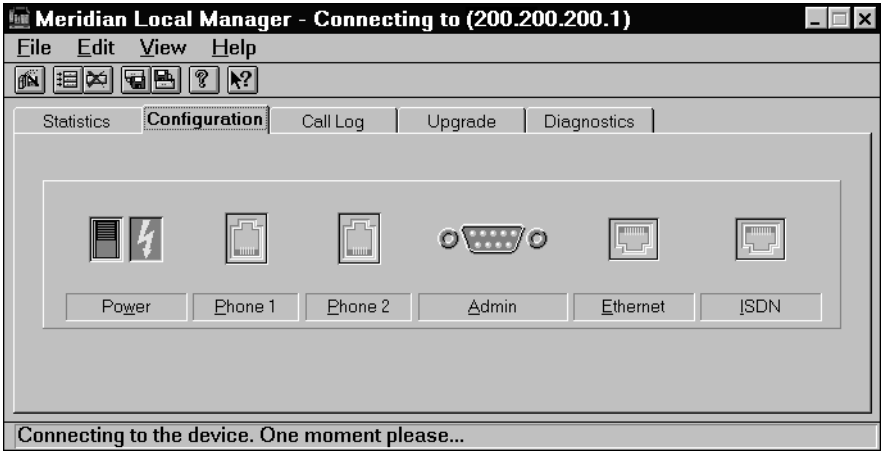
1 Locate and double-click the Local Manager icon.

Result: The following screen appears.



2 Select your HomeOffice Router and click OK.

Result: A screen similar to the following appears, indicating that a connection to the HomeOffice Router is being attempted.



Note: If your network administrator has restricted access to Local Manager, you will be prompted for a password. If this happens, do the following:

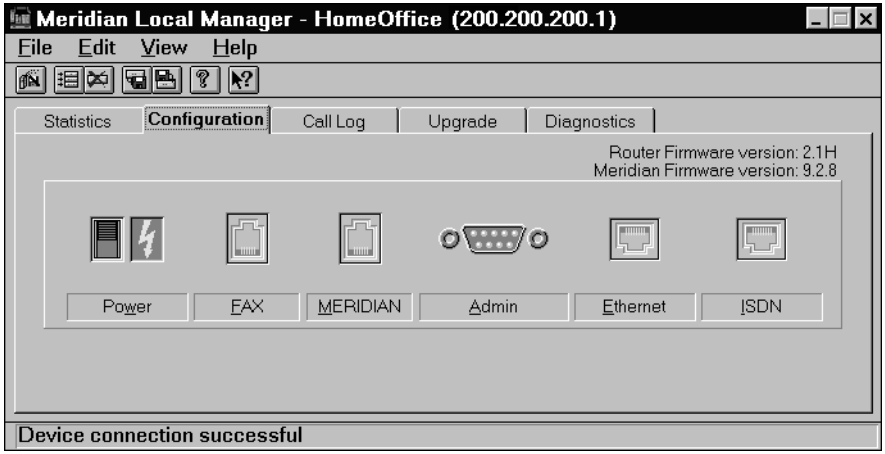
a. Click Cancel.

b. Click No at the prompt that follows.

c. Close Local Manager.

d. Continue with “Configure your PC” on page 35.

When the connection is successfully established, the screen similar to the following appears.



Note: If you are not able to successfully establish a connection with the HomeOffice Router, contact your technical support representative.

3 Follow the instructions from your network administrator for making the configuration changes.

4 Continue with “Configure your PC” on page 35.

Configure your PC

Introduction

To establish a connection with your corporate data network, Windows 95, Windows NT, or Windows 3.x on your PC needs to be configured with TCP/IP or IPX network information.

More information

If you need more information, see Chapter 6, “Setting up your PC.”

To configure your PC

Follow the instructions provided by your network administrator.

When you are finished, continue with “Make a voice call” on page 36.

Make a voice call

Introduction

This procedure ensures that the PBX connection configuration is correct. You are ready to do this if the time and date are displayed on the digital telephone. The indicator beside the Online/LC key is also lit.

More information

If you need more information, see Chapter 7, “Testing the connections,” and Chapter 8, “Using the digital telephone.”

To make the voice call

1. Lift the handset.
2. Wait for the dial tone.

   Note: If the ISDN line is not active, it will take up to 3 to 5 seconds before a dial tone is heard while the ISDN connection is being negotiated with the Public Switched Telephone Network (PSTN).
3. Dial the extension of the person you wish to reach.

   If that extension rings and the person answers, or you reach their voice mail, your Meridian HomeOffice II system is working!
4. To ensure that the connections are working, make the types of calls you would normally make while at the corporate office.
5. Continue with “Browse the network” on page 37.

Browse the network

Introduction

This procedure ensures that the ISDN connection and Ethernet network configuration are correct on the HomeOffice Router. There are two ways to verify this, depending on whether security authentication is being used.

More information

If you need more information, see Chapter 7, “Testing the connections.”

To browse the network

Use a ping application to ping another IP address on the LAN. If you received a success response, your HomeOffice Router is correctly configured.

You can also verify the configuration by doing the following:

- Read your e-mail.
- Transfer a file.
- Use your web browser to browse the intranet or Internet.

You are using SPAP as the security authentication method

If you are using SPAP as the security authentication method when accessing the corporate data network, do the following:

1. Launch your web browser application (such as Netscape Navigator).
2. Ensure that manual proxy is disabled.
3. Type the IP address of your HomeOffice Router in the location field and press Enter.

   Note: The location field is where you usually enter the URL for a web site.

   Result: A Welcome page appears.

4 Click Security Authentication.

Result: The Security page appears, listing the circuits you created in the Install Wizard.

5 Select the data circuit, then click Activate.

Result: The call is initiated, and you are prompted for your user name and password.

6 Enter your user name and password and click **OK**.

Result: You receive one of the following messages:

IF this message appears	THEN
`Access denied`	try again. If you still receive this message, see “Network browsing did not work” on page 40.
`Connection successful`	your HomeOffice Router is correctly configured.

What to do if the connection does not work

Introduction

If you are not able to establish a connection with either the voice or data network, there may be a problem with the configuration on the HomeOffice Router or on devices at the office.

More information

If you need more information, see Chapter 12, "Troubleshooting system problems."

Voice call did not work

If you did not receive a dial tone while in online mode, or you were not able to dial someone's extension, do the following:

1 Press Online/LC on the telephone set and wait until Local Mode appears.

Result: When Local Mode appears, the indicator beside this key goes out.

Note: If Offline appears on the telephone display panel instead, you are not set up to make local calls at this time.

2 Call your network administrator for assistance.

IF your telephone displays	THEN call your network administrator with
Offline	your analog telephone.
Local Mode	your analog or digital telephone.

Network browsing did not work

If you did not receive a `Connection successful` message or a successful ping response, there may be a problem with the configuration of your HomeOffice Router or the devices on the network. For more details, see the "Troubleshooting system problems" chapter.

Note: Ping may not work if you are running other TCP/IP applications using the same circuit. If you wish to use ping to test the network connection, wait until the B-channel drops then becomes active again.

Getting help

Introduction

If you are unable to get your HomeOffice II system to work after you have installed, configured, and tested it, contact your network administrator or technical support for help.

Contacting your network administrator

When you call your network administrator, have the following information available:

- the HomeOffice Router serial number
- the version of software and firmware
- the interfacing hardware in use (make and model of computer, type of network cabling)
- the related software and version number
- a detailed description of the problem and the sequence of operations prior to occurrence(s)
- ISDN line provisioning information (that is, switch type, ISDN telephone numbers and SPIDs, bearer capability, and so on)

Escalating the support call

If your network administrator or technical support cannot resolve the problem, then he or she should consult the Nortel Networks distributor from whom your organization purchased the HomeOffice Router.

Chapter 3

Obtaining HomeOffice Router configuration information

In this chapter

Overview

Introduction

The information you need to configure the HomeOffice Router comes from two sources: your ISDN service provider and your corporate network administrator.

Note: If your network administrator will be ordering the ISDN service for you, obtain the information required for ISDN configuration from him or her.

ISDN information

Before you receive the information you need to configure ISDN on the HomeOffice Router, tell your ISDN service provider what you need on the service. Your network administrator can provide you with this information.

In return, your ISDN service provider gives you the directory number(s) others need to contact you and Service Profile Identifiers (SPIDs).

This chapter contains the information required to order the correct ISDN Basic Rate Interface (ISDN BRI) service from your service provider for the HomeOffice Router.

Corporate network information

Your corporate network administrator needs to give you information about

- the PBX connection and digital telephone set feature keys
- the network routing protocol used
- security authentication

Ordering ISDN outside of North America

Introduction

Before you receive the information you need to configure ISDN on the HomeOffice Router, tell your ISDN service provider what you need on the ISDN BRI service. Your network administrator can provide you with this information.

In return, your ISDN service provider needs to tell you the ISDN line type used and the ISDN directory numbers.

What you need to tell your ISDN service provider

If you are located outside of North America, inform your service provider that you need the following:

- two B-channels providing both voice and data capability

  Both B-channels must be Circuit Switched Voice and Data.

ATTENTION

Circuit switched voice and data (CSVD) must be ordered on the ISDN line to allow the administrator to connect to the HomeOffice Router for performing remote maintenance, firmware upgrades, or technical support tasks.

- Caller Line Identification (in the United Kingdom, this is known as Calling Line Identity Presentation [CLIP])
- Multiple Subscriber Numbering (MSN)
- two directory numbers
- Additional Call Offering (ACO)

  ACO is required so that both B-channels can be used for a data connection when the digital telephone is not being used. ACO will also reroute calls coming in to the digital telephone's ISDN number to the FAX port (analog telephone) when the digital telephone is online.

What you need from your ISDN service provider

To configure the HomeOffice Router, the service provider needs to tell you the ISDN line type used and the ISDN directory numbers. Record this information in the spaces provided on the *ISDN Provisioning Information* forms (see pages 57 and 58).

See the following table for the line types supported in your country.

Note: Euro-ISDN is the only line type that supports two directory numbers. Two directory numbers are required in order to use all HomeOffice II features.

Country	Euro-ISDN	Other	1RT6	Austel	Hong Kong / Taiwan
Australia	✔	✔		✔	
Austria	✔	✔			
Belgium	✔	✔			
Denmark	✔	✔			
Finland	✔	✔			
France	✔	✔			
Germany	✔	✔	✔		
Hong Kong	✔	✔			✔
Iceland	✔	✔			
Italy	✔	✔			
Ireland	✔	✔			
Luxembourg	✔	✔			
Malaysia	✔	✔			
Netherlands	✔	✔			
New Zealand	✔	✔			

Country	Euro-ISDN	Other	1RT6	Austel	Hong Kong / Taiwan
Norway	✔	✔			
Portugal	✔	✔			
Singapore	✔	✔			
South Africa	✔	✔			
Spain	✔	✔			
Sweden	✔	✔			
Switzerland	✔	✔			
Taiwan	✔	✔			✔
United Kingdom	✔	✔			

Ordering ISDN in North America

Introduction

In North America, you can order many variants of ISDN. To ensure that you get the correct variant and the correct parameters to use when configuring the HomeOffice Router, give your service provider certain information.

What you need to tell your ISDN service provider

Inform your service provider that you need the following:

- two B-channels providing both voice and data capability

  Both B-channels must be Circuit Switched Voice and Data.

ATTENTION

Circuit switched voice and data (CSVD) must be ordered on the ISDN line to allow the administrator to connect to the HomeOffice Router for performing remote maintenance, firmware upgrades, or technical support tasks.

- Caller Line Identification (CLI)
- two directory numbers
- two Service Profile Identifiers (SPIDs)
- Additional Call Offering (ACO)

  ACO is required so that both B-channels can be used for a data connection when the digital telephone is not being used. ACO will also reroute calls coming in to the digital telephone's ISDN number to the FAX port (analog telephone) when the digital telephone is online.

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

Tell your service provider how the line should be provisioned for data, voice, and other optional services. See "Providing information to your service provider" on page 50 for more details.

What you need from your ISDN service provider

Your service provider needs to tell you

- the ISDN service and switch type
- the ISDN directory numbers
- associated SPIDs
- bearer capability (56 Kbps or 64 Kbps)

See “Receiving information from your service provider” on page 54 for more details.

Supported ISDN switches and services

The HomeOffice Router supports the most common switch types used:

- Nortel Networks DMS-100
- AT&T 5ESS

The HomeOffice Router is also compatible with the National ISDN service offered through Siemens switches.

The following table shows the ISDN services available on these switches.

Note: AT&T 5ESS Custom Multipoint and National ISDN 1 are the only ISDN services that support two directory numbers and two SPIDs (required for HomeOffice II).

Switch type	ISDN service
Nortel Networks DMS-100	National ISDN 1 (NI-1)
	National ISDN 2 (NI-2)
AT&T 5ESS	Custom Point-to-Point
	Custom Multipoint
	National ISDN 1 (NI-1)
	National ISDN 2 (NI-2)

Switch type	ISDN service
Siemens	National ISDN 1 (NI-1) National ISDN 2 (NI-2)

Providing information to your service provider

To ensure that you get the correct ISDN service for the HomeOffice Router, tell your service provider how the ISDN line should be provisioned. In addition to the extra services you need, two B-channels providing voice and data capability are required for HomeOffice II. Terminal type A is required for the HomeOffice Router.

Different service providers require this information in different ways; increasingly they are using ISDN Order Codes for simplicity, but some still require specific switch type details.

Using ISDN Order Codes

Placing an order for ISDN has been greatly simplified recently for National ISDN (NI-1 and NI-2) services by using ISDN Order Codes (IOC). There are two ways of ordering ISDN using these ISDN Order Codes:

- capability packages
  The HomeOffice Router complies with Capability S.
- EZ-ISDN
  The HomeOffice Router complies with EZ ISDN-1.

There are a number of IOCs that can be used when ordering ISDN for the HomeOffice Router. They may not all be available in your area so check this with your service provider.

Capability packages

The following table shows the capability packages that are appropriate for the HomeOffice Router. The HomeOffice Router complies with Capability S.

Note: The Order Code used depends on the data and voice services required; the HomeOffice Router does not necessarily exploit all the features of a given service.

Capability package	ISDN service
M	includes alternate voice/data on two B-channels; includes CLI
S	similar to M but always with two directory numbers; includes CLI (This service complies with EZ-ISDN 1.)
U	includes alternate voice/data on two B-channels; includes CLI and ACO
V	includes alternate voice/data on two B-channels; includes CLI and ACO

Note: If you require incoming call bumping, select capability package U.

EZ-ISDN

The following table shows the EZ-ISDN codes that mirror some of the capability packages described previously. The EZ-ISDN codes are another method of ordering the correct ISDN service.

To simplify the process of provisioning an ISDN line, the HomeOffice Router complies with, and is registered against, EZ ISDN-1. Ask your ISDN service provider for EZ ISDN-1 provisioning. The HomeOffice Router conforms to Bellcore requirements for connection to National ISDN-1 services.

EZ codes	ISDN service
EZ-ISDN 1	equivalent Service to Capability U
EZ-ISDN 1A	equivalent Service to Capability V

Using specific switch parameters

Your service provider may require specific details about the parameters for the switch to which you are connected. The parameters depend on the service you select. The following information provides the switch settings that are appropriate for HomeOffice Router connectivity.

Terminal types

When connecting to an AT&T switch, you may need to specify a terminal type to the service provider as part of the ISDN provisioning. This is a letter that defines the type of device to which you are connecting. For the HomeOffice Router, the correct terminal type is A.

AT&T 5ESS custom

The following table shows the value associated with the AT&T 5ESS switch feature.

Switch feature	Value
Terminal Type	A
Call Appearances	1
CSV	1 per directory number
CSV Limit	2
CSD	1 per directory number
CSD Limit	2

National ISDN 1

For National ISDN 1, you receive two directory numbers. As a result, some switch features are for each directory number.

The following table shows the value associated with National ISDN 1.

Switch feature	Value
Terminal Type	A
CSV	1
CSV Limit	2
CSD	2
CSD Limit	2

Switch feature	Value
CSV Notification Busy Limit	1
CSD Notification Busy Limit	1
EKTS	No
ACO	Yes

Using supplementary services

The following supplementary data services are supported by the HomeOffice Router:

- Calling Line Identification (CLI) or Caller ID
- Multiple Subscriber Numbering (MSN)
- Additional Call Offering (ACO)

Calling Line Identification (CLI) or Caller ID

CLI provides the caller's telephone number when you receive a call. This information is provided by the network and not the caller, so it can be used as a security measure to identify calls to be accepted and rejected.

Order CLI if it is available.

Multiple Subscriber Numbering (MSN)

MSN allows multiple telephone numbers to be assigned to a single BRI connection. This lets you assign specific numbers to specific devices.

For HomeOffice II, there is one LAN connection, one digital telephone, and one analog device (for example, a telephone or fax machine). It is possible to give each device a separate number through multiple subscriber numbering, allowing calls to be routed to the correct device. This also depends on the service to which you are connected.

When connecting to AT&T 5ESS Custom, you are provided with one telephone number (directory number). If you only need to connect one device, then one number is all that is required. If you need to connect two devices, subscribe to MSN. This allows you to differentiate between the devices and direct calls to the correct device.

When connecting to National ISDN 1, you are provided with two telephone numbers (directory numbers). The HomeOffice Router can differentiate between voice and data calls. This means one telephone number is assigned to the digital telephone, and the other directory number is assigned to the PC and fax machine. There is no requirement for multiple subscriber numbering in this case.

Additional Call Offering (ACO)

When the Additional Call Offering (ACO) feature is enabled, the HomeOffice Router can use both B-channels for data transmission. When an incoming voice call is detected, the HomeOffice Router drops one B-channel in order to accept the call.

Order this feature (and enable it on the HomeOffice Router) to gain the full benefits of HomeOffice II.

Receiving information from your service provider

In return for providing the ordering information, your service provider provides you with directory numbers and SPIDs. SPIDs are not provided for the AT&T 5ESS Custom service.

A directory number is the address or ISDN telephone number for the ISDN line assigned by the service provider. Each ISDN line receives at least one telephone number, called the Primary Directory Number. Depending on the service offered by your service provider, you may also have a second directory number.

Your service provider provides you with the Service Profile Identifiers (SPIDs). These are associated with the service you have ordered, and you must use these as part of the configuration for the HomeOffice Router before any ISDN connections can be made (except for AT&T Custom). The SPID is similar to the ISDN telephone number and its format is unimportant as long as the information is entered correctly when configuring the HomeOffice Router.

Obtaining more information about ISDN provisioning

Introduction

There are many sources that you can use to learn more about ISDN. These are only some of the sources available on the Internet or in books.

Information available on the Internet

http://www.bellcore.com/ISDN/index.html
Bellcore's ISDN home page providing a link to ISDN provisioning information

http://www.cnet.com/Content/Reviews/compare/Isdn2/ss05.html
A how-to guide for ordering ISDN service (in the United States)

http://www.cnet.com/Content/Reviews/compare/Isdn2/ss04.html
ISDN: what to look for

Available books

For more information on ISDN, including ISDN provisioning, consult the following books:

ISDN for Dummies
David Angell
IDG Books Worldwide Inc.
ISBN 1-56884-331-3

ISDN Networking Essentials
Ed Tittel and Steve James
AP Professional
ISBN 0-12-691392-7

Completing the ISDN Provisioning Information forms

Introduction

Before you can configure the HomeOffice Router, obtain information about your ISDN service. This information is recorded on the HomeOffice Router—ISDN Provisioning Information forms (pages 1 and 2) provided on pages 57 and 58. When you have completed this form, you will have the information ready for the Install Wizard program and for future reference.

To complete the form

Note: Your network administrator should have already completed Part A of the *ISDN Provisioning Information* form.

1 If not already provided, obtain the information needed to complete Part A of the HomeOffice Router—ISDN Provisioning Information form from your network administrator. (See page 57.)

2 Contact your ISDN service provider and order the ISDN service.

Provide the information from Part A of the form.

3 Request information from the service provider to complete Part B of the form.

Record the information on the form. You need this information before you can configure the HomeOffice Router using the Install Wizard.

Note: The service provider contact name and telephone number are for your reference only.

Meridian HomeOffice II

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

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? **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. You require two telephone numbers for HomeOffice II. Line 1: _____ Line 2: _____ Line 3: _____ Line 4: _____ Line 5: _____ Line 6: _____ Line 7: _____ Line 8: _____ Line 9: _____ Line 10: _____	What are the Service Profile IDs (SPIDs)? **Note:** For NI-1 and AT&T 5ESS Custom Multipoint only. You require two SPIDs for HomeOffice II. If SPIDs are not provided, then you require Multiple Subscriber Numbering (MSN). Line 1: _____ Line 2: _____

Obtaining information from your network administrator

Introduction

Before you can configure the HomeOffice Router, obtain information about the PBX, the type of routing, and the security authentication used on the network.

Generally, this information is recorded and provided by your network administrator. Your network administrator may use one of the following methods to provide you with the information you need:

- the forms provided on pages 341–352
- some other method of providing the information

When you have obtained the information, you will have the information ready for the Install Wizard program and for future reference.

What you need to get

Ensure that the network administrator has provided you with the following information:

- configuration instructions

  The Configuration Instructions form identifies what your network administrator wants you to configure on the HomeOffice Router and your PC. A sample of this form is shown on pages 341 and 342.

- PBX information

  The HomeOffice Router—Meridian Interface Information form provides configuration information about your digital telephone and the connection to the corporate PBX. A sample is shown on page 345.

- the routing protocol being used on the Router (IP, IPX, or Bridging)

  Samples of the forms are provided as indicated in the following table.

For the	See
HomeOffice Router—IP Routing Information form	pages 346 and 347
HomeOffice Router—IPX Routing Information form	page 348
HomeOffice Router—Bridging Information form	page 349

- security authentication, if it is being used

  A sample of the HomeOffice Router—Security Authentication Information form is shown on page 350.

- network configuration on your Windows PC

  Samples of the Windows PC configuration forms are shown as follows:

  — "Windows PC—TCP/IP Network Configuration Information" on page 351

  — "Windows PC—IPX/SPX Network Configuration Information" on page 352

Before proceeding any further, ensure that *you* have completed the HomeOffice Router—ISDN Provisioning Information forms provided on pages 57 and 58.

Chapter 4

Installing the hardware and software

In this chapter

Overview

Introduction

This chapter explains how to

- verify that you have everything you need to complete the installation
- choose a suitable location for the HomeOffice Router
- physically connect the HomeOffice Router to your PC and telephone(s)
- install the software on your PC from the Meridian HomeOffice II CD-ROM
- verify that the current firmware and software is installed

Ensuring you have all the components

Before you start installing and configuring the Meridian HomeOffice II system, ensure that you have everything that you need. Generally, the HomeOffice II package contains the basic cables, software, and documentation required to complete installation and configuration.

Choosing a suitable location for the Router

You can install the HomeOffice Router anywhere in your home, up to a maximum of 304.8 meters (1000 feet) from your telephone. However, most people will choose to install the HomeOffice Router in their office next to their PC.

Connecting the Router

You will connect the HomeOffice Router to the following:

- AC power
- a PC on the Ethernet LAN through the 10BaseT connector, either directly or through a hub

  Note: To connect the PC through a hub, you require a straight UTP cable, which is not supplied with the HomeOffice Router.

- an administration terminal through the ADMIN port, if used
- an ISDN line supplied by your service provider

Installing the Online/LC key

Your digital telephone set can be used in either online mode (where calls are processed through the corporate PBX), or local (offline) mode (where all calls are processed through the Public Switched Telephone Network [PSTN]). Initiate either mode by pressing the Online/LC key on the telephone set.

The Online/LC key is not automatically installed on your telephone. A key cap is provided in a plastic bag inside the HomeOffice II package. You will need to install this key cap.

If you are using a Symposium Communicator card and use a CTI application to make and receive calls, download the Online/LC softkey program from the Nortel Networks web site and install it on your PC desktop.

Installing the software

The Install Wizard and Local Manager applications are installed from the HomeOffice II CD-ROM into a Windows directory on your PC.

Verifying that current software and firmware is installed

Nortel Networks is continually improving Meridian HomeOffice II functionality and posts product updates on the Nortel Networks web page. Ensure that you have current firmware and software to use new features that have been added.

Verifying the HomeOffice II package contents

Introduction

Before you start installing and configuring the Meridian HomeOffice II system, ensure that you have everything that you need. Generally, the HomeOffice II package contains the basic cables, software, and documentation required to complete installation and configuration.

Additional cables are required if the HomeOffice Router will be connected to

- an Ethernet hub
- your analog telephone device

Also, you need certain information from your network administrator to configure the HomeOffice Router for operation on your network. For more details, see the following:

- “Obtaining HomeOffice Router configuration information” on page 43
- “Data entry forms” on page 339

Note: Your network administrator may configure the HomeOffice Router before giving it to you. This requires that the network administrator open the HomeOffice II package and remove its contents. This procedure will ensure that your package includes all the required items.

To verify the package contents

1. On receipt of the HomeOffice II package from your network administrator, open it and verify the contents.

   Complete the HomeOffice II Package Contents Checklist shown on page 65.

2. If any items are missing, contact your network administrator immediately.

Meridian HomeOffice II

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 for additional information.

Choosing a suitable location

Introduction

You can install the HomeOffice Router anywhere in your home, up to a maximum of 304.8 meters (1000 feet) away from your telephone. However, most people will choose to install the HomeOffice Router in their office next to their PC.

Guidelines to follow

The following are some guidelines to follow when choosing a location for the HomeOffice Router:

- Choose a suitable mounting place, such as on a desktop or shelf. The HomeOffice Router should be within easy reach for powering on and off, but secure enough that it cannot fall to the floor.

CAUTION

Risk of equipment damage

Do not put the HomeOffice Router on top of the PC monitor or in a location that generates moisture or heat. Heat and moisture will damage the unit.

- If space is a consideration, place the HomeOffice Router underneath your telephone.
- The location must be within 304.8 meters (1000 feet) of the digital telephone.

  The cables must be able to reach the following:

  — a grounded AC power outlet

  — the PC's COM port and Ethernet card or hub

  — ISDN jack

  — analog telephone or fax machine (if one is being used)

  — digital telephone

Connecting the HomeOffice Router

Introduction

In this procedure, you will connect the HomeOffice Router to

- AC power
- a PC on the Ethernet LAN through the 10BaseT connector, either directly or through a hub

  Note: To connect the PC through a hub, you require a straight UTP cable, which is not supplied with the HomeOffice Router.
- an administration terminal through the ADMIN port, if used
- an ISDN line supplied by your service provider

CAUTION

Risk of equipment damage

Do not apply power to your HomeOffice Router until all connections are in place. Ensure that the power switch on the HomeOffice Router is in the OFF position before you connect the AC power cord.

ATTENTION

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 your electrical outlet does not contain the required earth wire, you must have the electrical outlet rewired.

U versus S/T interfaces

The bottom of the HomeOffice Router identifies the unit as being a U-Router or an S/T-Router. The U-Router is generally used in North America because ISDN lines are U-interface. The S/T-Router is used in Europe because European ISDN lines are S/T-interface.

If you are located in North America and are using an NT1 device connected to the ISDN line, connect an S/T-Router (since the NT1 device converts the U-interface to S/T). If you want to use the S/T-Router in North America, connect an NT1 device between the ISDN line and the Router.

To install the HomeOffice Router

1 Place the HomeOffice Router in a suitable location.

See “Choosing a suitable location” on page 66.

2 Ensure that the power switch on the HomeOffice Router is turned off.

3 Do the following:

a. Connect the six-pin plug on the power transformer into the power receptacle on the HomeOffice Router.

Ensure that the arrow on the six-pin plug is facing up. The pins on the plug will then line up with the power receptacle.

b. Connect the AC cord to the AC power receptacle on the power transformer.

c. Plug the AC cord into a grounded AC outlet.

4 Connect the HomeOffice Router to your analog telephone and/or fax machine.

Note: This step is optional.

Connect one end of the RJ-11 cable that you supplied to the FAX port on the HomeOffice Router. Connect the other end to the telephone or fax machine.

5 Connect the HomeOffice Router to the digital telephone or Symposium Communicator card on your PC.

Connect one end of the supplied RJ-11 cable to the MERIDIAN port on the HomeOffice Router. Connect the other end to the digital telephone or Symposium Communicator card.

Note: If you are located in Europe, you will be provided with two telephone cables; only one of them is supported in Europe. Use the cable that is labeled A0346862.

6 Connect the HomeOffice Router ADMIN port to a COM port on your PC.

Use the RS-232 Administration cable supplied as part of the HomeOffice II package (marked Admin Cable).

Notes:

- This step is optional. Perform the connection only if you are not running the TCP/IP protocol on your PC, or if you have configured the PC to obtain its IP address automatically from the HomeOffice Router. The connection also allows you to return to the Install Wizard and Local Manager applications in the event of Ethernet problems.
- You may need to provide an RS-232 adapter if the available RS-232 port on your PC does not match the connector on the administration cable.

7 Connect the HomeOffice Router to the Ethernet LAN.

You may connect the HomeOffice Router to an Ethernet card in your PC or to an Ethernet hub as follows:

To connect	Do the following
the HomeOffice Router ETHERNET port to an Ethernet card in your PC	Use the red UTP crossover cable with RJ-45 connectors supplied as part of the HomeOffice II package (marked DTE-DTE crossover). **Note:** Depending on availability, this cable may contain a 5.08 cm (2 inch) red sleeve at each end of the cable.
the HomeOffice Router ETHERNET port to an Ethernet hub	Use a standard straight-through UTP cable with RJ-45 connectors. **Note:** This cable is not supplied as part of the HomeOffice II package.

8 Connect the HomeOffice Router ISDN port to the ISDN wall jack.

Use the gray cable with RJ-45 connectors, supplied as part of the HomeOffice II package (marked ISDN [UTP]).

Plug the cord into the ISDN wall jack first, then put it into the ISDN port on the HomeOffice Router. The ISDN and Ethernet jacks are identical in appearance.

Note: In countries where the ISDN wall jack is not an RJ-45 connector, use the included ISDN adapter.

9 Turn on the power to the HomeOffice Router by placing the On/Off switch in the ON position.

10 Watch the LEDs on the front panel.

They flash from left to right during the bootup process. When bootup is completed, the following LEDs shine steady green:

- On
- ISDN READY

11 Look at the display panel on the digital telephone.

The display shows Hit RLS to Cancel Auto-Redial, indicating that the HomeOffice Router is attempting to connect to the corporate PBX.

Since you have not yet configured the HomeOffice Router with the information it needs to establish a connection, the connection attempt will not work. Press Rls on the digital telephone to cancel the auto redial.

Note: After you press Rls, Jan 12:00 appears on the display. This is normal, and will be updated with the correct time and date when successful connection to the corporate PBX is established after HomeOffice Router configuration is completed.

Installing the Online/LC key

Introduction

Your digital telephone set can be used in either online mode (where calls are processed through the corporate PBX), or local (offline) mode (where all calls are processed through the Public Switched Telephone Network [PSTN]). Initiate either mode by pressing the Online/LC key on the telephone set.

If you are using a Symposium Communicator card and you use your PC as a telephone, you initiate the online or local (offline) mode by clicking the Online/ Offline button on your PC desktop.

The Online/LC key is not automatically installed on your telephone or PC desktop. For the digital telephone, a key cap is provided in a plastic bag inside the HomeOffice II package. For the PC desktop, the Online/LC softkey program can be obtained from the Nortel Networks web site.

Online/LC key position on your telephone

The Online/LC key can be installed in place of any feature key on your digital telephone. The default position is feature key 14 as follows:

- M2216 and M2616 telephones: second button from the top in the left column
- M3820 telephone: top button in the left column
- M2616CT telephone: the default Online/LC key position cannot be used as it is pre-programmed with a handset locator function. Another programmable feature key must be chosen for this function.

Note: On the M2616CT cordless telephone, the Online/LC key may be installed in place of keys 1, 2, 8, 9, or 10, if you wish to be able to toggle between online and local (offline) modes on both the base unit and handset.

To install the custom key cap on the digital telephone

1 Remove the key cap from the plastic bag.

2 Remove from the digital telephone the feature key from the location that has been designated by your network administrator as the Online/LC function.

If the network administrator has instructed you to use feature key 14 as the Online/LC key, the key is located as follows:

- on Meridian 2216 and 2616 digital telephone sets: second key from the top in the left column
- on the Meridian 3820 digital telephone set: top key in the left column

Note: When configuring with the Install Wizard, select FKey14 (in the case of the Meridian 3820 set, select the key that represents the physical location of feature key 14).

Generally, unused feature keys are not labeled. To ensure that you are removing the correct feature key, see the information package provided by your network administrator.

3 Place the Online/LC key cap in its place, and press down firmly until it snaps into place.

To install the Online/Offline button on your PC desktop

1 Connect to the Nortel Networks web page at: http://www.nortelnetworks.com/homeoffice.

2 Click Software and Documentation Distribution Center.

3 Follow the links to the Online/LC softkey program.

4 Download the file into a temporary directory.

Note: The file is called setup.exe.

5 On your PC, double-click the setup.exe to start the installation.

Result: The Online/LC softkey program files are installed into the Program Files\Nortel Networks directory. A shortcut is placed on the desktop.

Note: If a Communicator card is not installed on your PC, an error message appears and the installation is canceled.

Installing the Install Wizard and Local Manager software

Introduction

This procedure copies both the Install Wizard and Local Manager applications from the HomeOffice II CD-ROM into a Windows directory on your PC.

Use the Install Wizard to configure the entire HomeOffice Router at the time of installation.

Use Local Manager to

- modify the HomeOffice Router configuration if changes are desired
- configure individual features of the HomeOffice Router that could not be configured through the Install Wizard

Before you begin

Before installation can begin, close all other programs.

To install the software

1. Insert the CD-ROM into the CD-ROM drive on your PC.
2. Using either the Windows Program Manager or Windows Explorer, select the CD-ROM drive.

3 Locate and run the setup.exe file.

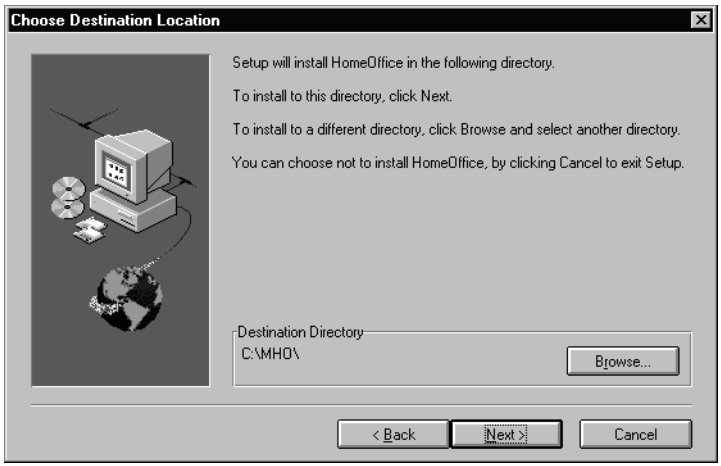
IF you are using	THEN
Windows 3.x	**1** From Program Manager, click File, then Run. **2** In the command line, enter the CD-ROM directory path followed by setup.exe. For example, type d:\setup.exe. **Result:** You are prompted to select the destination directory. The default is: c:\mho.
Windows 95 or Windows NT	**1** From the task bar select: Start > Settings > Control Panel. **2** From the Control Panel, select Add/Remove Programs. **3** On the Install/Uninstall tab, click Install. **Result:** You are prompted to insert the floppy disk or CD-ROM. **4** Insert the CD-ROM, then click Next. **5** In the command line, enter the directory path followed by setup.exe. For example, type d:\setup.exe. **Result:** You are prompted to select the destination directory. The default is: c:\mho.

Result: This starts the Windows Setup utility, which displays a Welcome window similar to the following:

4 In the Welcome window, click Next to continue with the setup.

Note: If other Windows programs are open, close them before proceeding with this setup. Click Cancel to close the Setup program. Close the other programs, then return to step 3.

Result: The Choose Destination Location window similar to the following appears.



5 In the Choose Destination Location window, select the directory in which you want to store the Install Wizard and Local Manager applications.

IF you want to	THEN
use c:\mho as the default directory	click Next.
select another directory	do the following: **1** Click Browse and navigate to the desired directory. **2** Click OK. **3** Click Next.

Result: The installation process starts. The Wizard displays the status as it proceeds.

When finished, the HomeOffice Program Group window similar to the following appears. If you are using Windows 95 or Windows NT, the program titles appear in the Programs menu.

You are asked to reboot your PC if you have been running an older version of Local Manager.

6 If this is a new installation of Local Manager, click No, then click Finish.

7 Proceed as follows:

To run	in	Do the following
the Install Wizard	Windows 3.x	Double-click the Install Wizard icon in the Local Manager Program Group.

To run	in	Do the following
the Install Wizard	Windows 95 or Windows NT	Click Start > Programs > HomeOffice > Install Wizard.
Local Manager	Windows 3.x	Double-click the Local Manager icon in the Local Manager Program Group.
Local Manager	Windows 95 or Windows NT	Click Start > Programs > HomeOffice > Local Manager.

Verifying the software and firmware release

Introduction

Nortel Networks is continually improving Meridian HomeOffice II and posts product updates on the Nortel Networks web page. Ensure that you have current firmware and software to use new features that have been added.

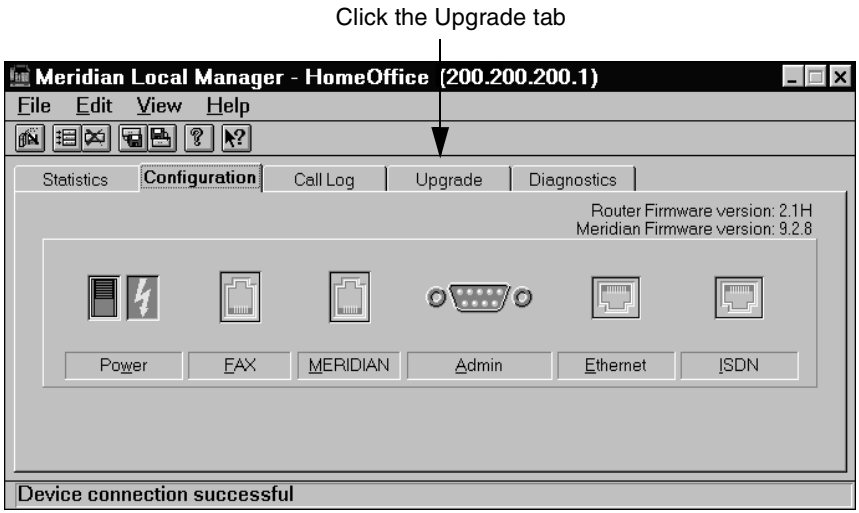
Note: If you choose not to upgrade your firmware, you may not be able to use Meridian HomeOffice II if you are

- working in an ACD environment
- using one of the following:
  - — Meridian 2616CT cordless telephone
  - — Meridian 3820 headset
  - — Symposium Communicator card

To check the software and firmware versions

1 Start Local Manager as described in step 7 on page 76.

Result: A screen similar to the following appears.



2 Click the Upgrade tab.

Result: The Upgrade tab appears, showing the current firmware version.

3 Review the firmware version information on the screen and compare it with the information shown in "To determine if you need to upgrade" below.

Note: There are two types of firmware on your Router:

- motherboard firmware (identified as Current firmware version)
- daughterboard firmware (identified as Meridian Firmware Version)

4 Check the Local Manager software version as follows:

a. Click Help, then About Meridian Local Manager.

b. Review the version number on the screen and compare it with the version below.

To determine if you need to upgrade

The software and firmware versions at publication date of this manual are listed in the following table. Check the Release Notes on the Nortel Networks web page at http://www.nortelnetworks.com/homeoffice to obtain more current information.

Component	Version
Motherboard firmware	2.1H
Daughterboard firmware	9.2.8

Component	Version
Local Manager and Install Wizard software	2.1H

If the software and firmware installed on your PC and Router are older than these versions, then do the following:

1. Connect to the Nortel Networks web page at http://www.nortelnetworks.com/homeoffice.
2. Click Software and Documentation Distribution Center.
3. Locate and download the current software and firmware.
4. Extract the upgrade files and perform the upgrade as described in Chapter 10, “Performing upgrades.”

What's next?

Now that you have installed the HomeOffice II hardware and software, you are ready to configure the HomeOffice Router. For instructions, see Chapter 5, "Configuring the HomeOffice Router."

Chapter 5

Configuring the HomeOffice Router

In this chapter

Overview

Introduction

This chapter explains how to use the Install Wizard to configure the HomeOffice Router with the following:

- ISDN interface and circuit information
- PBX circuit information (including the online/offline feature key on the telephone set)
- Internet/IP Access, Novell Networking (IPX), or Bridging (no routing) information
- security authentication information
- network browsing support information

Before you begin

Before you begin HomeOffice Router configuration, do the following:

1. Review the Release Notes that are included with the HomeOffice Router and any readme files on the CD-ROM for additions or changes to these procedures.
2. Obtain the following information you need for configuration:
   - — ISDN information (see “Completing the ISDN Provisioning Information forms” on page 56)
   - — PBX, routing, and security authentication information (see “Obtaining information from your network administrator” on page 59)

Accessing online help

Introduction

Help is always available during installation and configuration with the Install Wizard. To obtain a detailed description of what to type or select in each field, see the Install Wizard help topics and the associated glossary.

Help is available through three methods as described below.

Method 1

Click Help or ? on any Install Wizard screen. This is the fastest way to get the information you need.

Method 2

1 Right-click anywhere on the screen.

Result: A ? appears.

2 With ? displayed, click the item you need.

Method 3

1 Open the suite of Online Help files as described in the following table.

IF you are using	THEN
Windows 3.x	double-click the Wizard Online Help icon in the HomeOffice Program Group.
Windows 95 or Windows NT	click Start > Programs > HomeOffice > Wizard Online Help.

2 In the Help Topics window, choose the topic of interest.

Note: Cross references to the relevant Online Help topics are provided. For example:

See the Selecting a Device to Configure help topic.

Starting the Install Wizard

Introduction

This procedure explains how to start the Install Wizard. Depending on the HomeOffice Router network configuration requirement, refer to the following additional procedures:

- "Entering ISDN information" on page 92
- "Entering Meridian interface information" on page 98
- one of the following:
  - — "Entering IP information" on page 105 (for Internet/IP Access setup) or
  - — "Entering IPX information" on page 121 (for Novell/Netware Networking setup) or
  - — "Entering Bridging information" on page 135 (for Bridging [no routing] setup)

Note: Each routing procedure includes instructions for entering security authentication and network browsing support information.

Before you begin

Before you begin the configuration, you should have completed or obtained the following HomeOffice Router configuration forms from your network administrator:

- ISDN Provisioning Information

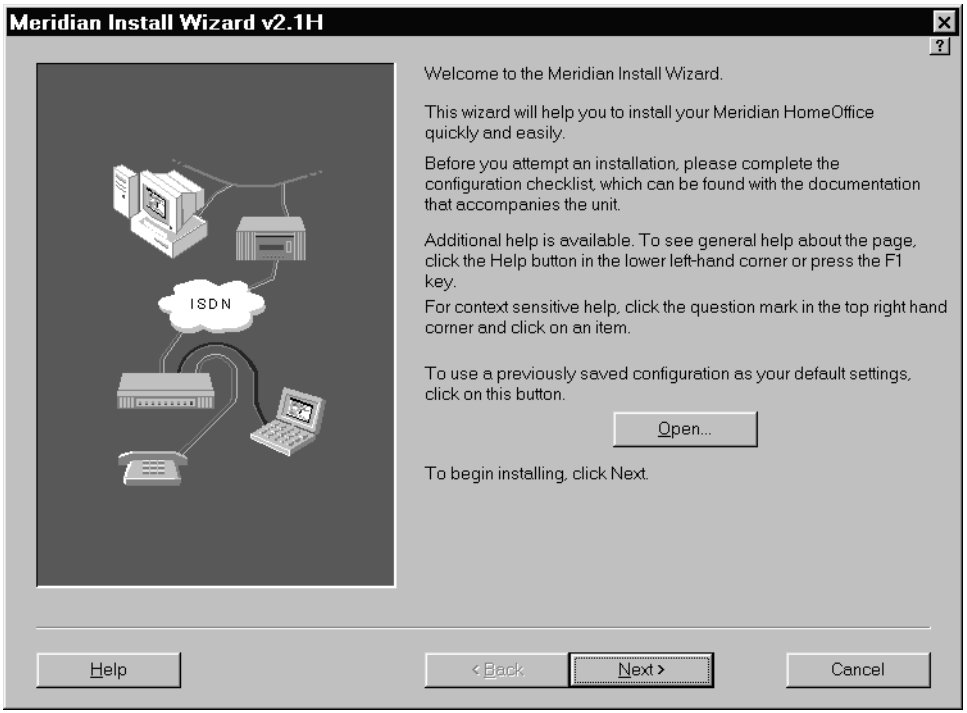
  Note: Information is also required from your ISDN service provider.
- Meridian Interface Information
- IP Routing Information
- IPX Routing Information
- Bridging Information
- Security Authentication Information (if security authentication is being used)

To start the Install Wizard

1 Start the Install Wizard as follows:

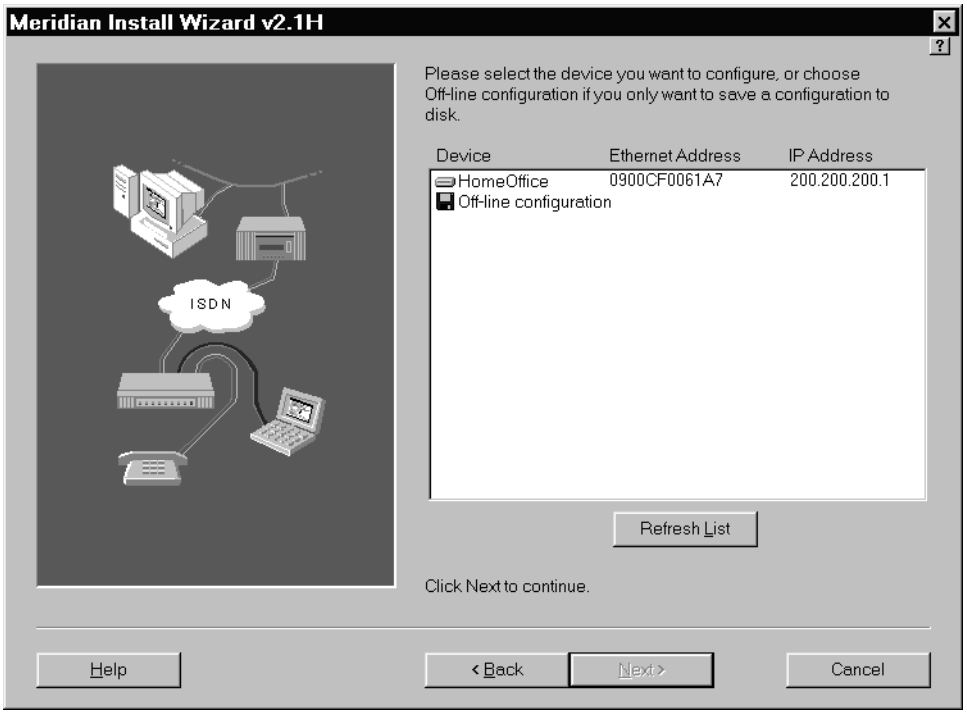
IF you are using	THEN
Windows 3.x	double-click the Install Wizard icon in the HomeOffice Program Group.
Windows 95 or Windows NT	click Start > Programs > HomeOffice > Install Wizard.

Result: A welcome screen similar to the following appears.



2 In the Welcome screen, click Next.

Result: A device selection screen similar to the following appears.

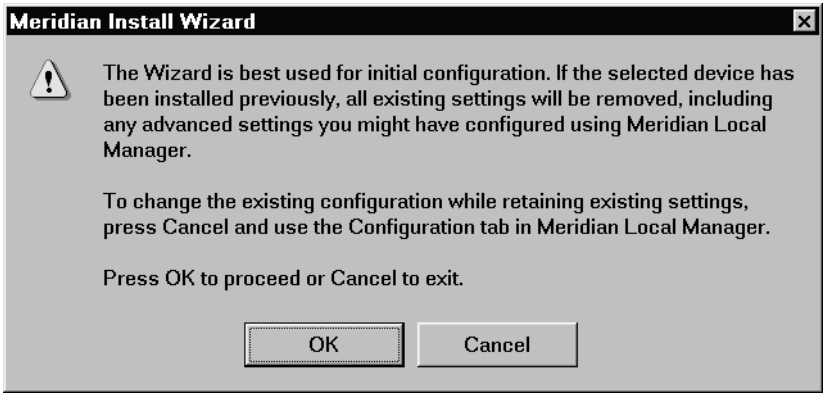


3 Select the HomeOffice Router to be configured.

For more information, see the Selecting a Device to Configure help topic.

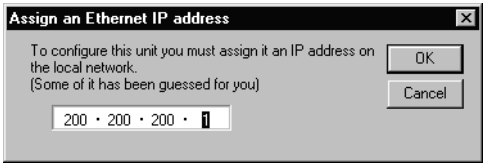
4 Click Next.

Result: A warning screen may appear to inform you that you should use Install Wizard for an initial installation, or Local Manager for a reconfiguration.



Click OK to proceed with the Install Wizard.

Result: If an IP address has not yet been configured for the HomeOffice Router, the following screen appears.



This screen appears when one of the following conditions applies:

- The IP address has not yet been configured for the HomeOffice Router.
- The HomeOffice Router is not on the same network as your PC. In order to continue with the configuration, enter a new IP address.

Note: Part of the IP address is completed for you. Refer to Section 2 of the HomeOffice Router—IP Routing Information forms for the address.

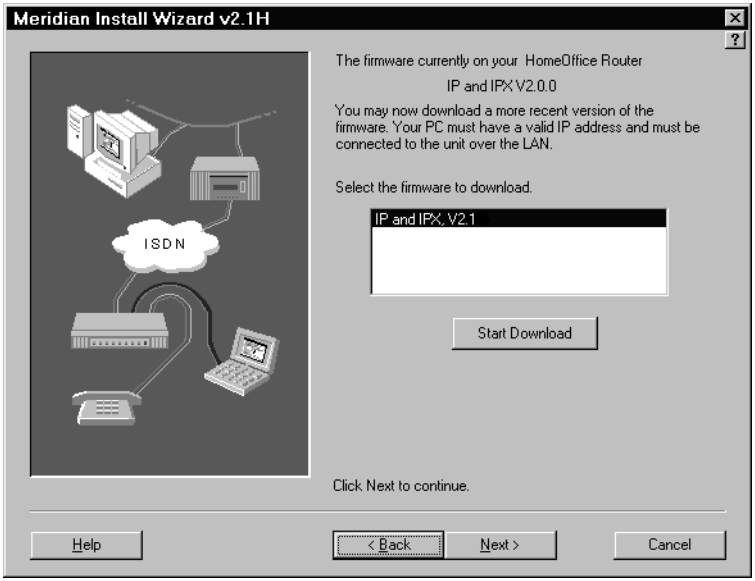
5 Enter the rest of the IP address and click OK.

Result: There is a delay while the unit reconfigures. After the delay, the firmware download screen appears, identifying the current version of firmware installed.

CAUTION

Risk of Pressing keys at inappropriate times produces unexpected results

If you press Esc while running the Install Wizard, Install Wizard may either become unstable or close without warning (causing loss of information).



You may perform a download at this time only if the HomeOffice Router is connected to the LAN rather than to a COM port on your PC.

6 If necessary, select a new firmware upgrade file, then click Start Download.

Result: The Install Wizard installs the new firmware on the HomeOffice Router. You may not interrupt this process.

When completed, the ISDN location screen appears.

7 Go to “Entering ISDN information” on page 92.

ATTENTION

When entering circuit names, user names, and passwords, do not use the semi-colon (;). Doing so will cause cryptic error messages to appear.

Entering ISDN information

Introduction

This procedure explains how to enter the ISDN information needed to connect to the corporate network.

Refer to the HomeOffice Router—ISDN Provisioning Information forms for the information you need.

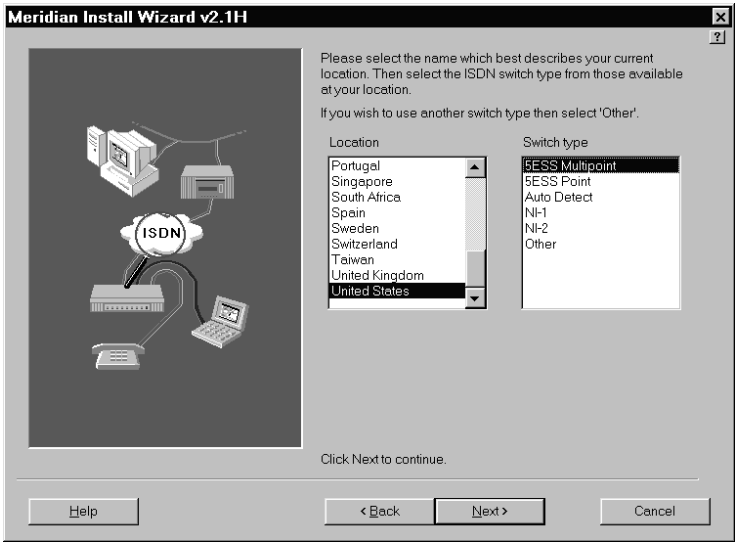
If you need help

For more information, see the following Online Help books in the Install Wizard Help Topics window:

- Using Install Wizard
- Getting Started with ISDN

To enter the ISDN information

At this point, the ISDN location selection screen is displayed.



Note: This is an example of what you may see while entering ISDN information. A different, but similar, screen will appear based on the choices you make.

1 Choose the location that best matches where you are working.

See the Specifying your ISDN location help topic.

2 If you know what type of ISDN switch you are using, select the switch from the list.

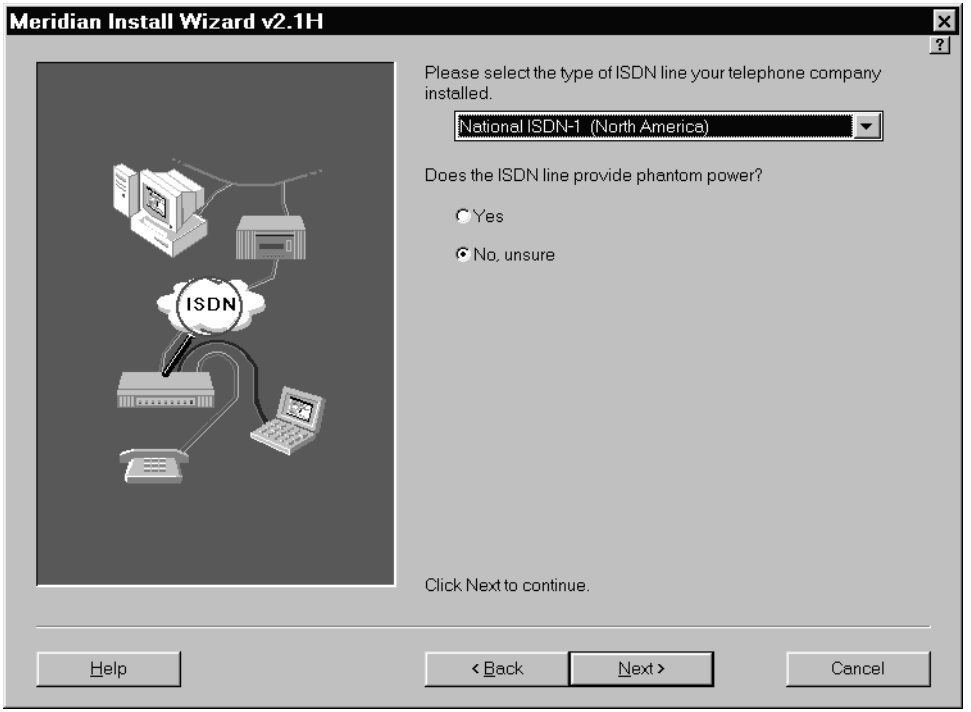
- See the Specifying your ISDN location help topic.
- Refer to the HomeOffice Router—ISDN Provisioning Information forms.

3 Click Next.

IF you selected	THEN
Other in the Switch Type list	the ISDN variant screen appears (see below). **Note:** If the Install Wizard cannot find the REGION.TAB in your Local Manager directory, the ISDN variant screen appears. Go to step 4.
any other switch type	the ISDN information screen appears (see page 95). Go to step 7.

The following is an example of the ISDN variant screen.

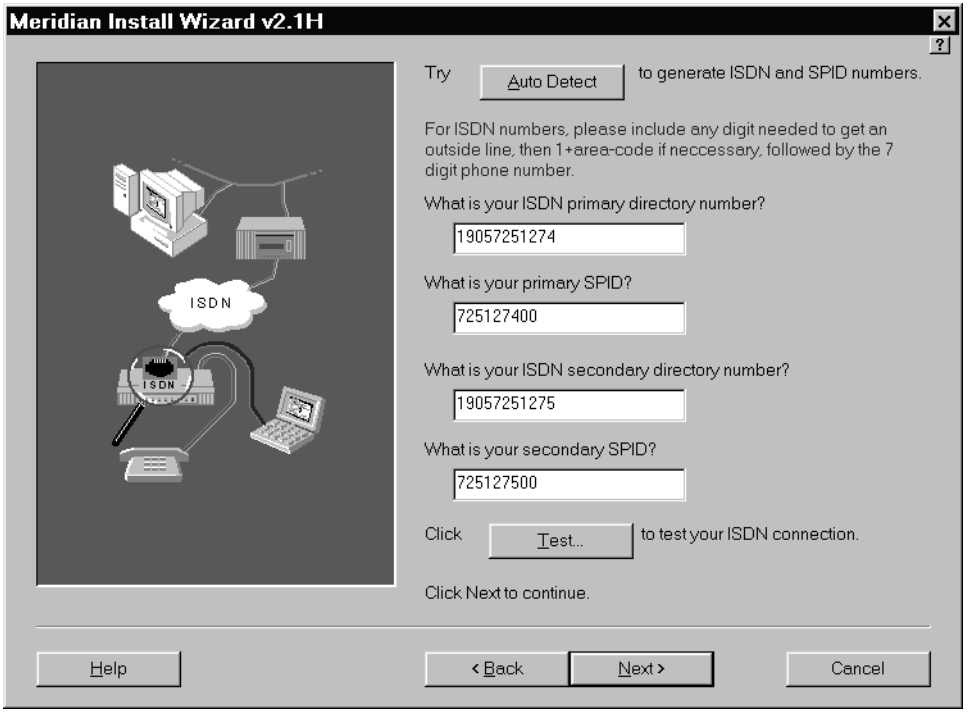
ISDN variant screen (Go to step 4.)



The following is an example of the ISDN information screen.

Note: This example shows the ISDN information screen for the National ISDN-1 (North America) variant. The ISDN information screen for other variants may require you to enter one ISDN directory number only, with or without a service profile identifier (SPID).

ISDN information screen (Go to step 7.)



4 In the list box on the ISDN variant selection screen, select the ISDN variant appropriate for the service supplied by your service provider or the variant supported by your telephone company.

See the Selecting the ISDN Variant help topic.

5 Choose whether you want the HomeOffice Router to detect if the ISDN line provides phantom power.

See the Phantom Power Detection help topic.

6 Click Next.

Result: The ISDN information screen appears.

7 If you are configuring for an NI-1 line, do the following:

IF	THEN
you know your ISDN directory numbers and SPIDs	enter your primary and secondary ISDN directory numbers and SPIDs. Refer to the HomeOffice Router—ISDN Provisioning Information forms. See the following online help topics: • Entering your Directory Number • Entering Service Profile Identifiers (SPIDs)
you don't know your ISDN directory numbers and SPIDs	click Auto Detect. **Note:** Your ISDN line must be connected, and auto-detect must be supported on it for Auto Detect to work. See the Auto-Detecting Directory Numbers and SPIDs help topic.

If you are configuring for any other type of line, enter your ISDN directory number(s) and SPID(s).

Note: Some line types only require one ISDN number and one SPID, or no SPIDs at all.

Refer to the HomeOffice Router—ISDN Provisioning Information forms.

See the following Install Wizard Online Help topics:

- ISDN Service Information
- Configuring an NI-1 ISDN Line
- Configuring a 5ESS Multipoint or an NI-2 ISDN Line
- Configuring a 5ESS Point or a European ISDN Line
- Entering your Directory Number
- Entering Service Profile Identifiers (SPIDS)

8 Click Test to test the ISDN connection.

This performs the ISDN loopback test that verifies

- that the HomeOffice Router can communicate with the ISDN switch
- that the ISDN configuration is correct
- whether CLI is installed on the line

When the test is completed, a screen displays the test results. You have the option to display more details about the test results.

See the Testing ISDN Using the Loopback Test help topic.

Note: Your ISDN line must be connected for the test to work.

9 Click Next.

Result: The Meridian telephone interface screen appears.

10 Go to “Entering Meridian interface information” on page 98.

Entering Meridian interface information

Introduction

This procedure explains how to

- enter the information needed to connect to the corporate PBX
- select the feature key to be labeled as Online/LC

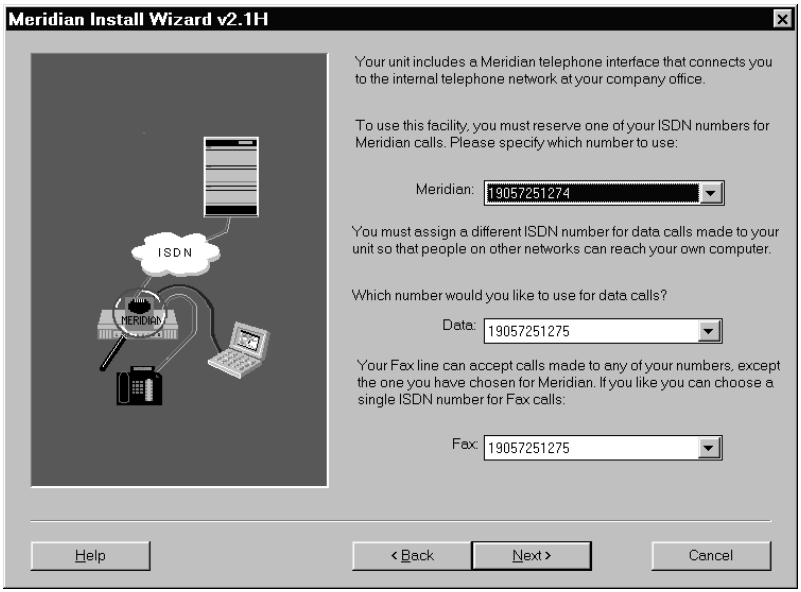
Refer to the HomeOffice Router—Meridian Interface Information form for the information you need.

If you need help

For more information, see the Configuring the Meridian Telephone Interface Online Help book in the Install Wizard Help Topics window.

To enter the Meridian interface information

At this point, the Meridian telephone interface screen is displayed.



1 Do the following:

See the ISDN Telephone Numbers for Meridian, Fax, and Data Calls help topic.

a. From the Meridian list box, select one of the ISDN directory numbers you entered earlier.

This number is used to receive analog voice calls while in local (offline) mode, and is the number you give to people outside the organization.

b. From the Data list box, select another ISDN directory number.

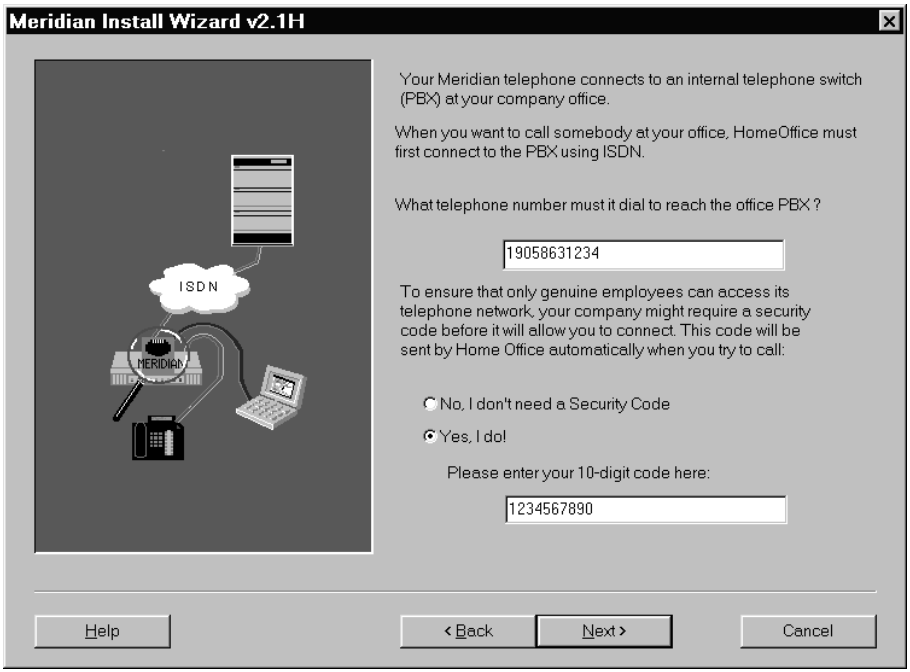
This number is used to receive data calls. It cannot be the same as the number selected for Meridian.

c. From the Fax list box, select an ISDN directory number.

This number is used to receive calls on the analog telephone or fax machine. It can be the same number you selected for Data. It *cannot* be the same number you selected for Meridian.

d. Click Next.

Result: The Meridian telephone connection screen appears.



2 Do the following:

See the Setting a Phone Number and Security for the PBX help topic.

a. Enter the directory number used to dial the corporate PBX.

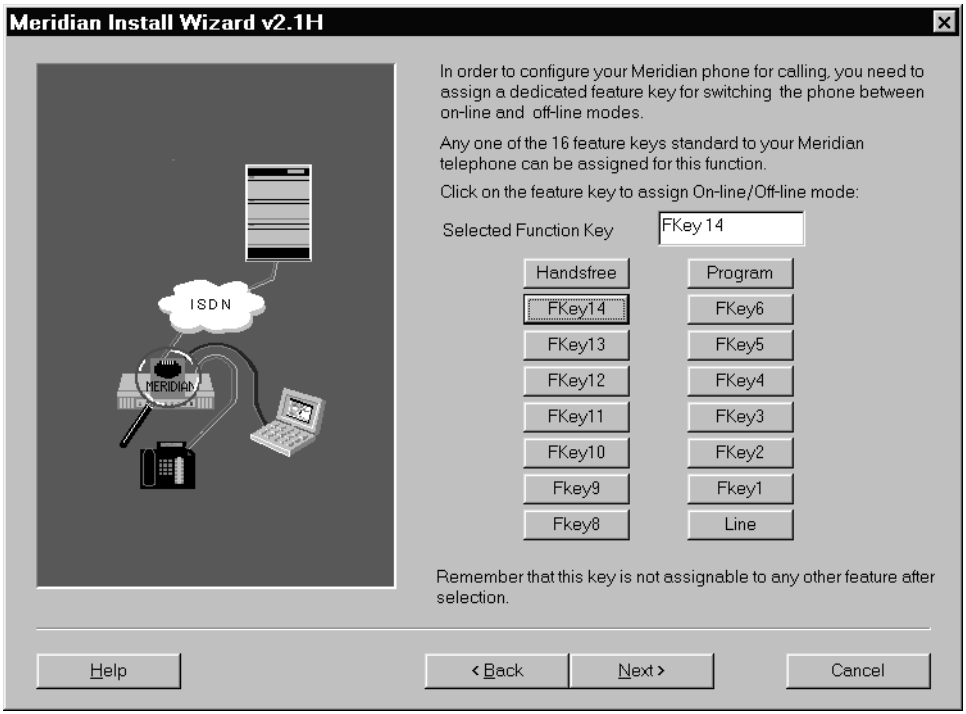
Note: You will never dial this number. The HomeOffice Router uses it internally to connect corporate telephone calls to the PBX.

b. Select the type of security required.

c. If you indicated that security is required, enter your 10-digit security code.

d. Click Next.

Result: The feature key definition screen similar to the following appears.



This screen shows a representation of buttons available on your digital telephone set.

3 Do the following:

See the Choosing the Online/LC key on the Telephone help topic.

a. Look at the telephone set and identify the position where you installed the Online/LC key.

b. Select the position on the screen that matches the Online/LC key position on the telephone.

It is recommended that you select Fkey14, as that is the default.

CAUTION

Risk of PBX feature functionality loss

You cannot select the Handsfree, Program, or Line keys.

The key you select cannot be used for any other PBX feature.

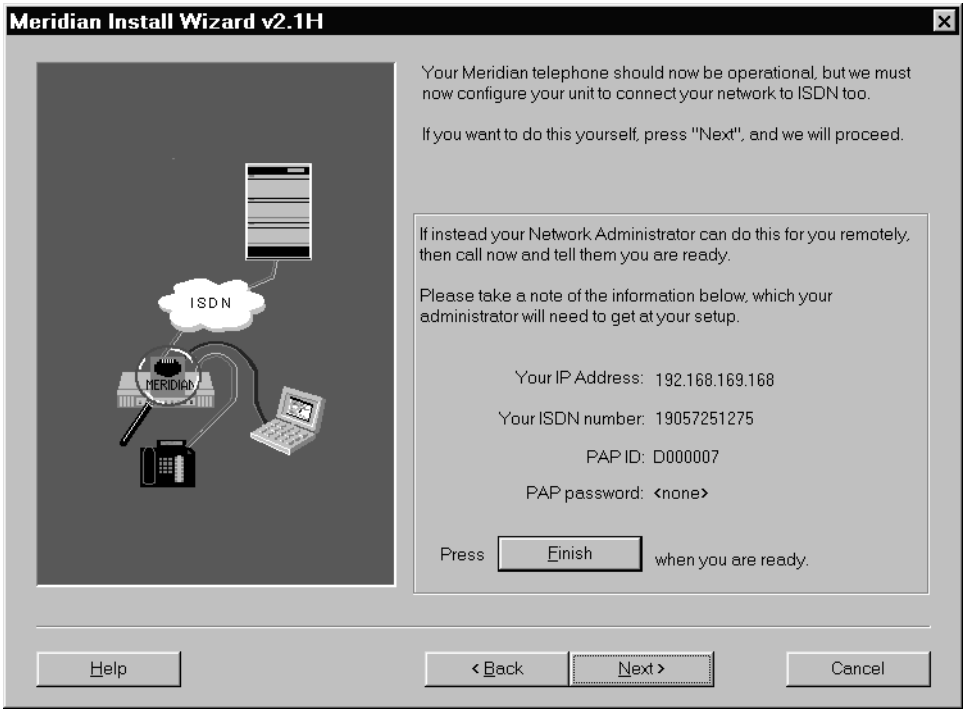
If you select a key already programmed on the PBX, your Online/LC key configuration will override the PBX key configuration.

If you are using a M2616CT cordless telephone, you must use feature keys 1, 2, 8, 9 or 10 if you want to be able to use the handset to go offline.

Result: The feature key name appears in the Selected Function Key field.

c. Click Next.

Result: The next screen indicates that Meridian telephone set configuration is completed.



See the Exiting from the Meridian Interface Setup help topic.

d. At this point, you have two choices:

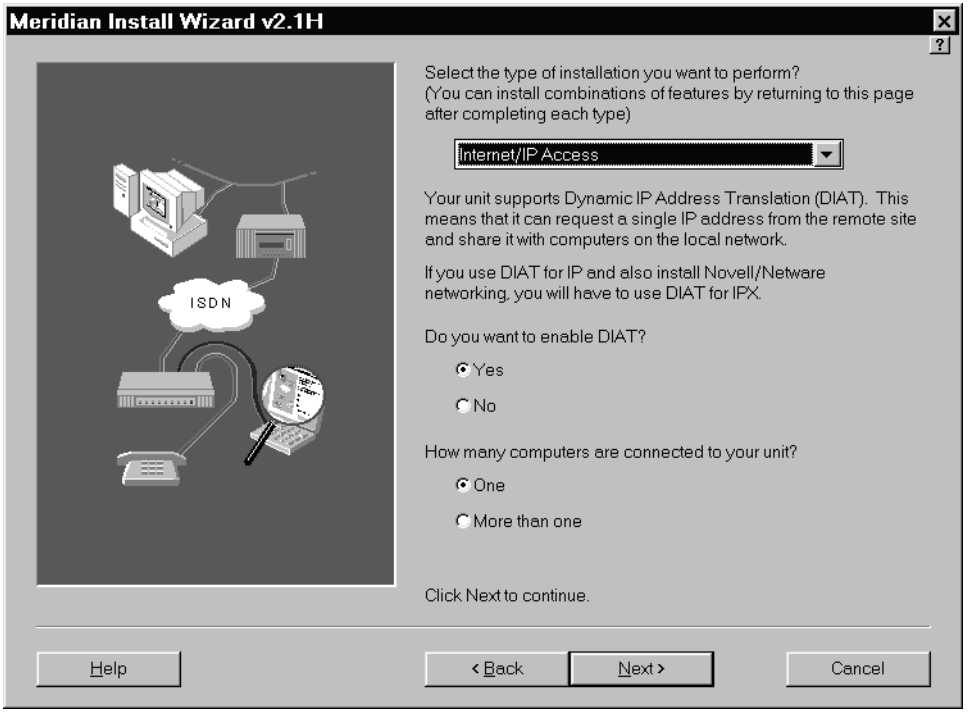
Exit the Install Wizard and continue configuration at another time (or ask the network administrator to perform the remaining configuration by modem).

or

Continue with the configuration.

4 Do the following:

IF you want to	THEN
continue the configuration	click Next. The screen similar to the following appears. Go to step 5.
exit the Install Wizard	click Finish. The Install Wizard application closes, returning you to Windows.



5 If you chose to continue the configuration, select the type of installation that you are configuring from the list box.

See the Configuration Preferences help topic.

IF you want to configure	THEN go to
Internet/IP Access (IP)	“Entering IP information” on page 105.
Novell/Netware Networking (IPX)	“Entering IPX information” on page 121.
Bridging Only (Routing disabled)	“Entering Bridging information” on page 135.

Entering IP information

Introduction

If you chose Internet/IP Access on the installation type screen, continue from here.

Refer to the HomeOffice Router—IP Routing Information forms for the information you need.

If you need help

For more information, see the following Online Help books in the Install Wizard Help Topics window:

- Using Install Wizard
- Configuring for Routing and Bridging
- Setting Up IP Routing and Bridging

To enter IP information

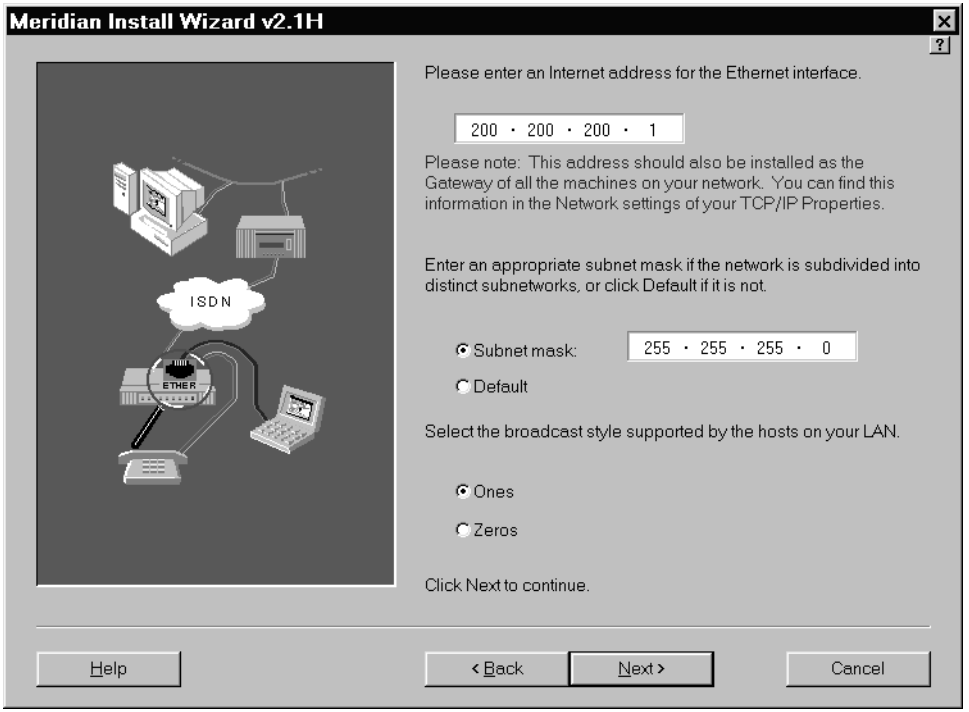
1 Select Internet/IP Access from the list box.

2 Do the following:

IF you	THEN
wish to use DIAT for IP	choose Yes, then select whether one or more than one computer is connected to your HomeOffice Router. See the Dynamic IP Address Translation (DIAT) help topic.
do not wish to use DIAT for IP	choose No, then decide whether to use unnumbered IP links between the HomeOffice Router and the remote access server. See the How Unnumbered Links Work and Unnumbered Links help topics.

3 Click Next.

Result: An Ethernet interface Internet address screen similar to the following appears.



4 On the Ethernet interface Internet address screen, do the following:

a. Enter the IP address for the HomeOffice Router.

It must be in decimal format. For example, 200.200.200.1.

See the IP Addressing help topic.

b. Enter a subnet mask or select the default.

See the Subnet Masks and How Subnet Masks Work help topics.

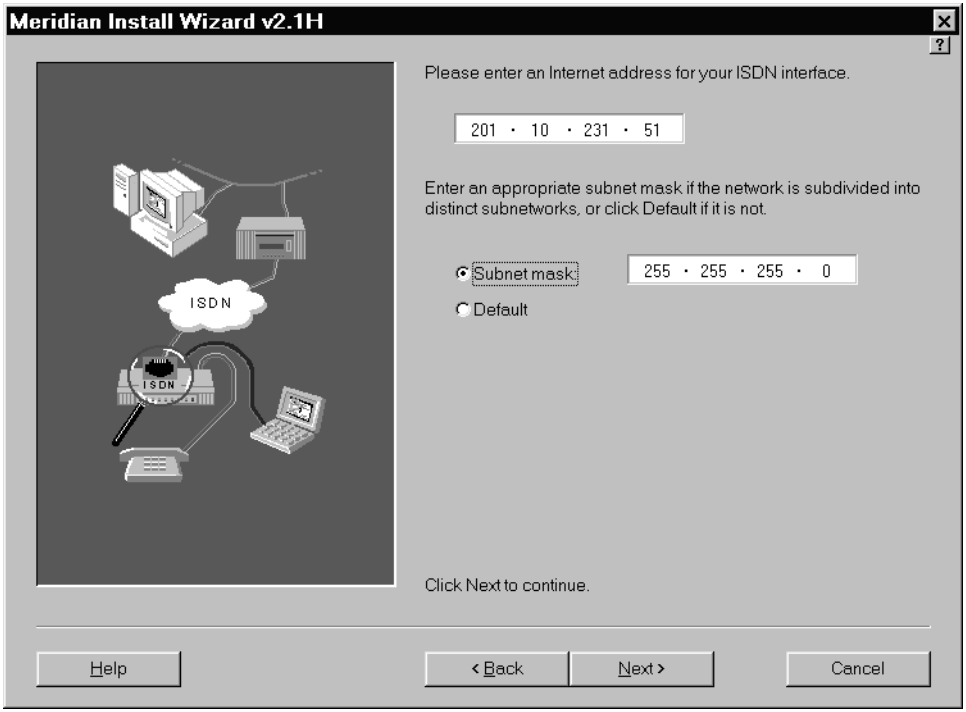
c. Click the broadcast style required.

See the Broadcast Style Supported by Hosts on your Network help topics.

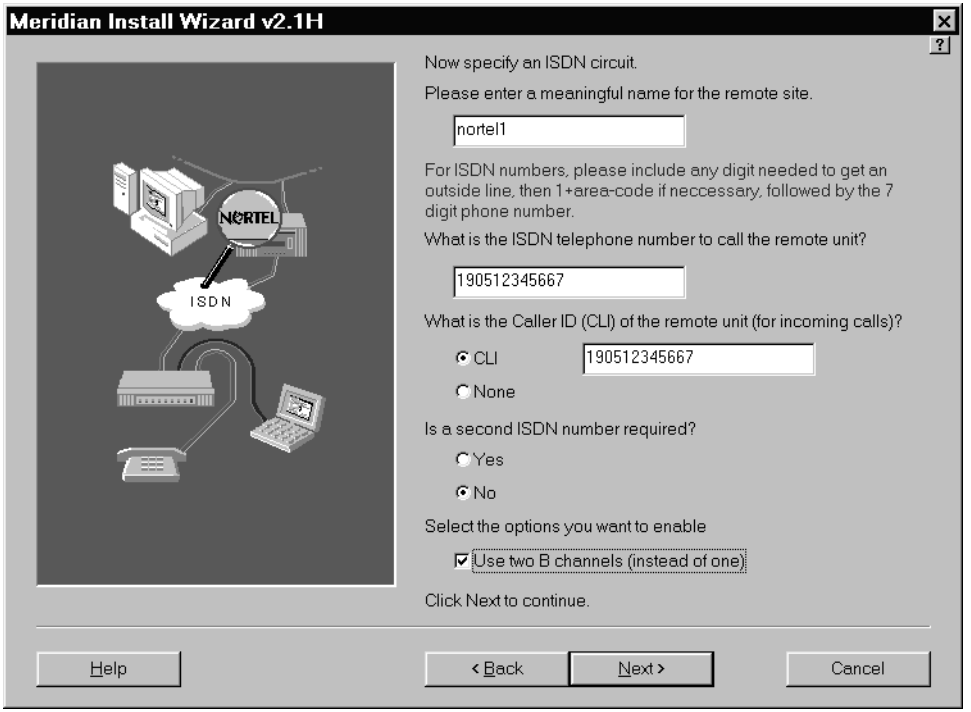
d. Click Next.

IF you	THEN
chose not to use DIAT for IP or unnumbered links in step 1	the ISDN interface address screen appears. Go to step 5.
chose to use DIAT for IP in step 1	the ISDN circuit screen appears. Go to step 6.

ISDN interface screen (Go to step 5.)



ISDN circuit screen (Go to step 6.)



5 On the ISDN interface screen, do the following:

a. Enter the HomeOffice Router's ISDN interface address and subnet mask, or select the default.

b. Click Next.

Result: The ISDN circuit screen appears.

6 On the ISDN circuit screen:

a. Enter a name for the remote device (up to 15 characters).

See the Configuring ISDN IP Circuits and ISDN Circuit Name help topics.

b. Enter the ISDN telephone number of the remote device.

See the Connecting to the Remote Device help topic.

c. Choose whether to use Caller ID (CLI).

d. If you choose to use Caller ID, enter the Caller ID number.

See the Using Caller ID (Calling Line Identification) help topic.

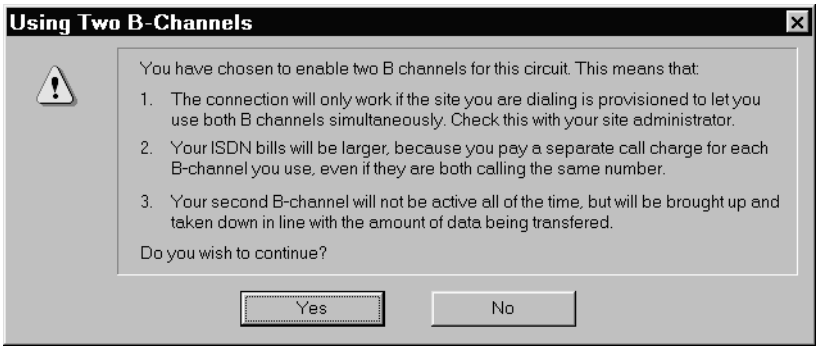
e. Choose whether a second ISDN number is required.

f. Choose whether to use two B-channels instead of one.

See the Using Two B-Channels help topic.

g. Click Next.

Result: If you chose to use two B-channels, the following warning appears.



Read the warning, then click Yes or No as appropriate.

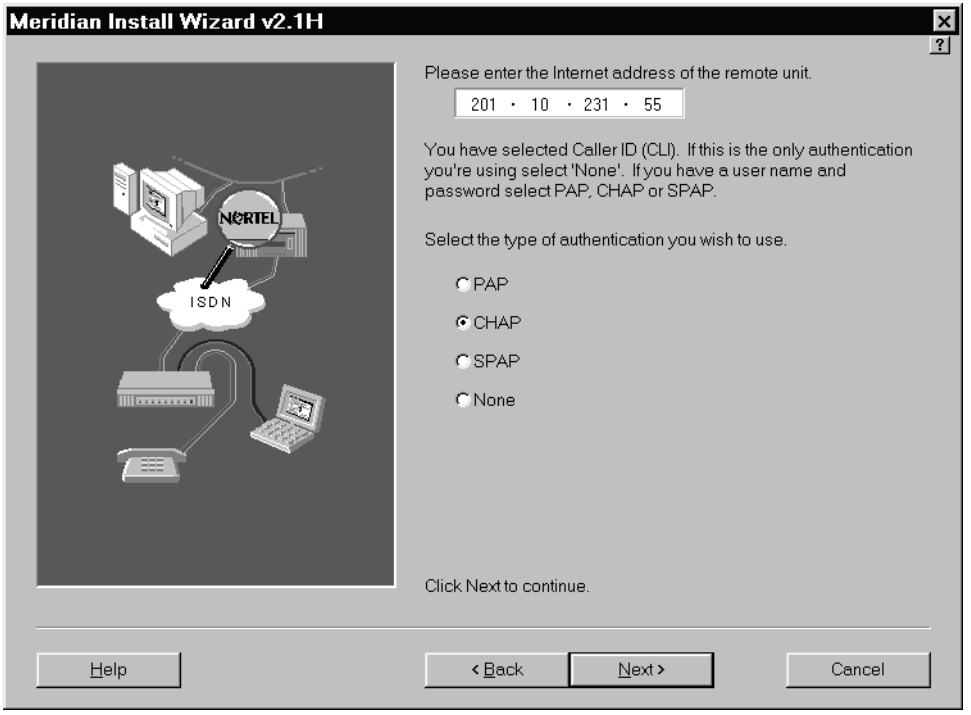
Note: When the digital telephone is in online mode (that is, calls are processed through the corporate PBX rather than the Public Switched Telephone Network), only one B-channel is available for data activity such as file transfers. The other B-channel is dedicated to making and receiving calls to and from the corporate PBX (including display and indicator updates). If you want to be able to use both B-channels for data activity when in local (offline) mode, select two B-channels.

Result: If you responded with Yes to Is a second ISDN number required?, a second ISDN screen appears to accept the second number.

Repeat steps b through d, then click Next.

Result: An screen similar to the following appears.

Note: The Internet address field appears only if you chose not to use unnumbered links in step 12 on page 105.



7 Do the following:

a. Enter the IP address if unnumbered links are not being used.

b. Select the type of security you want to use, then click Next.

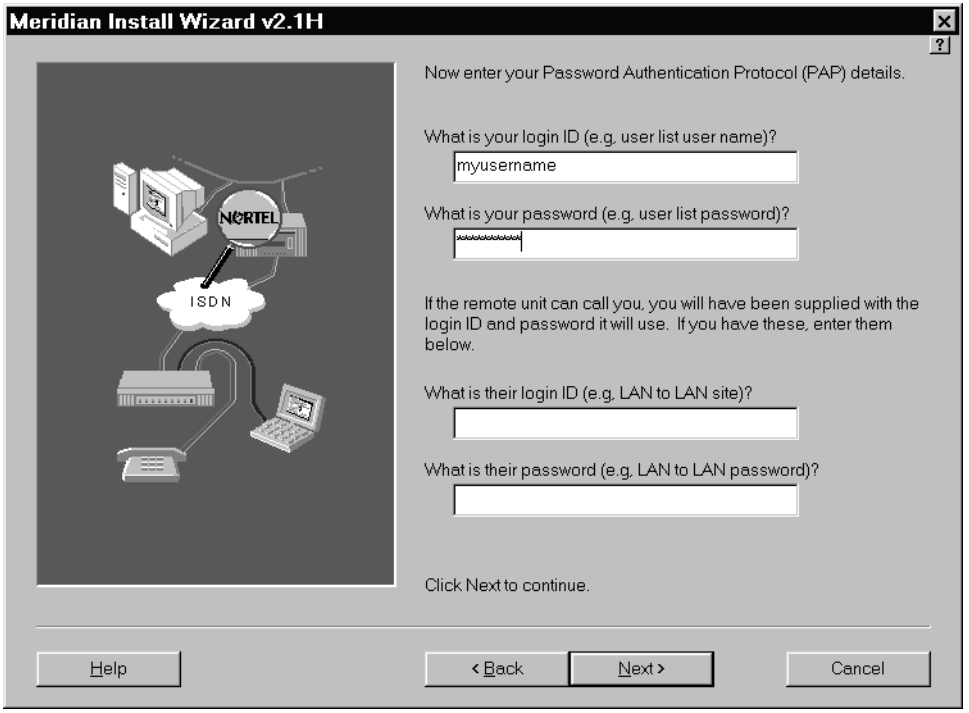
Notes:

- See the Authentication using PAP, Authentication using CHAP, or Authentication using SPAP help topics.
- Refer to the HomeOffice Router—Security Authentication Information form.

IF you choose	THEN
PAP	the Password Authentication Protocol screen appears. Go to step 8.

IF you choose	THEN
CHAP	the Challenge Handshake Authentication Protocol screen appears. Go to step 9.
SPAP	the Remote site is using 3rd party authentication option appears. Click this option if it is being used, then click Next. The SPAP screen appears. Go to step 10.
None	the Microsoft Networking support screen appears. Go to step 11. **Note:** You can choose None only if you chose CLI on the ISDN circuit screen.

8 On the Password Authentication Protocol screen, do the following:



a. Enter your login ID.

See the Setting up PAP help topic.

b. Enter your login password.

c. Enter the remote unit's login ID, if required.

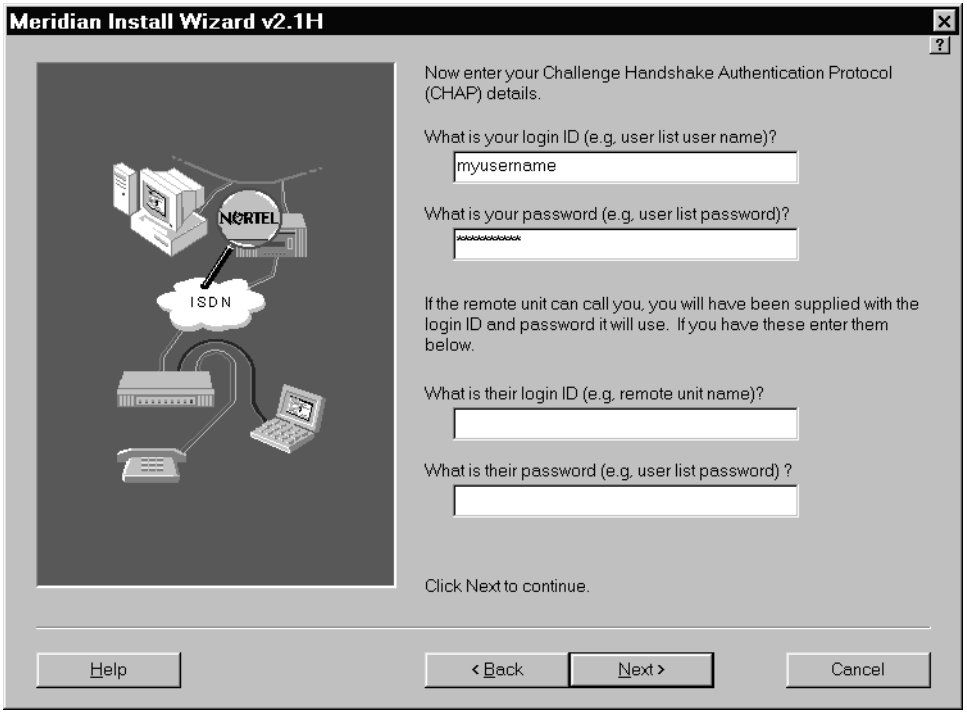
d. Enter the remote unit's login password, if required.

e. Click Next.

Result: The Microsoft Networking support screen appears.

f. Go to step 11.

9 On the Challenge Handshake Authentication Protocol (CHAP) screen, do the following:



a. Enter your login ID.

See the Setting up CHAP help topic.

b. Enter your login password.

c. Enter the remote unit's login ID name, if required.

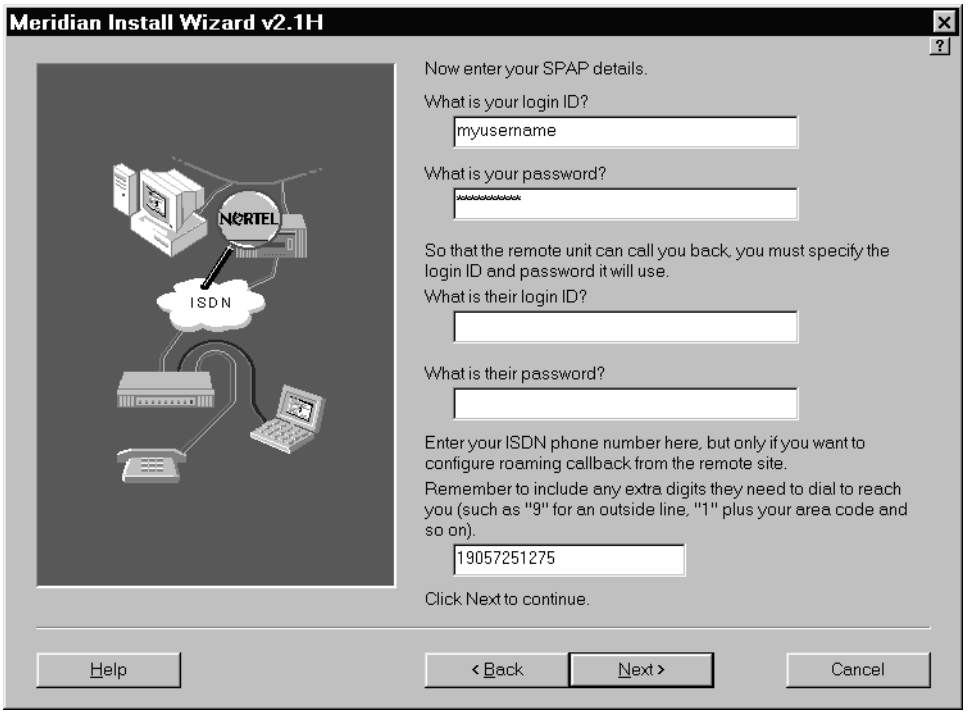
d. Enter the remote unit's login password, if required.

e. Click Next.

Result: The Microsoft Networking support screen appears.

f. Go to step 11.

10 On the SPAP screen, do the following:



a. Enter your login ID.

See the Setting up SPAP and Configuring for Third Party Security help topics.

b. Enter your login password.

c. Enter the remote unit's ID name, if required.

Result: This enables the remote unit to call your HomeOffice Router.

d. Enter the remote unit's password, if required.

e. Enter your ISDN phone number if you are using roaming callback (that is, a network device can call your HomeOffice Router).

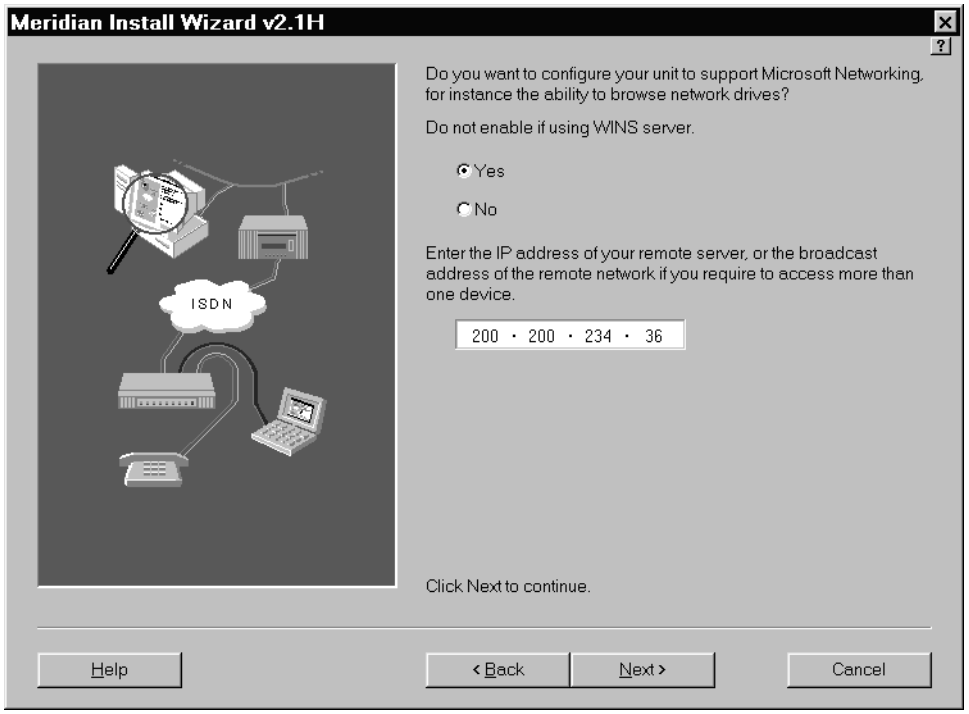
This is the number you specified as the Data number in the "Entering Meridian interface information" procedure.

Note: Roaming callback must be configured for you at the remote site.

f. Click Next.

Result: The Microsoft Networking support screen appears.

11 On the Microsoft Networking support screen, do the following:



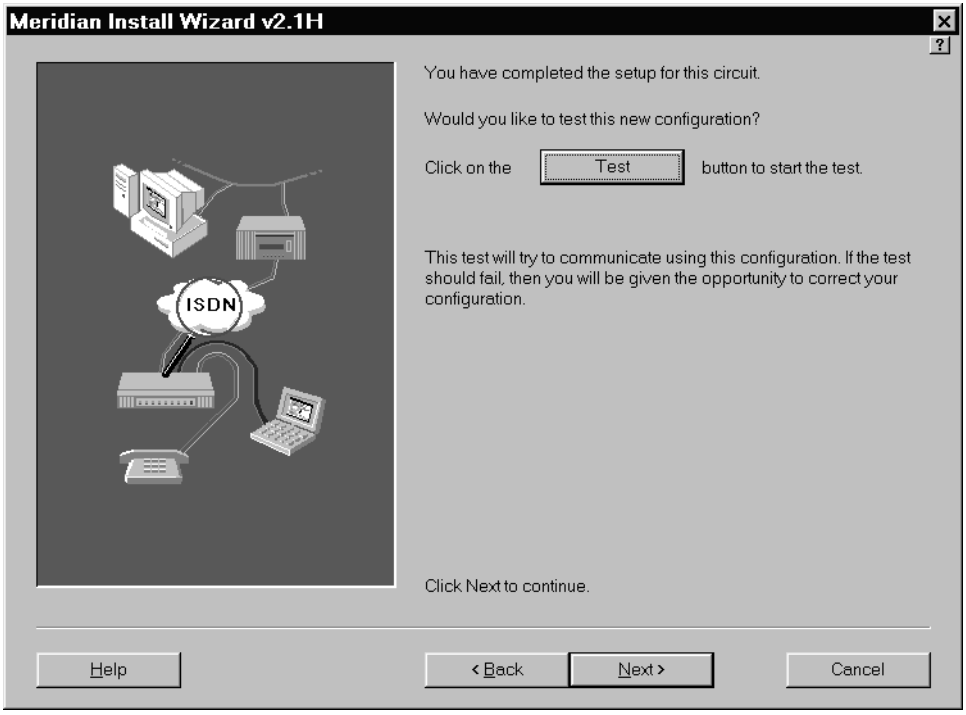
See the Microsoft Networking: Browsing over TCP/IP help topic.

IF you	THEN
want to communicate and share resources with other computers running • Windows 95 • Windows for Workgroups • Windows NT Servers and Workstations • LAN Manager on Microsoft Networks	do the following 1 Click Yes. **Note:** Selecting Yes enables forwarding and spoofing of NetBIOS packets. If you are unsure, contact your network administrator. **Result:** An IP address field appears. 2 Enter the IP address of the remote server or broadcast address of the remote network.
do not want to communicate and share resources with other computers	click No.

12 Click Next.

Result: The circuit setup completion screen appears.

Note: If you are performing an offline configuration, this screen does not appear. An Installation completion screen appears instead. Go to step 15.



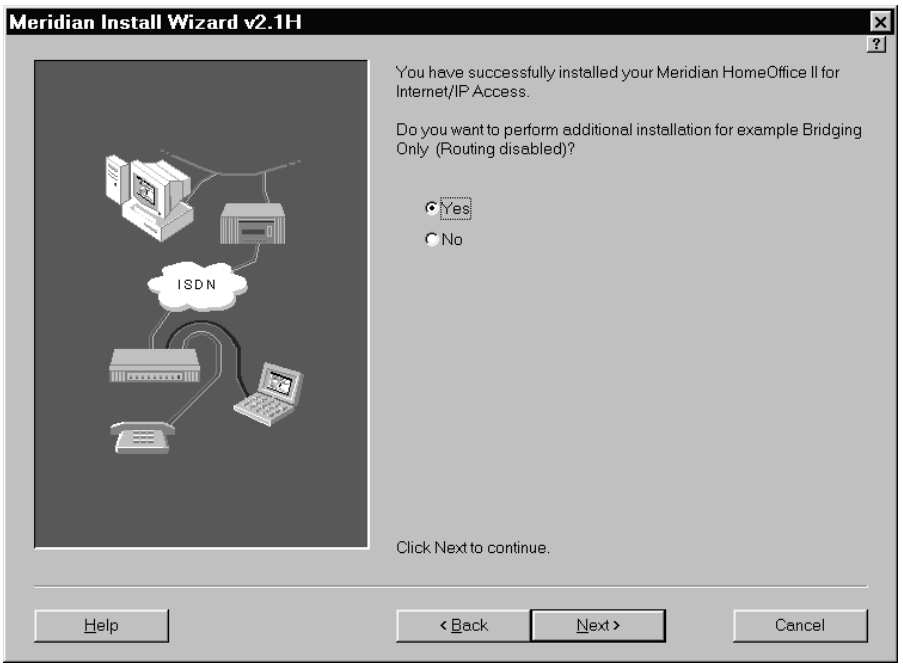
13 Do the following:

IF you	THEN
do not want to perform the test	click Next. An Installation completion screen appears. Go to step 15.
want to perform the test	click Test. This performs the network test ensuring that the circuit configuration is correct. It verifies that the HomeOffice Router can communicate with the remote site. On completion of the test, the test results appear. Go to step 14.

14 On receipt of the circuit test results, do the following

IF the test was	THEN
successful	click Next.
not successful	wait 60 seconds, then try the test again. The test may have failed because the ISDN connection did not have time to initialize. If the test still fails, you are provided with a detailed explanation and log messages. Save the log messages before contacting your network administrator for help. You are also prompted to continue or go back to fix the error(s). If you choose to fix the error(s), you are returned to the screen where configuration changes are needed. Make the required changes, then continue with step 15.

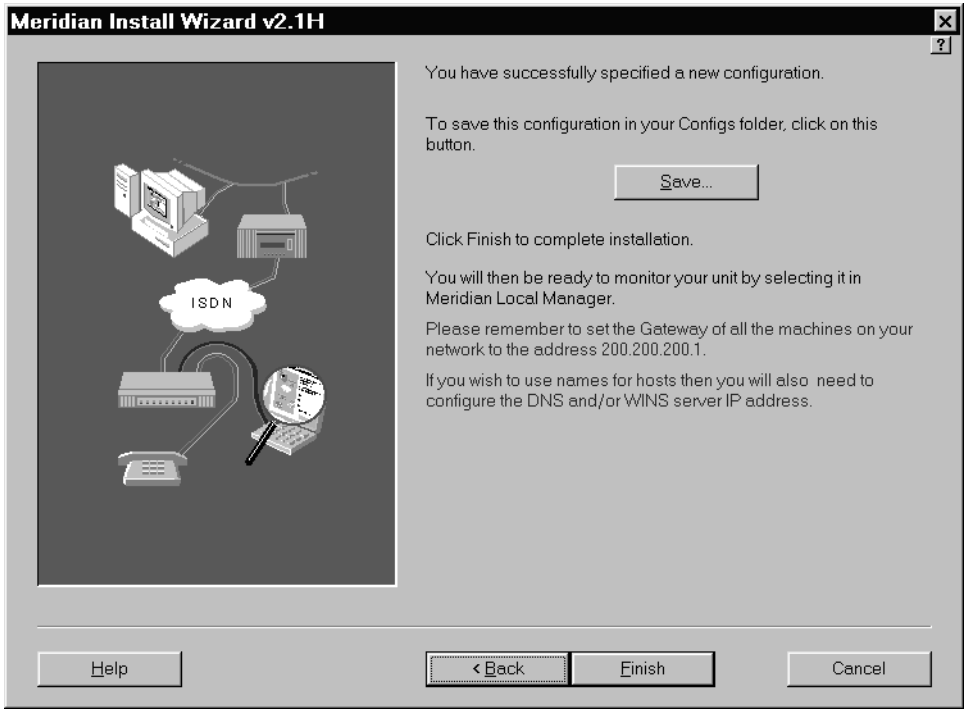
The Internet/IP access installation is complete, and an Installation completion screen similar to the following appears.



15 You can perform an additional installation, or you can finish.

See the Do You Want to Perform Additional Configuration? help topic.

IF you want to	THEN
perform an additional installation	click Yes, then click Next. The screen prompting for the installation type appears.
finish this installation	click No and then click Next. The Internet/IP Access installation is complete, and the finish screen (similar to the following) appears.



16 On the Finish screen:

a. Click Save to save the new configuration.

Result: The File Save As dialog box appears.

b. Enter a name for the configuration file.

Note: Ensure the file name contains the .IWZ extension and is no longer than 49 characters, including the directory path.

c. Click OK.

d. Click Finish to complete the installation.

Entering IPX information

Introduction

If you chose Novell/Netware Networking, continue from here.

Refer to the HomeOffice Router—IPX Routing Information form for the information you need.

If you need help

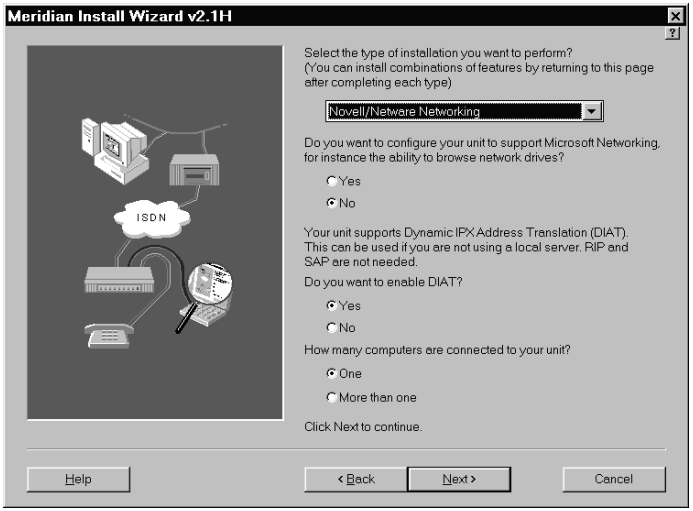
For more information, see the following Online Help books in the Install Wizard Help Topics window:

- Using Install Wizard
- Configuring for Routing and Bridging
- Setting Up IPX Routing

To enter IPX information

1 Select Novell/Netware Networking from the list box.

Result: The following screen appears.



2 Choose whether you want to support Microsoft Networking.

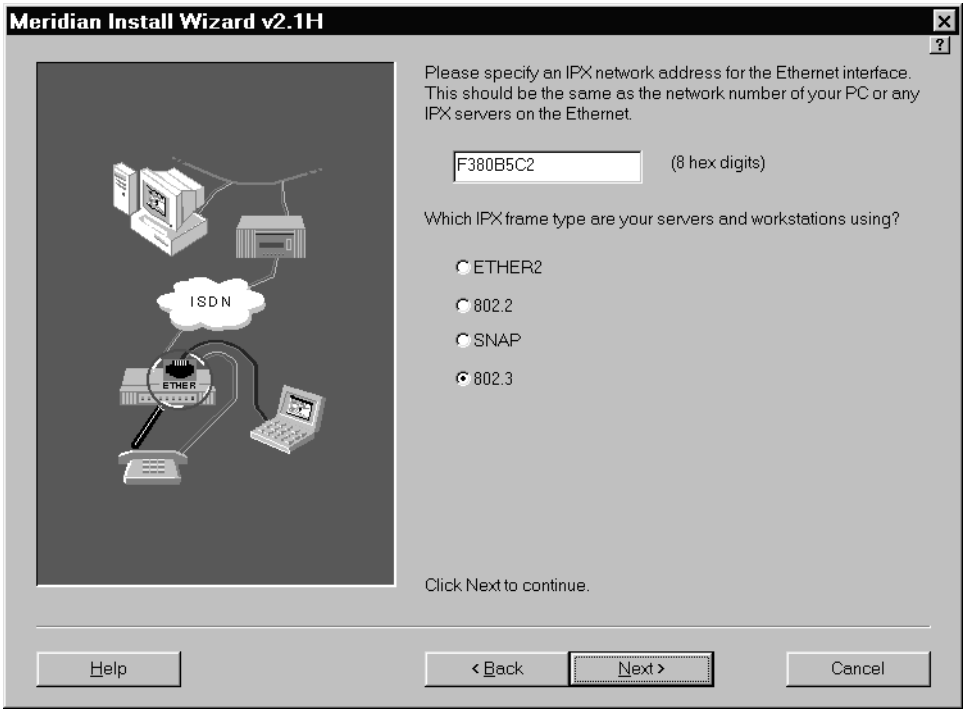
See the Microsoft Networking: Browsing over IPX help topic.

3 Do the following:

IF you	THEN
wish to use DIAT for IPX	choose Yes, then select whether one or more than one computer is connected to your HomeOffice Router. See the Dynamic IPX Address Translation (DIAT) help topic.
do not wish to use DIAT for IPX	choose No.

4 Click Next.

Result: The IPX network address screen similar to the following appears.



5 On the IPX network address screen:

a. Enter the appropriate IPX network address information.

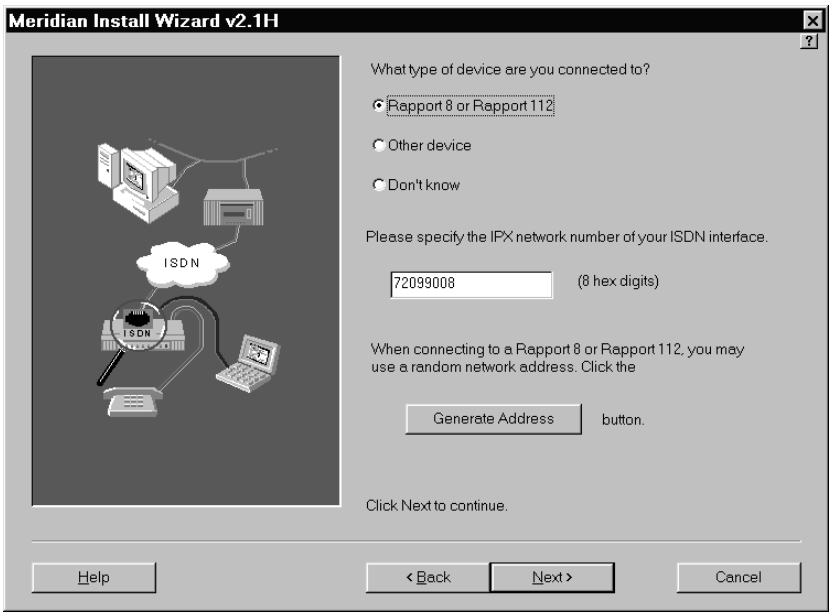
See the Configuring the Ethernet Interface for Novell Networking help topic.

b. Choose a frame type.

Note: The HomeOffice Router must use the same IPX frame type as the servers and workstations on the LAN.

6 Click Next.

IF you	THEN
chose not to use DIAT for IPX in step 1	the IPX network number for ISDN interface screen appears. Go to step 7.
chose to use DIAT for IPX in step 1	the Remote unit identification screen appears. Go to step 10.



7 On the IPX network number for the ISDN interface screen, select the type of device to which your HomeOffice Router will connect.

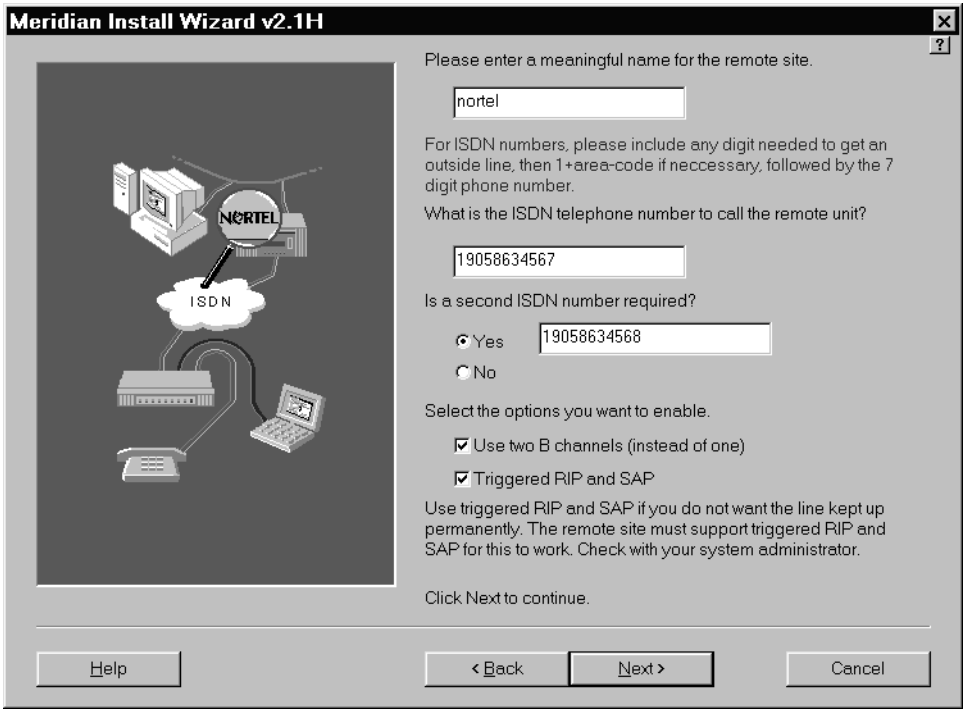
8 Enter the IPX network number for the HomeOffice Router's ISDN interface.

Note: If you are connecting to an Intel Shiva LanRover Access Switch, you can generate an address automatically by clicking Generate Address.

See the IPX Network Numbers help topic.

9 Click Next.

Result: A remote unit identification screen similar to the following appears.



10 On the remote unit identification screen:

a. Enter a meaningful name for the remote unit.

This can be up to 15 characters and becomes the name of the circuit (or link) to that unit. Use this name to refer to the circuit when setting up protocol-specific information.

See the Configuring ISDN IPX Circuits and ISDN Circuit Name help topics.

b. Enter the ISDN telephone number of the remote unit, including area codes.

See the Entering the Directory Number of the Remote Device help topic.

c. Choose whether a second ISDN number is required.

d. If a second ISDN telephone number is required, enter the number.

e. Choose whether to use two B-channels instead of one.

See the Using two B-channels help topic.

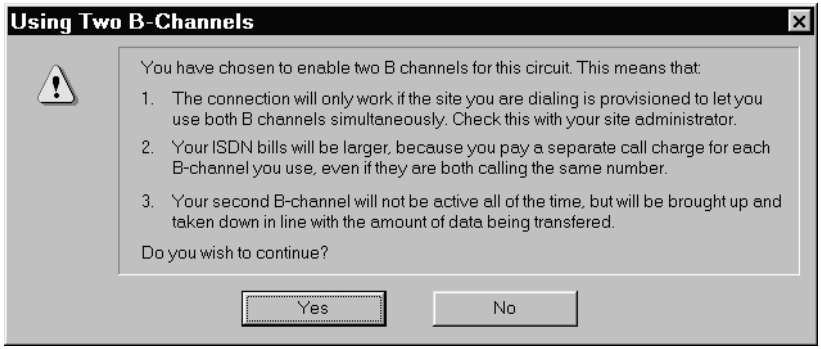
f. Choose whether to use Triggered RIP and SAP.

Note: This prompt appears only if you chose not to use DIAT for IPX.

See the Triggered RIP and SAP help topic.

g. Click Next.

Result: If you chose to use two B-channels, the following warning appears.

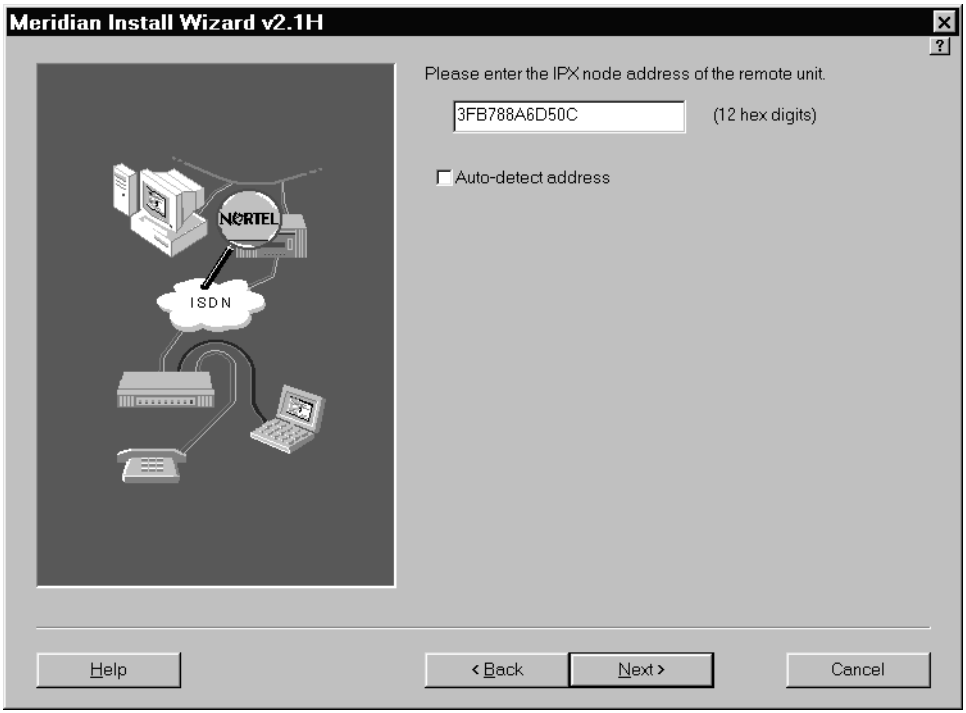


Read the warning, then click Yes or No as appropriate.

Note: When the digital telephone is in online mode (that is, calls are processed through the corporate PBX rather than the Public Switched Telephone Network), only one B-channel is available for data activity such as file transfers. The other B-channel is dedicated to making and receiving calls to and from the corporate PBX (including display and indicator updates). If you want to be able to use both B-channels for data activity when in local (offline) mode, select two B-channels.

IF you	THEN
chose not to use DIAT for IPX in step 1	the IPX network node (MAC) address screen appears. Go to step 11.
chose to use DIAT for IPX in step 1	the screen prompting for the authentication type appears. Go to step 13.

IPX node (MAC) address screen



11 On the IPX network node address screen, enter the MAC address of the remote device to which are connecting, or select Auto-detect address.

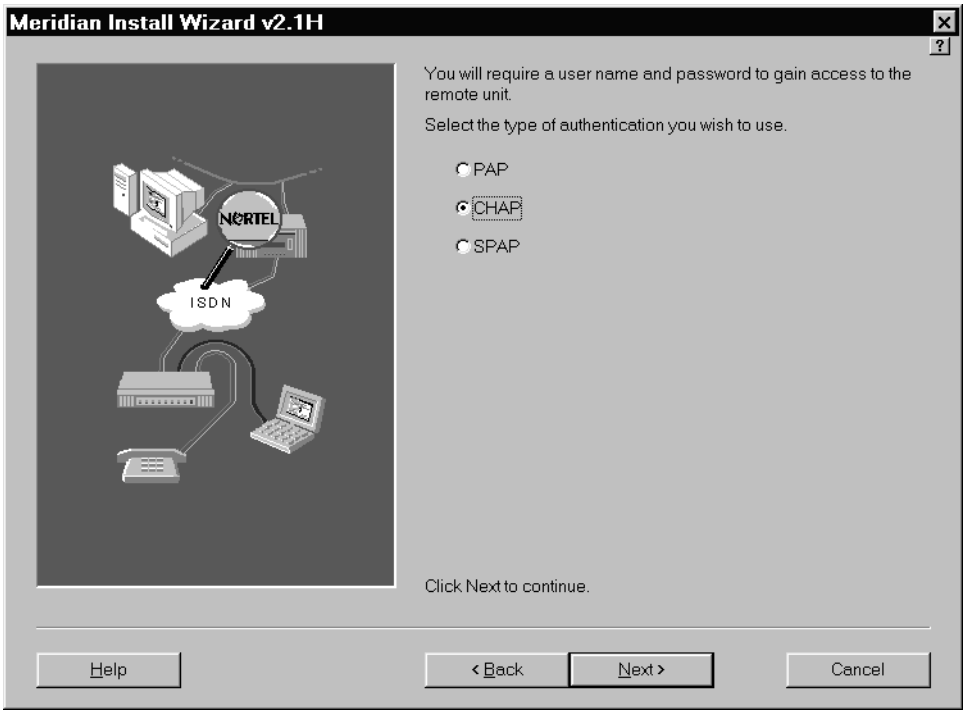
Note: If you want to enter the MAC address, de-select Auto-detect address.

See the IPX Node Address of the Remote Device help topic.

Consult the documentation for the remote device to determine its MAC address.

12 Click Next.

Result: A screen similar to the following appears.



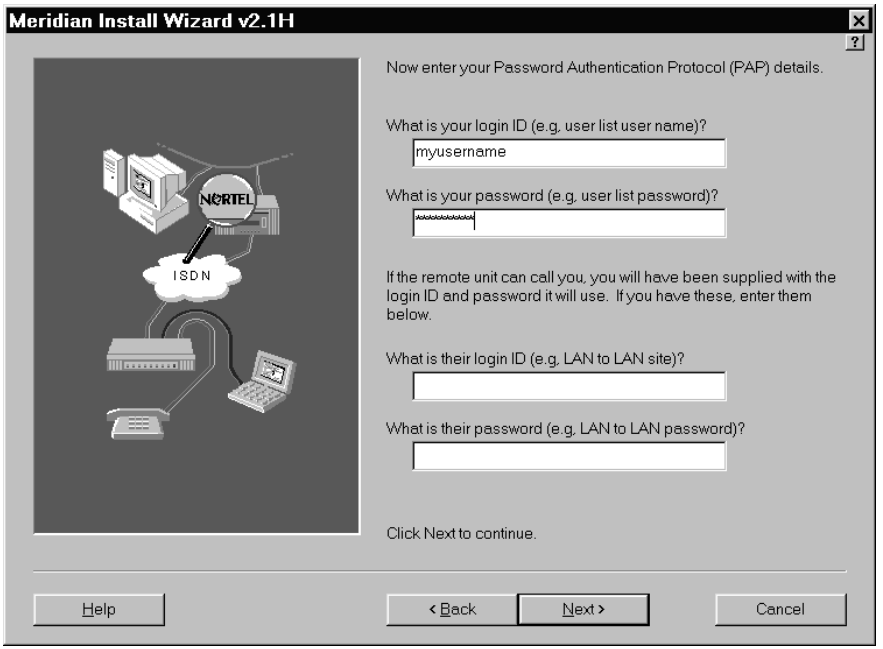
13 Select the type of security you want to use, and then click Next.

Notes:

- See the Authentication using PAP, Authentication using CHAP, or Authentication using SPAP help topics.
- Refer to the HomeOffice Router—Security Authentication Information form.

IF you choose	THEN
PAP	the Password Authentication Protocol screen appears. Go to step 14.
CHAP	the Challenge Handshake Authentication Protocol screen appears. Go to step 15.
SPAP	the Remote site is using 3rd party authentication option appears. Click this option if it is being used, then click Next. The SPAP screen appears. Go to step 16.

14 On the Password Authentication Protocol screen, do the following:



a. Enter your login ID.

See the Setting up PAP help topic.

b. Enter your login password.

c. Enter the remote unit's login ID, if required.

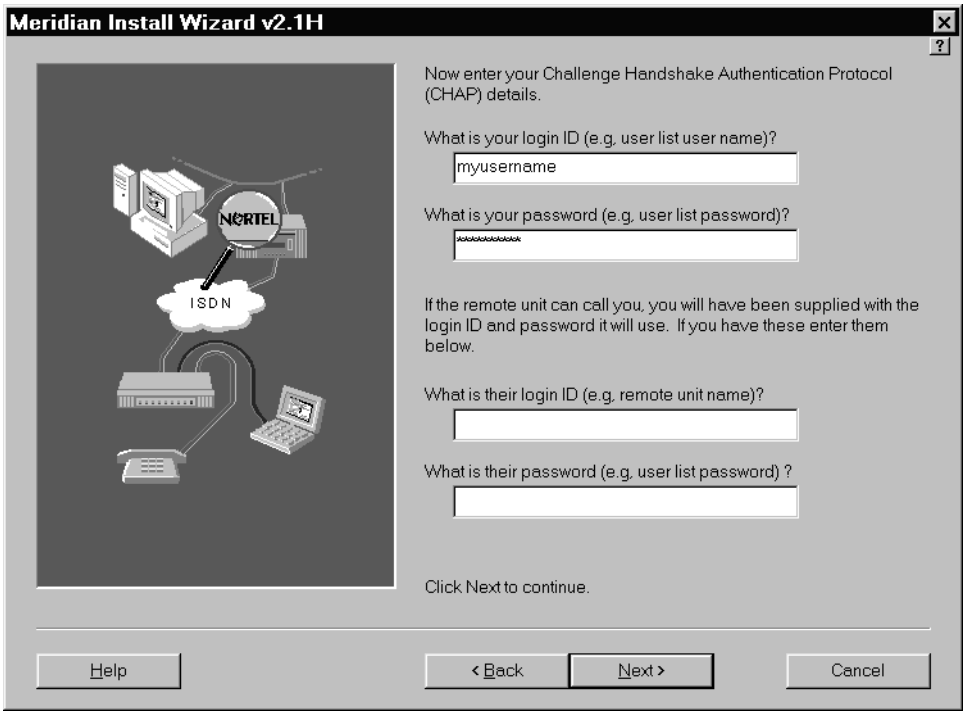
d. Enter the remote unit's login password, if required.

e. Click Next.

Result: The IPX (Novell/Netware Networking) installation is complete, and an Installation completion screen appears.

f. Go to step 19.

15 On the Challenge Handshake Authentication Protocol (CHAP) screen, do the following:



a. Enter your login ID.

See the Setting up CHAP help topic.

b. Enter your login password.

c. Enter the remote unit's login ID name, if required.

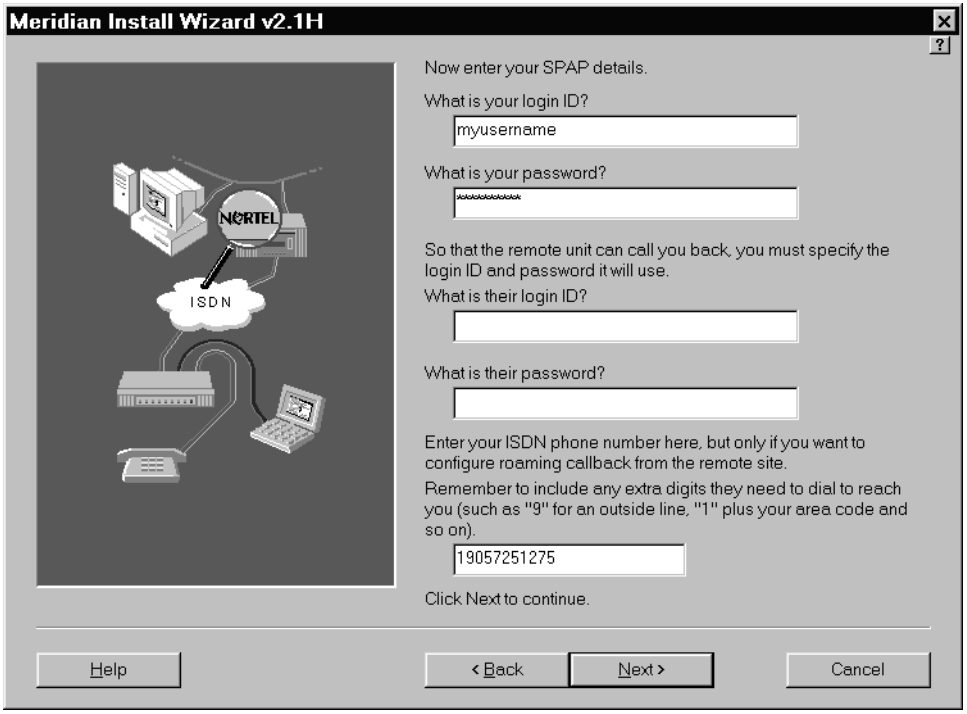
d. Enter the remote unit's login password, if required.

e. Click Next.

Result: The IPX (Novell/Netware Networking) installation is complete, and an Installation completion screen appears.

f. Go to step 19.

16 On the SPAP screen, do the following:



a. Enter your login ID.

See the Setting up SPAP and Configuring for Third Party Security help topics.

b. Enter your login password.

c. Enter the remote unit's login ID, if required.

d. Enter the remote unit's login password, if required.

e. Enter your ISDN phone number if you are using roaming callback (that is, a network device can call your HomeOffice Router).

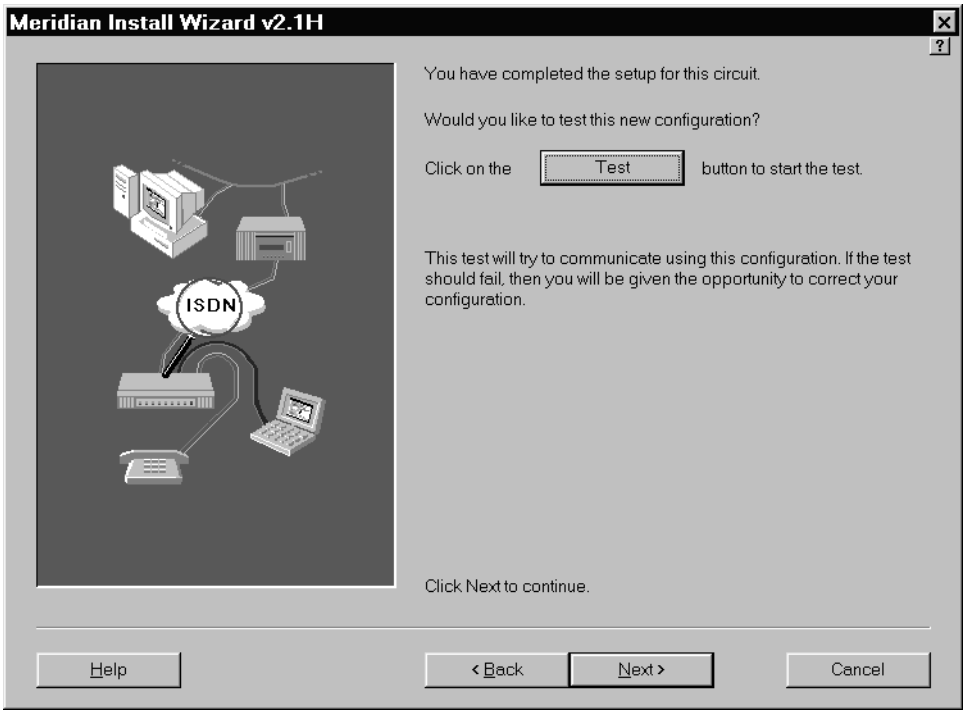
This is the number you specified as the Data number in the “Entering Meridian interface information” procedure.

Note: Roaming callback must be configured for you at the remote site.

f. Click Next.

Result: The circuit setup completion screen appears.

Note: If you are performing an offline configuration, this screen does not appear. An Installation completion screen appears instead. Go to step 19.



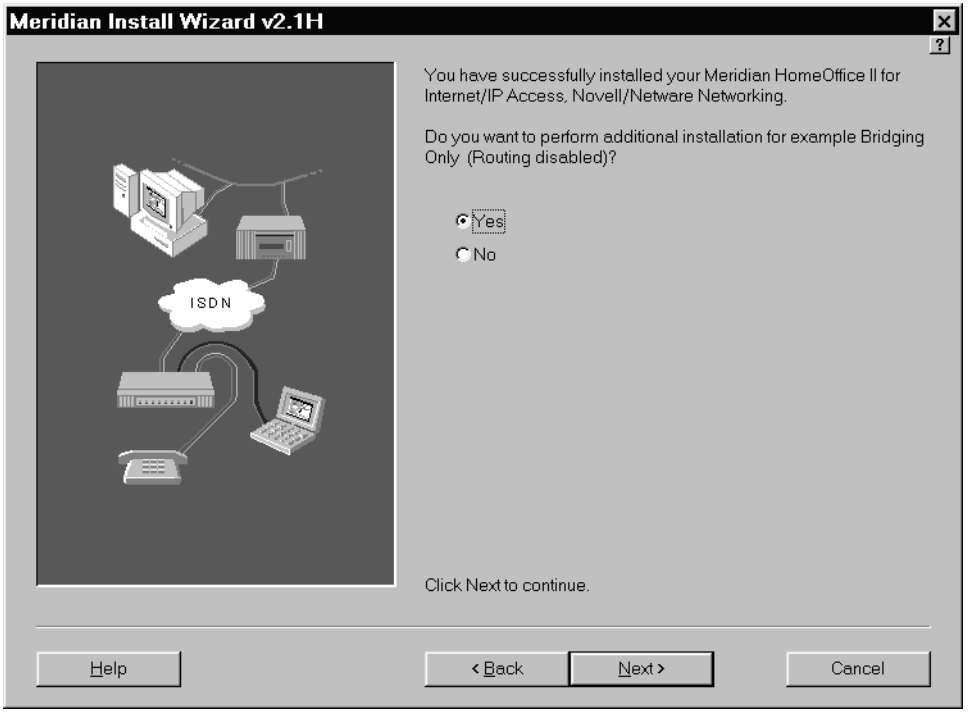
17 On the circuit setup completion screen, do the following:

IF you	THEN
do not want to perform the test	click Next. An Installation completion screen appears. Go to step 19.
want to perform the test	click Test. This performs the network test to ensure that the circuit configuration is correct. It verifies that the HomeOffice Router can communicate with the remote site. On completion of the test, the test results appear. Go to step 18.

18 On receipt of the circuit test results, do the following

IF the test was	THEN
successful	click Next.
not successful	wait 60 seconds, then try the test again. The test may have failed because the ISDN connection did not have time to initialize. If the test still fails, you are provided with a detailed explanation and log messages. Save the log messages before contacting your network administrator for help. You are also prompted to continue or go back to fix the error(s). If you choose to fix the error(s), you are returned to the screen where configuration changes are needed. Make the required changes, then continue with step 19.

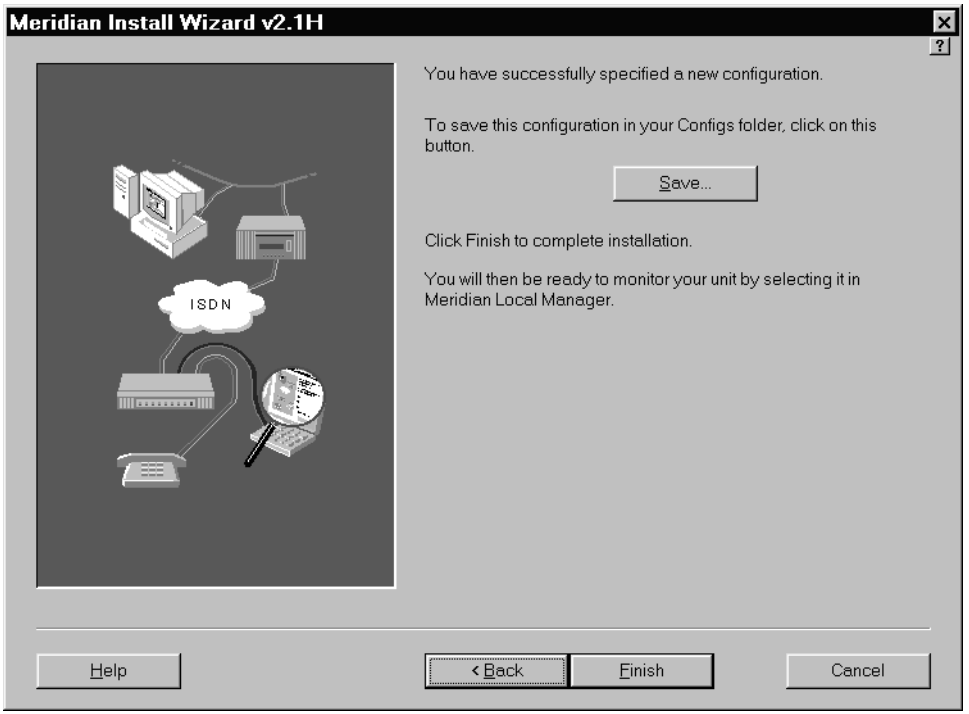
Result: The IPX (Novell/Netware Networking) installation is complete, and an Installation completion screen similar to the following appears.



19 You can perform an additional installation, or you can finish.

See the Do You Want to Perform Additional Configuration? help topic.

IF you want to	THEN
perform an additional installation	click Yes, then click Next. The installation type screen appears.
finish this installation	click No, then click Next. The Novell/Netware Networking installation is complete, and the finish screen similar to the following appears.



20 On the Finish screen:

a. Click Save to save the new configuration.

Result: The File Save As dialog box appears.

b. Enter a name for the configuration file.

Note: Ensure the file name contains the .IWZ extension and is no longer than 49 characters, including the directory path.

c. Click OK.

d. Click Finish to complete the installation.

Entering Bridging information

Introduction

If you chose Bridging Only (Routing disabled), continue from here.

Refer to the HomeOffice Router—Bridging Information form for the information you need.

If you need help

For more information, see the following Online Help books in the Install Wizard Help Topics window:

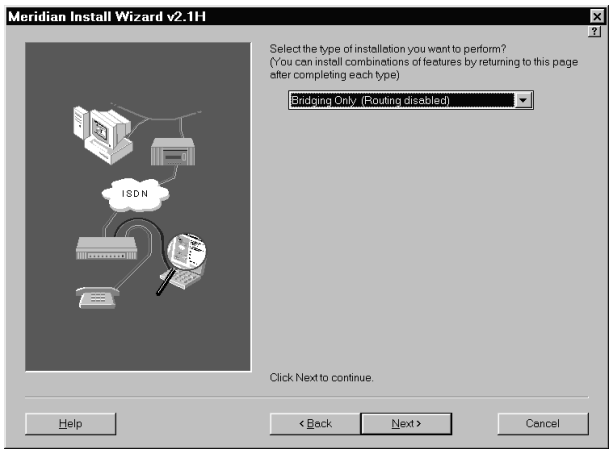
- Using Install Wizard
- Configuring for Routing and Bridging
- Setting Up IP Routing and Bridging

To enter bridging information

1 Select Bridging Only (Routing disabled) from the list box.

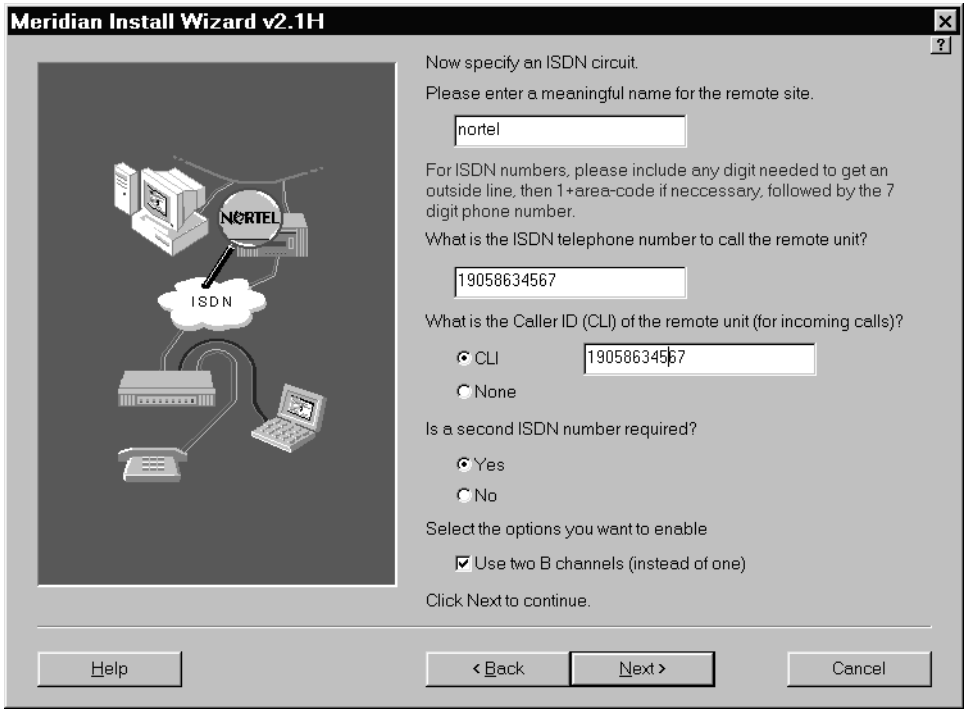
See the Bridging help topic.

Result: The following screen appears.



2 Click Next.

Result: An ISDN circuit screen similar to the following appears.



3 On the ISDN circuit screen:

a. Enter a name for the remote device (up to 15 characters).

See the Configuring an ISDN Bridging Circuit and ISDN Circuit Name help topics.

b. Enter the ISDN telephone number of the remote device.

See the Entering the Directory Number of the Remote Device help topic.

c. Choose whether to use Caller ID.

d. If you choose to use Caller ID, enter the Caller ID number.

See the Using Caller ID (Calling Line Identification) help topic.

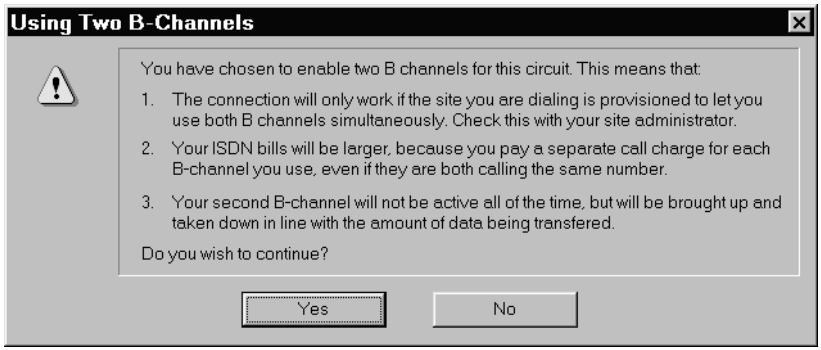
e. Choose whether a second ISDN number is required.

f. Choose whether to use two B-channels instead of one.

See the Using Two B-Channels help topic.

g. Click Next.

Result: If you chose to use two B-channels, the following warning appears.



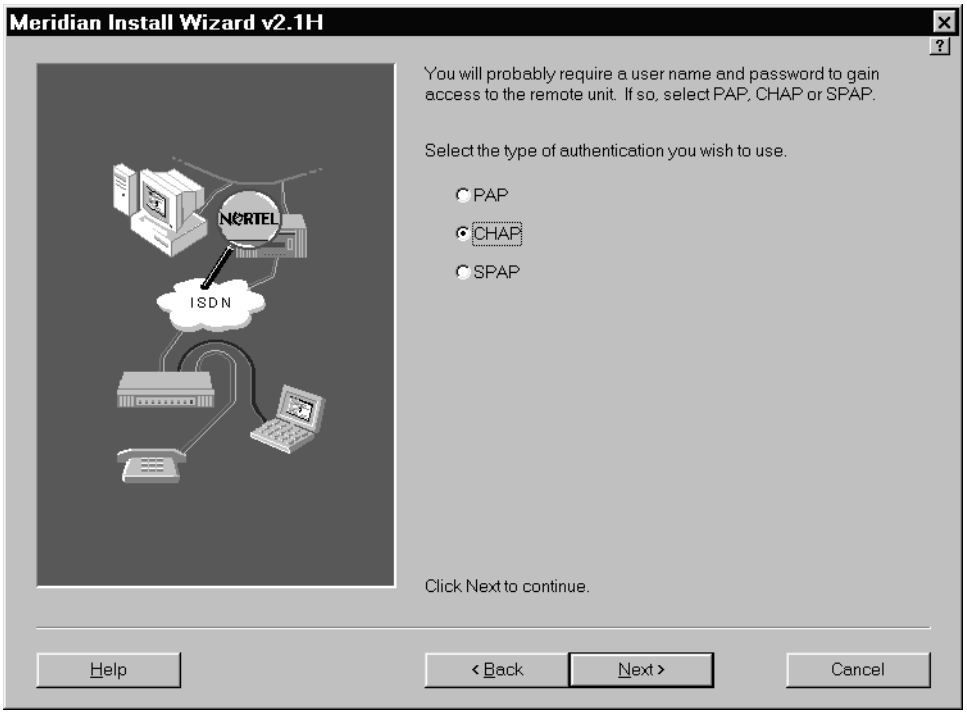
Read the warning, then click Yes or No as appropriate.

Note: When the digital telephone is in online mode (that is, calls are processed through the corporate PBX rather than the Public Switched Telephone Network), only one B-channel is available for data activity such as file transfers. The other B-channel is dedicated to making and receiving calls to and from the corporate PBX (including display and indicator updates). If you want to be able to use both B-channels for data activity when in local (offline) mode, select two B-channels.

Result: If you responded with Yes to Is a second ISDN number required?, a second ISDN screen appears to accept the second number.

Repeat steps b through d, then click Next.

A screen similar to the following appears.



4 Select the type of security you want to use, then click Next.

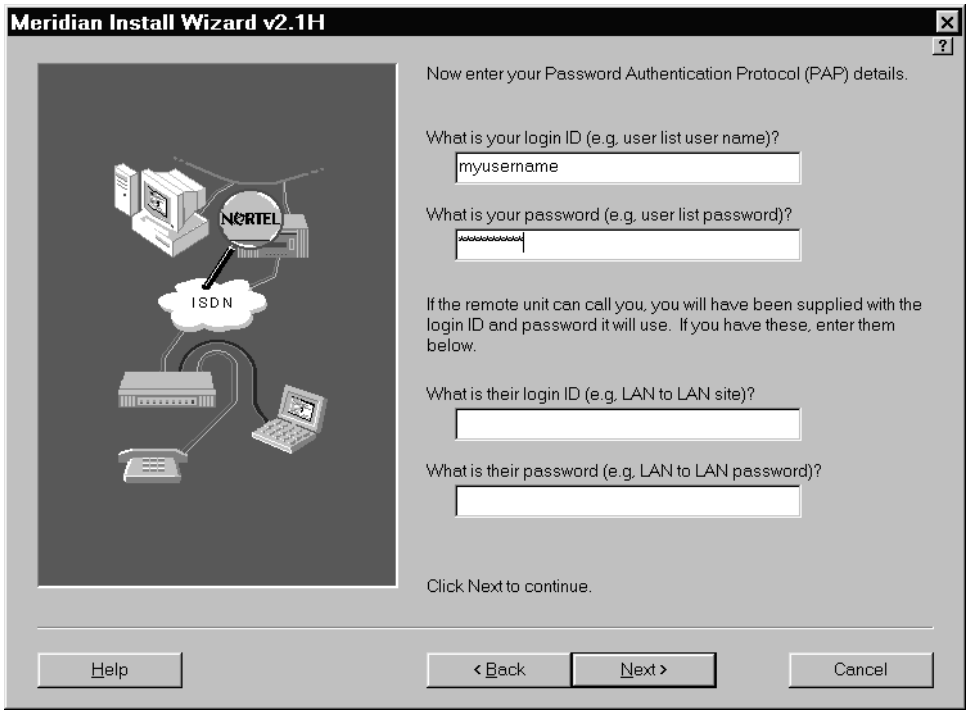
Notes:

- See the Authentication using PAP, Authentication using CHAP, or Authentication using SPAP help topics.
- Refer to the HomeOffice Router—Security Authentication Information form.

IF you choose	THEN
PAP	the Password Authentication Protocol screen appears. Go to step 5.
CHAP	the Challenge Handshake Authentication Protocol screen appears. Go to step 6.

IF you choose	THEN
SPAP	the Remote site is using 3rd party authentication option appears. Click this option if it is being used, then click Next. The SPAP screen appears. Go to step 7.
None	the IP address for the unit screen appears. **Note:** You can choose None only if you chose CLI on the ISDN circuit screen. Go to step 8.

5 On the Password Authentication Protocol screen, do the following:



a. Enter your login ID.

See the Setting up PAP help topic.

b. Enter your login password.

c. Enter the remote unit's login ID, if required.

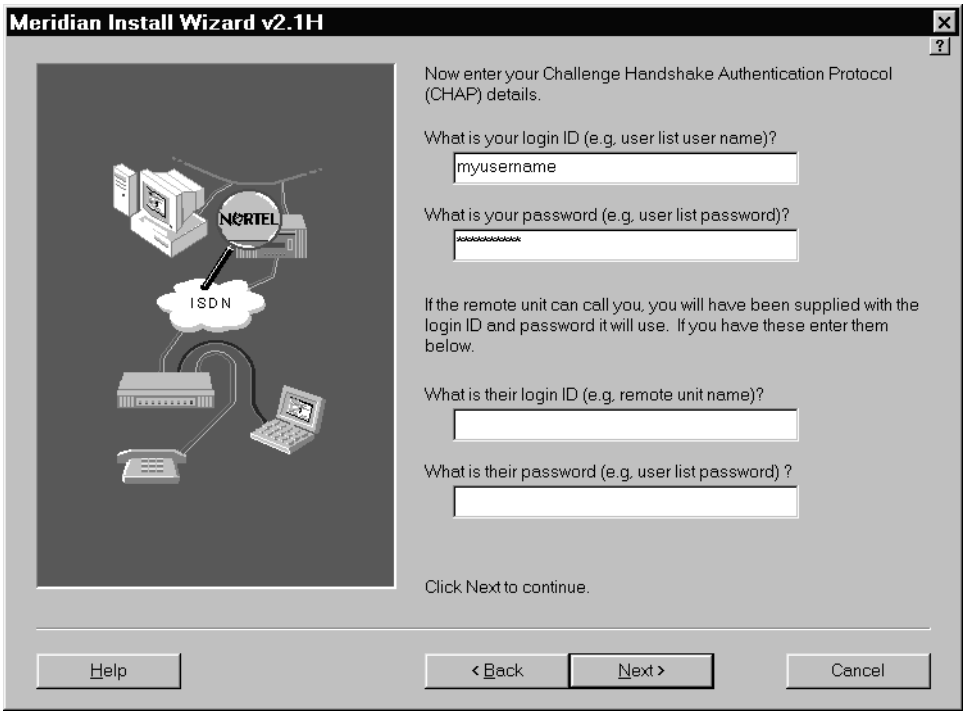
d. Enter the remote unit's login password, if required.

e. Click Next.

Result: The IP address for the unit screen appears.

f. Go to step 8.

6 On the Challenge Handshake Authentication Protocol (CHAP) screen, do the following:



a. Enter your login ID.

See the Setting up CHAP help topic.

b. Enter your login password.

c. Enter the remote unit's ID login name, if required.

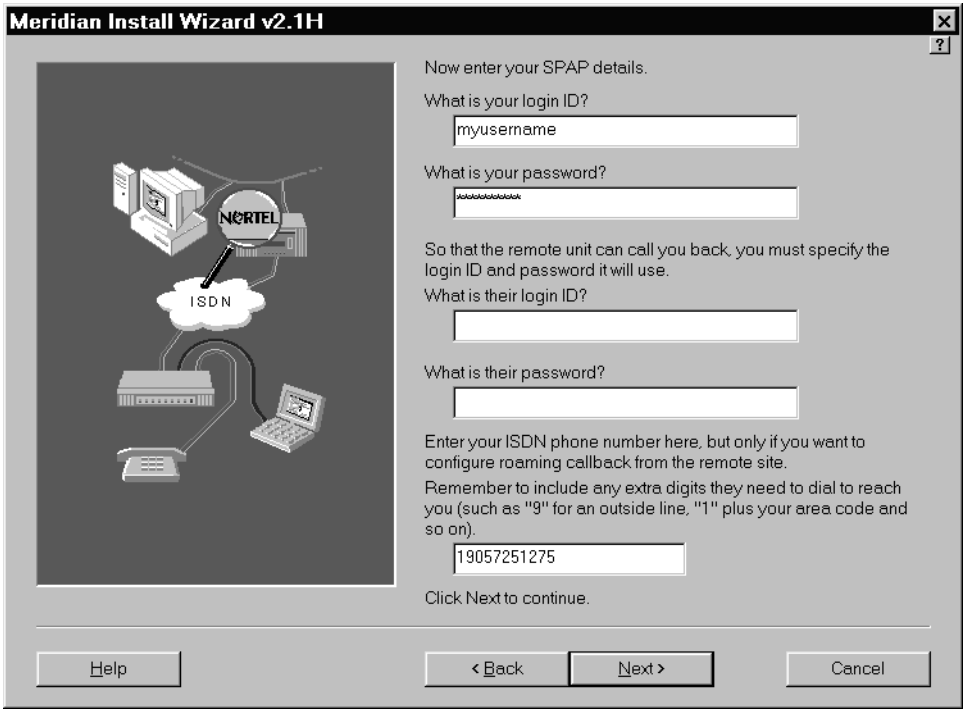
d. Enter the remote unit's login password, if required.

e. Click Next.

Result: The IP address for the unit screen appears.

f. Go to step 8.

7 On the SPAP screen, do the following:



a. Enter your login ID.

See the Setting up SPAP and Configuring for Third Party Security help topics.

b. Enter your login password.

c. Enter the remote unit's login ID, if required.

d. Enter the remote unit's login password, if required.

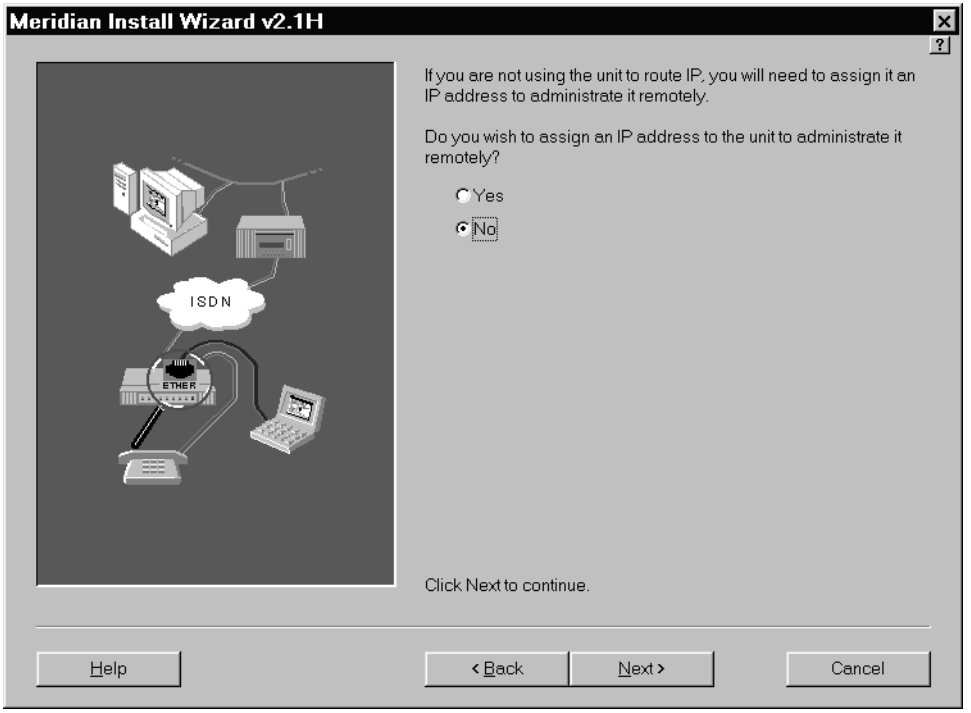
e. Enter your ISDN phone number if you are using roaming callback (that is, a network device can call your HomeOffice Router).

This is the number you specified as the Data number in the “Entering Meridian interface information” procedure.

Note: Roaming callback must be configured for you at the remote site.

f. Click Next.

Result: The IP address for the unit screen appears.



8 On the IP address for the unit screen, choose whether to assign an IP address to the HomeOffice Router.

Note: The IP address will enable either you or an administrator to access the HomeOffice Router's configuration file from a remote site for troubleshooting purposes.

IF you choose	THEN
Yes	additional fields appear. Go to step 9.
No	click Next. The circuit setup completion screen appears. Go to step 10.

9 On the IP address for the unit screen, do the following:

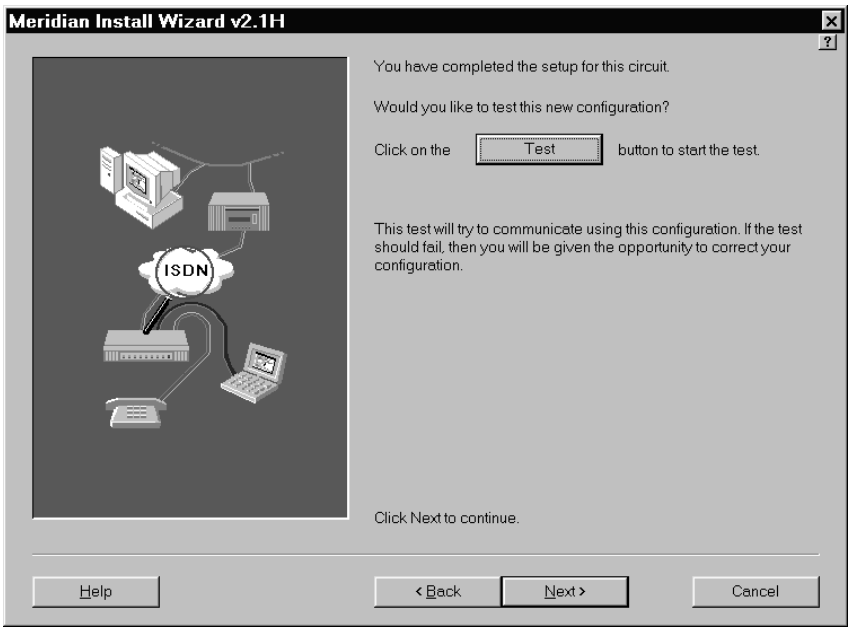
a. Enter the IP address for the HomeOffice Router.

Note: The IP address must be unique.

b. Enter a subnet mask address or click Default.

c. Click Next.

Result: The circuit setup completion screen appears.



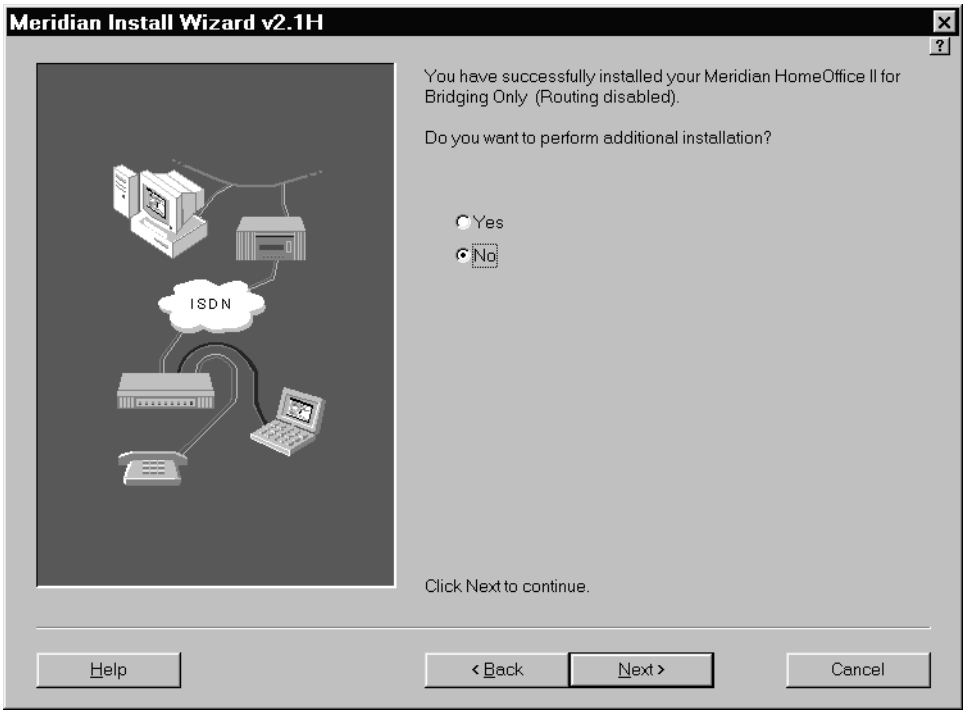
10 On the circuit setup completion screen, do the following:

IF you	THEN
do not want to perform the test	click Next. An Installation completion screen appears. Go to step 12.
want to perform the test	click Test. This performs the network test ensuring that the circuit configuration is correct. It verifies that the HomeOffice Router can communicate with the remote site. On completion of the test, the test results appear. Go to step 11.

11 On receipt of the circuit test results, do the following:

IF the test was	THEN
successful	click Next.
not successful	wait 60 seconds, then try the test again. The test may have failed because the ISDN connection did not have time to initialize. If the test still fails, you are provided with a detailed explanation and log messages. Save the log messages before contacting your network administrator for help. You are also prompted to continue or go back to fix the error(s). If you choose to fix the error(s), you are returned to the screen where configuration changes are needed. Make the required changes, then continue with step 12.

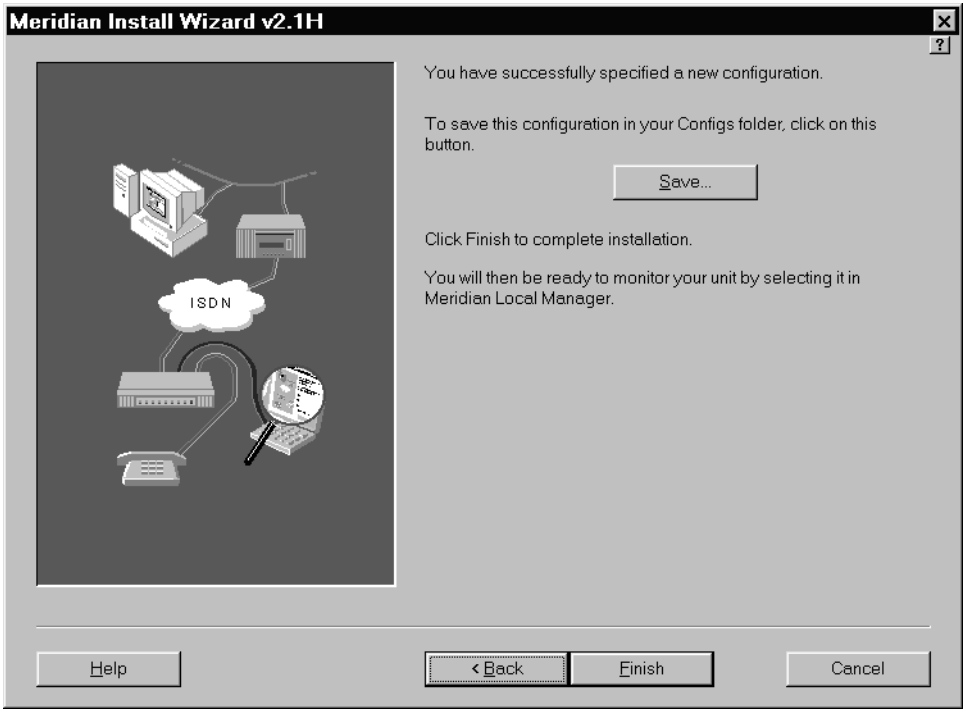
Result: The Bridging Only (Routing disabled) installation is complete, and an Installation completion screen similar to the following appears.



12 You can perform an additional installation, or you can finish.

See the Do You Want to Perform Additional Configuration? help topic.

IF you want to	THEN
perform an additional installation	click Yes, then click Next. A screen prompting you for the type of installation appears.
finish this installation	click No, then click Next. The Bridging Only (Routing disabled) installation is complete, and the finish screen similar to the following appears.



13 On the Finish screen:

a. Click Save to save the new configuration.

Result: The File Save As dialog box appears.

b. Enter a name for the configuration file.

Note: Ensure the file name contains the .IWZ extension and is no longer than 49 characters, including the directory path.

c. Click OK.

d. Click **Finish** to complete the installation.

Modifying an existing configuration

Introduction

Once you have installed the software, use the Install Wizard to modify the configuration. You may want to do this if you have already configured the HomeOffice Router, and now want to change some settings (although it is recommended that you use the Local Manager to do this).

To do this, open and edit a previously saved configuration file.

ATTENTION

When you begin a new configuration, any existing settings on the HomeOffice Router that you have selected are overwritten, including any advanced settings you have configured using Local Manager. Exceptions are the Meridian interface security code and local calling permission. If you are using a saved configuration as default settings, these settings appear in the dialog boxes on the Install Wizard to help you with your new configuration.

To modify a previously saved configuration

1 Use one of the following methods to start the Install Wizard:

- From the Local Manager Edit menu, select Installation.
- Using Local Manager, click the Installation icon from the toolbar.
- Start the Install Wizard as described in “Starting the Install Wizard” on page 86.

Result: The Install Wizard Welcome screen appears.

Note: If you start the Install Wizard from Local Manager, the following message displays before the Welcome screen appears:

```
The Local Manager is paused while Install Wizard is
running.
```

2 Click Open.

Result: The File Open dialog appears. The configuration files that you have saved (.IWZ files) are listed on the left of the screen.

3 Select the configuration file that you want to open and click OK.

4 Click Next to continue.

Result: The device selection screen appears.

5 Select the device to be configured, then click Next.

Result: The next screen appears.

6 For each screen of the Install Wizard, do the following:

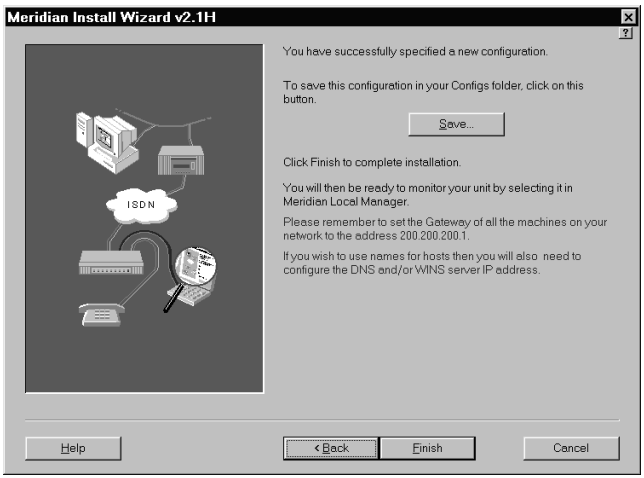
Note: The fields in each screen will contain the information entered in the configuration file.

IF you	THEN
want to change information on a screen	make the necessary changes, then click Next.
don't want to change information on a screen	click Next.

7 Repeat step 6 until the last screen of the Install Wizard appears.

8 Click Finish.

Result: A finish screen similar to the following appears.



9 On the Finish screen:

a. Click Save to save the new configuration.

Result: The File Save As dialog box appears.

b. Enter a name for the configuration file if desired, or verify the current file name.

Note: Ensure the file name contains the .IWZ extension and is no longer than 49 characters, including the directory path.

c. Click OK.

d. Click Finish to complete the installation.

What's next?

Now that you have performed the basic configuration of your HomeOffice Router, do the following:

- Perform additional configuration with Local Manager as instructed by your network administrator.

  Local Manager configuration instructions are located in the *Meridian HomeOffice II Network Administration Guide* (NTP 555-8321-310) on your Meridian HomeOffice II CD-ROM.

- Configure the network information on your PC.

  Network configuration is required so that your PC can connect with the corporate data network through your HomeOffice Router.

Chapter 6

Setting up your PC

In this chapter

Overview

Introduction

Use the information recorded on the HomeOffice Router configuration forms provided by your network administrator to configure your Windows PC so that it can operate on the network. One or both of the following network protocols will be used on the network:

- TCP/IP
- IPX

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.

Obtaining the information you need from your network administrator

Set up your PC so that the HomeOffice Router can interoperate with other devices on the network. To do this, your network administrator needs to provide you with instructions.

The configuration forms in Appendix A, “Data entry forms,” show you what your network administrator should provide in your HomeOffice Router package. If you did not receive these forms, contact your network administrator immediately.

TCP/IP overview

Configuring TCP/IP on your PC involves configuring the following TCP/IP properties:

- IP address for your PC
- gateway address

- Windows Internet Naming Services (WINS) server addresses (optional)
- Domain Name Server (DNS) addresses (optional)

Your network administrator will tell you the properties you need to configure for a particular network configuration scenario. For your reference, they are identified in the following table.

IF you are asked to configure	THEN the network configuration scenario is
• a specific IP address on the same network as the HomeOffice Router • one or more gateway addresses • WINS server addresses (optional) • DNS addresses (optional)	IP LAN-to-LAN or Dynamic IP Address Translation (DIAT for IP) without IP Forwarding or DHCP
• to obtain an IP address automatically • to use DHCP for WINS resolution • to disable DNS resolution	Dynamic IP Address Translation (DIAT for IP) with DHCP (without IP Forwarding)
• a specific IP address on a different network than the HomeOffice Router • one or more gateway address • WINS server addresses (optional) • DNS addresses (optional)	Single-user DIAT for IP with IP Forwarding

About DHCP and DIAT for IP

Dynamic Host Configuration Protocol (DHCP) allows your PC to find its own address configuration details. The IP address is given to your PC by the built-in DHCP server in the HomeOffice Router after being obtained from the remote site.

DHCP is enabled on the PC by configuring the PC to obtain its IP address automatically. DNS and/or WINS server addresses are configured on the HomeOffice Router, not the PC.

When using DIAT for IP and DHCP, the HomeOffice Router provides your PC with its IP address and gateway address, and can be configured with primary and secondary Domain Name Server (DNS) and/or Windows Internet Name Service (WINS) servers to resolve names.

Prerequisites for TCP/IP

The procedures in this section assume the following:

- An Ethernet card adapter is installed, configured, and working on your PC.
- The TCP/IP protocol is installed on your PC.

IPX overview

To configure IPX on your PC, the IPX address must be entered.

If you are using Windows NT, you will also need to configure the preferred server (if using NetWare 3.x) or preferred tree and context (if using NetWare 4.x).

The procedures in this section assume the following:

- An Ethernet card adapter is installed, configured, and working on your PC.
- The IPX protocol is installed on your PC.
- A NetWare client (either Microsoft or Novell) is installed on your PC.

Configuring Windows 3.x

The HomeOffice Router will interoperate with a PC using Windows 3.x. For network configuration instructions, refer to your Windows 3.x documentation or contact your network administrator.

Using Microsoft Networking with the HomeOffice Router

Introduction

When using a HomeOffice Router to connect a PC running Microsoft Networking to a central site, your PC may produce a higher than expected number of ISDN calls. This will result in correspondingly high ISDN call costs.

This topic explains why this may occur and the steps that you can take to reduce these ISDN call costs.

Notes:

1. These increased costs occur when using the Windows 95 and Windows NT operating systems in an ISDN Wide Area Network (WAN) environment.
2. Most of the features described in this chapter are associated with computers operating as Windows NT servers. Therefore, this information is only relevant if your PC is operating in this way, not as a Windows NT client.

This information is relevant when you are connecting the HomeOffice Router to

- another HomeOffice Router
- an Intel Shiva LanRover Access Switch

Microsoft Networking features

The table on the next page identifies the features supported by Microsoft Networking. These features send packets to support specific networking functions. Since Microsoft Networking was originally designed primarily for use with local area networks, traffic produced was confined to the local network and did not have any cost implications.

However, Microsoft Networking has increased its functionality, allowing it to span more than one network segment. These packets now have cost implications when used in an ISDN WAN environment.

Note: Microsoft Networking also supports other features. However, these features are most likely to generate additional network traffic over a WAN.

Feature	Description
Domain browsing	When using Microsoft Networking, a specified computer at each site sends messages to discover computer browse lists. These lists show the services available on each segment of the network. **Note:** These computers are either called domain master browsers (DMBs) or master browsers (MBRs). Microsoft Networking regularly sends out packets to keep this information recent. On a network that spans more than one physical site and uses an ISDN link, this process regularly opens the ISDN link.
WINS replication	As a Microsoft Networking client, your PC will ask for Windows Internet Name Service (WINS) by consulting the WINS server across the ISDN.
Directory replication	As a Microsoft Networking client, your PC will regularly ask for directory replication across the ISDN.
User accounts database (SAM) replication	As a Microsoft Networking client, your PC will regularly ask for user accounts database (SAM) replication. When this is done across the ISDN, it results in increased ISDN costs.
Printer browsing	As a Microsoft Networking client, your PC will regularly ask for updates on the printer servers available. When this is done across the ISDN, it results in increased ISDN costs.

For information on how to reduce these costs, refer to the documents on Microsoft's web site (see “Related information” on page 157).

Recommended minimum setup for Microsoft Networking

The following minimum setup is recommended. This allows Microsoft Networking to function without incurring unnecessary ISDN call costs.

- Enable IP for Microsoft Networking (rather than IPX, which requires forwarding broadcasts).
- Disable domain browsing.
- Disable WINS name resolution.

  Use static name resolution instead. A sample configuration for this is shown in the Windows 95 file called LMHOSTS.SAM in the Windows directory on your PC.
- Disable local file sharing.
- Disable local printer sharing.

Related information

Information on reducing costs when using Microsoft Networking is available from Microsoft's web site at: http://www.microsoft.com.

In particular, the following articles are recommended:

- PSS ID Number: Q134985
- PSS ID Number: Q135360

In addition, Microsoft has also released Service Packs, which can help reduce costs when using Microsoft Networking over an ISDN (WAN). Information on obtaining these Service Packs is also available from Microsoft's web site.

Section A: Configuring TCP/IP and IPX in Windows 95

In this section

Displaying Windows 95 TCP/IP properties

Introduction

This topic explains how to display the TCP/IP properties. Once displayed, enter the information required for communication on the IP network.

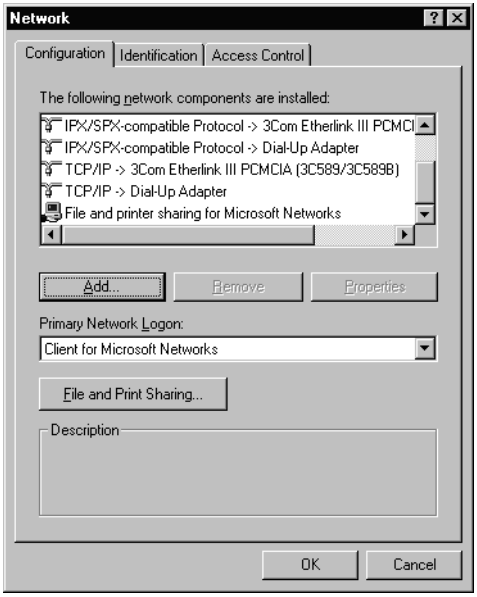
To display TCP/IP properties

1 From the Windows 95 Start menu, select Settings, then Control Panel.

Result: The window similar to the following appears.

2 Double-click the Network icon.

Result: The Network Configuration tab similar to the following appears.

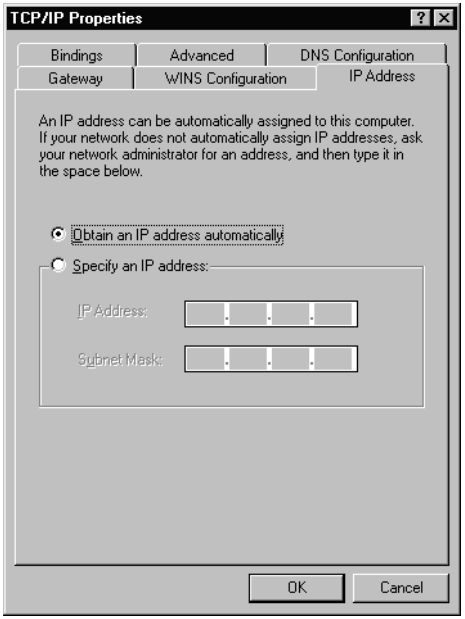


3 Select the TCP/IP network component.

Note: If more than one TCP/IP component is present on your PC, select the one that represents your Ethernet adapter.

4 Click Properties.

Result: The TCP/IP Properties window similar to the following appears.



5 Do the following:

To enter	See
the IP address	page 163.
gateway address	page 167.
WINS addresses	page 170.
DNS addresses	page 173.

Entering the IP address

Introduction

The IP address distinguishes your PC from other devices on the network. Entering a specific IP address for your PC configures it for use with the following network features:

- IP LAN-to-LAN
- Dynamic IP Address Translation (DIAT for IP) with or without IP Forwarding

Note: For Single-User DIAT for IP with IP Forwarding, the PC settings should be left as they are when you are connected to your office LAN.

Using DHCP

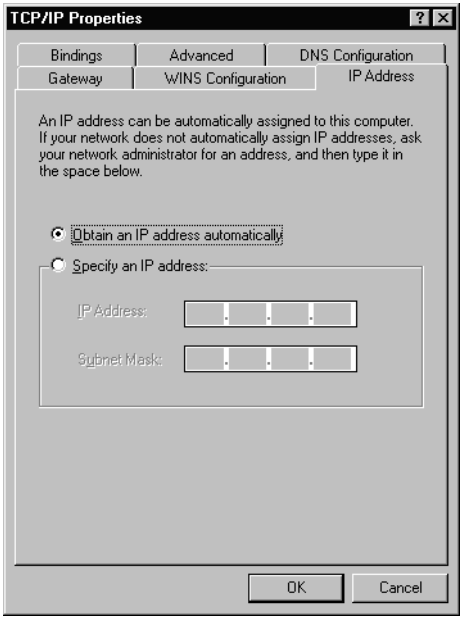
If you configure the PC to obtain an IP address automatically (that is, do not enter a specific IP address for your PC), your PC is then configured to use Dynamic Host Configuration Protocol (DHCP), which means the IP address is assigned dynamically by the network.

To enter the IP address

Note: The starting point for this procedure is the TCP/IP Properties window.

1 Click the IP Address tab.

Result: The IP Address tab similar to the following appears.



2 Refer to the Windows PC—TCP/IP Network Configuration Information form and do one of the following:

- Click Obtain an IP address automatically.

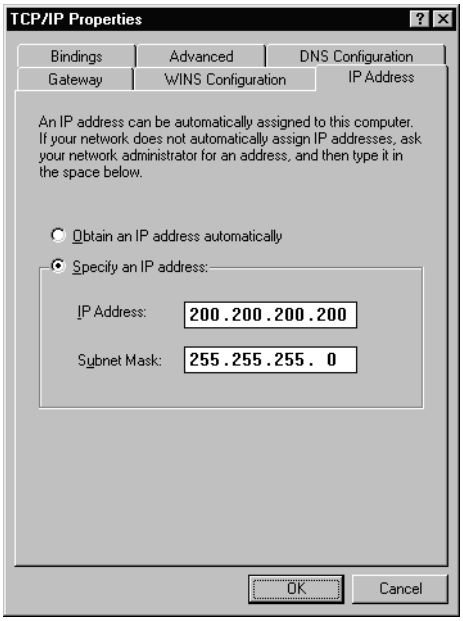
or

- Click Specify an IP address, then enter the IP address and subnet mask provided by your network administrator.

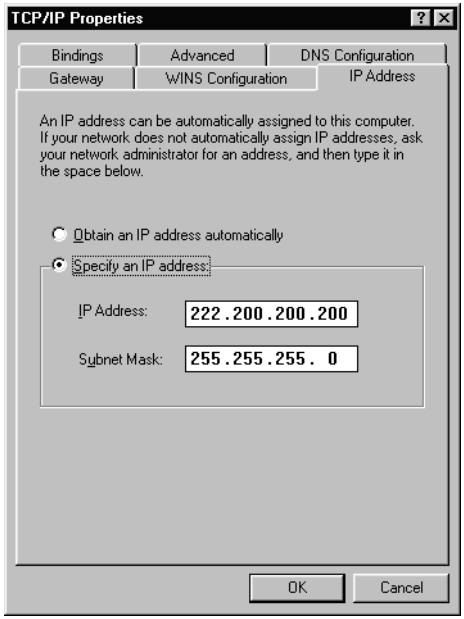
For an example of an IP address and subnet mask on the same network as the HomeOffice Router, see Example 1 on page 165.

For an example of an IP address and subnet mask on a different network from the HomeOffice Router (and on the same network as the remote device to which you will connect), see Example 2 on page 166.

Example 1: The following example contains an IP address that is on the same network as the HomeOffice Router. (The IP address assigned to the HomeOffice Router is 200.200.200.1. The subnet mask is 255.255.255.0.)



Example 2: The following example contains an IP address that is on a different network than the HomeOffice Router. (The IP address assigned to the HomeOffice Router is 200.200.200.1. The subnet mask is 255.255.255.0.)



3 Complete additional configuration as required (gateway, WINS, and DNS), then click OK.

Result: You are returned to the Network Configuration tab.

4 If you wish to close the Network window at this time, click OK again.

Result: You are returned to the Control Panel and prompted to restart your PC.

5 Reboot your PC to put the configuration into effect.

Entering the gateway address

Introduction

The gateway address tells your PC the route it should take to access the corporate network. In this case, the gateway address is the Ethernet IP address of your HomeOffice Router.

A specific gateway address configures your PC for use with the following network features:

- IP LAN-to-LAN
- Dynamic IP Address Translation (DIAT for IP) with or without IP Forwarding

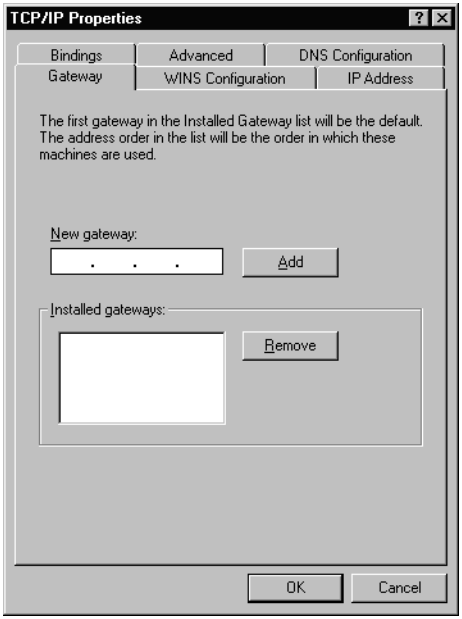
Note: If your PC is configured to obtain an IP address automatically, do not enter a gateway address.

To enter the gateway address

Note: The starting point for this procedure is the TCP/IP Properties window.

1 Click the Gateway tab.

Result: The Gateway tab similar to the following appears.

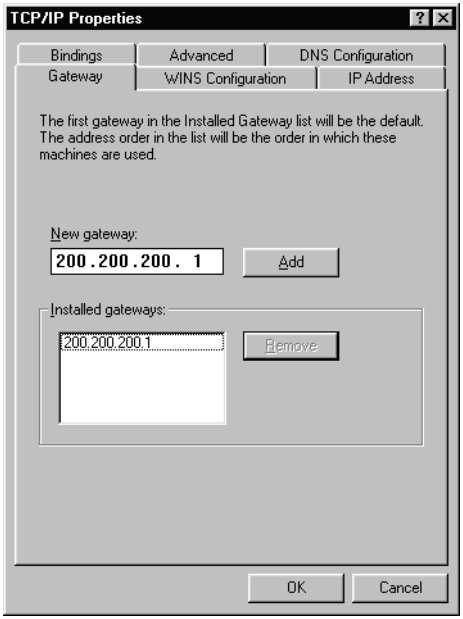


2 Refer to the Windows PC—TCP/IP Network Configuration Information form and enter the IP address provided.

Note: This is the IP address of your HomeOffice Router's Ethernet interface. In the example shown on the next page, this is 200.200.200.1.

3 Click Add.

The following is a completed example.



4 Complete additional configuration as required (IP address, WINS, and DNS), then click OK.

Result: You are returned to the Network Configuration tab.

5 If you wish to close the Network window at this time, click OK again.

Result: You are returned to the Control Panel and prompted to restart your PC.

6 Reboot your PC to put the configuration into effect.

Entering WINS server addresses

Introduction

Windows Internet Naming Service (WINS) enables you to use programs that require the NetBIOS protocol.

Entering WINS resolution addresses configures your PC for use with the following network features:

- IP LAN-to-LAN
- Dynamic IP Address Translation (DIAT for IP) with or without IP Forwarding

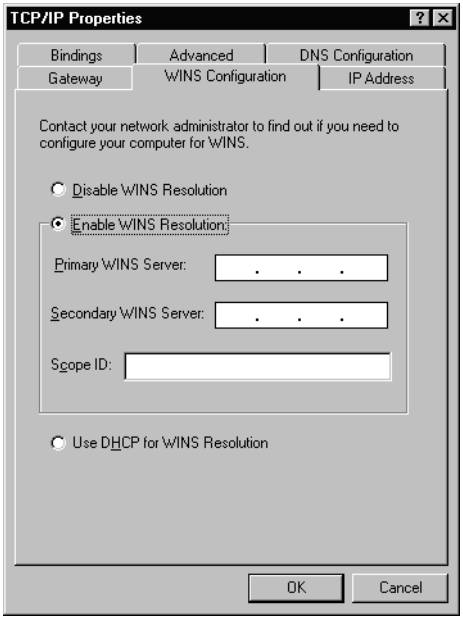
Note: If your PC is configured to obtain an IP address automatically, DHCP for WINS resolution is selected instead.

To enter the WINS server addresses

Note: The starting point for this procedure is the TCP/IP Properties window.

1 Click the WINS Configuration tab.

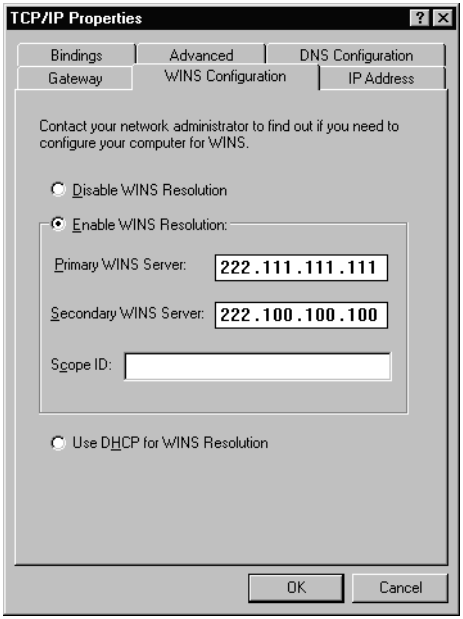
Result: The WINS Configuration tab similar to the following appears.



2 Refer to the Windows PC—TCP/IP Network Configuration Information form and do one of the following:

IF you	THEN do the following
entered an IP address and subnet mask on the IP Address tab	**1** Click Enable WINS Resolution. **2** Enter the IP addresses provided for the primary and secondary WINS servers. See the example on the next page.
selected Obtain an IP address automatically on the IP Address tab	**1** Click Disable WINS Resolution. **2** Click Use DHCP for WINS Resolution.

The following is an example of configured WINS server addresses.



3 Complete additional configuration as required (IP address, gateway, and DNS), then click OK.

Result: You are returned to the Network Configuration tab.

4 If you wish to close the Network window at this time, click OK again.

Result: You are returned to the Control Panel and prompted to restart your PC.

5 Reboot your PC to put the configuration into effect.

Entering DNS addresses

Introduction

The Domain Name Server (DNS) is a client-server application that converts the names assigned to computers into IP addresses. Enable DNS so that your computer can be identified on the network, and so that other computers you are connecting to can be identified by your PC.

DNS is a hierarchical naming system. It uses a combination of text names separated by periods to create a unique name.

DNS addresses configure your PC for use with the following network features:

- IP LAN-to-LAN
- Dynamic IP Address Translation (DIAT for IP) with or without IP Forwarding

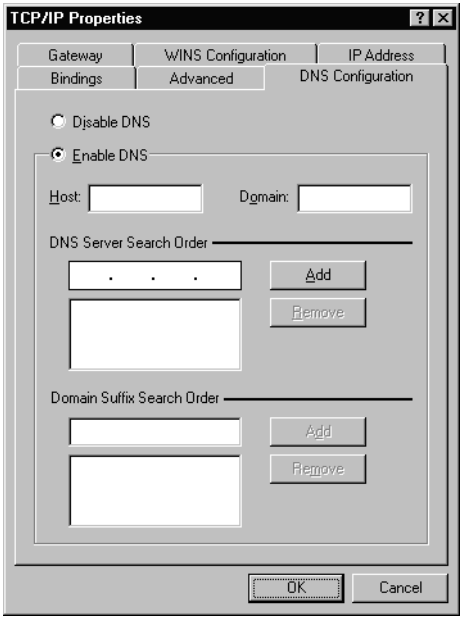
Note: If your PC is configured to obtain an IP address automatically through DHCP, DNS is disabled instead.

To enter DNS addresses

Note: The starting point for this procedure is the TCP/IP Properties window.

1 Click the DNS Configuration tab.

Result: The DNS Configuration tab similar to the following appears.



2 Refer to the Windows PC—TCP/IP Network Configuration Information form and do one of the following:

- Click Disable DNS.

or

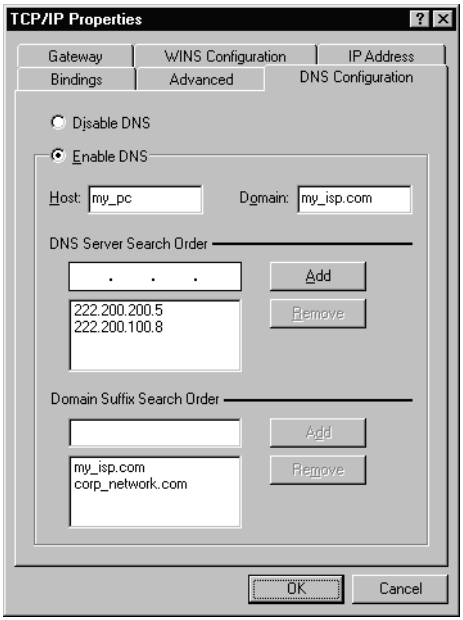
- Click Enable DNS

3 Do the following:

IF you	THEN
disabled DNS	go to step 4 on page 176.
enabled DNS	do the following: **1** Enter a name for your PC in the Host field. This name will identify your PC to other users on the network. **2** Enter the name of the domain in which your PC is located.

IF you	THEN
enabled DNS (continued)	**3** In the DNS Server Search Order box, enter the IP address provided for each DNS server and click Add. **Note:** Windows 95 allows only three DNS server addresses to be added and used. Ensure you leave room for addresses provided by your Internet Service Provider (ISP), if the PC is also being used for Internet access. **4** In the Domain Suffix Search Order box, enter a name (for example, yourcompany.com) of each domain you want listed and click Add.

The following is a completed example.



4 Complete additional configuration as required (IP address, gateway, and WINS), then click OK.

Result: You are returned to the Network Configuration tab.

5 If you wish to close the Network window at this time, click OK again.

Result: You are returned to the Control Panel and prompted to restart your PC.

6 Reboot your PC to put the configuration into effect.

Entering the IPX address

Introduction

This topic explains how to display the IPX properties, then enter the IPX address.

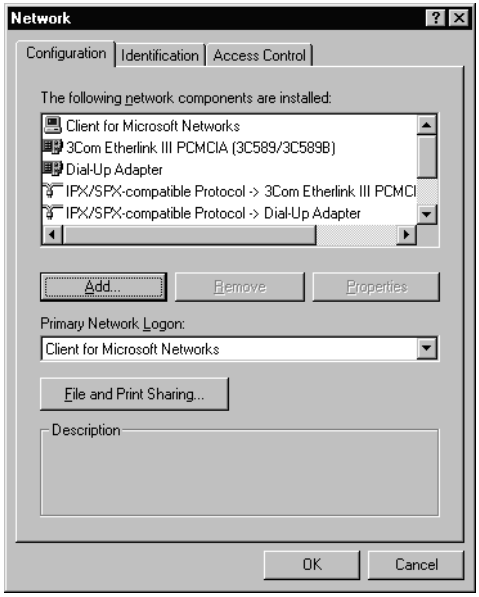
To enter the IPX address

1 From the Windows 95 Start menu, select Settings, then Control Panel.

Result: The window similar to the following appears.

2 Double-click the Network icon.

Result: The Network window similar to the following appears.

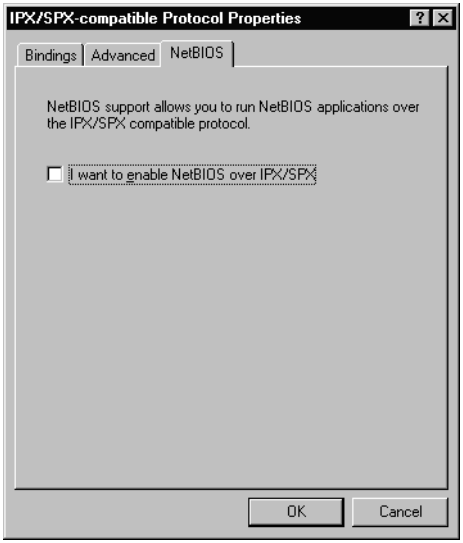


3 Select the IPX network component.

Note: If more than one IPX component is present on your PC, select the one that represents your Ethernet adapter.

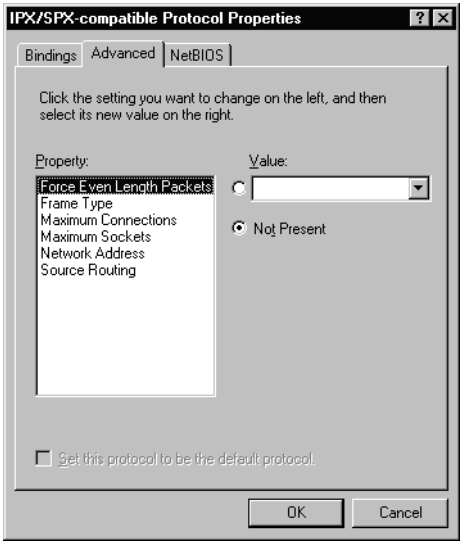
4 Click Properties.

Result: The IPX/SPX-compatible Protocol Properties window similar to the following appears.



5 Click the Advanced tab.

Result: The Advanced tab appears.

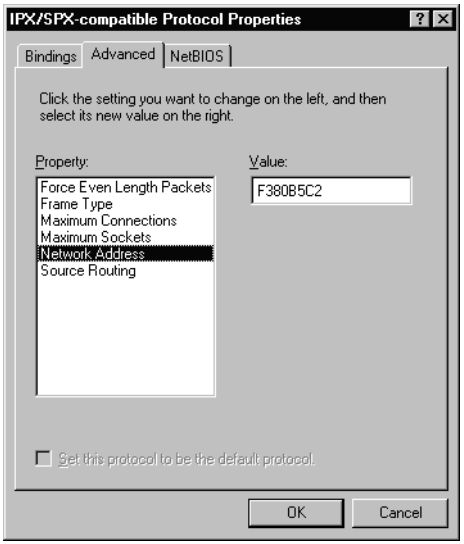


6 Click Network Address in the Property list.

7 In the Value box, enter an IPX address that is on the same network as the HomeOffice Router.

Note: Refer to the Windows PC—IPX/SPX Network Configuration Information form.

The following is a completed example.



8 Click OK.

Result: You are returned to the Network Configuration tab.

9 Click OK again to close the Network window.

Result: You are returned to the Control Panel and prompted to restart your PC.

10 Reboot your PC to put the configuration into effect.

What's next?

Now that you have configured your Windows 95 PC so that it can connect to the data network through your HomeOffice Router, test the telephone and data network connections to ensure they work. For instructions, see Chapter 7, "Testing the connections."

Section B: Configuring TCP/IP and IPX in Windows NT

In this section

Displaying Windows NT TCP/IP properties

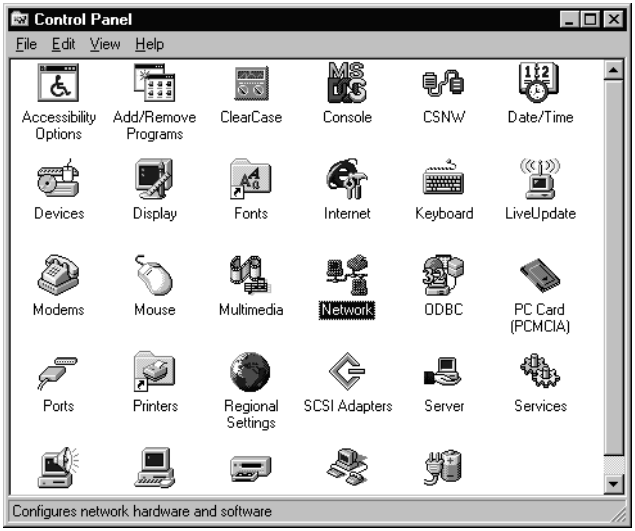
Introduction

This topic explains how to display the TCP/IP properties. Once displayed, you can enter the information required for communication on the IP network.

To display TCP/IP properties

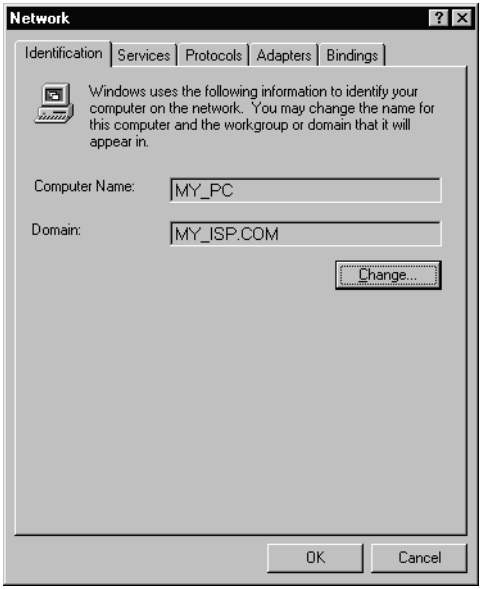
1 From the Windows NT Start menu, select Settings, then Control Panel.

Result: The window similar to the following appears.



2 Double-click the Network icon.

Result: The Network window similar to the following appears.



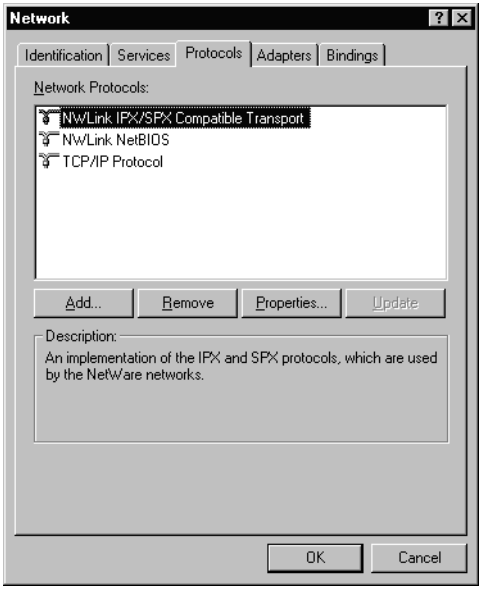
3 Verify that your computer name and domain are correct.

The name identifies your PC to other users on the network.

Note: If the name and domain are not correct, click Change, then make the necessary changes.

4 Click the Protocols tab.

Result: The Protocols tab appears.

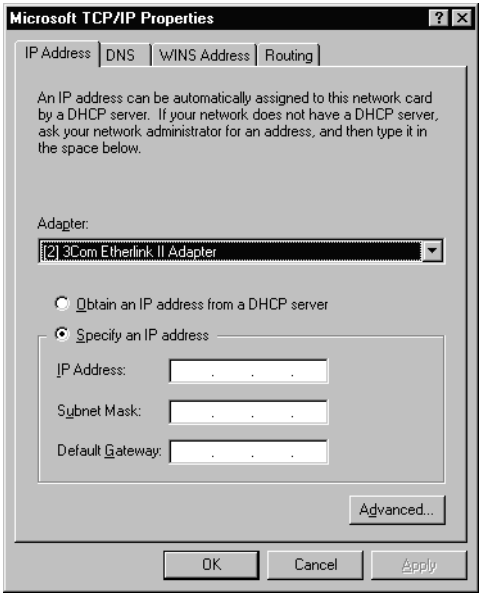


5 Select the TCP/IP network component.

Note: If more than one TCP/IP component is present on your PC, select the one that represents your Ethernet adapter.

6 Click Properties.

Result: The Microsoft TCP/IP Properties window similar to the following appears.



7 Do the following:

To enter	See
the IP and gateway addresses	page 188.
WINS addresses	page 192.
DNS addresses	page 195.

Entering the IP and gateway addresses

Introduction

The IP address distinguishes your PC from other devices on the network.

The gateway address tells your PC the route it should take in order to access the corporate network. In this case, the gateway address is the Ethernet IP address of your HomeOffice Router.

Specific IP and gateway addresses for your PC configure it for use with the following network features:

- IP LAN-to-LAN
- Dynamic IP Address Translation (DIAT for IP) with or without IP Forwarding

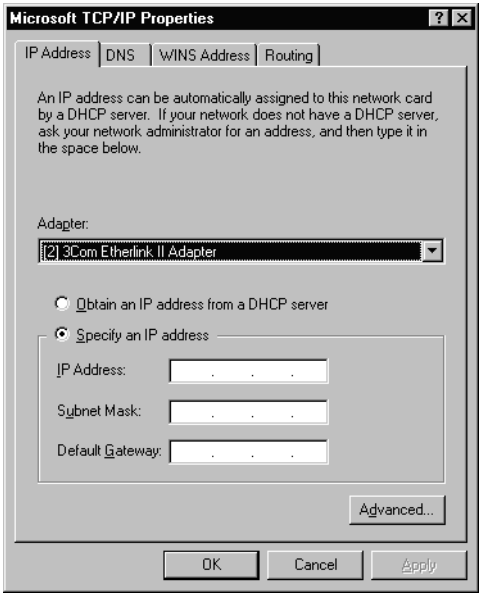
Note: For Single-User DIAT for IP with IP Forwarding, you should leave the PC as they are when you are connected to your office LAN.

Using DHCP

If you configure the PC to obtain an IP address automatically (that is, do not enter specific IP and gateway addresses for your PC), your PC uses Dynamic Host Configuration Protocol (DHCP). This means the IP address is assigned dynamically by the network.

To enter the IP and gateway addresses

Note: The starting point for this procedure is the Microsoft TCP/IP Properties window similar to the following:



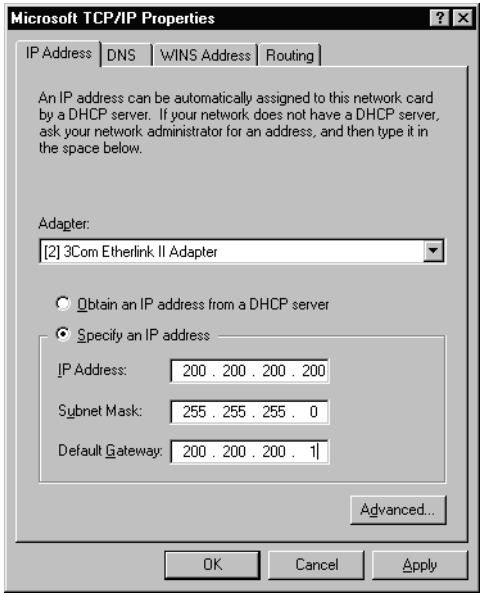
1 Ensure the correct Ethernet adapter is selected in the Adapter list box.

2 Refer to the Windows PC—TCP/IP Network Configuration Information form and do one of the following:

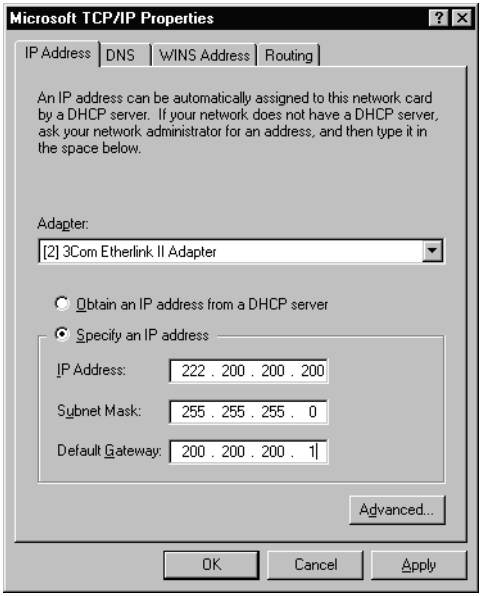
IF you want to	THEN do the following
specify an IP address	1 Click Specify an IP address. 2 Enter the IP address, subnet mask, and gateway address provided by your network administrator. **Notes:** • For an example of an IP address and subnet mask on the same network as the HomeOffice Router, see Example 1 on page 190.

IF you want to	THEN do the following
specify an IP address (continued)	• For an example of an IP address and subnet mask on a different network from the HomeOffice Router (and on the same network as the remote device to which you will connect), see Example 2 on page 191.
use DHCP	**1** Ensure that the IP Address, Subnet Mask, and Default Gateway fields are blank. **2** Click Obtain an IP address from a DHCP server. **Note:** If you enable DHCP without removing the addresses that are already configured, Windows NT will use those addresses instead of DHCP.

Example 1: The following example contains an IP address that is on the same network as the HomeOffice Router. (The IP address assigned to the HomeOffice Router is 200.200.200.1. The subnet mask is 255.255.255.0.)



Example 2: The following example contains an IP address that is on a different network than the HomeOffice Router. (The IP address assigned to the HomeOffice Router is 200.200.200.1. The subnet mask is 255.255.255.0.)



3 Complete additional configuration as required (WINS and DNS), then click OK.

Result: You are returned to the Network Protocols tab.

4 If you wish to close the Network window at this time, click Close.

Result: You are returned to the Control Panel and prompted to restart your PC.

5 Reboot your PC to put the configuration into effect.

Entering WINS server addresses

Introduction

Windows Internet Naming Service (WINS) enables you to use programs that require the NetBIOS protocol.

WINS resolution addresses configure your PC for use with the following network features:

- IP LAN-to-LAN
- Dynamic IP Address Translation (DIAT for IP) with or without IP Forwarding

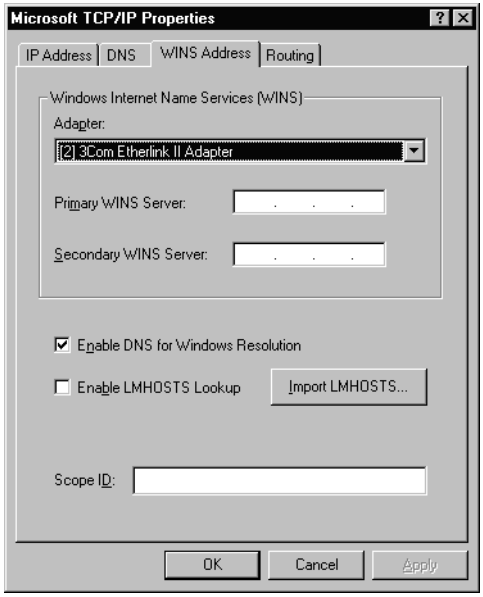
Note: If your PC is configured to obtain an IP address automatically, DHCP is used. You do not need to enter WINS server addresses.

To enter the WINS server addresses

Note: The starting point for this procedure is the Microsoft TCP/IP Properties window.

1 Click the WINS Address tab.

Result: The WINS Address tab similar to the following appears.

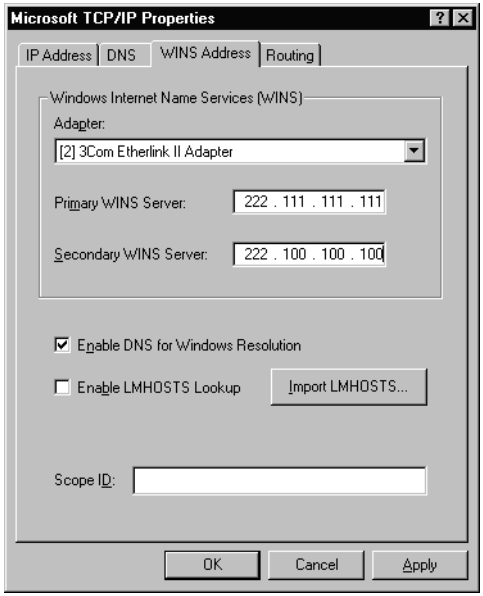


2 Ensure the correct Ethernet adapter is selected in the Adapter list box.

3 Refer to the Windows PC—TCP/IP Network Configuration Information form and enter the IP addresses of the primary and secondary WINS Servers.

Note: Enter the addresses only if you specified an IP address on the IP Address tab.

The following is an example of configured WINS server addresses.



4 Select the following options as indicated on the Windows PC—TCP/IP Network Configuration Information form:

- Enable DNS for Windows Resolution
- Enable LMHOSTS Lookup

5 Complete additional configuration as required (IP addresses and DNS), then click OK.

Result: You are returned to the Network Protocols tab.

6 If you wish to close the Network window at this time, click Close.

Result: You are returned to the Control Panel and prompted to restart your PC.

7 Reboot your PC to put the configuration into effect.

Entering DNS addresses

Introduction

A Domain Name Server (DNS) is a client-server application that converts computer names into IP addresses. You must enable DNS so that your computer can be identified on the network, and so that other computers you are connecting to can be identified by your PC.

DNS is a hierarchical naming system. It uses a combination of text names separated by periods to create a unique name.

DNS addresses configure your PC for use with the following network features:

- IP LAN-to-LAN
- Dynamic IP Address Translation (DIAT for IP) with or without IP Forwarding

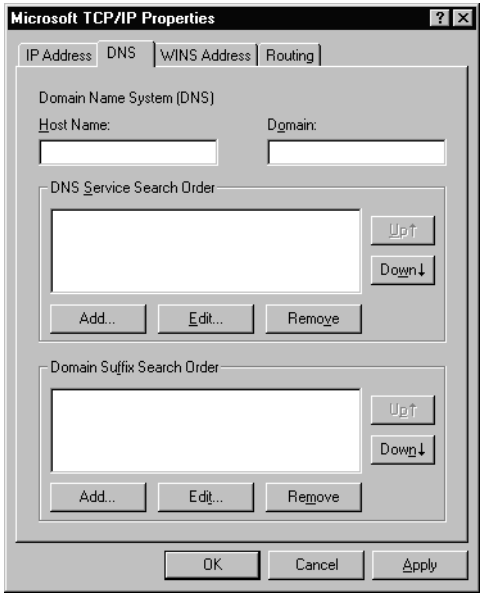
Note: If your PC is configured to obtain an IP address automatically, DHCP is used. You do not need to enter DNS addresses.

To enter DNS addresses

Note: The starting point for this procedure is the Microsoft TCP/IP Properties window.

1 Click the DNS tab.

Result: The DNS tab similar to the following appears.



Note: Refer to the Windows PC—TCP/IP Network Configuration Information form for the following information.

2 Enter a name for your PC in the Host Name field.

This name identifies your PC to other users on the network and may already show the computer name entered in step 3 on page 185.

3 Enter the name of the domain in which your PC is located.

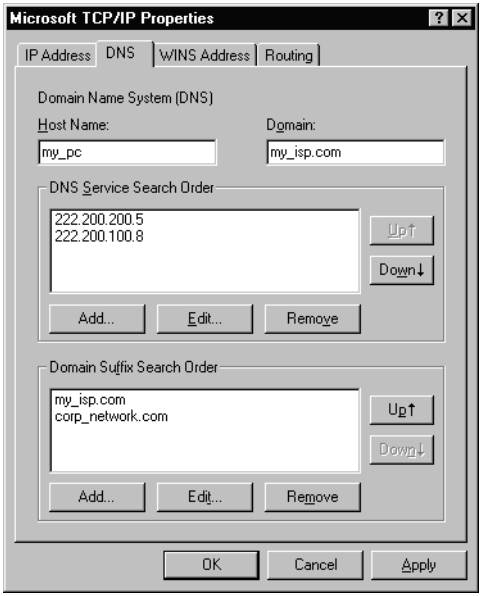
4 Under DNS Service Search Order, click Add, then enter the IP address provided for the first DNS server. Click Add again to add the address to the list.

5 Repeat step 4 for each DNS server you need to add.

Note: Windows NT allows only three DNS server addresses to be added. Ensure you leave room for addresses provided by your Internet Service Provider (ISP) if this PC is also being used for Internet access.

6 Under Domain Suffix Search Order, click Add, then enter the name (for example, yourcompany.com) of each domain you want listed. Click Add again to add the name to the list.

The following is a completed example.



7 Complete additional configuration as required (IP addresses and WINS), then click OK.

Result: You are returned to the Network Protocols tab.

8 If you wish to close the Network window at this time, click Close.

Result: You are returned to the Control Panel and prompted to restart your PC.

9 Reboot your PC to put the configuration into effect.

Entering the IPX address

Introduction

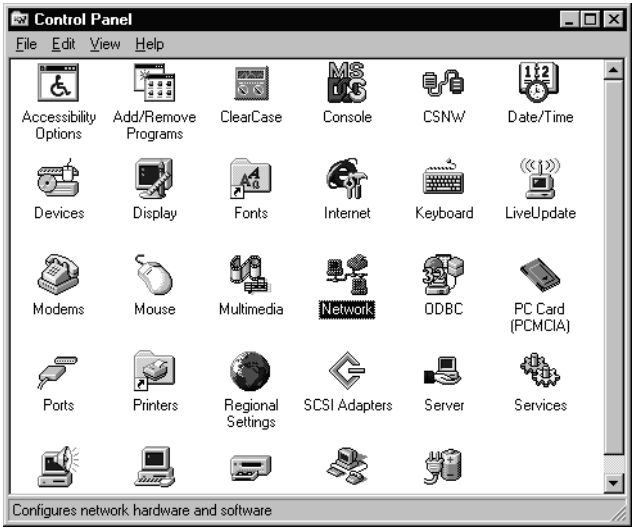
This topic explains how to display the IPX properties, then enter the IPX address.

After you enter the IPX address, you must configure the preferred server (if you are using a NetWare 3.x network) or the default tree and context (if you are using a NetWare 4.x network) before attempting to log on to the network.

To enter the IPX address

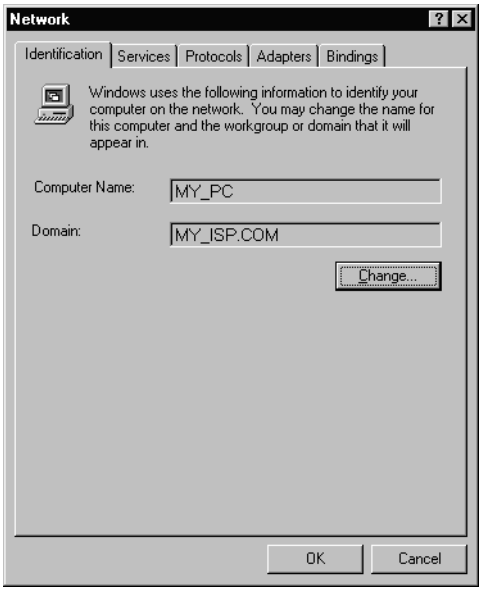
1 From the Windows NT Start menu, select Settings, then Control Panel.

Result: The window similar to the following appears.



2 Double-click the Network icon.

Result: The Network window similar to the following appears.



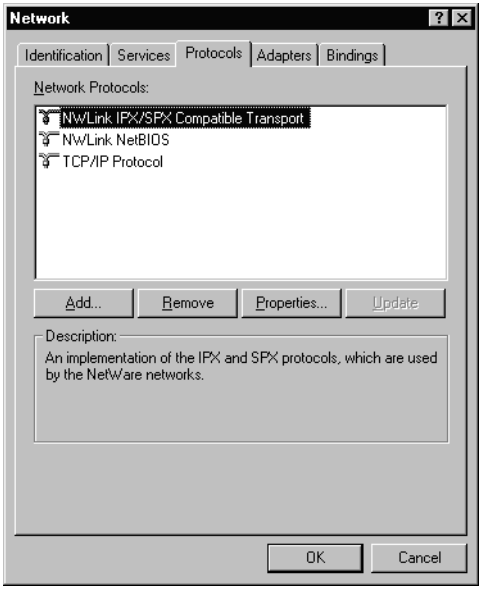
3 Verify that your computer name and domain are correct.

The name identifies your PC to other users on the network.

Note: If the name and domain are not correct, click Change, then make the necessary changes.

4 Click the Protocols tab.

Result: The Protocols tab similar to the following appears.

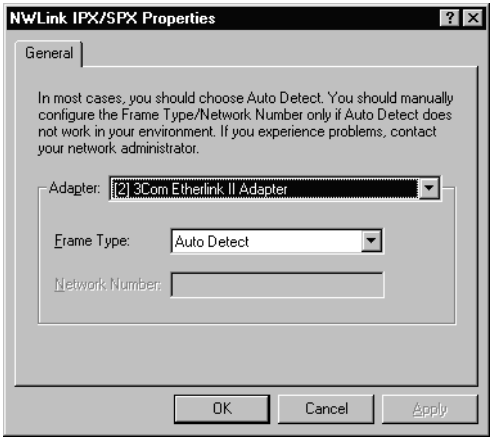


5 Select the IPX/SPX network component.

Note: If more than one IPX/SPX component is present on your PC, select the one that represents your Ethernet adapter.

6 Click Properties.

Result: The IPX/SPX Properties window similar to the following appears.

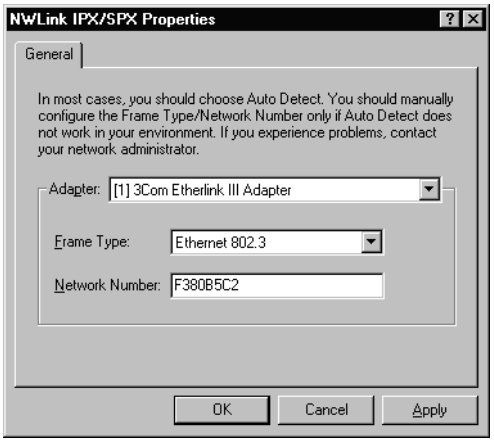


7 Ensure the correct Ethernet adapter is selected in the Adapter list box.

8 Refer to the Windows PC—IPX/SPX Network Configuration Information form, then do the following:

IF you want	THEN
your PC to detect the frame type and network number automatically	In the Frame Type list box, select Auto Detect.
to specify the frame type and network number	do the following: **1** Select the required frame type in the Frame Type list box. **Result:** The Network Number field is activated. **2** Enter the network number provided by your network administrator.

The following is a completed example showing a specified frame type and network number.



9 Click OK.

Result: You are returned to the Network Protocols tab.

Note: If you selected Auto Detect and later experience connection problems, display this screen again and specify the frame type and network number. Get these from your network administrator.

10 Click Close to close the Network window.

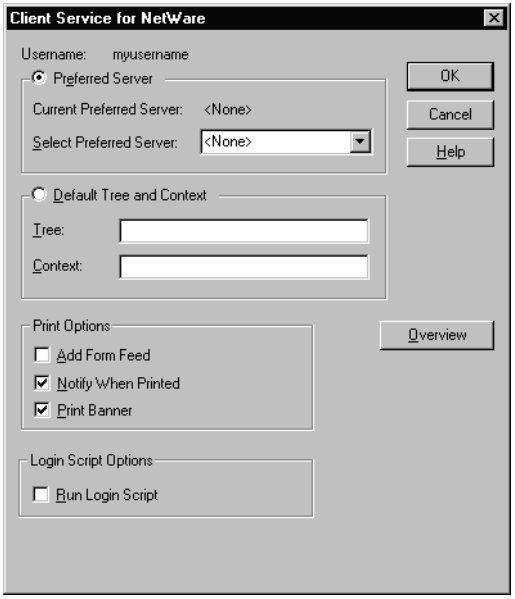
Result: You are returned to the Control Panel and prompted to restart your PC.

11 Do not restart your PC at this time. Proceed with “To configure your logon information” instead.

To configure your logon information

1 In the Control Panel, double-click the CSNW icon.

Result: The Client Service for NetWare screen appears.

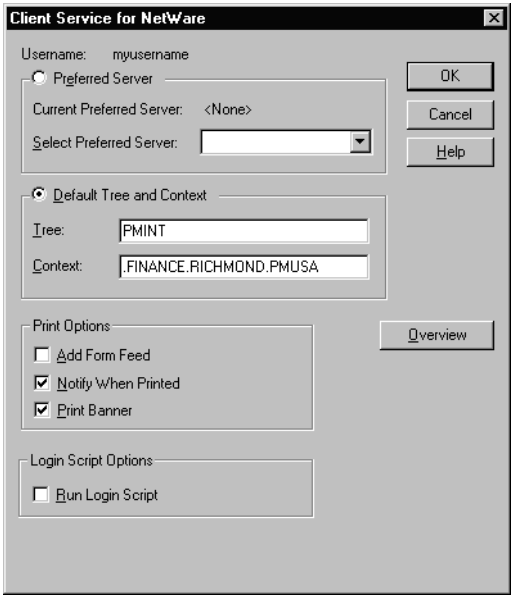


Note: Refer to the Windows PC—TCP/IP Network Configuration Information form for the following information.

2 Do the following:

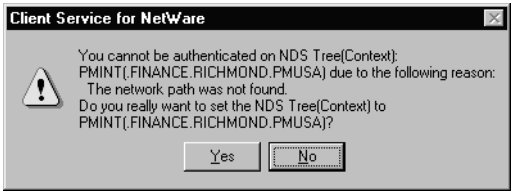
IF the network is using	THEN do the following
NetWare 3.x	**1** Click Preferred Server. **2** Select a server from the Preferred Server list box.
NetWare 4.x	**1** Click Default Tree and Context. **2** Enter the names of the Preferred Tree and Context.

The following is a completed example.



3 Click OK.

Result: Your PC attempts to authenticate itself to the network. If the attempt is not successful, you receive an error message similar to the following:



Click Yes. You are informed that the change will take place next time you log on.

4 Reboot your PC to put the configuration into effect.

What's next?

Now that you have configured your Windows NT PC so that it can connect to the data network through your HomeOffice Router, test the telephone and data network connections to ensure they work. For instructions, see Chapter 7, "Testing the connections."

Chapter 7

Testing the connections

In this chapter

Overview

Introduction

This chapter explains how to verify that your HomeOffice Router, digital telephone, and PC are set up correctly.

Telephone connection

If the telephone connection is correctly configured, you can call other employees from your home office digital telephone in the same manner as when you are in the corporate office.

Data network connection

If the data network connection and network devices are correctly configured, you can access network services such as e-mail, file servers, and the intranet or Internet.

Testing the telephone connection

Introduction

By using the procedures in this topic, you can verify that the telephone connection configuration is correct.

Use the following methods to test the telephone connection:

- Make an outgoing call from the digital telephone while in online mode.
- Make an outgoing call from the digital telephone while in offline mode (if you are authorized to make local calls over this ISDN line).
- Make an outgoing call from the analog telephone connected to the FAX port.

  Note: This step is optional.

To make an outgoing call from the digital telephone in online mode

1 Initiate the outgoing call as follows:

IF you	THEN do the following
use a physical digital telephone to make and receive calls	**1** Ensure the indicator beside the Online/LC key is lit. If the indicator is not lit, press the Online/LC key to go online. **2** Lift the handset and wait for the dial tone. **3** Dial the number of the person you wish to reach.
use your PC to make and receive calls	**1** Ensure the Online/Offline softkey on your PC desktop shows Online. If the softkey does not show Online, click it to go online. **2** Enter the telephone number in the usual manner.

IF you	THEN do the following
use your PC to make and receive calls (continued)	**3** Start the dialing process. Ensure you hear the dial tone before the number is actually dialed.

Result: If the number rings and the person answers, or you reach his or her voice mail, your Meridian HomeOffice II system is working for online calls.

Note: If the ISDN line is not active, it will take about 3 to 5 seconds before a dial tone is heard while the ISDN connection is being negotiated with the Public Switched Telephone Network (PSTN).

2 To ensure that the connections are working, make the types of calls you would normally make while at the office.

To make an outgoing call from the digital telephone in offline mode

Note: Perform this test only if you are authorized to make local calls on your digital telephone. Your network administrator will tell you if you are authorized.

1 Initiate the outgoing call as follows:

IF you	THEN do the following
use a physical digital telephone to make and receive calls	**1** Ensure the indicator beside the Online/LC key is *not* lit. If the indicator is lit, press the Online/LC key to go offline. **2** Lift the handset and wait for the dial tone. **3** Dial the number of the person you wish to reach.
use your PC to make and receive calls	**1** Ensure the Online/Offline softkey on your PC desktop shows Offline. If the softkey does not show Offline, click it to go offline. **2** Enter the telephone number in the usual manner.

IF you	THEN do the following
use your PC to make and receive calls (continued)	**3** Start the dialing process. Ensure you hear the dial tone before the number is actually dialed.

Result: If the call goes through, your Meridian HomeOffice II system is working for local calls in offline mode.

To make an outgoing call on the analog telephone

The analog telephone is the telephone you supplied and connected to the FAX port on the HomeOffice Router.

Make an outgoing call as you normally would from your home telephone. If the call goes through, your Meridian HomeOffice II system is working for the FAX port.

Note: Use the analog telephone to make a call to your digital telephone. To do this while the digital telephone is in online mode, dial the number you give to your outside business contacts.

What to do if an outgoing call was not successful

1 If you did not receive a dial tone while in online mode, or you were not able to dial someone's extension or telephone number, do the following:

IF you	THEN do the following
use a digital telephone to make and receive calls	Press Online/LC on the telephone set and wait until Local Mode appears. **Result:** When Local Mode appears, the indicator beside this key goes out. **Note:** If Offline appears on the telephone display panel instead, you are not set up to make local calls at this time.
use your PC to make and receive calls	Click the Online/Offline softkey on your PC desktop.

2 Call your network administrator for assistance.

IF your telephone displays	THEN call your network administrator using
Offline	your analog telephone.
Local Mode	your analog or digital telephone.

Testing the data network connection

Introduction

By using the procedures in this topic, you can verify that the data network connection configuration is correct.

Use the following methods to test the data network connection:

- Use a ping application to ping another IP address on the LAN.
- Read your e-mail.
- Transfer a file.
- Use your web browser to browse the intranet or Internet.

To use a ping application

1 Open an MS-DOS session and navigate to the Windows directory.

2 At the prompt, type **ping** followed by the IP address of the device for which you want to test the connection. The IP address you select should be located on the corporate data network, not on your local area network.

Example: ping 201.10.231.55

Result: The ping results appear.

Note: The following is an example of a successful ping result.

```
C:\WINDOWS>ping 201.10.231.55

Pinging 201.10.231.55 with 32 bytes of data:

Reply from 201.10.231.55: bytes=32 time<10ms TTL=128
Reply from 201.10.231.55: bytes=32 time<10ms TTL=128
Reply from 201.10.231.55: bytes=32 time<10ms TTL=128
Reply from 201.10.231.55: bytes=32 time<10ms TTL=128

Ping statistics for 201.10.231.55:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum =  0ms, Average =  0ms
```

```
C:\WINDOWS>
```

What to do if the test did not work

If you did not receive a `Connection successful` message or a successful ping response, there may be a problem with the configuration of your HomeOffice Router or the devices on the network. For more details, see the "Troubleshooting system problems" chapter.

Notes:

- The first ping session may time out while the ISDN circuit is being established and authentication is being performed by the remote access server at the corporate office. If the first ping session times out, try a second session or a continuous ping before troubleshooting or contacting your administrator.
- Ping may not work if you are running other TCP/IP applications using the same circuit. If you wish to use PING to test the network connection, wait until the B-channel drops then becomes active again.

What to do if you are unable to connect to a host computer

If you are not able to connect to a host computer such as an e-mail server and you do not have Windows Internet Name Server (WINS) configured on your PC (see page 170 for more details), it may be necessary to create an entry in the hosts.sam file in Windows NT or Windows 95.

Within a text editor such as Notepad, do the following:

1 In c:\<windows directory>, locate and open the hosts.sam file.

2 On a separate line, enter the IP address and computer name of the destination host (e-mail server).

Follow the example that is provided within the file.

3 Save the file as "hosts" (remove the .SAM file name extension) in the same directory.

Result: The new file provides your PC a "host name to IP address association" to locate the e-mail server.

Part 2

Using and maintaining Meridian HomeOffice II

In this part

Chapter 8

Using the digital telephone

In this chapter

Overview

Introduction

The digital telephone set, used primarily to make and receive company-related voice calls, makes you appear as if you are working in the corporate office. All the functionality that is available to you at the office is available to you in your home office. For example, you can use voice mail, call transfer, conference calling, and other features provided by the corporate telephone system.

Relationship between ISDN and the corporate PBX

The digital telephone and the ISDN BRI connections work together to provide you with corporate office functionality in your home office. The digital telephone and ISDN BRI connections are affected by the following:

- connection type (demand or permanent)
- call duration and idle timers
- online and offline modes
- local calling privileges
- online/offline schedules

Feature keys

The digital telephone contains multiple programmable feature keys, which are programmed on the corporate PBX call forwarding, call transfer, conference, ring again, and so on.

To toggle the telephone between online and local (offline) modes, one of the feature keys must be replaced by the Online/LC key.

Note: Unless instructed differently by your network administrator, the Online/LC key replaces feature key 14. However, on Meridian 2616CT cordless telephones, feature key 14 cannot be used to toggle between online and local (offline) modes because key 14 is programmed with a handset locator function. This key cannot be overridden.

Feature keys that are programmed with features provided by the corporate PBX cannot be used while the digital telephone is in local (offline) mode. Others, such as Handsfree, Mute, Rls, and Hold, may be used all the time.

Display and indicator messages

The display module and Online/LC indicator on your digital telephone identify the status of your telephone. The status at a particular time depends on whether the telephone is in online or offline mode, and whether or not a call is in progress.

Using the telephone

Instructions are provided for:

- making outgoing calls in online or offline mode
- what to do when the telephone goes offline
- preventing ISDN charges when alternating between your corporate office and home office telephones
- what to do when there is a hardware failure

Communicator card users

If your PC is equipped with a Symposium Communicator card and you use a CTI application to make and receive calls, you must install the Online/LC program on your PC (even if you are also using a physical digital telephone). This program provides a button that is used to toggle the telephone state as follows:

- Online: to establish a connection to the PBX for corporate calls
- Offline: to
  - — release the HomeOffice II Line Card port so that it becomes available for another agent (if you are working in an ACD environment)
  - — stop connection usage and toll charges

For information about using the Communicator card and CTI application with Meridian HomeOffice II, see “Exceptions for Communicator card and CTI application users” on page 243.

Relationship between ISDN and the corporate PBX

Introduction

This topic explains how the digital telephone and the ISDN BRI connections work together to provide you with corporate office functionality in your home office.

ISDN connection versus PBX connection

Each time you use the telephone to make a call, two types of calls are made. The first type is the ISDN call, which carries the data necessary to establish connection between the telephone and the corporate PBX.

The second type of call is the voice call to the PBX, which carries the information the corporate PBX needs to establish connection with the party you are calling.

Both types of calls are made over the ISDN line. Without the ISDN line, you cannot make or receive voice calls through the corporate PBX.

ISDN directory number versus PBX directory number

The two numbers associated with your digital telephone are the ISDN directory number and your corporate directory number.

You give the ISDN directory number to people who wish to call you after hours when the digital telephone is in local (offline) mode. When the digital telephone is in online mode, calls to this number will receive a busy tone or be routed to the FAX port. Calls will not be forwarded to your corporate voice mail.

Note: If you have connected an analog telephone to the FAX port of your HomeOffice Router, give the ISDN directory number assigned to the FAX port instead.

The corporate directory number is your extension number. It is

- used by people from inside your organization to contact you
- the number to which calls are routed or transferred as if you are in the office

Note: If your organization also uses Direct Inward Dial (that is, people from outside your organization can dial you directly), give this number to your outside business contacts.

Permanent versus demand connection

A permanent connection means that the ISDN connection remains open all the time, and should only be used if a flat rate is being charged for ISDN service. A demand connection means that the connection is opened only when you need it.

Your network administrator will tell you which connection type to use and the configuration required for it.

Minimum call duration timer

Most ISDN tariffs specify a minimum length of time for which you are charged when you open the line, regardless of the call duration. This is the same as the minimum call charges that you may find on your long-distance telephone bill.

The call duration timer specifies the minimum length of time that each ISDN call remains open, regardless of telephone activity (or lack thereof). The timer is configured to drop the connection just before an additional charge period is incurred. For example, if your ISDN service provider charges a minimum of 90 seconds and your call lasts only 20 seconds, a charge of 90 seconds is incurred.

If you make one or two more calls during the 90-second time frame, a charge is incurred only for one ISDN call, because the original ISDN call had not yet been closed.

Note: The ISDN line is opened by the HomeOffice Router when you

- press a key on the digital telephone
- take the handset off-hook

- receive an incoming call
- receive an indicator update for the Message Waiting indicator

Idle timer

The idle timer identifies the maximum length of time during which an ISDN connection should remain idle before it can be closed. The idle timer is configured to drop the connection just before an additional charge period is incurred.

Idle means that a voice connection does not exist, and buttons are not being pressed on the digital telephone.

For example, if you set the idle timer to 60 seconds, the ISDN call remains open for 60 seconds after you hang up. Note that if you dial another number before 60 seconds has passed, you do not have to open another ISDN call.

How the connection type and timers affect the digital telephone

If the connection type is permanent, the digital telephone always displays the date and time, indicating that the ISDN service is active. As long as the ISDN service is active, the time and date are always updated by the corporate PBX.

If the connection type is demand, then the time and date are updated only when the ISDN line is active. The time and date on the digital telephone may drift over long periods of time (that is, become out of sync with the corporate PBX time and date) when the ISDN service is not active.

How long the ISDN line stays active depends on the following:

- call activities on the telephone (such as pressing the Online/LC key, or initiating or receiving a call)
- call duration and idle timer settings

Online and local (offline) modes

The telephone operates in either online or offline mode.

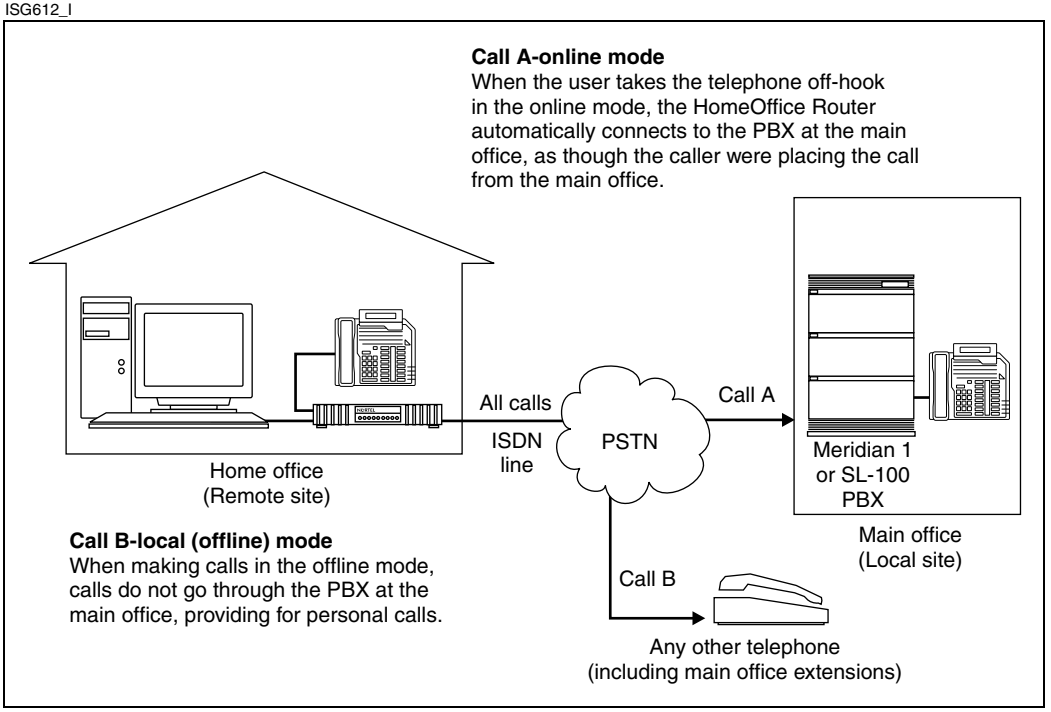
When in online mode, calls are directed through the corporate telephone switch. (See Call A in the following illustration.) Any long-distance charges associated with calls placed through the PBX are charged to your organization.

Note: If you are long distance from the corporate office, long-distance charges will also be incurred from your home office to the corporate PBX and billed accordingly to the ISDN BRI service at the corporate office.

When in offline mode, calls are directed through the Public Switched Telephone Network (PSTN). When you make telephone calls in offline mode, those calls are considered to be local calls since they are processed directly through your local telephone service provider. (See Call B in the following illustration.) Note that

- any long-distance charges associated with those calls are charged to you, not to your organization
- long-distance charges are also applied to the ISDN BRI service in your home

ISG612_I



Local call privileges

Since the ISDN line is still being used in offline mode, you need authorization from your network administrator to use the digital telephone to make local calls. This is because your organization is (most likely) being expensed or charged for your ISDN line usage, either on a flat-rate or per-call basis.

Local calling permissions are configured in Local Manager. For more information, refer to the *Meridian HomeOffice II Network Administration Guide* (NTP 555-8321-310).

Local (offline) mode, data calls, and B-channel usage

When the digital telephone is in online mode (that is, calls are processed through the corporate PBX rather than the Public Switched Telephone Network), only one B-channel is available for data activity such as file transfers. The other B-channel is dedicated to making and receiving calls to and from the corporate PBX (including display and indicator updates). If you want to be able to use both B-channels for data activity, put the telephone into local (offline) mode.

Notes:

1. You must have also selected the ability to use two B-channels in the Install Wizard. If you did not do this, contact your network administrator for assistance.
2. If you go online while two B-channels are being used for a data call, one B-channel drops the data call in order to connect to the corporate PBX. Data transmission continues however, but on one B-channel only.

Online/offline schedules

Your organization is concerned about telephone costs, and as such, wants to ensure that your digital telephone is being used for business only. To control costs, your network administrator may dictate the time periods during which the digital telephone is brought online and offline automatically. These time periods are initiated by the corporate PBX.

For example, if the normal business day is from 9:00 a.m. to 5:00 p.m. from Monday to Friday, your time schedule will instruct the corporate PBX to put your digital telephone into online mode during those times. For all other time periods, your telephone will be offline (in Local Mode), therefore disconnected from the corporate PBX. If you press the Online/LC key on the digital telephone, full functionality is allowed even if the time period is outside the automatic offline time periods defined on the corporate PBX.

If your network administrator has not defined an online/offline schedule for you on the corporate PBX, your digital telephone remains in the mode last selected by the Online/LC key on the digital telephone.

If the corporate PBX instructs your digital telephone to go into offline mode while a call is in progress, the Online/LC key indicator flashes and the telephone buzzes at 30-, 20-, and 10-second intervals for 2 seconds each. You have the option of overriding and staying online.

Note: If the online/offline schedule defined for you is not adequate (that is, you need to be online longer than for the defined periods), contact your network administrator and request that changes be made.

Feature and Online/LC keys

Introduction

The digital telephone contains multiple programmable feature keys, which are programmed on the corporate PBX. Features that you can program may include call forwarding, call transfer, conference, and ring again.

For Meridian HomeOffice II, one of these keys is replaced by the Online/LC key which allows you to:

- go online

  This establishes a connection with the corporate PBX so you can make business calls.
- go offline

  This terminates the connection with the corporate PBX so that business calls are not received in your home office.

When you installed and configured HomeOffice II (see Chapter 4, “Installing the hardware and software”), you selected and programmed a feature key to use as Online/LC (and labeled it accordingly by installing the custom key cap provided in your installation package).

Note: If your PC is equipped with a Symposium Communicator card and you use a CTI application to make and receive calls, use the Online/Offline softkey installed on your PC’s desktop instead. For more details, see “Exceptions for Communicator card and CTI application users” on page 243.

Where the Online/LC key can be installed

The Online/LC key can be installed in place of any feature key (that is not labelled as Handsfree, Mute, or your primary directory number). The default position is feature key 14 as follows:

- M2216 and M2616 telephones: second button from the top in the left column
- M3820 telephone: top button in the left column

On the M2616CT cordless telephone, the Online/LC key may be installed only in place of keys 1, 2, 8, 9, or 10 if you wish to be able to toggle between online and local (offline) modes on both the base unit and handset.

Feature keys that cannot be replaced by the Online/LC key

The Online/LC key *cannot* replace the following feature keys:

- keys labelled as Handsfree, Program, or your primary directory number
- key 14 on the Meridian 2616CT cordless telephone

  Feature key 14 on Meridian 2616CT cordless telephones is programmed with a handset locator function and cannot be overridden.

What happens when a feature key is replaced by the Online/LC key

When the feature key is replaced by the Online/LC key, Meridian HomeOffice II overrides the feature originally programmed on the PBX for that key.

When programmable feature keys can be used

When in online mode, all feature keys that have been programmed can be used. However, when in local (offline) mode, those same keys will not work since the features are supplied by the corporate PBX. This is because the connection to the PBX does not exist when the telephone is in local (offline) mode.

When other keys (such as Handsfree and Mute) can be used

The following keys can be used in both online and local (offline) modes:

- Handsfree (including hands-free dialing)
- Mute
- Rls
- Hold
- primary DN key
- Online/LC

Display messages and indicators

Introduction

The display module and Online/LC indicator on your digital telephone identify the status of your telephone. The status at a particular time depends on whether the telephone is in online or offline mode, and whether a call is in progress.

Note: If your PC is equipped with a Symposium Communicator card and you use a CTI application to make and receive calls, see also "Exceptions for Communicator card and CTI application users" on page 243.

Message and indicator descriptions

Note: If you are located outside of North America, and your ISDN line is disconnected or not active or working, the telephone display will be blank.

When the display shows	and the Online/LC key is	It means that the telephone
Hardware Failure	off	is offline. Internal communication inside the HomeOffice Router has failed. See page 241. The message is removed once successful communication is maintained for approximately 20 seconds or when you press a key on the telephone.
Phone Type Not Supported	off	cannot be used to make or receive calls. The telephone you connected to the MERIDIAN port on the HomeOffice Router is not one of the supported Meridian digital telephone sets. Contact your network administrator.

When the display shows	and the Online/LC key is	It means that the telephone
Dialing Host Site	flashing slowly	is offline (until connection is made). The HomeOffice Router is attempting to connect to the corporate PBX.
Hit RLS to Cancel Auto Redial	flashing slowly	is offline. The HomeOffice Router was not able to connect to the corporate PBX and is redialing once every second until you press Rls on the digital telephone. When you press Rls, the telephone display shows Jan 1 12:00.
Jan 1 12:00 as the date	off	is out of sync with the corporate PBX. This can appear when: • first installing the Meridian HomeOffice II system, when the configuration of the HomeOffice Router is not yet complete (and connection with the corporate PBX has not yet been established) • the telephone has been powered off, then back on Press Online/LC to initiate connection to the corporate PBX. On successful connection, the telephone is updated, and put into online or local (offline) mode.

When the display shows	and the Online/LC key is	It means that the telephone
the date and time (This is supplied by the corporate PBX.)	flashing slowly The Message Waiting indicator shows the current state. All other indicators are off.	is online. The ISDN line is not active. ISDN usage charges *are not* incurred. The ISDN connection is reestablished from activity on the digital telephone, or call activity received from the corporate PBX. **Note:** The time and date may not be accurate, since it is updated only when the ISDN line is active.
the date and time (This is supplied by the corporate PBX.)	on and solid	is online. The ISDN connection to the corporate PBX is active, but the telephone set is idle.
Offline	off	is offline. Local calls are not allowed.
Local Mode	off	is offline. Local calls are allowed. A call may or may not be in progress. For incoming calls, the caller ID or “Unknown number” appears on the second line. For outgoing calls, the called number appears on the second line.

When the display shows	and the Online/LC key is	It means that the telephone
System Upload in Progress	off or on and solid	has frozen and cannot be used to make or receive calls. A motherboard or daughterboard upgrade is being performed by you or by your network administrator from the corporate site. When the upgrade is completed, the HomeOffice Router reboots, and the telephone is updated accordingly. **Note:** If a call is in progress when an upgrade is started, it is disconnected.
information that is supplied by the corporate PBX (such as an incoming call ID)	on and solid	is online. The ISDN connection to the corporate PBX is active and an incoming call is in progress.
the number you dialed	on and solid	is online. The ISDN connection to the corporate PBX is active and an outgoing call is in progress.

When the display and indicators are updated

If the time and date are displayed, indicators are always updated when the ISDN service is active.

The ISDN service is activated and the display and indicators are updated automatically by the corporate PBX each time

- an incoming call is received
- an outgoing call is made
- a message waiting indicator (MWI) update is received

Note: If the HomeOffice Router is configured with a permanent ISDN connection (instead of an on-demand connection), the ISDN service is active and the digital telephone is always updated.

The following indicators are not affected by either mode (online or offline):

- line indicator (The indicator is lit when the handset is off-hook.)
- Handsfree
- Mute

Display messages that occur as a result of administrator activity

Some telephone conditions, such as Make Set Busy, can be initiated by the PBX administrator, as well as by pressing the Make Set Busy key on the telephone. The telephone display messages associated with these administrator activities will not show on your digital telephone unless a call is active. This is because the telephone display is updated by the PBX only when one of the following occurs:

- an incoming call is received
- the PBX performs a Message Waiting Indicator (MWI) update
- you initiate an outgoing call

If you are affected by these types of PBX administrator activities, periodically cause activity on your digital telephone by pressing any key. This initiates a connection to the PBX, at which point the display is updated.

Making outgoing calls

Introduction

Before you can make outgoing calls, determine whether your telephone is in online or offline mode.

Note: If your PC is equipped with a Symposium Communicator card and you use a CTI application to make and receive calls, see “Exceptions for Communicator card and CTI application users” on page 243.

Determining the telephone mode

IF the display shows	and the Online/LC key indicator is	THEN
the time and date	on and solid	the ISDN line is active and the telephone is in online mode. Follow the procedure for online mode.
the time and date	flashing slowly	the ISDN line is not active, but the telephone is in online mode. Follow the procedure for online mode.
either Local Mode or Offline	off	the telephone is in offline mode. Follow the procedure for offline mode.
nothing and you are outside of North America	off	your ISDN line is disconnected or is not working. To determine why the ISDN line is not working, see the “Troubleshooting system problems” chapter.

Double-dialed digits

If you start an outgoing call when the ISDN B-channel is not up (that is, the B1 or B2 LEDs are not lit on the HomeOffice Router), dialed digits may be sent twice to the PBX.

To prevent double dialing, use one of the following dialing methods:

- Take the handset off-hook, wait for the dial tone, then dial the number.
- Press Handsfree, wait for the dial tone, then dial the number.
- Leave the handset on-hook, dial the number, then press a line key.

To make an outgoing call in online mode

Note: If you are located long distance from the corporate PBX, response times between telephone actions may be affected.

1 Lift the handset.

2 Wait for the dial tone.

Note: If the ISDN service was not active, it may take up to 30 seconds for a dial tone while the ISDN connection is being negotiated with the Public Switched Telephone Network.

3 Dial the extension or the telephone number of the person you wish to reach.

Note: If the person you are trying to contact is outside of your organization, precede the telephone number with the prefix for external dialing. For example, 9.

To make an outgoing call in offline mode

Note: To put the digital telephone into offline mode, press Online/LC.

1 Are you authorized to make local calls?

IF the display shows	THEN you are
Offline	not authorized to make local calls.
Local Mode	authorized to make local calls. Go to step 2.

2 Lift the handset.

3 Wait for the dial tone.

4 Dial the telephone number of the person you wish to reach.

Note: External dialing prefixes (such as 9) may not be required.

What to do when the phone goes offline

Introduction

The telephone online/offline status is changed each time

- your telephone receives an internal instruction to go offline or online from the corporate PBX

  This is determined by the time of day schedules discussed earlier.
- you press the Online/LC key

Going offline or online with the Online/LC key

In offline mode, the display shows Local Mode (if you are authorized to make and receive local calls) or Offline (if you are not authorized to make and receive local calls). Certain feature keys cannot be used.

To change the online/offline status, press the Online/LC key on your telephone.

Note: When going online, the ISDN connection must be negotiated with the PSTN. During this negotiation period (up to 5 seconds), the telephone cannot be used. When negotiation is completed and connection to the corporate PBX has been established, the time and date appear.

Going offline or online from the corporate PBX

When the telephone is instructed by the corporate PBX to go offline, then before going offline, the telephone buzzes at 30-, 20-, and 10-second intervals for 2 seconds each and the Online/LC indicator flashes.

The same thing happens when going online.

If you are still using the telephone after the 30 seconds expire, your call is disconnected and the telephone status changes. (That is, if it was online, it goes offline.)

To prevent your call from being disconnected, press the Online/LC key once. When you complete your call and hang up, the telephone status remains unchanged. (That is, if the telephone was online, it remains online.)

Alternating between your corporate office and home office telephones

Introduction

If you have a digital telephone in the corporate office with the same directory number as your home office digital telephone, then this topic applies to you. If the directory numbers are different, ignore this topic.

Multiple appearance DNs

When the directory numbers for both telephones are the same (known on the corporate PBX as multiple appearance DNs), incoming calls ring on both telephones. This means that the ISDN line on the home office telephone is activated, and charges are incurred even if the incoming call is not answered.

If you will not be available to answer incoming calls on the home office digital telephone, you need to prevent ISDN costs from being incurred. This is accomplished by either putting the home office telephone into local (offline) mode, or powering down the HomeOffice Router. Putting the telephone into "make set busy" mode does not necessarily prevent ISDN charges from being incurred.

Multiple appearance DNs and Call Forward

If your corporate office or home office telephone are put on Call Forward, the following occurs, which may cause you to wonder why you are not receiving calls:

- The other telephone does not display the Call Forward status.

  This is normal because the corporate PBX updates only the display of the telephone from which Call Forward was activated.
- Calls will not be received on either telephone if one of them is on Call Forward.

Make Set Busy

If you are using the make set busy feature, the following are scenarios to consider.

IF	THEN
both telephones are put into make set busy mode	neither set will ring or be activated. No ISDN charges will be incurred.
only one set is put into make set busy mode	the set in make set busy mode does not ring, but the LED of the DN key flashes to give silent indication of the incoming call. You can answer this call by pressing the DN key even though the set is in make set busy mode. If this is the home office telephone, the HomeOffice Router has answered the call in order flash the LED, and is therefore incurring ISDN charges. Charges are incurred even if you do not answer the call. The other set rings since it is not in make set busy mode. To prevent ISDN charges from being incurred when you do not wish to answer incoming calls on either telephone, put the home office telephone into local (offline) mode, or power down the HomeOffice Router.
you have also a Companion telephone or DECT handset with the same directory number	there is no way to put the Companion or DECT handset into make set busy mode. In this scenario, putting both telephones into make set busy mode will not prevent the DN LED on the home office telephone from flashing for each incoming call on that DN. ISDN charges are incurred. To prevent ISDN charges from being incurred when you do not wish to answer incoming calls on either telephone, put the home office telephone into local (offline) mode, or power down the HomeOffice Router.

What to do when there is a failure

Introduction

If the HomeOffice Router power-on self-tests fail, call attempts to the corporate PBX fail, or the telephone displays an error message, there may be a hardware problem.

Expected results on self-tests and bootup

When the HomeOffice Router is turned on, it performs a self-test to test RAM, ROM, and all testable peripherals. Two tests are run to verify the following:

- the signaling paths from the HomeOffice Router to the telephone
- the connection from the HomeOffice Router to the corporate PBX

On successful bootup, the ON and ISDN READY LEDs on the front panel of the HomeOffice Router shine steady green, and the telephone displays its status as described in “Display messages and indicators” on page 229.

Failure results

If the self-tests fail (indicating a possible hardware failure), or call attempts to the corporate PBX fail, the telephone appears as described in the following table.

IF the telephone displays	THEN	Recommendation
Call Failed or All PBX trunks busy, please wait	the call could not be completed because of an ISDN line problem or a lack of an available trunk on the corporate PBX.	Try the call again. If repeated attempts still fail, contact your network administrator.

IF the telephone displays	THEN	Recommendation
Hardware Failure	a failure occurred inside the HomeOffice Router.	Contact your network administrator or technical support representative. (Your network administrator or technical support representative will contact the Nortel Networks distributor.)
Hit RLS to Cancel Auto Redial	the HomeOffice Router was not able to connect to the corporate PBX and is redialing once every second until you press Rls on the digital telephone.	**1** Press Rls. The telephone display goes blank. **2** Check the Meridian circuit configuration and ensure that the corporate PBX ISDN number and security level and identifier are correct. **3** Check the ISDN circuit configuration and ensure that your ISDN numbers and SPIDs are correct.

Exceptions for Communicator card and CTI application users

Introduction

This topic describes what happens when Meridian HomeOffice II is used with a Symposium Communicator card and CTI application.

Online/Offline softkey

If your PC is equipped with a Symposium Communicator card and you use a CTI application to make and receive calls, use the Online/Offline softkey program installed on your PC to establish a connection with the corporate PBX.

When you click the Online/Offline softkey on your PC, the softkey click mimics an Online/LC key press normally done on the digital telephone, as follows:

- When you click to go Online, a connection to the PBX for corporate calls is established.
- When you click to go Offline, the following occurs:
  - The HomeOffice II Line Card port is made available for another agent (if you are working in an ACD environment).
  - Usage and toll charges for the connection are stopped.

The softkey indicates whether you are online or offline.

Meridian HomeOffice II telephone set display messages

Messages that normally appear on the digital telephone appear in the CTI application. However, this is not the case for Meridian HomeOffice II. The following messages (described in “Display messages and indicators” on page 229) do not appear in the CTI application.

- Hardware Failure
- Phone Type Not Supported
- Dialing Host Site

- Hit RLS to Cancel Auto Redial
- Offline or Local Mode
- System Upload in Progress

Making an outgoing call

Note: Outgoing calls in local mode are not supported. Go into online mode before performing any CTI functions.

1 Ensure the Online/Offline softkey on your PC desktop shows Online.

If the softkey does not show Online, click it to go online.

2 Enter the telephone number in the usual manner.

3 Start the dialing process.

Ensure you hear the dial tone before the number is actually dialed.

Result: If the number rings and the person answers, or you reach his or her voice mail, your Meridian HomeOffice II system is working for online calls.

Note: If the ISDN line is not active, it will take about 3 to 5 seconds before a dial tone is heard while the ISDN connection is being negotiated with the Public Switched Telephone Network (PSTN).

4 To ensure that the connections are working, make the types of calls you would normally make while at the office.

Resetting the Communicator card

If you disconnect the telephone line or restart the HomeOffice Router while the Communicator card is running, reset the Communicator card by doing the following:

1 Open the Control Panel.

2 Double-click the Communicator card icon.

3 Click Init to restart the card.

Using the Online/Offline softkey *and* a physical telephone

If in addition to using a CTI application, you occasionally use a digital telephone to make and receive calls, and the digital telephone is connected to your HomeOffice Router, the telephone display and Online/LC key indicator are updated when you click the Online/Offline softkey on your PC desktop. (For a description of the telephone state, see “Display messages and indicators” on page 229.)

Chapter 9

Local Manager overview

Overview

Introduction

This chapter provides a brief introduction to Local Manager, the software used to configure and monitor your HomeOffice Router.

ATTENTION

If your network administrator has restricted access to Local Manager, you may be prompted for a password. If you do not know the password, you cannot establish a connection between Local Manager and your HomeOffice Router.

Why you may need to use Local Manager

When you used the Install Wizard to perform initial configuration of the HomeOffice Router, all the minimum required information was entered. You should be able to operate the HomeOffice Router with that minimum information.

However, some features offered by the HomeOffice Router may require more information to complete the configuration, or require more customizing or fine-tuning in order to enhance operation of the HomeOffice Router. Your network administrator will tell you if this needs to be done. Instructions for modifying the configuration are located in the *Meridian HomeOffice II Network Administration Guide* (NTP 555-8321-310) on your Meridian HomeOffice II CD-ROM.

You can also use Local Manager to display statistics (calls in and out, and bytes in and out), compression performance, bandwidth usage, ISDN traffic, and so on.

Starting Local Manager

Introduction

When you start Local Manager, you are prompted to select the HomeOffice Router to which you want to connect.

ATTENTION

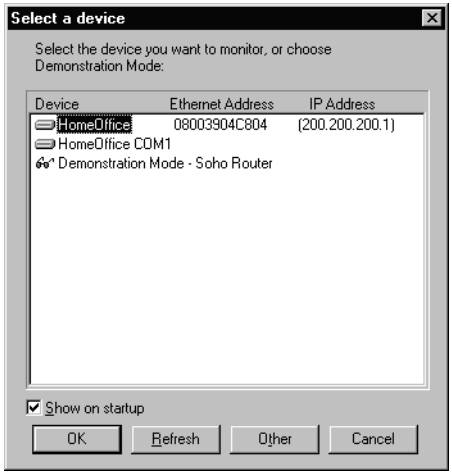
If your network administrator has restricted access to Local Manager, you may be prompted for a password. If you do not know the password, you cannot establish a connection between Local Manager and your HomeOffice Router.

To start Local Manager

1 Do the following:

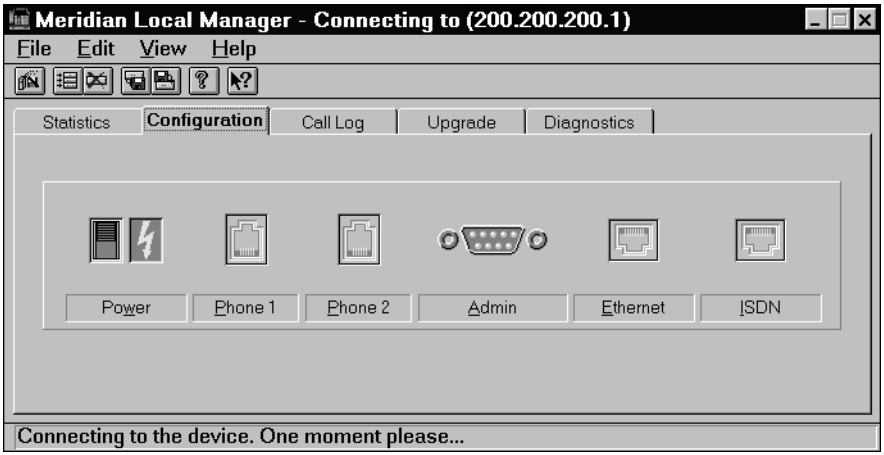
IF you are using	THEN
Windows 3.x	double-click the Local Manager icon in the Local Manager Program Group.
Windows 95 or Windows NT	click Start > Programs > HomeOffice > Local Manager.

Result: You are prompted to select your HomeOffice Router from the Select a device screen.



2 Select the HomeOffice Router with the IP address and click OK.

Result: A screen similar to the following appears, indicating that a connection to the HomeOffice Router is being attempted.



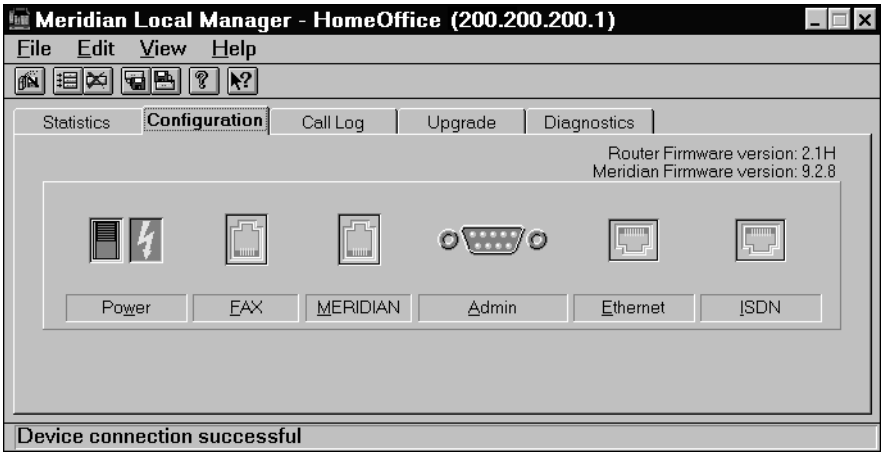
Note: If your network administrator has restricted access to Local Manager, you will be prompted for a password. If this happens, do the following:

a. Click Cancel.

b. Click No at the prompt that follows.

c. Close Local Manager.

When the connection is successfully established, the screen similar to the following appears.



Note: If you are not able to successfully establish a connection with the HomeOffice Router, contact your technical support representative.

Using Local Manager

For a brief description of Local Manager screens and how to use them, refer to the following Online Help books:

- Local Manager - Monitor Online Help
- Local Manager - Configurator Online Help

For instructions, see “Accessing online help” on page 252.

CAUTION

Risk of Pressing keys at inappropriate times produces unexpected results

Periodically, Local Manager displays a message indicating that the unit is reconfiguring. If you press Esc when this message appears, the message disappears, but the reconfiguration continues to completion.

Accessing online help

Introduction

Help is always available while running Local Manager. To obtain a detailed description of what to type or select in each field, see the Local Manager help topics and the associated glossary.

Help is available through the following methods:

Method 1

Click Help (if available) on any Local Manager screen. This is the fastest way to get the information you need.

Method 2:

1 Click  .

2 Drag the ? that appears to the area of the screen where you need help and click again.

Result: Context-sensitive help for that item appears.

Method 3:

1 In Local Manager, select Index from the Help menu.

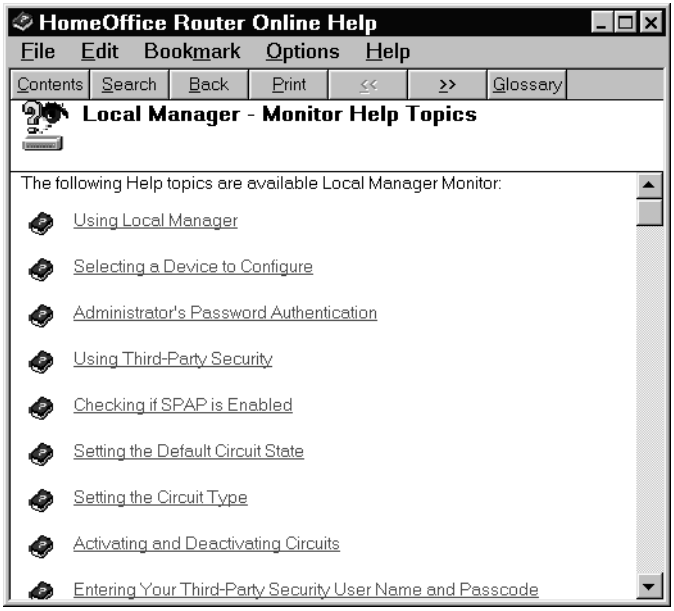
Result: The HomeOffice Router Online Help window appears.

Note: This window also provides you with access to Install Wizard help topics.

2 Click one of the following online help topics:

- Local Manager - Monitor Online Help to see topics related to monitoring the status of the HomeOffice Router
- Local Manager - Configurator Online Help to see topics related to configuring the HomeOffice Router

Result: The list of help topics appears. (The following example is the list of topics for Monitor Online Help.)



3 Choose the topic of interest.

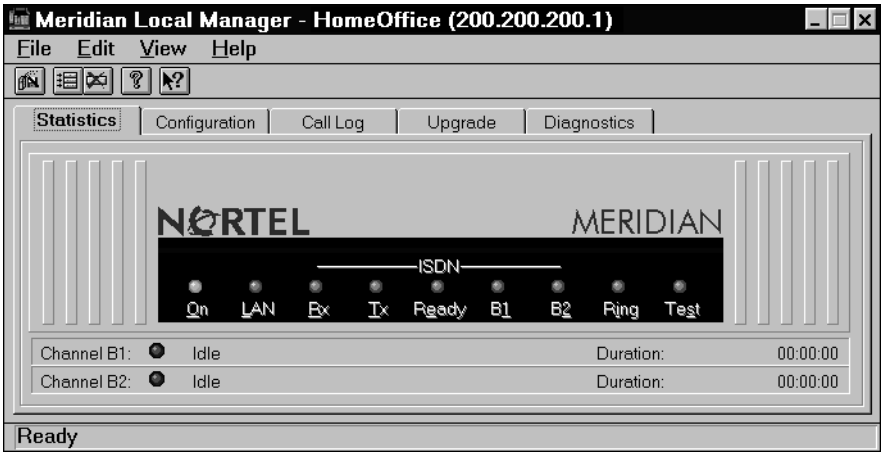
Displaying Router activity

Introduction

This topic describes the Statistics and Call Log tabs on the main Local Manager screen. These tabs are used to view activity occurring on the HomeOffice Router.

Statistics tab

The Statistics tab (shown below) allows you to monitor the activity of your Router.



LEDs

When you hover the mouse pointer over an LED for approximately half a second, a yellow tool-tip message appears telling you what the LED signifies.

When you click an LED, a dialog box appears, displaying more comprehensive information. This includes incoming and outgoing call information for each channel (including call identification) and call duration information.

You can define how often you want the information to be updated by setting the update interval. To do this, select Preferences from the Edit menu and enter a value.

Call details

The Call status bar (shown below the LEDs on the Statistics tab) displays call information for the B1 and B2 channels.

When you place the mouse pointer over a Call Arrow for approximately half a second, a yellow tool-tip message appears showing call status details for that B-channel.

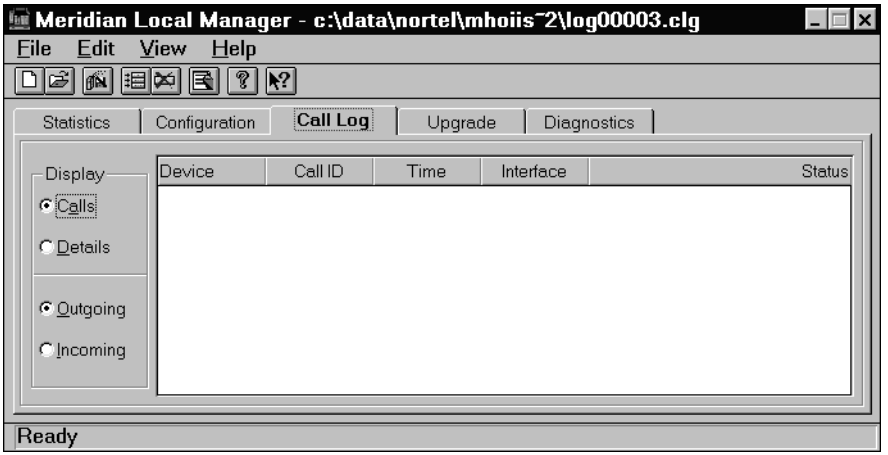
The yellow tool-tip message is either:

- Current call is out: Indicates that a call is being sent out through the device.
- Current call is in: Indicates that a call is coming in to the device.

The rest of the status bar shows information for each channel, including call identification, incoming and outgoing indication, and total call duration.

Call Log tab

The Call Log tab (shown below) provides continuous monitoring of ISDN status information for incoming and outgoing calls made and received by your Router.



This information is collected by Local Manager. The data is saved on your Router when you close Local Manager. By default, it is saved to the file name that appears at the top of the page.

Outgoing and Incoming Calls

By default, Call Log displays details of outgoing calls.

The Time column contains a pair of entries for each call. The first time indicates the time at which the call was started and the second time indicates the time at which the call was completed.

Call Details

The Call Details window gives more detailed information on the volume of traffic being produced by each ISDN call.

Note: The statistics displayed do not include calls made or received using the ISDN test option.

Toolbar icons

The following table indicates several icons in the Local Manager toolbar and describes their purpose:

Icon	Function
New Icon	Saves the Call Log data to a new file
Open Icon	Opens an existing Call Log data file
Install Wizard Icon	Launches Install Wizard
Find Icon in Local Manager	Searches for a Call Log data file

Chapter 10

Performing upgrades

In this chapter

Overview

Introduction

Nortel Networks is continually improving Meridian HomeOffice II and posts product updates on the Nortel Networks web page. Ensure that the current firmware and software are installed so you can use new features that have been added.

ATTENTION

If your network administrator has restricted access to Local Manager, you may be prompted for a password. If you do not know the password, you cannot establish a connection between Local Manager and your HomeOffice Router and cannot perform the upgrade procedures discussed in this chapter. Contact your network administrator for assistance.

Obtaining upgrade files

If you need to upgrade the firmware or software, the latest upgrade files may be downloaded from the Nortel Networks web site at:
http://www.nortelnetworks.com/homeoffice

When you reach this web site, click Software and Documentation Distribution Center. From the page displayed, select the files you wish to download.

Types of upgrades

There are three types of upgrades that can be performed for your HomeOffice Router:

- Install Wizard and Local Manager software upgrade on your PC
- Meridian firmware upgrade

  Meridian firmware files are identified by the .RDB file name extension.

- HomeOffice Router firmware upgrade

  HomeOffice Router firmware files are identified by the .UPH file name extension.

The Meridian and HomeOffice Router firmware contain the code necessary for operating the HomeOffice Router. The Local Manager software is used to manage or reconfigure your HomeOffice Router.

Perform the upgrades as instructed by your network administrator.

Downloading upgrade files from the Internet

Introduction

If you must upgrade the firmware or software, you can download the latest upgrade files from the Nortel Networks web site. You should download upgrade files into a temporary directory. Once you complete the upgrades, you can delete the download files.

Note: To determine if you need to perform an upgrade, refer to the *Meridian HomeOffice II Release Notes* (NTP 555-8321-102) for the latest information.

Management software

The management software download file is a self-extracting EXE program containing the Install Wizard and Local Manager. After you download the file, you must extract the files contained within it. For instructions, see “Extracting files from the downloaded upgrade files” on page 265.

Firmware

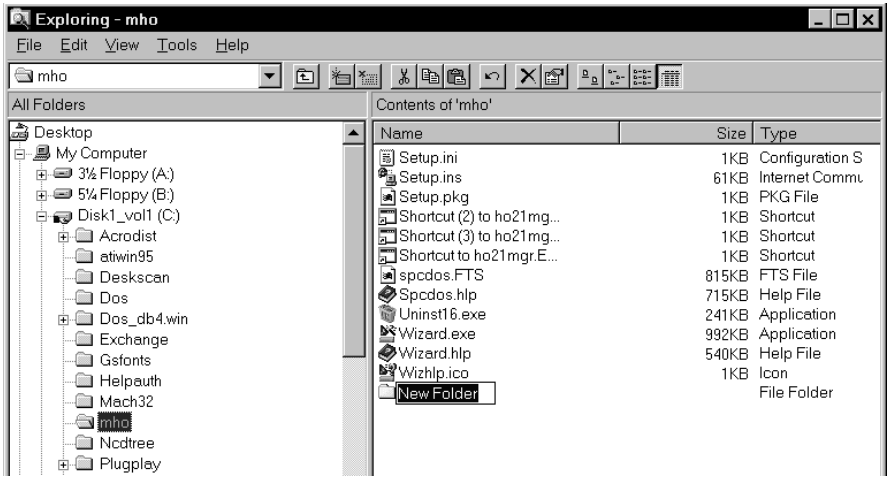
The firmware download file is also a self-extracting EXE program containing firmware for HomeOffice Router hardware. After you download the file, you must extract the files contained within it. For instructions, see “Extracting files from the downloaded upgrade files” on page 265.

To create a temporary folder

1. Open the Program Manager or Windows Explorer.
2. Locate and select the mho directory.

3 Click File > New > Folder.

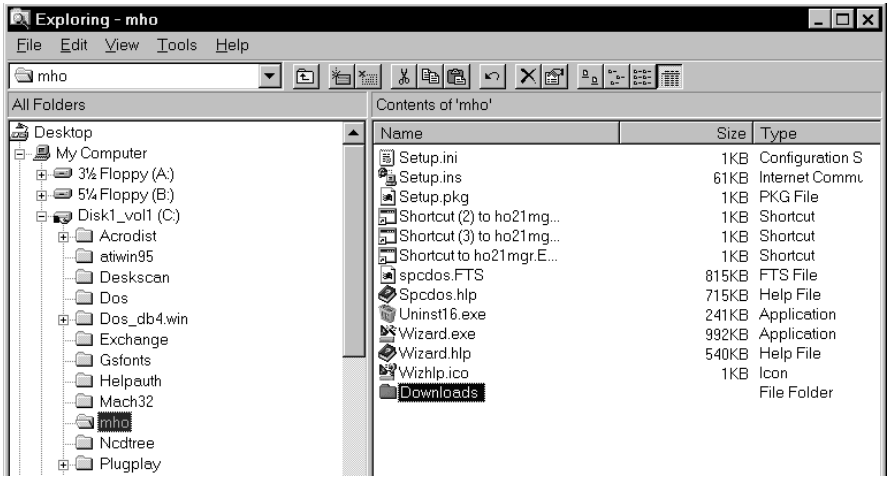
Result: A NewFolder icon appears in the directory contents column. The New Folder name is selected.



4 Type a name for the new folder and press Enter.

Note: It is recommended that you name the folder “Downloads.”

Result: The folder is renamed.



To download the upgrade files

1. With your web browser, connect to the Nortel Networks web site at http://www.nortelnetworks.com/homeoffice.
2. Click Software and Documentation Distribution Center.
3. Locate the software and firmware that you need.
4. Download the file or files into your Downloads folder.
5. Extract the files as described in “Extracting files from the downloaded upgrade files” on page 265.

Extracting files from the downloaded upgrade files

Introduction

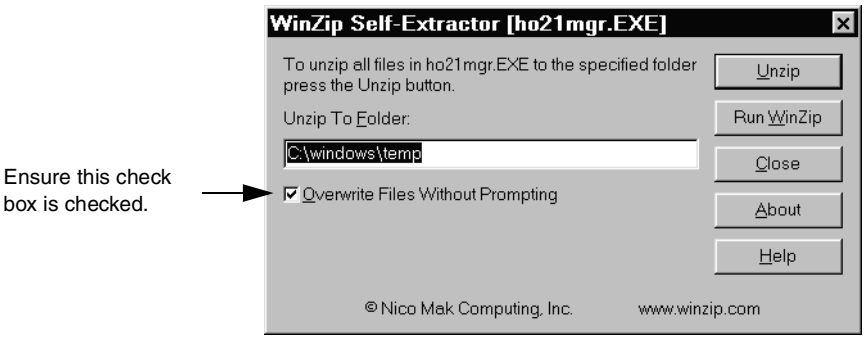
Once you have downloaded the management software and firmware files to your PC, you must extract the files contained within them before you can perform the upgrades.

To perform the extraction using Windows

1 Use Windows Explorer or the Program Manager to navigate to the directory that contains the downloaded upgrade file.

2 Locate and double-click the file that you downloaded.

Result: The WinZip Self-Extractor screen opens.



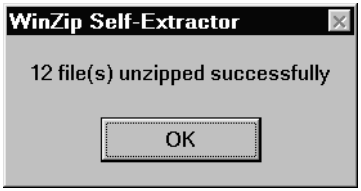
3 Review the information presented and make changes as necessary. (Ensure the Overwrite Files Without Prompting check box is checked.)

Notes:

- It is recommended that you extract the files into the mho directory.
- If you specify a directory that does not exist, the WinZip Self-Extractor creates it.

4 Click Unzip.

Result: The file extraction begins. A status bar shows the extraction progress. When completed, a message similar to the following appears.



5 Click OK.

Result: The WinZip Self-Extractor screen reappears.

6 Click Close.

To perform the extraction using MS-DOS

1 Open an MS-DOS session as follows:

- In Windows 3.1/3.11, double-click the MS-DOS icon in the Program Manager (usually in the Main Program group).
- In Windows NT or Windows 95, select MS-DOS Prompt from Programs in the Start Menu.

2 Navigate to your download folder.

3 Enter a command that represents the file that you downloaded.

Result: This command extracts the full management or firmware upgrade kit from the .EXE file.

Upgrading the management software

Introduction

Your management software upgrade is initiated by running SETUP.EXE.

When to perform the upgrade

Perform a software upgrade if you have determined that you are using out-of-date software. For instructions on determining if you need to perform an upgrade, see "Verifying the software and firmware release" on page 78.

Before you begin

If you downloaded the management software upgrade from the Nortel Networks web site, then you must extract the upgrade files before you can perform the upgrade. For instructions, see "Extracting files from the downloaded upgrade files" on page 265.

To perform the management software upgrade

1 Using Windows Explorer or the Program Manager, navigate to the directory that contains the upgrade file.

IF you	THEN
downloaded from the World Wide Web	find and open your folder that contains the upgrade files (c:\mho).
are using the CD-ROM	find and open the SOFTWARE directory on the CD-ROM (d:\software).

2 Double-click the SETUP.EXE icon.

Result: The management software installation begins.

3 Follow the prompts on the screen.

4 When the installation is complete, reboot your PC.

Using Local Manager to upgrade the firmware

Introduction

As changes to the HomeOffice Router are made, its firmware may need to be updated. This procedure can be used for the following types of upgrades:

- HomeOffice Router firmware upgrade

  This type of firmware (identified by the .UPH file name extension) contains the code necessary for operating your HomeOffice Router.

- Meridian firmware upgrade

  The Meridian firmware (identified by the .RDB file name extension) provides the communication path between your HomeOffice Router, digital telephone, and the corporate PBX.

When to perform the upgrade

Perform a firmware upgrade if you have determined that you are using out-of-date firmware. For instructions on determining if you need to perform an upgrade, see “Verifying the software and firmware release” on page 78.

Before you begin

If you downloaded the firmware upgrade from the Nortel Networks web site, then you must extract the upgrade files before you can perform the upgrade. For instructions, see “Extracting files from the downloaded upgrade files” on page 265.

Before you start the firmware upgrade, do the following:

- Ensure that your PC and the HomeOffice Router are connected with an Ethernet cable.
- Perform the management software upgrade. For instructions, see “Upgrading the management software” on page 267.
- Shut down any TFTP servers you may have running on your PC.

To perform the firmware upgrade with Local Manager

1 Start Local Manager.

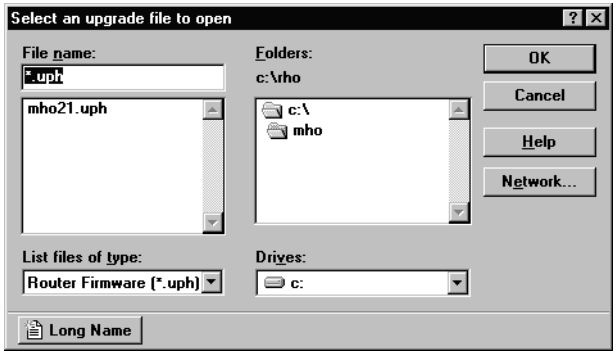
2 Select the HomeOffice Router device to upgrade.

3 Click the Upgrade tab.

Result: The Upgrade tab appears, showing the current firmware version.

4 Click Select file.

Result: The Select an upgrade file to open screen appears.



5 Navigate to the folder containing the upgrade files (for example, c:\mho).

6 Select the file type you need from the List files of type box:

- Router Firmware (*.UPH): these are HomeOffice Router firmware files
- Meridian phone (*.RDB): these are Meridian firmware files

Result: All files matching the type you selected are listed in the File name list.

7 Select the file containing the firmware you want to upgrade and click OK.

Result: The upgrade file will now be automatically transferred to the HomeOffice Router hardware; its progress is shown on screen.

Using the serial port to upgrade firmware

Introduction

This procedure explains how to upgrade the HomeOffice Router firmware using MS-DOS. Use this procedure only if you are unable to upgrade with Local Manager and have been instructed to do so by your network administrator or technical support representative.

Note: You cannot use this procedure to upgrade the Meridian phone firmware (identified by the .RDB file name extension). You can only use the serial port to upgrade the motherboard firmware (identified by the .UPH file name extension).

When to perform the upgrade

Perform a firmware upgrade if you have determined that you are using out-of-date firmware. For instructions on determining if you need to perform an upgrade, see “Verifying the software and firmware release” on page 78.

Before you begin

Before you begin the upgrade with the serial port, ensure that your HomeOffice Router ADMIN port is connected to the PC COM port using the RS-232 cable supplied with the HomeOffice Router.

To perform the upgrade with the serial port

1. Ensure the HomeOffice Router is switched off.
2. Connect the RS-232 cable (supplied with the HomeOffice Router) between the ADMIN port on the HomeOffice Router and a free COM port on your PC.

   Make a note of which COM port you used. It will usually be COM1 or COM2.
3. Navigate to the directory where the upgrade file is located (for example, c:\mho).

4 With the HomeOffice Router still switched off, start the upgrade by typing start 1 or start 2, where the number is the COM port you used for the admin cable.

Result: The upgrade utility checks the validity of the firmware upgrade file. Keep the HomeOffice Router switched off while this happens.

After a few seconds, the screen background changes to bright blue, and the main upgrade screen appears with the following messages:

```
Please make sure the target unit is powered off.
Wait for three seconds then switch it on
Scanning for download target....
```

5 Turn the HomeOffice Router on.

Result: The following message appears:

```
Negotiating link speed
```

Result: After a few seconds, the Link Status line should change to

```
Link established at 115200 baud
```

The upgrade begins and takes a few minutes. Monitor its progress on the screen.

When the upgrade is completed, the HomeOffice Router restarts using the new firmware.

6 Close the MS-DOS window by typing exit (Windows 3.1/3.11) or by clicking Close Application.

Chapter 11

Performing backups and restores

In this chapter

Overview

Introduction

This chapter explains how to create a backup of your HomeOffice Router configuration. If you ever have problems with the configuration, or if you need to use a different configuration, you can restore the backup file.

Configuration backup files are saved on your PC.

ATTENTION

If your network administrator has restricted access to Local Manager, you may be prompted for a password. If you do not know the password, you cannot establish a connection between Local Manager and your HomeOffice Router and cannot perform the backup and restore procedures discussed in this chapter. Contact your network administrator for assistance.

Why backups and restores may be needed

There are two reasons why you need to create and restore a configuration backup file:

- You have a configuration to go back to if changes you make to the configuration cause loss of connectivity to the telephone or data networks.
- You need more than one configuration scenario for connecting to different corporate offices or a different PBX.

Performing a configuration backup

Introduction

Once you have configured the HomeOffice Router completely, save that configuration in case the device is reset inadvertently or deliberately, or if you need to change between several configurations as you use the HomeOffice Router.

The configuration is saved in a file on your PC.

Why create a backup

There are two reasons why you should create a configuration backup file:

- You have a configuration to go back to if changes you make to the configuration cause loss of connectivity to the telephone or data networks.
- You need more than one configuration scenario for connecting to different corporate offices or a different PBX.

Example: If you usually connect to your Chicago office but occasionally need to connect to your London office, you could create a Chicago configuration, save it for future use, and then create and save a London configuration. Switching between configurations is achieved by performing a configuration restore for the connection you need at a particular time.

When to create a backup

Create a backup each time you make changes to the HomeOffice Router configuration. Before creating a backup, verify that your connections to the telephone and data network are working correctly.

Note: A configuration backup can be done only if you are connected to the HomeOffice Router by Ethernet.

To perform a configuration backup

1 In Local Manager, click File, then select Config Backup.

Note: Alternatively, click  .

Result: The Save File dialog box appears.

2 Type a name and location for the file.

Note: Ensure the file name includes the .SAP extension.

3 Click OK.

4 The configuration is saved.

Performing a configuration restore

Introduction

If you have saved a complete device configuration using the Config Backup command in the Local Manager, you can restore that configuration to the HomeOffice Router at any time.

When and why you should restore a configuration file

You may want to restore a configuration file if

- You determine that changes you make to the configuration have caused the telephone or data connection to the corporate network to stop working.
- You want to use an alternate configuration.

CAUTION

Risk of configuration loss

Restoring a configuration to the HomeOffice Router clears existing settings. If you have doubts about whether you want to replace the existing configuration, save the configuration to another file by using Config Backup.

Note: A configuration restore can be done only if you are connected to the HomeOffice Router by Ethernet.

ISDN settings

The following ISDN interface settings are not saved in a configuration backup file. Therefore, each time you restore a configuration file, you may need to manually configure them in Local Manager:

- Switch Type
- Power Detect

See “To restore ISDN settings” on page 278 for more details.

To perform a configuration restore

1 In Local Manager, click File, then select Config Restore.

Note: Alternatively, you can click .

Result: A warning appears to remind you that the device's existing configuration will be lost if you continue.

2 Click Yes to replace the existing configuration.

Result: The Open File screen appears.

3 Locate and select the saved configuration (.SAP) file you want to restore to the HomeOffice Router.

4 Click OK.

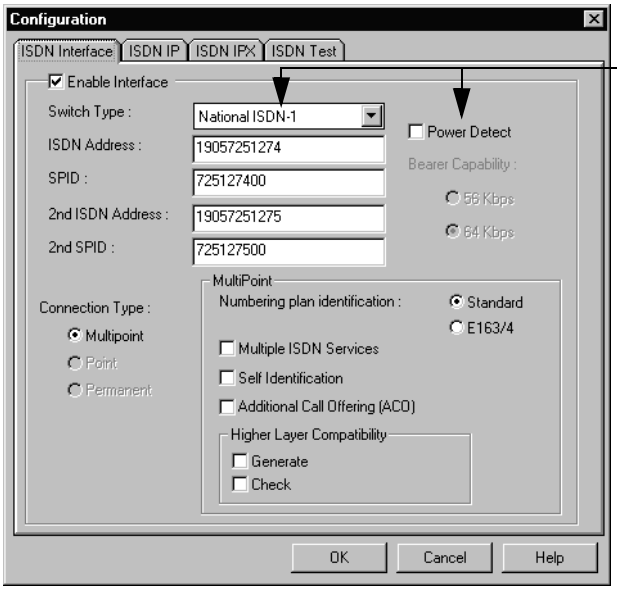
Result: The HomeOffice Router is reconfigured and your connection to it is reestablished.

To restore ISDN settings

1 Click the ISDN icon.

2 Select Properties from the pop-up menu that appears.

Result: The ISDN Interface Configuration screen appears.



Change the Switch Type and Power Detect settings as required.

3 Change the Switch Type and Power Detect settings as required.

4 Click OK.

Result: A message appears indicating that the Router is being reconfigured. When reconfiguration is completed, your connection is reestablished with the Router.

Chapter 12

Troubleshooting system problems

In this chapter

Overview

Introduction

This chapter describes some of the problems that can occur when using Meridian HomeOffice II, and what to do to resolve them.

Component troubleshooting

Problem symptoms and associated troubleshooting are divided into the following types:

- HomeOffice Router LEDs

  The correct status of the ON, ISDN Ready, LAN, and TEST LEDs on the HomeOffice Router is described. Instructions are provided for what to do if they are not displayed correctly.

- digital telephone

  Indicators, display messages, and no dial tone indicate digital telephone problems. Instructions are provided for what to do when certain display messages appear, or when the telephone does not operate as expected.

- analog telephone or other analog devices

  Instructions are provided for what to do if, for example, you do not have dial tone on the analog device, or you are not able to place outgoing calls.

- data connectivity to network

  Instructions are provided for what to do if you are not able to connect to other devices on the network.

ISDN tests

The ISDN loopback test verifies HomeOffice Router connectivity. In this test, the HomeOffice Router places a call to itself through the ISDN line and checks that the call can be completed.

ISDN listening and calling tests verify the ability of two devices to connect over ISDN. The tests verify your ISDN numbers and check whether your HomeOffice Router supports CLI.

Meridian circuit tests

The Meridian phone test ensures that the HomeOffice Router and the digital telephone can communicate with each other.

The Meridian call test ensures that connection to the corporate PBX can be established, verifying that the following are correct:

- directory number used to connect to the PBX
- security identifier used to identify the HomeOffice Router

Diagnostics

The Diagnostics tab in Local Manager allows you to collect, view, and save HomeOffice Router activity as it happens. Use Diagnostics if you have trouble with your ISDN circuit and need information to determine the problem.

If you wish to collect progress information for a Meridian circuit call, perform the PBX Diagnostic Test on the Meridian Circuit Configuration screen. The test verifies that the communication path between the HomeOffice Router and the corporate PBX is working by initiating a call to the corporate PBX. It also displays the progress of the ISDN call on the screen, reporting successful connection or an ISDN problem.

Before you begin

Introduction

If you experience problems in setting up or running your HomeOffice Router, this chapter will help you to isolate and solve the problem.

ATTENTION

If your network administrator does not want you to use Local Manager, you may be prompted for a password. If you do not know the password, you cannot establish a connection between Local Manager and your HomeOffice Router and cannot perform the test and diagnostic procedures discussed in this chapter. Contact your network administrator for assistance.

Identifying why the problem occurred

Before you begin, ask yourself the questions listed in the following table.

Question	IF the answer is	THEN do the following
Is this a new installation?	yes	**1** Perform troubleshooting in the sequence presented in this chapter. **2** Perform the following tests discussed later in this chapter: • ISDN loopback, listening, and calling tests • Meridian phone and call tests
	no	Answer the next question.

Question	IF the answer is	THEN do the following
Has your HomeOffice II system ever worked?	yes	Answer the next question.
	no	**1** Perform troubleshooting in the sequence presented in this chapter. **2** Perform the following tests discussed later in this chapter: • ISDN loopback, listening, and calling tests • Meridian phone and call tests
Did you modify the configuration or change any hardware components?	yes	**1** Verify that changes were done correctly. **2** Check the hardware components to ensure they are in working order. **3** Perform troubleshooting for the specific component.
	no	Contact your network administrator or technical support representative. There may be a problem with the network.

Returning hardware components for repair

If you have been instructed by your network administrator or technical support representative to return your HomeOffice Router or digital telephone because of a hardware problem, then return the unit along with its cables and accessories.

The unit you return will be replaced or repaired and sent back to you.

Section A: Symptoms by component

In this section

HomeOffice Router LEDs

Introduction

On completion of a HomeOffice Router power-up cycle, look at the front panel of the HomeOffice Router. The LEDs should appear as follows:

- ON: green
- LAN: flashing green every few seconds when there is LAN activity
- ISDN Ready: green
- TEST: dark (unlit)

What to do if the LEDs do not display correctly

The following table identifies what to do if the LEDS do not display correctly.

IF the	THEN do the following
The ON LED is not green.	**1** Power the HomeOffice Router off, then back on. **2** There is possible a hardware problem. Contact your network administrator or technical support representative.
The LAN LED is red.	**1** Check the Ethernet cable to ensure it is connected. **2** Check the Ethernet cable for damage. **3** Ensure the correct Ethernet cable is used for connection to PC Ethernet card or Ethernet hub.
The ISDN Ready LED is unlit.	**1** Ensure the ISDN line has been activated by the ISDN service provider. **2** Ask your service provider to check the ISDN line for faults.

IF the	THEN do the following
The TEST LED is flashing or solid red.	**1** Power the HomeOffice Router off, then back on. **2** Check the label on the bottom of the HomeOffice Router. If the label identifies the unit as an S/T unit, ensure the ISDN line is connected. If necessary, check the ISDN number and SPID configuration. **3** There is possible a hardware problem. Contact your network administrator or technical support representative.

Digital telephone

Introduction

This topic identifies some problems that could occur on the digital telephone, and what to do to resolve them.

CAUTION

Risk of of equipment damage

Do not connect the digital telephone to an ordinary wall jack or the FAX port on the HomeOffice Router. The wall jack and FAX port are to be used with analog telephones only, and will damage digital telephones that are connected to them.

The digital telephone must be connected to the MERIDIAN port on the HomeOffice Router only.

Symptom descriptions

If you are having trouble with your digital telephone, perform troubleshooting as described in the following table.

IF this symptom is present	THEN do the following
Hit RLS to Cancel Auto Redial persists on the telephone display.	**1** Press the Rls key to cancel redialing. The HomeOffice Router is attempting to, but is unable to connect to the corporate PBX. **2** Check the Meridian circuit configuration and ensure that the corporate PBX ISDN number and security level and identifier are correct. **3** Check the ISDN circuit configuration and ensure that your ISDN numbers and SPIDs are correct. **4** Power the HomeOffice Router off, then power it back on.

IF this symptom is present	THEN do the following
Hardware Failure on the telephone display persists without clearing itself.	Power the HomeOffice Router off, then power it back on. If the Hardware Failure message still appears, there is a possible hardware problem. Contact your network administrator or technical support representative.
Phone Type Not Supported appears on the display.	The digital telephone you have connected to the MERIDIAN port is not supported. Contact your network administrator. **Note:** Meridian 2616CT cordless telephones that report themselves to the corporate PBX as MCU are not supported. If Phone Type Not Supported appears when using a Meridian 2616CT cordless telephone, contact your network administrator and request a new telephone.
Port Already in Use appears on the display when attempting to connect to the corporate PBX	Contact your network administrator. This message appears when ACD agents attempt to use the telephone port on the HomeOffice II Line Card when it is already being used by another ACD agent. Even though multiple agents may *share* a port, only one agent can *use* it at any given time.
Lamps or indicators are not lit after completion of the HomeOffice Router power-up cycle.	**1** Check all cable connections. **2** Use a regular telephone cable to test the telephone connection. **3** If the digital telephone is not a display phone and lamps are not lit, ensure that it is connected to the MERIDIAN port (not the FAX port).
Lamps or indicators are black and flickering after completion of the HomeOffice Router power-up cycle (display phone only).	It is possible the digital telephone is connected to the FAX port on the HomeOffice Router. Ensure it is connected to the MERIDIAN port instead.

IF this symptom is present	THEN do the following
Lamps or indicators do not reflect the true status of the telephone.	It is possible there is a synchronization error between your digital telephone and the corporate PBX. Contact your network administrator.
The display is blank (that is, the time and date are not displayed).	Press the Online/LC key on the telephone. The HomeOffice Router attempts to connect to the corporate PBX. When the connection is established, the time and date appear. If the connection attempt fails, perform troubleshooting for "The B1 or B2 LED on the HomeOffice Router does not light" on the next page.
There is no dial tone when picking up the handset, or when pressing the Handsfree or feature key.	**1** Check the cabling and ensure it is correct and working. **2** Check the B-channel LED on the HomeOffice Router; it should be flashing. If it is not flashing, perform troubleshooting for "The B1 or B2 B-channel LED does not light" on the next page. **3** Check the telephone display. Is it auto redialing? If yes, connection to the PBX is being attempted. On successful connection, you should hear dial tone. If the auto redial message persists, perform troubleshooting for "Hit RLS to Cancel Auto Redial persists" on page 290. **4** Are you using a Meridian 2616CT cordless telephone? • If no, contact your network administrator. • If yes, check the line indicator. Is it solid? If yes, there is a synchronization error between your telephone and the corporate PBX. Contact your network administrator.

IF this symptom is present	THEN do the following
There is dial tone in local mode, but not in online mode. **Note:** You cannot get dial tone when the digital telephone is in offline mode.	Verify that the corporate PBX ISDN number and security level and identifier are configured correctly on the Meridian circuit. **Note:** A dial tone in local mode but not in online mode indicates that the ISDN numbers and SPIDs are correct on the ISDN circuit.
There is echo on the line.	Contact your network administrator and request echo cancellation on the HomeOffice II Line Card port to which you are assigned.
The B1 or B2 LED on the HomeOffice Router does not light when pressing the Online/LC key on the telephone.	**1** Verify that the ISDN Ready LED is lit. **2** Ensure that the corporate PBX ISDN number is configured correctly on the Meridian circuit. **3** Ensure that ISDN numbers and SPIDs are configured correctly on the ISDN circuit. **4** Is the Meridian circuit enabled and configured in Local Manager? **5** Try changing the circuit speed from 56 Kbps to 64 Kbps on the Meridian Circuit Configuration screen in Local Manager. **6** Power the HomeOffice Router off, then power it back on.
The B1 or B2 LED on the HomeOffice Router lights momentarily then goes out when pressing Online/LC on the telephone. The time and date do not display on the telephone.	Ensure that the security level and identifier configuration on the Meridian circuit is correct.

IF this symptom is present	THEN do the following
The B1 or B2 LED on the HomeOffice Router does not flash orange on outgoing calls.	**1** Check cabling between the HomeOffice Router and the digital telephone. Is the digital telephone connected to the MERIDIAN port? Is the cable good? **2** Ensure that ISDN numbers and SPIDs are configured correctly on the ISDN circuit.
Incoming calls are not being received in local (offline) or online modes.	**1** Ensure the ISDN numbers for both the Meridian and FAX circuits are correct. **2** Ensure that the Meridian and FAX circuits are both configured with unique directory numbers (that is, they cannot be the same). **3** Ensure that neither your home office telephone or your corporate office telephone are on Call Forward. **4** If the problem persists, contact your ISDN service provider or your network administrator.
A call in progress while in online mode was suddenly disconnected.	Check the phone display. **a** Does the display show **S**ystem Upload in Progress? If yes, you must wait until the upgrade is completed and the HomeOffice Router has rebooted before you can reestablish the call. **b** Does the display show Local Mode? If yes, then possibly you ignored the Going Offline warning sent by the corporate PBX. **c** Does the display show Link Lost or Unexpected End of Call? If yes, contact your network administrator.
A call in progress while in local (offline) mode was suddenly disconnected.	Check the phone display. Does the display show the time and date? If yes, then possibly you ignored the Going Online warning sent by the corporate PBX.

Analog telephone and other analog devices

Introduction

This topic identifies some problems that could occur on the analog telephone, modem or fax machine, and what to do to resolve them.

Symptom descriptions

If you are having trouble with your analog telephone, modem, or fax machine, perform troubleshooting as described in the following table.

IF this symptom is present	THEN do the following
There is no dial tone when going off-hook.	**1** Check the B-channel LED on the HomeOffice Router. Is it flashing? If no, verify that the ISDN circuit configuration is correct. **2** Is voice or data working? Check the connection type on the ISDN circuit configuration. If the circuit is defined as permanent, you will not get dial tone. **3** Press the telephone set keys. Do you hear key tones? If no, check the cable connection to ensure it is properly connected. **4** If you are using a modem, disconnect it and connect an analog telephone. If dial tone is heard on the analog telephone, check your modem settings. **5** Verify if local calling permission is enabled.
Popping or static is heard when going off-hook.	Ensure the device is connected to the FAX port, not the MERIDIAN port.

IF this symptom is present	THEN do the following
Incoming calls are not being received.	**1** Check that the analog device works by connecting it to another wall jack. **2** Ensure the ISDN number on the FAX circuit is configured correctly. **3** If the problem persists, contact your ISDN service provider.

Data network connectivity

Introduction

This topic identifies some problems that could occur on the data network, and what to do to resolve them.

Symptom descriptions

If you are not able to connect to the network, perform troubleshooting as described in the following table.

IF this symptom is present	THEN do the following
The LAN LED on the HomeOffice Router is red.	Perform troubleshooting described in "HomeOffice Router LEDs" on page 288.
The HomeOffice Router does not appear in the Local Manager device list.	**1** Ensure that the HomeOffice Router is powered on. **2** Is the LAN LED red? If no, perform troubleshooting described in "HomeOffice Router LEDs" on page 288. **3** Ensure that you are using the correct version of Local Manager (that is, HomeOffice Router Local Manager, not Soho Router Local Manager). **4** Ensure your PC is running the TCP/IP protocol. **5** If the HomeOffice Router is connected to your PC through the COM port rather than Ethernet, ensure the COM port is not being used by another application.

IF this symptom is present	THEN do the following
You cannot connect to the HomeOffice Router.	**1** Does the Ethernet address shown in the device list start with “0090CF”? If not, contact your network administrator or technical support representative. **2** Power the HomeOffice Router off. Connect the HomeOffice Router to your PC using the RS-232 administration cable and power up. Contact your network administrator or technical support representative and request verification of your networking configuration. Network administrator or technical support: Verify the configuration of the Ethernet interface.
You cannot connect to the corporate network.	**1** If the connection was working previously, contact your network administrator or technical support representative. If the connection has never worked, check the ISDN circuit configuration and verify that the ISDN number used to dial the network is correct. **2** If not correct, rerun the Install Wizard and reconfigure IP, IPX, or Bridging (as applicable). Then perform the network test (located on the circuit completed screen). This test will produce a detailed explanation of where the test succeeded or failed. If the test failed, display the details and save the information to a file. Then provide the file to your network administrator or technical support representative for analysis. **3** Check that the gateway or IP/IPX addresses in your Windows network configuration are correct. (continued on next page)

IF this symptom is present	THEN do the following
You cannot connect to the corporate network. (continued)	**4** If you are connected to an Ethernet hub and the LAN LED on the HomeOffice Router is green, check the cable between your PC and the hub to ensure it is good. **5** If the problem persists, contact your network administrator or technical support representative. Network administrator: Ensure the configuration of the remote access switch is correct in these areas: ISDN number, IP and/or IPX addressing scheme, routing, DIAT, security authentication, and that IP or IPX protocols are associated with circuits. You can also use the `network isdn2 rejects` command in the command shell to determine if ISDN calls are being rejected.

Section B: ISDN tests

In this section

Overview

Introduction

Local Manager provides two types of tests that can be performed on the ISDN interface:

- ISDN loopback test
- ISDN listening and calling tests

ISDN loopback test

The ISDN loopback test verifies HomeOffice Router connectivity. In this test, the HomeOffice Router places a call to itself through the ISDN line and checks that the call can be completed.

ISDN listening and calling tests

ISDN listening and calling tests verify the ability of two devices to connect over ISDN. The tests verify your ISDN numbers and check whether your HomeOffice Router supports CLI.

Performing an ISDN loopback test

Introduction

The ISDN loopback test verifies HomeOffice Router connectivity. In this test, the HomeOffice Router places a call to itself through the ISDN line and checks that the call can be completed. The loopback test verifies

- that the unit can communicate with the ISDN exchange (that is, the cable and interface are working)
- that the numbers assigned by the service provider (that is, the ISDN number of the local ISDN connection) and the number that you think you have are the same
- whether Calling Line Identification (CLI) is installed on your line
  If it is, the loopback tests whether the exchange inserts extra digits in the CLI. This may affect how you configure the unit for communication.

  Note: CLI is known as Caller ID in North America.
- that the data path to and from the ISDN exchange has continuity

Requirements

The loopback test cannot be used if you are provisioned with only one B-channel. If this is the case, perform listening and calling tests.

Use the ISDN calling and listening tests to test ISDN connections and make sure that your ISDN installation is in working order. You may want to do this if you have been experiencing problems with an ISDN interface.

In North America, if you are using NI-1 or NI-2 as your switch variant, you must set up your SPIDs before you can test an ISDN interface.

To perform the ISDN loopback test

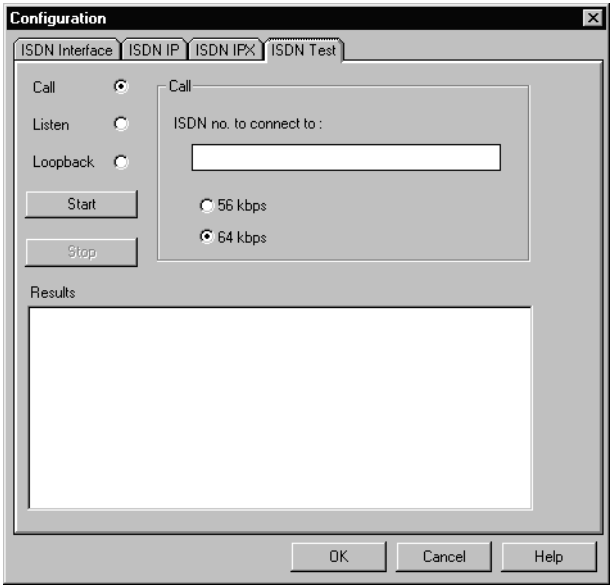
1 Click the Configuration tab.

2 Click the ISDN icon.

3 Select Properties from the pop-up menu.

4 Click the ISDN Test tab in the screen that appears.

Result: The ISDN Test page appears.



5 Click Loopback.

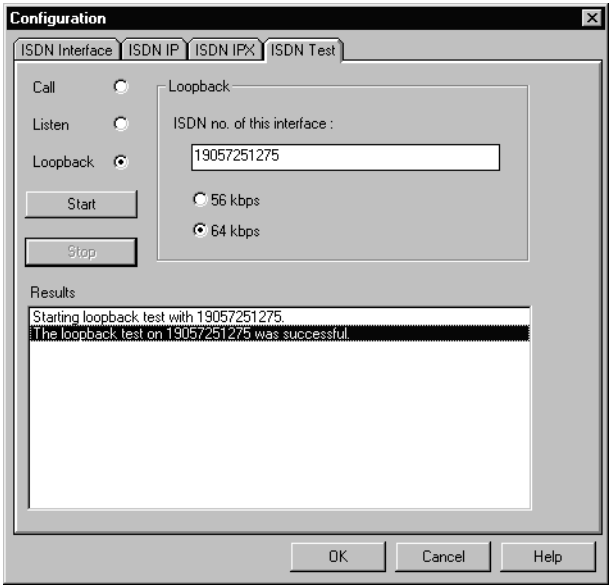
Result: Your ISDN number is inserted automatically.

6 Ensure the displayed ISDN loopback test number contains dialing prefixes that are required by the central office switch to dial your Router.

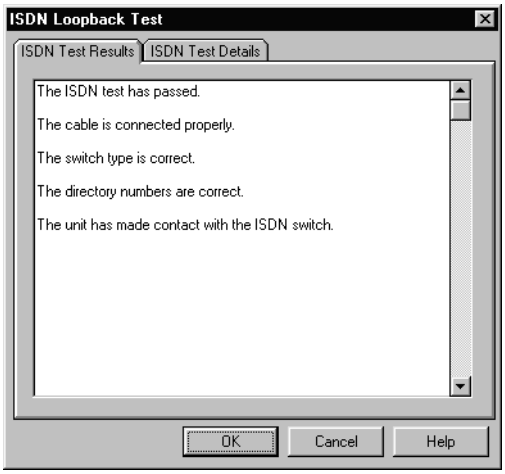
Example: If 9 is required for dialing outgoing calls, ensure the ISDN loopback test number is prefaced with 9.

7 Click Start.

Result: The Results section indicates the status of the test. The following is an example of a successful loopback test.

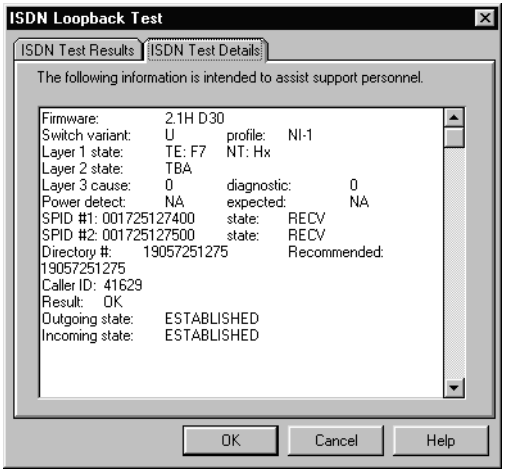


When the test is completed, the results are displayed on a separate screen. The following is an example of the passed test results.



8 To see more details, click the ISDN Test Details tab.

Result: The result details similar to the following appear.



Note: If the test failed, see “Troubleshooting loopback test failures” on page 307.

9 Click OK to return to the ISDN Test page.

10 Click OK to close the ISDN Test page.

Troubleshooting loopback test failures

Introduction

Loopback tests can fail for one of many reasons, as described in this topic.

No CLI

If the HomeOffice Router receives a call, but does not recognize it as its own call to itself, the HomeOffice Router assumes that the incoming call is the loopback call and determines the CLI using this assumption, or reports no CLI.

If no CLI is reported, it means that the number entered was not the network identification address. The possible reasons for this are:

- The HomeOffice Router has received NULL as the ISDN address received. If this is the case, you get the result Incoming Call from NULL. This means that the ISDN network has incorrectly identified the HomeOffice Router because Calling Line Identification (CLI) is not supported on your network.
- The HomeOffice Router has received the correct number, but with a prefix attached.
  The ISDN network has incorrectly identified the HomeOffice Router because the ISDN network has added an area code prefix to the number. For example, you get the result Incoming Call from 0101234567890.
- The HomeOffice Router has received an incorrect number.
  Another user tried to call you while you were performing the loopback test and nullified the test. Repeat the test.

Troubleshooting failures for other reasons

If the loopback test fails for any other reason, do the following:

1 Review any ISDN cause codes that are reported in the test results.

  ISDN cause codes are described in Appendix B, “ISDN cause codes” at the back of this manual.

2 Verify that the ISDN cable is connected and working properly.

If in doubt, remove and reconnect the cable to ensure a good connection, or replace the cable with a substitute.

3 Ensure the ISDN READY LED on the HomeOffice Router front panel shines green.

If it does not, then the ISDN link to the network is down. This may be caused by a problem with the cable, the HomeOffice Router, or the ISDN switch. It indicates that the problem is not simply a numbering one.

4 Check the configuration of the ISDN numbers (and in North America, the SPIDs), and the bearer capability (56 Kbps or 64 Kbps) to ensure they are correct.

To check them, contact your ISDN service provider.

5 Determine if you need to use dialing prefixes (such as 1 or 9) and/or an area code.

If so, you need to enter them directly before the main telephone number. Do not use a hyphen to separate them from the main number. To check this, contact your network administrator and ISDN service provider.

6 Ensure you are using the correct ISDN variant.

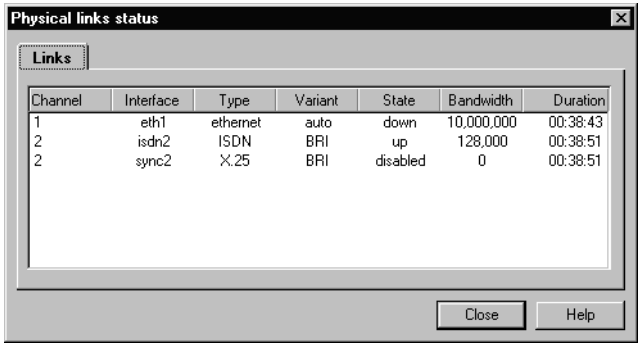
To check this, go to the ISDN Interface tab in the Configuration dialog and check which Switch Type you have selected in the pull-down list.

7 Determine if Power Detect is enabled or disabled.

To check this, display the ISDN properties to check if the Power Detect option is selected. If you are not sure if your ISDN line supports power detect, deselect the option.

8 Verify that the ISDN interface is up.

Check this by clicking the “On” LED on the Statistics tab in Local Manager. The following is an example of the screen that appears.



If the interface is down, ensure that the ISDN cable is securely connected. If it was not connected securely, restart the HomeOffice Router and check the interface status again.

If the interface is still down, contact your network administrator or technical support representative.

9 In North America only: Check the label on the bottom of the HomeOffice Router. If the label identifies the unit as an S/T unit, do you have an NT1 connected? Is the NT1 powered on?

About ISDN listening and calling tests

Introduction

ISDN listening and calling tests verify the ability of two devices to connect over ISDN. The tests verify your ISDN numbers and check whether your HomeOffice Router supports CLI.

The calling test may be performed from your HomeOffice Router to any network device at the remote site. The listening test may be performed from a telephone to your HomeOffice Router, or from another network device to your HomeOffice Router.

Requirements

You should have already successfully completed the loopback test and be confident that all network connections and addresses are correct.

The calling and listening tests must be run in cooperation with someone at the other end of the ISDN link.

Note: If you are using NI-1 or NI-2 in North America, you must set up your SPIDs before you can test an ISDN interface. Do this using the ISDN Interface tab. This allows you to set the SPIDs along with the ISDN directory number(s).

Reversing the listening and calling tests

Whether or not the test is successful, reverse the listening and calling states (so that you become the listening side and the remote site becomes the calling side) and run the test again.

Performing an ISDN calling test

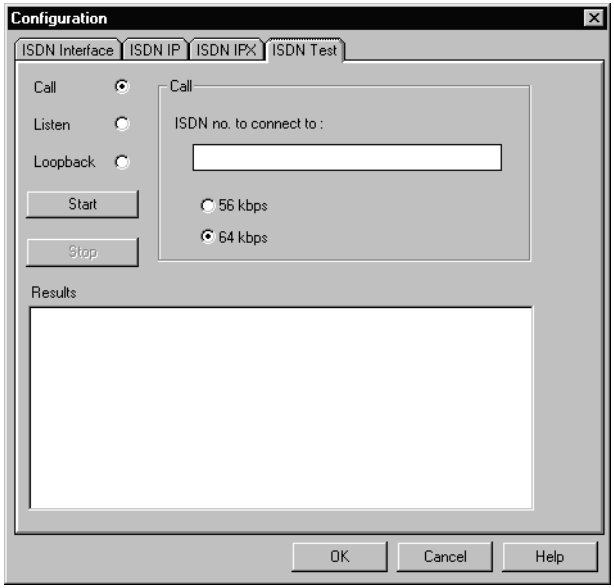
Introduction

The calling test may be performed from your HomeOffice Router to any network device at the remote site. Run this test in cooperation with someone at the other end of the ISDN link.

To perform the calling test

1. Click the Configuration tab.
2. Click the ISDN icon.
3. Select Properties from the pop-up menu.
4. Click the ISDN Test tab on the screen that appears.

   Result: The ISDN Test page appears.



5 Click Call.

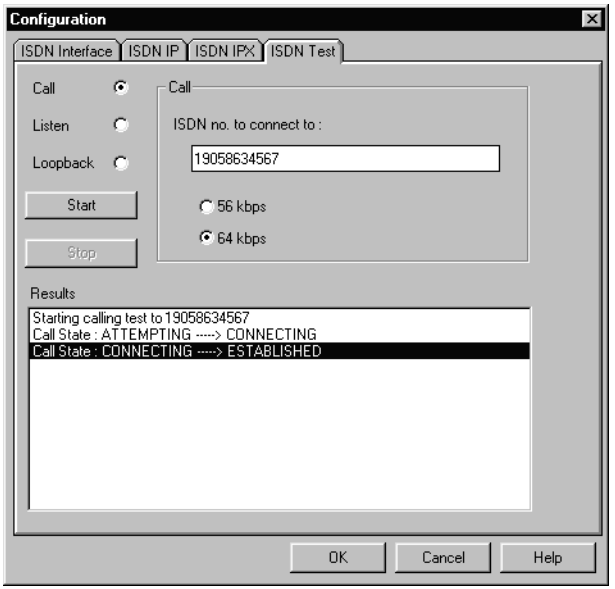
6 Enter the ISDN number of the listening device at the other end of the ISDN link (for example, 44580).

This can be up to 41 digits.

7 Click Start to start the test.

Result: The Results section indicates the status of the test. The following is an example of a successful calling test.

The call is closed automatically once the test message has been sent.



Note: If the test failed, see “Troubleshooting calling and listening test failures” on page 315.

Performing an ISDN listening test

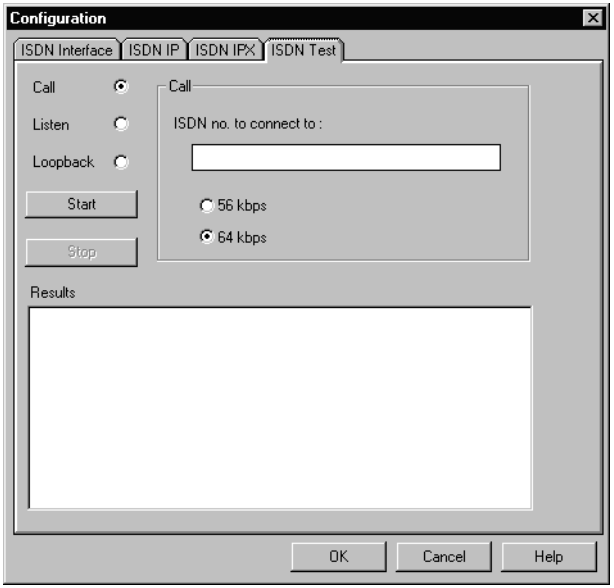
Introduction

The listening test may be performed from a telephone to your HomeOffice Router, or from another network device to your HomeOffice Router. Run this test in cooperation with someone at the other end of the ISDN link.

To perform a listening test

1. Click the Configuration tab.
2. Click the ISDN icon.
3. Select Properties from the pop-up menu.
4. Click the ISDN Test tab on the screen that appears.

   Result: The ISDN Test page appears.



5 Click Listen.

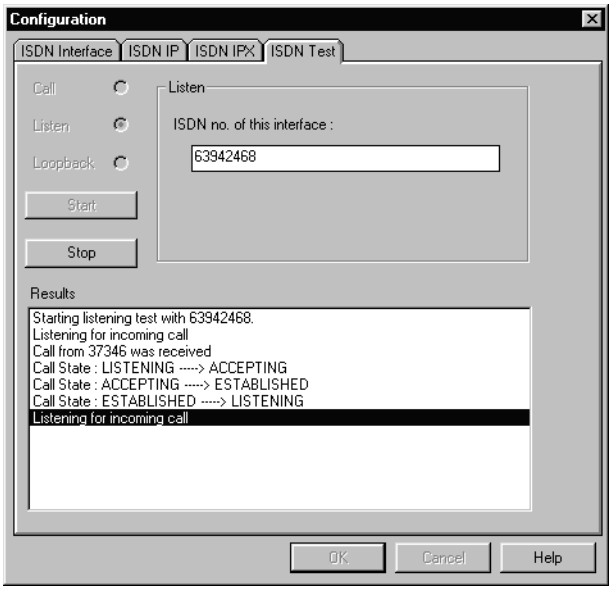
6 Enter the ISDN directory number of the interface you are testing.

The default is the address set up in the ISDN interface tab. However, any of the configured addresses can be used here. To test a sub-address, enter that address, for example, 63942468.

7 Click Start to start the test.

The Results section indicates the status of the test. The following is an example of a successful listening call test.

Result: The call closes automatically once the test message has been received.



Troubleshooting calling and listening test failures

Introduction

This topic provides suggestions for determining why a calling or listening test failed.

To troubleshoot a calling or listening test failure

1. Review any ISDN cause codes that are reported in the test results. ISDN cause codes are described in Appendix B, “ISDN cause codes” at the back of this manual.
2. Retry the test.
3. Try the loopback test again.
4. Check that you have used the correct dialing prefixes (such as 1) and/or area code.

   Enter them immediately before the main telephone number. Do not use a hyphen to separate them from the main number. Contact your network administrator and ISDN service provider to check that you are using the correct prefix digits and/or area codes at both ends.

Section C: Meridian circuit tests

In this section

Overview

Introduction

The two types of tests that can be performed to ensure that the Meridian circuit on your HomeOffice Router is working correctly are:

- phone test (see page 319)
- call test (see page 323)

Note: You can also perform a Meridian PBX diagnostic test to collect call progress information for a call to the corporate PBX. For instructions, see page 335.

Meridian phone test

The Meridian phone test ensures that the HomeOffice Router and the digital telephone can communicate with each other.

Meridian call test

The Meridian call test ensures that connection to the corporate PBX can be established, verifying that the following are correct:

- directory number used to connect to the PBX
- security identifier used to identify the HomeOffice Router

Performing the Meridian phone test

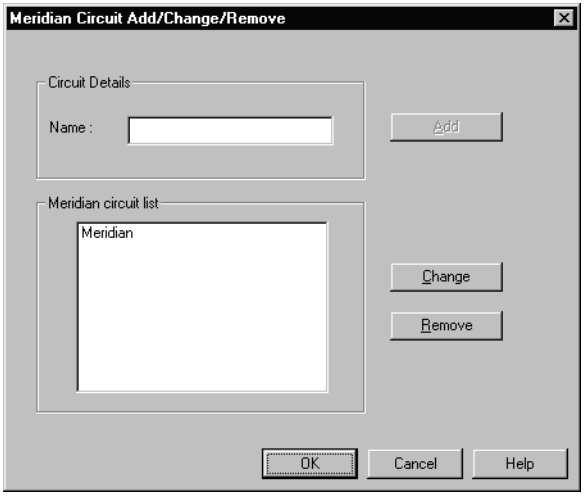
Introduction

The Meridian phone test performs a loopback test on the MERIDIAN port to determine if a digital telephone is connected, and if so, if it is working correctly. It verifies that the communication path between the HomeOffice Router and the digital telephone is working.

To perform the test

1. Click the Configuration tab.
2. Click MERIDIAN.
3. Select Circuits from the pop-up menu that appears.

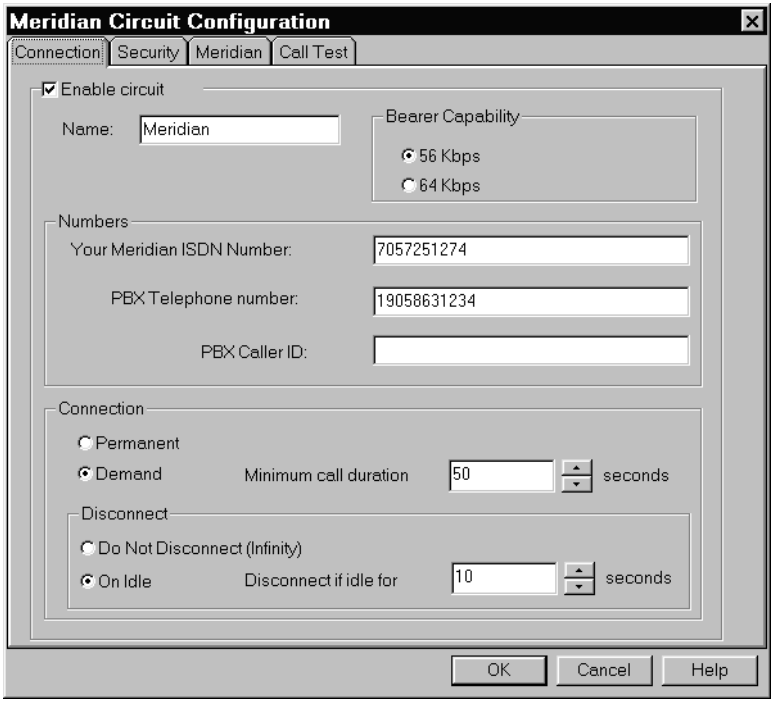
   Result: The Meridian Circuit Add/Change/Remove screen appears.



4. Select Meridian from the circuit list.

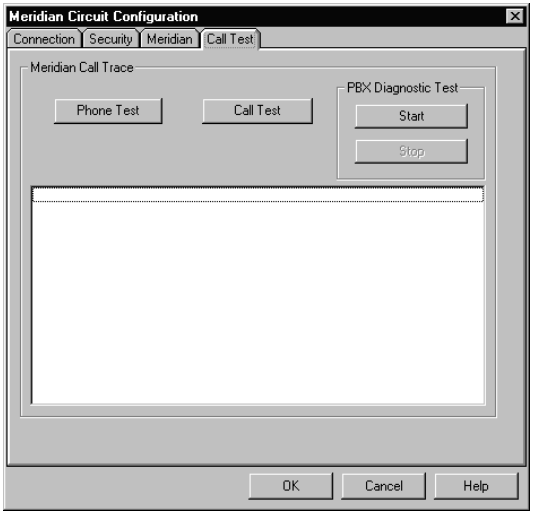
5 Click Change.

Result: The Meridian Circuit Configuration screen appears.



6 Click the Call Test tab.

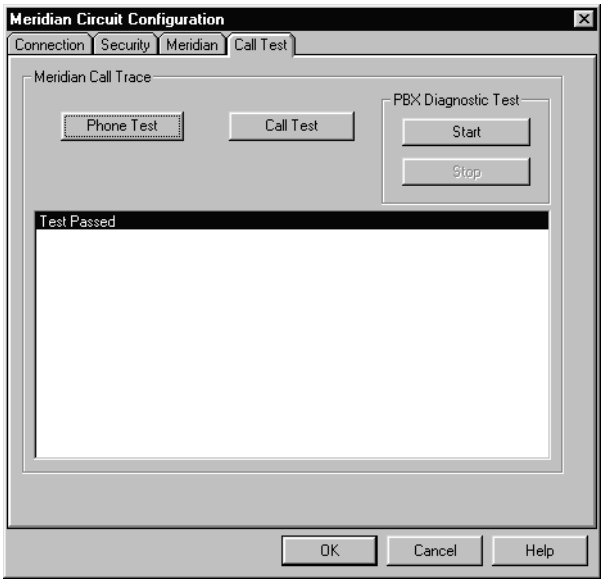
Result: The Call Test page appears.



7 Click Phone Test.

Result: The results of the test appear on the screen.

This is an example of a passed test.



If the test failed, the following message appears:

```
Test Failed
```

See “Troubleshooting Meridian circuit test failures” on page 327.

Performing the Meridian call test

Introduction

The Meridian call test initiates an ISDN call to the corporate PBX, and confirms that the directory number, and where applicable, the security identifier are correctly configured. It verifies that the communication path between the HomeOffice Router and the corporate PBX is working.

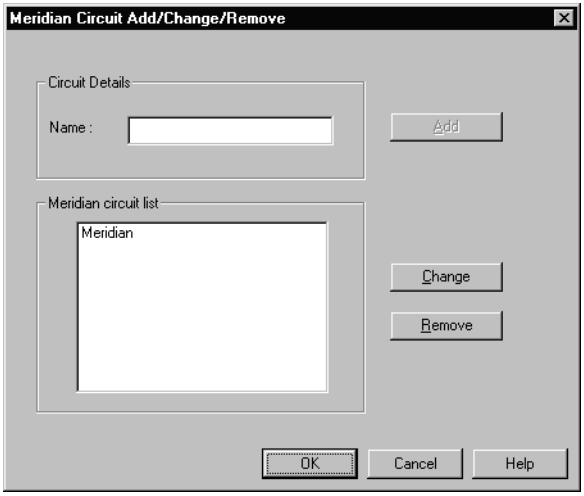
To perform the test

1 Click the Configuration tab.

2 Click MERIDIAN.

3 Select Circuits from the pop-up menu that appears.

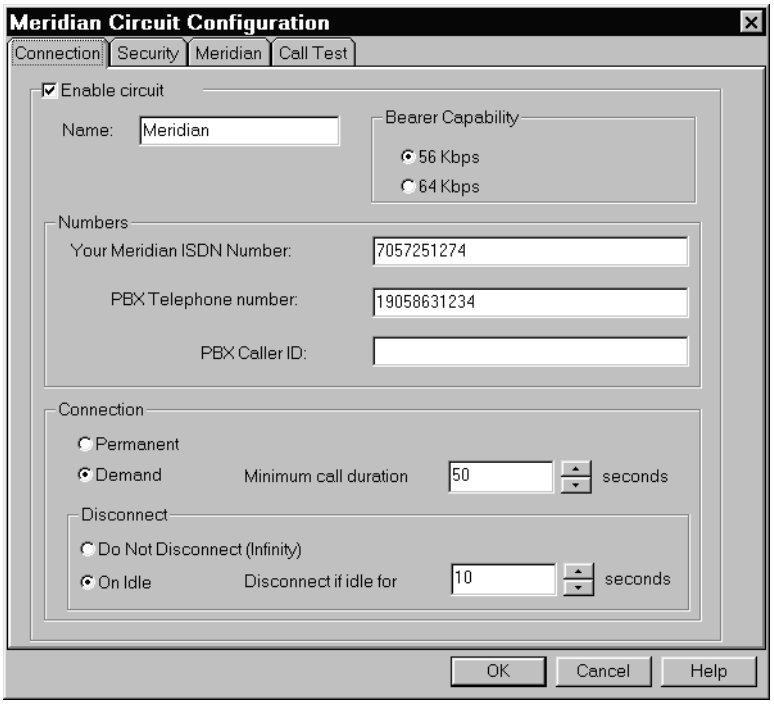
Result: The Meridian Circuit Add/Change/Remove screen appears.



4 Select Meridian from the circuit list.

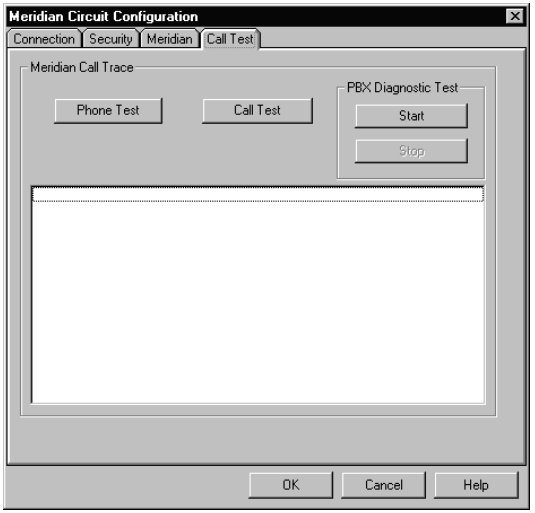
5 Click Change.

Result: The Meridian Circuit Configuration screen appears.



6 Click the Call Test tab.

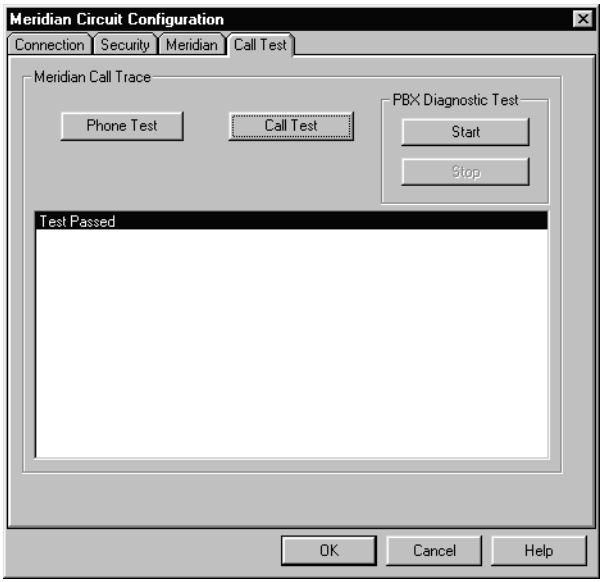
Result: The Call Test page appears.



7 Click Call Test.

Result: The results of the test appear on the screen.

This is an example of a passed test.



Examples of failure responses are:

```
Test Failed: Timeout Occurred

Test Failed: Phone is Busy

Test Failed: No Comms with Daughterboard

Test Failed: Daughterboard rejected test request
```

Troubleshooting Meridian circuit test failures

Introduction

This topic provides suggestions for determining why a Meridian circuit test failed.

Meridian phone test failures

If the Meridian phone test failed, there is a possible hardware problem. Contact your network administrator or technical support representative.

To troubleshoot Meridian call test failures

1. Ensure that the ISDN number to connect to the corporate PBX, security level, and identifier are configured correctly.
2. Try the test again.
3. If the problem persists, contact your network administrator or technical support representative.

Section D: Diagnostics

In this section

Overview

Introduction

You can use the following diagnostics features to determine problem causes:

- ISDN circuit diagnostics
- Meridian circuit diagnostics

ISDN circuit diagnostics

The Diagnostics tab in Local Manager allows you to collect, view, and save HomeOffice Router activity as it happens. Use Diagnostics if you are having trouble with your ISDN circuit and need information to determine the problem.

Meridian circuit diagnostics

If you wish to collect progress information for a Meridian circuit call, perform the PBX Diagnostic Test on the Meridian Circuit Configuration screen. The test verifies that the communication path between the HomeOffice Router and the corporate PBX is working by initiating a call to the corporate PBX. It also displays the progress of the ISDN call on the screen, reporting successful connection or an ISDN problem.

The HomeOffice Router must be connected to the digital telephone, and the Meridian circuit must be configured for connection to the corporate PBX.

Collecting ISDN circuit diagnostic information

Introduction

The Diagnostics tab allows you to collect, view, and save HomeOffice Router activity as it happens. Use Diagnostics if you are having trouble with your ISDN circuit and need information to determine the problem.

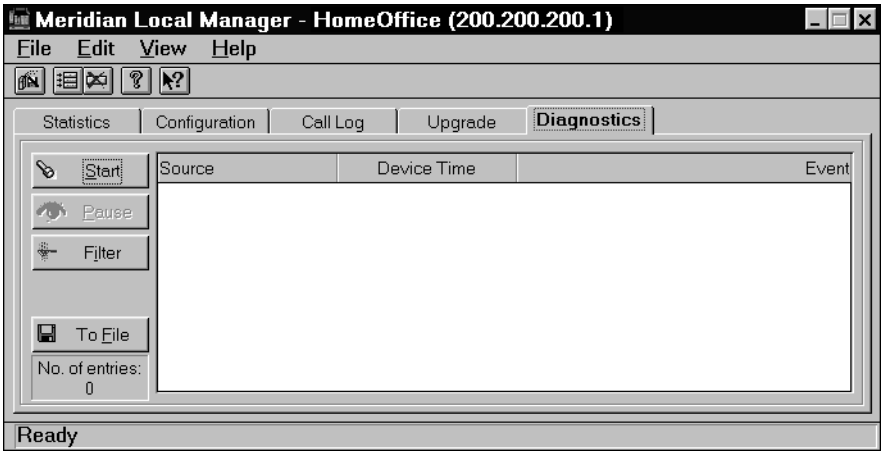
With the Diagnostics tab, you can

- determine which information to collect by filtering out unnecessary information
- start the diagnostic information collection
- save diagnostic information to a file on disk
  The file is saved as a plain text (ASCII) file that can be opened by any text editor (such as Notepad or Wordpad), as well as most word processing and spreadsheet applications.

To collect ISDN circuit diagnostics

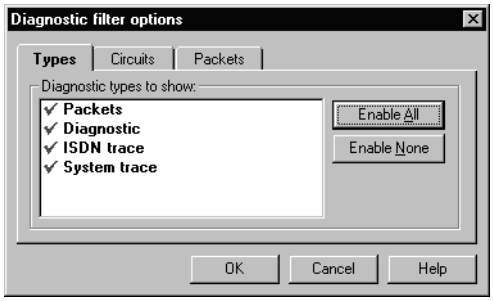
1 Click the Diagnostics tab.

Result: The Diagnostics page appears.



2 Click Filter.

Result: The Diagnostic filter options dialog appears.



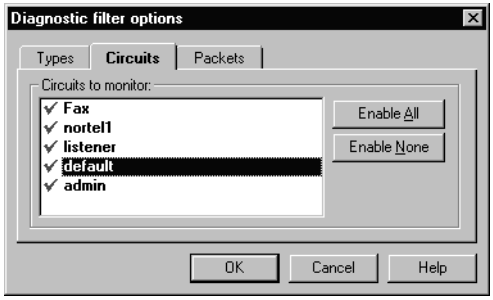
Items preceded by a check mark are included when the diagnostics are run. Those preceded by an X are not included.

3 Do the following:

To	Click the left column (check mark/X)
include an item	until a check mark appears beside it.
exclude an item	until an X appears beside it.

4 If your HomeOffice Router contains more than one circuit, click Circuits.

Result: The Circuits tab appears with a list of all the circuits on your HomeOffice Router.

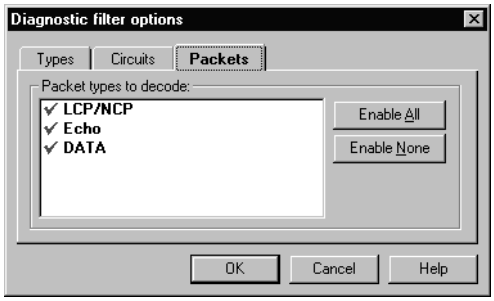


Items preceded by a check mark are included when the diagnostics are run. Those preceded by an X are not included.

5 Repeat step 3.

6 If you enabled packets collection, click Packets.

Result: The Packets tab appears.



Items preceded by a check mark are included when the diagnostics are run. Those preceded by an X are not included.

7 Repeat step 3.

8 Click OK.

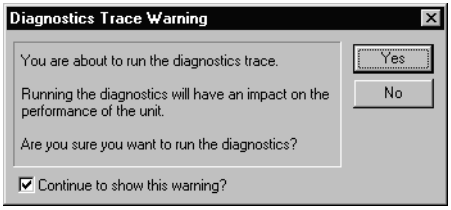
9 If you wish to save the test results in a file for interpretation by technical support, click To File.

Result: You are prompted to specify a file name (with .TXT as the file name extension) and the directory where the file should be saved. A file name is suggested for you.

Specify the file and directory names, then click OK.

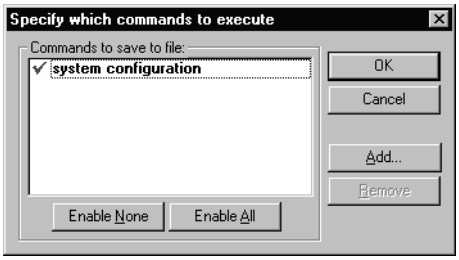
10 Click Start.

Result: You may receive the following warning.



11 Click Yes to continue.

Result: The Specify which commands to execute screen appears.



By default, this screen is preset to execute a command that collects the entire HomeOffice Router configuration and includes it in the text file you are saving. This can be useful for diagnosing problems or for providing additional information to your network administrator for technical support purposes.

12 Click OK.

13 Perform the required test(s).

Result: As you create network activity, information appears in the Diagnostics tab for the diagnostic filter types you selected. While collecting diagnostic information you can perform the following actions.

To	Click
interrupt the collection of diagnostic information without actually stopping the test	Pause
resume the collection of information	Pause
finish collecting information	Stop
start a new diagnostic trace. All previous diagnostic information is cleared	Start
save collected information to an ASCII text file	To File

Collecting Meridian circuit diagnostic information

Introduction

The PBX Diagnostic Test on the Meridian Circuit Configuration screen verifies that the communication path between the HomeOffice Router and the corporate PBX is working by initiating a Meridian call test to the corporate PBX. It also displays the progress of the ISDN call on the screen and reports a successful connection or an ISDN problem.

To collect Meridian circuit diagnostics

1 Click the Configuration tab.

2 Click MERIDIAN.

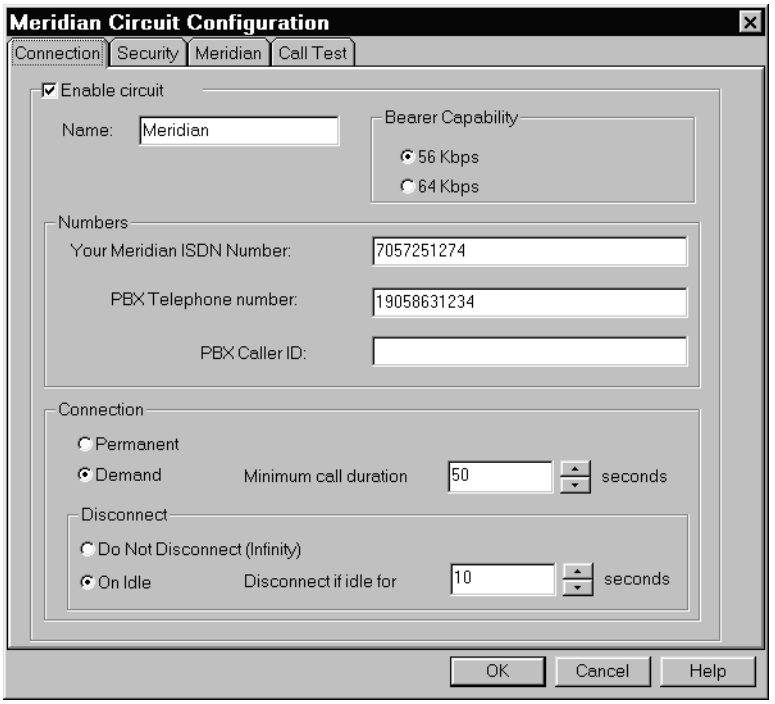
3 Select Circuits from the pop-up menu that appears.

Result: The Meridian Circuit Add/Change/Remove screen appears.

4 Select Meridian from the Meridian circuit list.

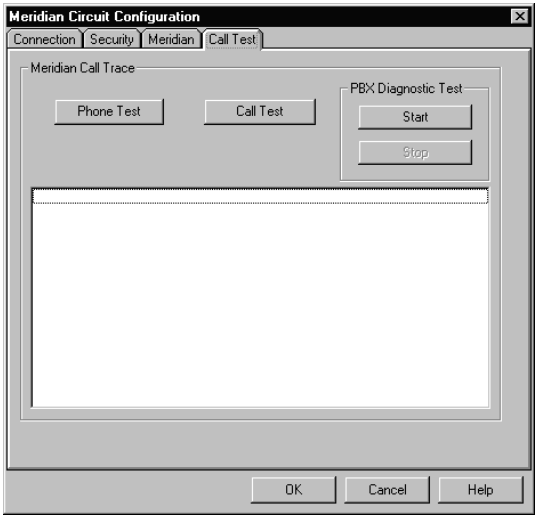
5 Click Change.

Result: The Meridian Circuit Configuration screen appears.



6 Click the Call Test tab.

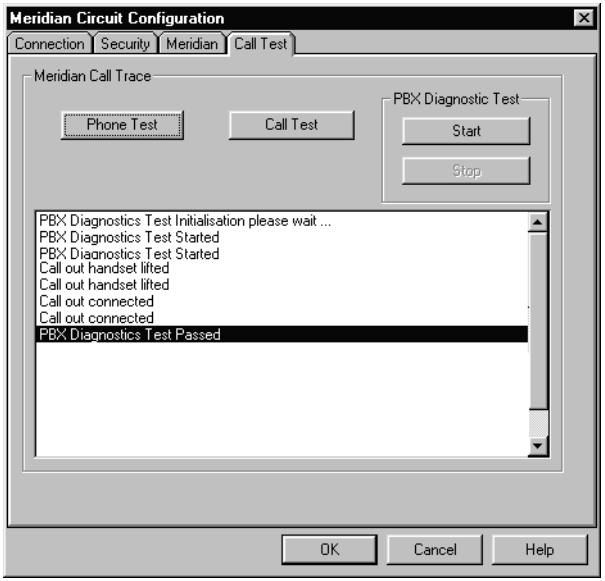
Result: The Call Test page appears.



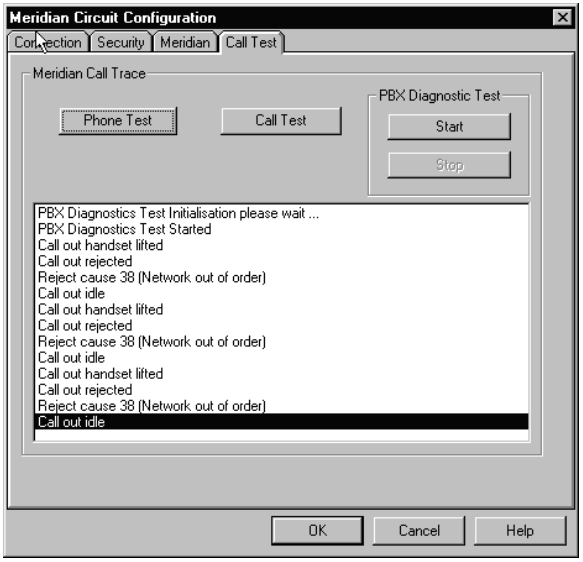
7 Click Start in the PBX Diagnostic Test section.

Result: The results of the test appear on the screen.

This is an example of a successful test.



This is an example of a failed test.



Appendix A

Data entry forms

In this appendix

Overview

Introduction

The information you need to configure the HomeOffice Router comes from two sources: your ISDN service provider and your network administrator.

Information from your ISDN service provider

Before you receive the information you need to configure ISDN on the HomeOffice Router, tell your ISDN service provider what you need on the service. Your network administrator can provide you with this information.

In return, your ISDN service provider gives you the directory number(s) needed by others to contact you and, if applicable, Service Profile Identifiers (SPIDs).

ISDN information is recorded on the HomeOffice Router—ISDN Provisioning Information forms shown on pages 343 and 344.

Information from your network administrator

Your network administrator needs to give you some configuration instructions as well as information about

- the ISDN service you need
- the corporate PBX to which you are connecting
- the network routing protocol used
- security authentication
- network configuration on your Windows PC

This appendix contains examples of the forms that the network administrator may use.

Meridian HomeOffice II
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

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

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

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? **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. You require two telephone numbers for HomeOffice II. Line 1: _____ Line 2: _____ Line 3: _____ Line 4: _____ Line 5: _____ Line 6: _____ Line 7: _____ Line 8: _____ Line 9: _____ Line 10: _____	What are the Service Profile IDs (SPIDs)? **Note:** For NI-1 and AT&T 5ESS Custom Multipoint only. You require two SPIDs for HomeOffice II. If SPIDs are not provided, then you require Multiple Subscriber Numbering (MSN). Line 1: _____ Line 2: _____

Meridian HomeOffice II

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

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

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

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

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

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

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

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 B

ISDN cause codes

In this appendix

Overview

Introduction

ISDN cause codes provide reasons for ISDN test failures. You may need to give your ISDN service provider this information if you encounter problems.

What to do if an ISDN test fails

If you are testing an ISDN interface and the test fails, do the following in conjunction with your ISDN service provider:

- Work your way through the troubleshooting and tests described in Chapter 12, “Troubleshooting system problems.”
- Verify the following with your service provider:
  - — your ISDN installation
  - — SPIDs
  - — directory numbers (ISDN telephone numbers)

Note: SPIDs are only allocated by service providers in North America.

Contact your ISDN service provider, detailing the test you are performing, and supply them with the ISDN layer 2/3 cause code that is reported after test failure. The possible codes are listed on the following pages.

Cause codes

Cause code	Meaning
1	**Definition** Unallocated (unassigned) number The number you have dialed is not recognized by the ISDN network. **Recommendation** Check that you have entered the correct directory number, with the area code, if required.
2	**Definition** No route to specified transit network The ISDN network is unable to find a way to connect you to the remote party. In this case, the HomeOffice Router appears to be functioning properly, but there is some problem in the network. It knows how to connect you, but cannot do so. This may be a temporary condition. If this occurs during a Loopback test, it probably means that you have entered a wrong number. **Recommendation** Check that you have entered the correct directory number, with the area code, if required.
3	**Definition** No route to destination The ISDN network is unable to find a way to connect you to the remote party. In this case, the HomeOffice Router appears to be functioning properly, but there is some problem in the network. It knows how to connect you, but cannot do so. This may be a temporary condition. If this occurs during a Loopback test, it probably means that you have entered a wrong number. **Recommendation** Check that you have entered the correct directory number, with the area code, if required.

Cause code	Meaning
16	**Definition** Normal Call Clearing Your call has succeeded, but the other end has then ended the call. It is the ISDN equivalent of the other phone being hung up. **Recommendation** It is probable that your ISDN connection is working, but you have made a call to some other line. Check that you have entered the correct directory number, with the area code, if required.
17	**Definition** User Busy The number you have dialed is busy. It is the ISDN equivalent of the engaged tone. You may also receive this response if the switch itself is overloaded. In this case try the test later. If this occurs during a Loopback test, it probably means that you have entered a wrong number. If you are connected to National ISDN-1, for example, where each B-channel has its own directory number, then you may have entered the number of the channel that is being used to send the call, when you should have used the number of the other ISDN channel. **Recommendation** Check that you have entered the correct directory number, with the area code, if required. Check that your ISDN service is provisioned for two B-channels data.
18	**Definition** No User Responding The switch may send this message if there is no answer to your call. This would happen, for example, if you called a device that was not plugged in to its ISDN line or was switched off. If this occurs during a Loopback test, it probably means that you have entered a wrong number.

Cause code	Meaning
18 (continued)	**Recommendation** Check that you have entered the correct directory number, with the area code, if required. If possible, check that the remote device is switched on and that its ISDN cable is connected properly.
19	**Definition** No answer from user (user alerted) The remote party is aware of your call, but is not answering it. It is as if the phone is ringing, but there is nobody there. **Recommendation** If you see this response when using the Loopback test, check that you have entered your own ISDN directory number(s) correctly.
21	**Definition** Call rejected Something (either the ISDN network or the remote party) has rejected your call. If this occurs during a Loopback test, it probably means that you have entered a wrong number. **Recommendation** Check that you have entered the correct directory number, with the area code, if required.
27	**Definition** Destination out of order The switch returns this message if the equipment at the number being called is out of order (for example, disconnected or switched off). If this occurs during a Loopback test, it probably means that you have entered a wrong number. **Recommendation** Check that you have entered the correct directory number, with the area code, if required.

Cause code	Meaning
28	**Definition** Invalid number format (address incomplete) The switch sends this message if the number you entered is in the wrong format. It may have too many or too few digits, or contain other unsupported characters. **Recommendation** You need to change the number that you are calling. Make sure the number is in a valid format, for example, when you are attaching an area code, always enter it directly before the main telephone number. For example, 6173312561. Do not use a hyphen (-) as a separator. Hyphens are reserved for sub-addressing.
31	**Definition** Normal, unspecified Your call was disconnected for an unspecified reason. For example, it occurs if the data link to the switch goes down during the call, but then recovers. The switch notices that the link has gone down, and then disconnects the call when the link comes back up. **Recommendation** Check that your ISDN cable is connected properly and that you have selected the correct switch type (for example, National ISDN-1 or 5ESS Custom) for your ISDN line.
38	**Definition** Network out of order The switch network is out of order and unable to process your call. This could be due to a faulty connection to the switch, or to maintenance within the switch network itself. **Recommendation** Make sure that the HomeOffice Router is set to the correct ISDN type for the switch (for example, 5ESS Custom, National ISDN-1). If you still see this response, wait a few minutes, then retry the test. If the same response reappears, try turning the HomeOffice Router off and on again, and repeat the test. If this fault still occurs, contact your ISDN service provider.

Cause code	Meaning
88	**Definition** Incompatible destination The party you have dialed is not able to accept data calls from the HomeOffice Router. This might be because it cannot handle data calls at all; for example, you could be trying to make a data call to a standard analog phone, or it cannot handle data calls at the rate you are transmitting (64 Kbps or 56 Kbps). If this occurs during a Loopback test, it probably means that you have entered a wrong number. **Recommendation** Check that you have entered the correct directory number, with the area code, if required.
102	**Definition** Recovery on timer expiry The HomeOffice Router and the switch are not communicating properly, either because of a poor connection, or perhaps because you have not selected the correct ISDN switch type for your ISDN line. It means that something has not happened on time, so the switch is repeating an operation or tackling the problem in some other way. **Recommendation** Check your ISDN connection, and check that you have selected the correct switch type (for example, National ISDN-1 or 5ESS Custom) for your ISDN line.

Cause code	Meaning
111	**Definition** Protocol error, unspecified The ISDN switch has rejected your call, but is not saying why. It has detected a protocol error in the communications between itself and the HomeOffice Router. The problem could be that you have dialed a wrong number, the line is provisioned for features that the HomeOffice Router does not support, or you have specified the wrong switch type (by choosing National ISDN-1 when you meant to choose 5ESS Custom, for example). If this occurs during a Loopback test, it means that your device is functioning and the link to the switch is functioning too, but the HomeOffice Router is possibly configured incorrectly for the line, or you have entered a wrong number. **Recommendation** Check that you have selected the correct ISDN type for your switch. Check that you have entered the correct directory number, with the area code, if required.
127	**Definition** Interworking, unspecified A call has been established and closed down normally, but the route between the HomeOffice Router and the destination involved interworking between different types of carrier networks, such as ISDN and packet-switched networks. If this error occurs during a Loopback test, it is likely that you have entered the wrong number. **Recommendation** Check that you have entered the correct directory number, with the area code, if required.

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User Guide

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