Meridian 1 Options 21 through 81C

System Programming Guide

System Programming Guide

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Contents

About this guide

Who should use this guide

This guide is intended for the novice Meridian 1 administrator or programmer. Use this guide when performing initial programming on a newly installed Meridian 1 system.

How to use this guide

This guide contains detailed instructions for programming a Meridian 1 system. The instructions are divided up into a number of sections, each section addressing one particular aspect of Meridian 1 system operation. Each section is called a task. A task number appears in the top corner of the page.

To gain an understanding of the process of initial system configuration, read through the entire guide once before starting to program. Pay attention to descriptions of features and functions, and trace your way through flowcharts. Think about any kind of preparation or planning you may need to do before performing the actual programming.

Once you have read through the guide and have an understanding of the process of initial system configuration, return to the beginning of the guide. Perform the programming tasks in the order in which they appear in the guide. The order in which you perform the tasks is very important. Work through this guide from beginning to end.

About this guide

Some features and options are beyond the scope of this guide. Make sure that you have access to other Meridian 1 documents, including:

◆ X11 features and services guides

◆ X11 input/output guides

How the sections of this guide work

About the Meridian 1

About the Meridian 1 introduces the basics of the Meridian 1.

Task sections

The bulk of this guide is made up of sections which explain how to perform tasks. Each task section has three parts: an introduction, a flowchart, and a step-action procedure. Use these sections in the order in which they appear.

Introduction (narrative)

The introduction provides you with what you should know about an aspect of Meridian 1 functionality before you program it.

Flowchart

The flowchart is a summary of the steps and decisions you must make while programming an area of functionality. Use it to make sure you have everything ready before you start programming.

Step-action procedure

Use this part of the task section to guide you through performing the programming part of the task. The procedure assumes you are comfortable with basic operation of the Meridian 1, and that you have read the narrative and flowchart parts of the section.

Terms and abbreviations section

Terms and abbreviations provides a definition or explanation of a number of the terms and abbreviations used in this guide.

About this guide

Index

The index at the back of this guide provides an easy way of finding information about specific subjects, features, prompts, responses and system messages.

How prompts and responses are represented

In this guide, the following conventions apply:

Prompts

Meridian 1 system prompts and messages appear in procedures in bold. The prompt appears at the far left, as shown underlined here:

TYPE   PRI, PRI2   Enter PRI to set thresholds for 1.5 Mbit/s PRI, or PRI2 to set thresholds for 2.0 Mbit/s PRI.

Responses

In procedures

The responses or commands you may enter at a particular prompt appear in the procedures to the right of the prompt itself, as shown underlined here:

TYPE   <u>PRI, PRI2</u>   Enter PRI to set thresholds for 1.5 Mbit/s PRI, or PRI2 to set thresholds for 2.0 Mbit/s PRI.

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Variables

Some prompts allow a wide range of responses. If more than two or three responses are suitable for a particular prompt, the responses are not listed directly to the right of the prompt. Instead, for alphanumeric responses, `aaa` appears in the procedure and a list of responses is provided in the description. For numeric responses, a range of values is shown, as in the example here:

DTT   <u>0-15 0-15</u>   Enter the PAD level for digital TIE trunks.

In this example, the required response is two numbers separated by a space.

In some cases in procedures, an `x` or some other designator appears in place of this range of numbers. The explanation to the right of the response indicates the range that you can enter.

Explanations

Explanations of what a prompt means or what the different responses do are provided for many prompts. In procedures this explanation appears to the right of the responses, as shown underlined here:

TYPE   PRI, PRI2   <u>Enter PRI to set thresholds for</u>

<u>1.5 Mbit/s PRI, or PRI2 to set</u>

<u>thresholds for 2.0 Mbit/s PRI.</u>

About this guide

Availability of product

Please check with your supplier if you have questions about which Nortel products (such as telephones, software features, or hardware) are available in your market area for a given release.

Language standards and translations

This guide is written to North American English standards. Please see the *Terms and abbreviations* for equivalent terminology. We welcome suggestions for additions to these sections.

For versions of this guide in other than North American English, please check with your supplier or with Nortel.

Additional Meridian 1 documentation

A number of Meridian 1 documents offer aids and resources that may help you during the initial programming of your Meridian 1. The aids are not required for basic configuration, but may make your planning and implementation more efficient. They may also help you during the programming of advanced or complex configurations.

About this guide

This guide provides references to the following documents:

◆ *Basic Telecom Management Guide*, provided with this guide

◆ *Meridian IVR Installation Guide* (555-9001-210)

◆ *Software Features Guide*

◆ *Meridian Mail Modular Option EC Installation Guide*
555-7061-210

See the Meridian 1 Planning and Engineering guide for

◆ *Meridian 1 Installation Planning* (553-3001-120)

◆ *Meridian 1 System Engineering* (553-3001-151)

◆ *Line Cards* (553-2201-1xx)

◆ *Digital Telephone Line Engineering* (553-2201-180)

◆ *Flexible Tone and Digit Switch Cards* (553-2711-180)

◆ *Multipurpose Serial Data Link Description* (553-3001-195)

◆ *Meridian 1 telephones* (553-3001-108)

◆ *Capacity engineering* (553-3001-149)

◆ *SL-1 telephone line cards* (553-2201-184)

◆ *System Overview* (553-3001-210)

See the Meridian 1 Software System Management guide for

◆ *Call Detail Recording Description and Formats* (553-2631-101)

◆ *X11 System Management Applications* (553-3001-301)

See the Installation and Maintenance guide for

◆ *Attendant console and set installation (*553-3001-215)

See the Automatic Call Distribution guide for

◆ *Automatic Call Distribution Feature Description* (553-2671-110)

About this guide

See the ISDN Basic Rate Interface guide for

◆ *ISDN Basic Rate Interface Description* (553-3901-100)

See the Networking guide for

◆ *Electronic Switched Network Description* (309-3001-100)

About this guide

About the Meridian 1

In this chapter

About the Meridian 1

The Meridian 1 is a digital telephone switch intended for use by customers that need advanced calling and networking features. The Meridian 1 provides flexible voice and data services, high reliability, compatibility with a number of telecommunications environments, and the ability to upgrade component by component as requirements change.

553-0117T AM1
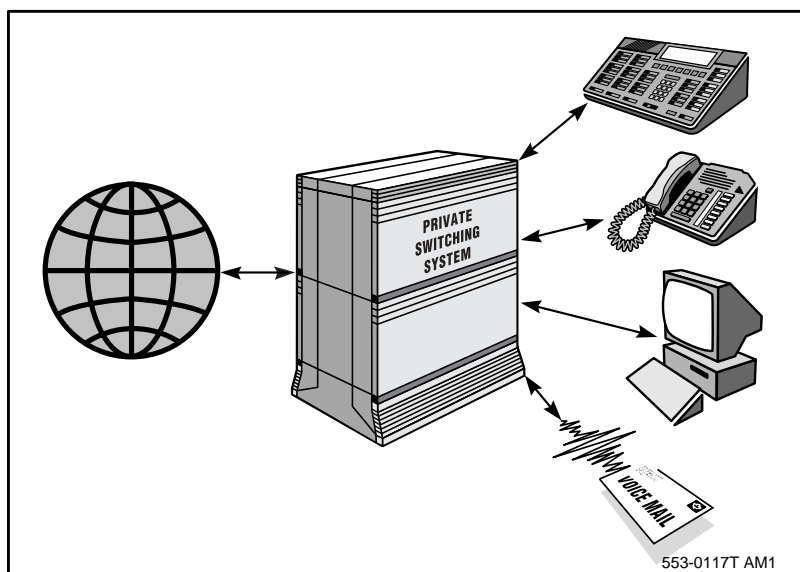
Meridian 1 description

The Meridian 1 product line consists of system types referred to as system options. A system option is made up of Universal Equipment Modules (UEMs) stacked one on top of another to form a column. Each column contains a pedestal, a top cap, and up to four modules. A system can have one column or multiple columns.

About the Meridian 1

Each UEM is a self-contained unit that, when equipped, houses a cardcage and backplane, power and ground cabling, power units, I/O panels, circuit cards, and cables. When the cardcage is installed, the function of the UEM is established and the module is no longer "universal." Meridian 1 modules are as follows:

— NT5K11 Enhanced Existing Peripheral Equipment Module
   options 21, 51, 51C, 61, 61C, 71, 81, and 81C

— NT5D21 Core/Network Module for options 51C, 61C, and 81C

— NT6D39 CPU/Network Module
   required for options 51 and 61

— NT6D60 Core Module
   required for option 81

— NT8D11 Common/Peripheral Equipment (CE/PE) Module
   required for options 21A, 21, and 21E

— NT8D13 Peripheral Equipment (PE) Module
   optional for options 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C

— NT8D34 CPU Module
   required for option 71

— NT8D35 Network Module
   required for options 71, 81, and 81C, optional for options 21, 21E, 51, 51C, 61, and 61C

— NT8D36 InterGroup Module
   required for options 71, 81, and 81C

— NT8D37 Intelligent Peripheral Equipment (IPE) Module
   required for options 51, 51C, 61, 61C, 71, 81, and 81C, optional for options 21 and 21E

— NT8D47 Remote Peripheral Equipment (RPE) Module
   optional for options 21, 21E, 51, 51C, 61, 61C, 71, 81, and 81C

— NT9D11 Core/Network Module
   for option 61C

About the Meridian 1

> *Note:* In addition, modules that house equipment for specific
> applications, such as Meridian Mail and Meridian Link, can be
> included in a column.

The pedestal generally houses a blower unit, air filter, Power
Distribution Unit (PDU), and System Monitor.

The top cap provides airflow exits, input/output (I/O) cable entry and
exit, and overhead cable-rack mounting. Thermal sensor assemblies
for the column are attached to a perforated panel on top of the highest
module in the column, under the top cap.

A system can have one column or multiple columns. To comply with
FCC and CSA standards for containing electromagnetic interference
and radio frequency interference (EMI/RFI), spacer kits connect the
columns in a multiple-column system

System options

Option 21A

Option 21A is a single-CPU system housed in a single CE/PE
Module. This system has specialized power distribution, monitoring,
and cooling systems that are optimized for the single-module
operation.

Options 21, 21E

Options 21 and 21E are single-CPU systems. One CE/PE Module is
required. In addition, IPE Modules, PE Modules, RPE Modules, and
application modules can be used.

Option 51

Option 51 is a single-CPU system with parity-protected memory and
a half-network group. One CPU/Network Module and one IPE
Module are required. Additional IPE Modules, PE Modules, RPE
Modules, and application modules can be used.

About the Meridian 1

Option 51C

Option 51C is a single-CPU system with a half-network group. One Core/Network Module and one IPE Module are required. Additional IPE Modules, PE Modules, RPE Modules, and application modules can be used.

Option 61

Option 61 is a dual-CPU system with standby processing capability, fully redundant memory, and a full-network group. Two CPU/Network Modules and one IPE Module are required. Additional IPE Modules, PE Modules, RPE Modules, and application modules can be used.

Option 61C

Option 61C is a dual-CPU system with standby processing capability, fully redundant memory, and a full-network group. Two Core/Network Modules and one IPE Module are required. Additional IPE Modules, PE Modules, RPE Modules, and application modules can be used.

Option 71

Option 71 is a dual-CPU system with standby processing capabilities, fully redundant memory, and up to five full-network groups. The following modules are required:

— two CPU Modules

— one InterGroup Module

— a minimum of two Network Modules (provides one network group)

— a minimum of one IPE Module

Additional Network and IPE Modules are required for additional network groups. PE Modules, RPE Modules, and application modules can also be used.

About the Meridian 1

Option 81

Option 81 is a dual-CPU system with standby processing capabilities, fully redundant memory, and up to five full-network groups. Option 81 is equipped with two redundant disk drive units.

The following modules are required:

— two Core Modules

— one InterGroup Module

— a minimum of two Network Modules

— a minimum of one IPE Module

Additional Network and IPE Modules are required for additional network groups. PE Modules, RPE Modules, and application modules can also be used.

Option 81C

Option 81C is a dual-CPU system with standby processing capabilities, fully redundant memory, and up to five full-network groups. Option 81C is equipped with two redundant input/output processor and disk drive unit combination packs.

The following modules are required:

— two Core/Network Modules (provide one network group)

— one InterGroup Module

— a minimum of two Network Modules (provides one network group)

— a minimum of one IPE Module

Additional Network and IPE Modules are required for additional network groups. PE Modules, RPE Modules, and application modules can also be used.

About the Meridian 1

Software

Meridian 1 software programs consist of instruction sequences that control call processing, peripheral equipment, administration, and maintenance functions. Several generic software programs with optional feature packages are available.

Office data

Office data describes the characteristics of the system in terms of configuration and call-dependent information, such as features and services. Office data is arranged in blocks defining peripheral equipment, system configuration, and transient data.

Resident programs

Resident programs stay in memory during system operation. Some resident programs are permanently programmed into the system read only memory (ROM). Other resident programs are automatically loaded into the system memory when the system is turned on.

Note 1: In options 51C and 61C, software for Release 23 runs on either of two Call Processor (CP) cards:

- the 48 MB (minimum) NT9D19 CP Card with the NT5D61 IODU/C Card or NT5D20 IOP/CMDU Card.

- the NT5D10 CP Card with the NT5D61 IODU/C Card or NT5D20 IOP/CMDU Card.

Note 2: In options 81 and 81C, software for Release 23 runs on the 64 MB (minimum) NT9D19 CP Card or NT5D10 CP Card, and the NT5D61 IODU/C Card or NT5D20 IOP/CMDU Card.

All software programs, including the nonresident programs listed in the following section are resident in, and accessible from, the memory on the cards listed above.

About the Meridian 1

Non-resident programs

Non-resident programs are stored on data disk and loaded into the overlay area of the system memory to perform specific tasks. Only one program may be loaded at a time and is removed from the overlay area when no longer needed. Non-resident programs can load automatically, under program control, or manually through software commands.

You can manually load non-resident programs into the system memory using the system terminal or maintenance telephone.

The non-resident programs provide the system interface for maintenance, service change, and traffic measurement. Each program is independent and has its own specific set of commands and formats. These programs do not interfere with system traffic or normal call processing.

There are five types of non-resident program:

◆ service change and print routines

◆ maintenance diagnostics

◆ traffic

◆ equipment data dump

◆ software audit

Service change and print routines

Service changes on the Meridian 1 do not usually require hardware changes. Instead, you use service administration programs to create or modify all aspects of the system, from individual feature key assignments to complete system configurations.

There are also programs and print routines for retrieving data from the system to check the status of office data assignments.

About the Meridian 1

Maintenance diagnostics

Diagnostic programs are the primary tools for clearing system faults. You use diagnostic programs to automatically or manually test both common equipment and peripheral equipment. The programs may be loaded into the overlay area at the request of maintenance personnel, or as part of a daily maintenance routine automatically initiated by the system at a specified time.

Traffic

All systems are equipped with traffic data accumulation programs. There is a traffic print program that examines the schedules, transfers data from accumulating to holding registers in accordance with schedules, and prints the traffic data. In addition, there is a traffic program used to query and modify schedules, options, and thresholds.

Equipment data dump

After making service changes, you transfer the changes to disk in order to save them. When you run the equipment data dump program, all the office data in the read/write memory is written to the system disk. You can run the program automatically during the midnight routine or on a conditional basis (for example, after making a service change). You can run the program manually through the system terminal.

You can also use the data dump program to install a new generic software version or issue and capture protected data store information (such as speed call lists) that a user might change.

Software audit

This program monitors system operation and gives an indication of the general state of the system. The program is concerned mainly with the system software. When a software problem is encountered, the program attempts to clear the problem automatically.

About the Meridian 1

Firmware

Firmware provides fundamental programs consisting of hard-wired logic instructions stored in programmable read-only memory (PROM). Firmware programs manipulate data in the central processor and control input/output operations, error diagnostics, and recovery routines.

Advanced Meridian 1 system architecture

Options 51C, 61C, 81, and 81C "core" processor cards more than double the real-time call processing capacity of earlier processor cards, supports extensive networking, and provide intensive use of software features and applications, including call centers of up to 1000 agents.

The core software architecture incorporates a real-time multitasking operating system, as well as SL-1 code that delivers features and call processing. This architecture guarantees feature transparency to the user upgrading to the core CPU. The core architecture also provides significant operation, administration, and maintenance enhancements for the people who work closely with the system software and hardware.

All core overlays reside in dynamic random-access memory (DRAM) after they are loaded from the hard disk during an initial software load (software is shipped on redundant hard disks). The Resident Overlays featured in core based systems ensure subsecond speeds in accessing the overlays.

About the Meridian 1

Along with software enhancements provided by X11 release 19, the capacity enhancement in the core architecture is provided by the core control complex. In the option 81 with Core Modules, the core control complex refers to the two Core Modules, Core 0 and Core 1. In the option 61C and option 81C with Core/Network Modules, the core control complex refers to the two Core/Network Modules, Core/Network 0 and Core/Network 1. In the option 51C, the core control complex refers to a Core/Network Module. The Core and Core/Network Modules are fully redundant, with Core 1 duplicating the contents of Core 0.

The backplane in the option 81 Core Modules is divided into two functional areas. The "interface" side houses a clock controller card, a three-port extender card, and up to two optional PRI/DTI cards. The "core" side provides an interprocessor bus (IPB).

The backplane in the options 51C, 61C, and 81C Core/Network Module is divided into "core" and "network" sides. The "network" side allows up to eight network cards to be installed for call processing capability.

The IPB is a very fast 32-bit address and data multiplexed multimaster bus that enables efficient communications with I/O interfaces and adjunct processors. The IPB is an asynchronous bus with speeds in the hundreds of megabits per second, resulting in a cumulative total speed many times greater than, for example, the 10-MB speed of Ethernet.

In each Core or Core/Network Module, the core side houses the following equipment:

— one Call Processor (CP) card

— one Input/Output Disk Unit with CD-ROM (IODU/C) or IOP/CMDU

— one (options 51C and 61C) or up to three (option 81C) core-to-network interface (CNI) cards

— CBT for option 81 or option 61C with NT9D11 Core/Network Module

About the Meridian 1

Options 51C/61C/81/81C supports three types of CP cards:

- The NT6D66 CP card incorporates a 32-bit Motorola 68030 processor with single in-line memory modules (SIMMs) that provide a total of 24 or 48 MB of memory. Use the 48 MB version to run X11 Release 22 on option 51C or 61C.

- The NT9D19 CP card incorporates a 32-bit Motorola 68040 processor with single in-line memory modules (SIMMs) that provide a total of 48, 64, or 96 MB of memory. Use the 48 MB version to run X11 Release 22 on option 51C or 61C, and the 64 MB version to run X11 Release 22 on option 81 or 81C.

- The NT5D10 CP card incorporates a 32-bit Motorola 68060 processor with single in-line memory modules (SIMMs) that provide a total of 48, 64, 80, or 112 MB of memory. Use the 48 MB version to run X11 Release 23 on option 51C or 61C, and the 64 MB version to run X11 Release 23 on option 81 or 81C.

Cabling between the CP cards allows memory shadowing and dual-CPU operation.

The CNI card provides the interface between the IPB and the network shelf, and between the CP card and three-port extender cards in the network shelf. Each CNI card provides two ports. In a typical configuration, three CNI cards support five network groups.

Release 23 introduces the NT5D61 Input/Output Disk Unit with CD-ROM (IODU/C) for options 51C/61C/81/81C. The IODU/C replaces the IOP/CMDU card, using an industry-standard 2MB floppy drive and a CD-ROM drive (on the NT5D61AA vintage) to install system software from a CD-ROM.

The IODU/C uses a Security Device and an electronic Keycode rather than a Security Cartridge, to perform security authentication. The Keycode file contains information about which features the system provides as well as Incremental Software Management limits, which determine the various system limits, such as the number of Loops, TNs, RAN connections, etc., allowed.

About the Meridian 1

The CBT card provides logical terminations to the 32-bit address/data multiplexed IPB signals across the core control section of the Core Module. For the Core/Network Module, the CBTs are replaced by hybrid bus terminators that are an integral part of the backplane of the Core/Network Module.

Core modules can diagnose faults in field-replaceable units for all core hardware, including cables. In case of a failure, a message in a natural language (such as English) appears on the system terminal and on the liquid crystal display (LCD) of the CP card. All messages can be stored in a file for future diagnostics.

Customization

The information that describes specific system configuration and associated peripheral equipment is called office data. This data resides in the system memory and on disk.

Office data describes the characteristics of the system in terms of configuration and call-dependent information, such as features and services. Office data is arranged in blocks defining peripheral equipment, system configuration, and transient data.

About the Meridian 1

Planning for your Meridian 1

You can prepare for the configuration of your Meridian 1 before it arrives by planning your new telephone system. Your company needs to make decisions about:

◆ telephone extensions, including telephone numbers, types of telephones, and telephone options

◆ attendant consoles

◆ features

◆ value-added servers for applications such as Meridian Mail, Interactive Voice Response, or Automatic Call Distribution

◆ trunks linking the Meridian 1 to other telephone systems, including the public telephone network

Documents are available to help your company plan your telephone system. For information about hardware planning, refer to *Meridian 1 Installation Planning*. For more information about feature planning and provisioning, refer to *Meridian 1 System Engineering*.

Once your company plans your new telephone system, you can use this guide to create implementation sheets or worksheets listing the responses to specific prompts in various Meridian 1 overlay programs.

About the Meridian 1

Configuring your new system

This guide gives you the information you need to configure your new Meridian 1 with standard features and options. To use the procedures in this document, you should have prior experience with Meridian 1 administration.

Programming the Meridian 1 involves loading various overlay programs and using each one to enter a specific type of information. In some cases you may have to move back and forth between overlays to complete programming. The following flowchart shows a typical pathway through the overlays.

To perform the configuration, complete each of the tasks described in this guide in the order that they appear. Flowcharts and step-by-step procedures are provided to help you complete each task.

Some features and options are beyond the scope of this programming guide. Make sure that you have access to other Meridian 1 documents, including:

◆ input-output guides

◆ software feature guide

About the Meridian 1

System planning and programming examples

The following examples of system planning and programming are available in Meridian 1 documents:

◆ Electronic Switched Network configurations, in *Electronic Switched Network Description*

◆ digital telephone line engineering, in *Digital Telephone Line Engineering*

◆ call detail recording, in *Call Detail Recording Description and Formats*

◆ tone and digit switch programming, in *Flexible Tone and Digit Switch Cards*

Planning forms

Planning forms serve as templates for your installation planning. Planning forms are available in the following Meridian 1 documents:

◆ *ISDN Basic Rate Interface Description*

◆ *X11 System Management Applications*

◆ *Multipurpose Serial Data Link Description*

Worksheets

Several worksheets are available to help you plan for and perform configuration and feature implementation on the Meridian 1. Worksheets are forms that serve as templates for your installation planning. Worksheets are available in *Meridian 1 System Engineering*.

Configuring terminals

Purpose

System administrators communicate with the Meridian 1 through a text-based interface that lets them issue commands, enter data, or browse the Meridian 1 system database. You can use the text-based interface on any basic data terminal, including video data terminals, printer terminals, or computers running terminal emulation software.

A data terminal connected to the Meridian 1 may be:

◆ a system monitor

◆ an administration and maintenance terminal

◆ a background terminal for use in a hotel/motel environment

553-0120 CI/OD
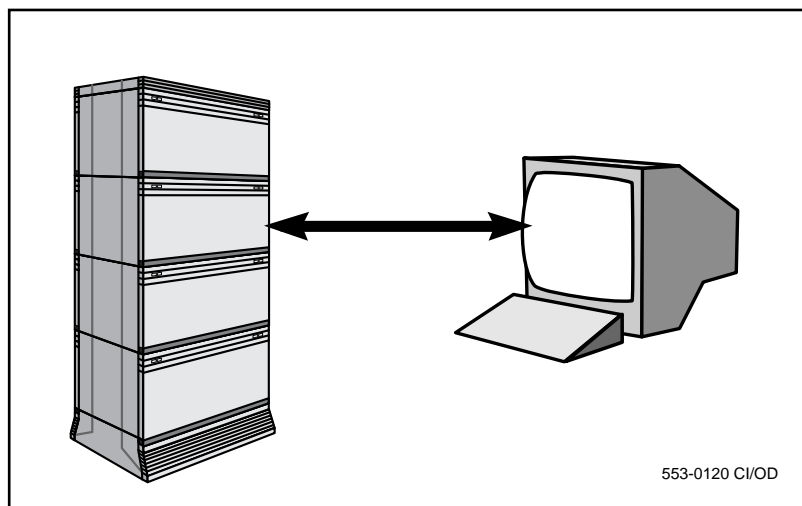
Configuring terminals

A terminal can be connected directly to the Meridian 1, allowing programmers and administrators to work onsite, or it can be connected by way of modems, allowing remote access.

The Meridian 1 already has one terminal configured. This is the terminal you use to communicate with the Meridian 1. Use the procedures and information provided here to configure any additional terminals.

Terminal types

The Meridian 1 uses data terminals in a number of different ways. A data terminal can play one of the following roles:

◆ system monitor

◆ background terminal

◆ maintenance terminal

◆ service change terminal

◆ traffic terminal

If you do not know what functions each terminal you are configuring will serve, refer to your installation plans. Brief descriptions are provided below.

System monitor

A system monitor operates as an output device only, displaying power, cooling, and general system error and status reporting.

To configure a terminal as a system monitor, enter YES in response to the XMS prompt in overlay 17.

Background terminal

A background terminal provides access to users in hotel/motel and other specialized environments, allowing them to monitor and control the Meridian 1.

To configure a terminal as a background terminal, enter BGD in response to the USER prompt in overlay 17.

Configuring terminals

Maintenance terminal

A maintenance terminal outputs system and maintenance messages, including AUD, BUG and ERR messages.

To configure a terminal as a maintenance terminal, enter MTC in response to the USER prompt in overlay 17.

Service change terminal

A service change terminal allows access to the Meridian 1 system, customer and set database, and allows programmers and administrators to review or change the database or issue commands.

To configure a terminal as a service change terminal, enter SCH in response to the USER prompt in overlay 17.

Traffic terminal

A service traffic terminal reports on traffic levels and events of interest to programmers and administrators.

To configure a terminal as a traffic terminal, enter TRF in response to the USER prompt in overlay 17.

Configuring terminals

Serial data interface ports

The Meridian 1 communicates with terminals through Serial Data Interface (SDI) ports. These SDI ports are found on several of the Meridian 1 circuit cards. These circuit cards include:

◆ NTND02 Misc/SDI/Peripheral Signalling Card

◆ NT8D41 Dual Port Serial Data Interface Paddle Board

◆ QPC687 CPU Card

◆ QPC139 Serial Data Interface

◆ QPC841 4-Port Serial Data Interface Card

◆ NT6D80 Multi-Purpose Serial Data Link Card

◆ QPC513 Enhanced Serial Data Interface Pack

◆ NT5K35 D-Channel Interface Card

◆ NT6D11 D-Channel Interface Card

◆ QPC757 D-Channel Interface Card

These cards reside in Network slots on the Meridian 1 switch. These cards require RS-232 cables with the exception of the Multi-purpose Serial Data Link (MSDL)card which requires a special cable (NTND27).The above circuit cards contain option switches, jumpers, or both that require the administrator to set, that will define the operating parameters of the SDI port on the card.

On a circuit card

- ON may be indicated by the word "on," the word "up," the word "closed," the number "1," an arrow pointing up or a solid dot (.).

- OFF may be indicated by the word "down," the word "open," the number "0," or an arrow pointing down.

Configuring terminals

See the section on circuit cards in this book for the various switch setting configurations of each card. The following section is a sample configuration of a maintenance terminal using a Multi-purpose Serial Data Link (MSDL) circuit card. This circuit card incorporates the most complex hardware configuration of the circuit cards listed.

Sample Configuration of Maintenance Terminal on MSDL card.

The system administrator obtains the customers configuration requirements for the maintenance terminal. For this example, the customer requires:

◆ the maintenance terminal to be configured on an MSDL card.

◆ The interface mode will be Data Terminal Equipment (DTE).

◆ The terminal or device number to be seven.

◆ A baud rate of 9600.

◆ Use port 0 on the MSDL card

Before configuring the maintenance terminal on the Meridian 1, the MSDL card has to be configured to obtain the correct operating parameters. The list below provides the necessary steps to configure the MSDL card.

Steps required to hardware configure MSDL card

1. Remove the MSDL card (NT6D80) from it's current slot on the Meridian 1 switch or protective package. Handle the circuit card according to the Circuit card Precautions section in this book.

2. Using figure "553-0282T MSDL crd", set the Data Terminal Equipment (RS-232 DTE) switch settings for port 0. Find switch four (S4) and switch eight (S8). Both S4and S8 should be in the off position.

3. Using figure "553-0282T MSDL crd", find switch 9 (S9) and switch 10 (S10).Set the device number to seven. To set the device number as 7, set S10 to 0 and S9 to 7.

Configuring terminals

> 4. Insert the MSDL card into any NET slot on the Meridian 1 switch.

Figure 1

Card Address Select Switches

TENS ONES

Option switches for port 0.

S4   S8

553-0282T MSDL crd
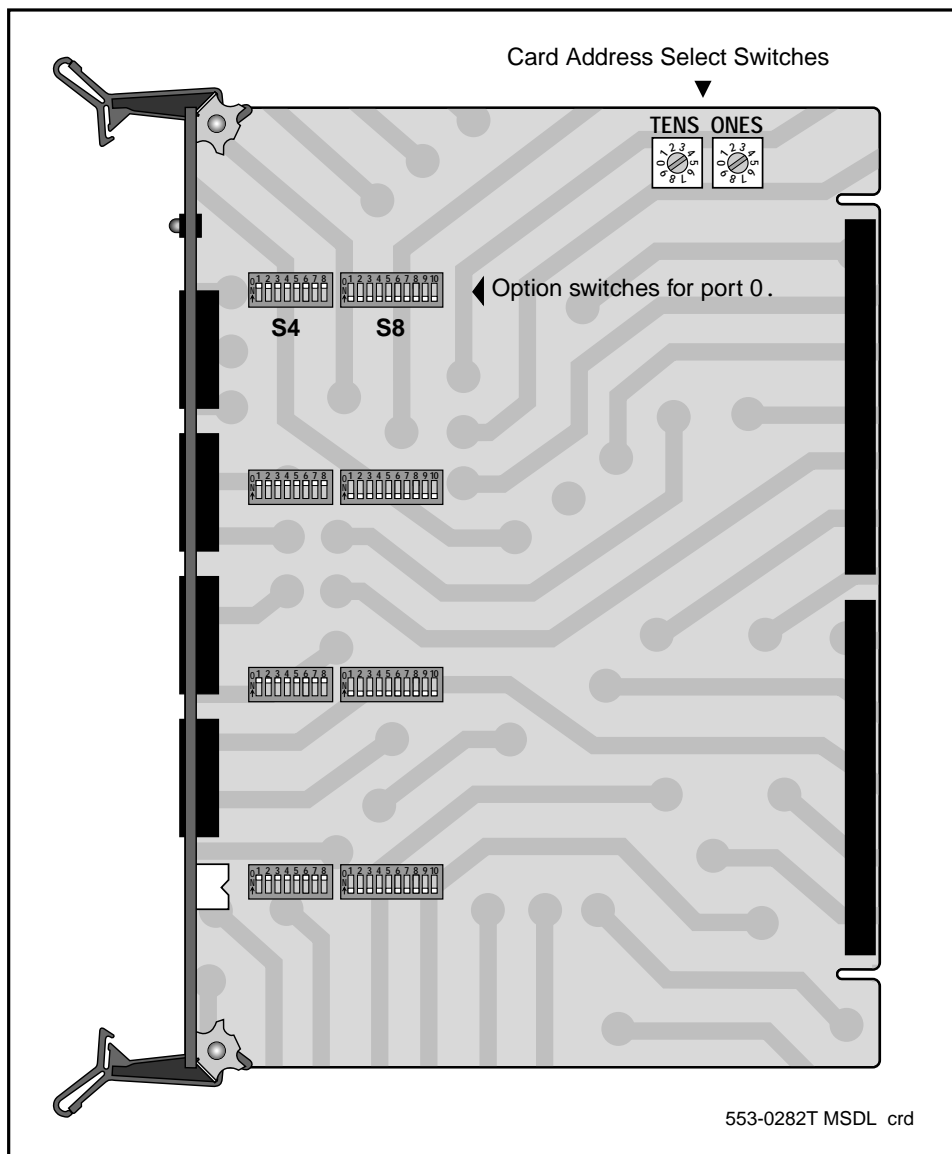
Configuring terminals

Obtain the required cable for the MSDL card serial data interface port (NTND27) and connect it to port 0. Connect the other end to the data terminal.

Step action to software configure MSDL card for a maintenance terminal

STEP	ACTION	
1	**Log in.**	
	For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.	
2	**Set up maintenance terminal.**	
	`>LD 17`	
	REQ CHG	
	TYPE CFN	Enter CFN to change configuration
	ADAN NEW TTY 7	Enter NEW TTY 7 to create a new input/output device number 7.
	CTYP MSDL	Enter MSDL to specify the Multi-purpose Serial Data Link card.
	PORT 0	Active port number
	BPS 9600	Enter 9600 for the customer defined baud rate.
	USER MTC	Enter MTC to specify the port as a maintenance port.
	REQ ****	Terminate the overlay by entering ****.
	— continued —	

Configuring terminals

STEP	ACTION

3	**Enable the MSDL card**.

>**LD 48**

. ENL MSDL 7 FDL	Enter ENL MSDL 7 to enable the MSDL card.
. STAT MSDL 7	Enter STAT MSDL 7 to verify that the MSDL card is enabled.
. ****	Terminate the overlay by entering ****.

4	**Enable the terminal port**

>**LD 37**

. ENL TTY 7	Enter ENL TTY 7 to enable the terminal port.
. ****	Terminate the overlay by entering ****.

— continued —

Configuring terminals

STEP	ACTION

5	**Check your programming**

>LD 22

REQ	PRT	Enter PRT.
TYPE	ADAN TTY 7	Enter ADAN TTY 7 to verify the terminal port settings. These setting must match those of the terminal connected to the switch.
REQ	* * * *	Terminate the overlay by entering ****.
		If possible, try all terminals to ensure that they are operating properly. If you cannot check all terminals at this time, review your programming to ensure that no errors were made.

6	**Perform a data dump to permanently store the programming you have just completed.**

> ⚠️ **CAUTION**
> Check your maintenance agreement
> before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

Configuring terminals

STEP	ACTION
	— continued —

7	**Verify that the data dump was successful.**

On-screen or printed response:

NO GO BAD DATA

or

DATA DUMP COMPLETE

data dump successful

8	**Terminate this overlay program.**

.

* * * *

9	**Terminate this programming session.**

Log off.

>LOGO

10	**You have completed the programming required to configure terminals.**

END

Configuring terminals

Modems

The Meridian 1 communicates with a data terminal by way of a modem in the same way it communicates with a local data terminal. A cable connects the modem to an interface card that has been configured to provide a terminal port.

To configure a terminal connected by way of a modem, respond to the same prompts used to configure a local modem. Configure the interface card using hardware switch settings to operate in DTE mode.

As well as programming the Meridian 1, you must configure the modem to auto-answer. Refer to the modem documentation for information about configuring the modem. Bell 103/212 compatible dumb modems are recommended to connect a remote data terminal. If a smart modem (such as a Hayes modem) is used, configure the modem for the dumb mode of operation (Command Recognition OFF, Command Echo OFF) before connecting the modem to the asynchronous port.

Log files

The Meridian 1 can store information sent to terminals into log files. To create a log file, respond to the TTYLOG prompt in overlay 17 with a size for the log file. The maximum size is 65 Kbytes.

To turn off the log file, respond to the TTYLOG prompt in overlay 17 with 0.

Determine the size of the log file by estimating the level of traffic to the terminal. The busier the terminal, the larger the log file should be.

Configuring terminals

Single terminal access

If you configure your terminal to use an MSDL card, you can take advantage of the Single Terminal Access (STA) application to combine a number of different terminal functions on a single terminal. With STA, you can use one terminal to act as an administration terminal, a maintenance terminal, and a traffic monitoring terminal. STA can be particularly useful when configuring a remote terminal, since a single terminal and telephone line can provide access to the Meridian 1.

Maintenance telephones

Administrators can use specially designated telephones to perform certain functions on the Meridian 1. Maintenance telephones allow the administrator to enter commands without using a data terminal. Maintenance telephones are not suited to initial system programming and are not discussed in this guide. For more information about using maintenance telephones, refer to the *Input/Output Guide*.

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. To maximize the effectiveness of your Meridian 1 administration efforts, take advantage of these courses and aids.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Configuring terminals

Saving data

After adding or changing an I/O device by way of the ADAN prompt sequence, the data is saved before ADAN is reprompted. This allows you to exit overlay 17 by entering **** after I/O changes without having to carriage return through the remaining prompts.

What to have ready

The following checklist summarizes the steps you should take before setting up your input/output requirements.

Table 1
Checklist

Basic	Optional	Preparation
Đ		Find out what terminals are needed, and where.
Đ		Identify the card to be used for each terminal.
Đ		Plan for any modems and telephone lines you may need.
Đ		Consider implementing Single Terminal Access.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure your terminals.

Configuring terminals
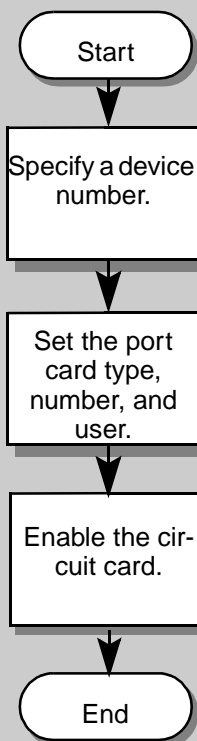
```
        ┌──────────┐
        │  Start   │          ┌────────────────────────────────┐
        └────┬─────┘          │   The flowchart summarizes the │
             │                │  procedure. Use the instructions in the │
             ▼                │   step-action table that follows this │
    ┌──────────────┐          │   flowchart to perform the procedure. │
    │Specify a device│        └────────────────────────────────┘
    │   number.    │
    └──────┬───────┘
           │
           ▼
    ┌──────────────┐
    │  Set the port │
    │  card type,  │
    │ number, and  │
    │    user.     │
    └──────┬───────┘
           │
           ▼
    ┌──────────────┐
    │ Enable the cir-│
    │  cuit card.  │
    └──────┬───────┘
           │
           ▼
        ┌──────────┐
        │   End    │
        └──────────┘
```

Configuring terminals

> The preceding material in this module contains essential information.
> You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the implementation
> of terminals.

STEP	ACTION

1   **Log in.**

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2   **Set up terminals.**

>**>LD 17**

REQ   CHG

TYPE   CFN   Enter CFN to change the configuration record.

ADAN   NEW TTY X

Enter NEW TTY and the device number to create a new terminal.

CTYP   aaa   Enter the card type that will support the terminal from the selection below.

To specify the card type	Enter
multipurpose serial data link	MSDL
four-port SDI	SDI4
SDI paddle board	XSDI

— continued —

Configuring terminals

STEP	ACTION

2 continued …	
To specify the card type	**Enter**
Dual port SDI card	SDI2
four-port SDI	QSDI
Single Port SDI card	SDI
Single Port DCH card	SPDC
Enhanced SDI card	ESDI
Misc/SDI/Perip Signal card	MSPS
D-channel Interface card	DCHI

`DNUM`	X	x = 0 - 15
		Enter the device number for I/O ports. All ports on the MSDL card address settings must match the DNUM value. For all other ports such as SDI, DCHI, etc., the device number should match the port address switch settings.
`PORT`	0	x = 0
		Prompted only when CTYP = MSDL. A terminal port can only reside on port zero. X = 0
`BPS`	xxxxx	Asynchronous baud rates. Only applies to software configurable cards (MSDL).
		xxxxx =1200, 2400, 4800, 9600, 19200,48000,56000 or 64000
`USER`	aaa	Specify the user of the port.

Configuring terminals

STEP	ACTION

To specify the port user	**Enter**
background terminal	BGD
maintenance terminal	MTC
service change terminal	SCH
traffic terminal	TRF

XMS   (NO) YES   Enter YES if the port is to be the system monitor.

Terminate the overlay by entering `****`.

3	**Enable the Terminal.**

If you have configured an MSDL card, use the previous example to enable the card and terminal.

The follow the steps apply to all other terminals.

>LD 37

.STAT   Check the status of the newly configured terminal.

.ENL TTY X   Enable the terminal if it is disabled.

Terminate the overlay by entering ****.

— continued —

Configuring terminals

STEP	ACTION

4	**Check your programming.**

>**LD 22**

REQ	PRT	Enter PRT.
TYPE	ADAN TTY X	Enter ADAN TTY and the device number to verify the terminal port settings. These setting must match those of the terminal connected to the switch.
REQ	****	Terminate the overlay by entering ****.
		If possible, try all terminals to ensure that they are operating properly. If you cannot check all terminals at this time, review your programming to ensure that no errors were made.

5	**Perform a data dump to permanently store the programming you have just completed.**

> [!CAUTION]
> **CAUTION**
> Check your maintenance agreement
> before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

— continued —

Configuring terminals

STEP	ACTION
6	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
	data dump successful
7	**Terminate this overlay program.**
	.
	****
8	**Terminate this programming session.**
	Log off.
	>LOGO
9	**You have completed the programming required to configure terminals.**

END

Configuring terminals

Configuring printers

Purpose

Printers are commonly used with the Meridian 1 to output Call Detail Recording (CDR) and traffic data. Printers are sometimes connected in parallel with administration or maintenance terminals to capture programming actions or commands.

553-0122T CI/OD
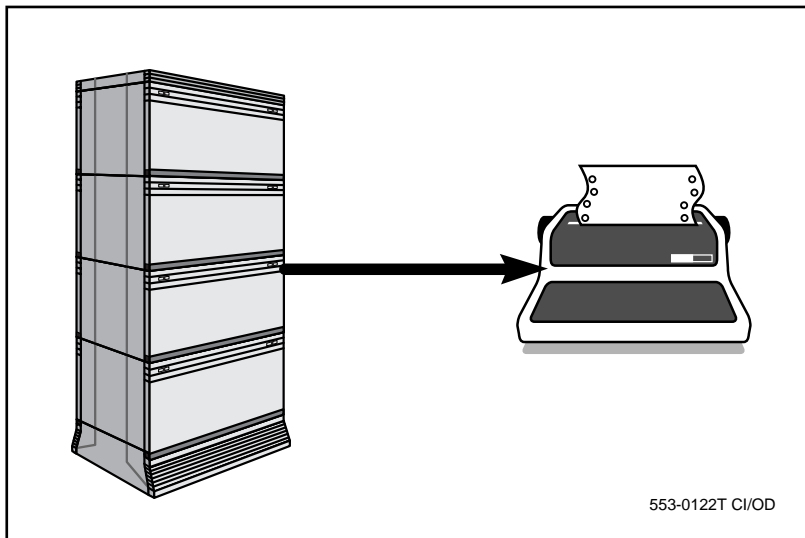
Configuring printers

Applications

The following types of printer can be configured:

◆ Automatic Call Distribution (ACD) printer (for reports)

◆ background terminal

◆ software error printer

◆ CDR TTY port (outputing CDR records)

◆ Maintenance printer (printing AUD, BUG and ERR messages)

◆ traffic printer

To designate a specific application for a printer, respond to the USER prompt in overlay 17.

Serial data interface ports

Refer to Serial data interface ports in Configuring terminals. Ensure that the SDI port is properly configured and Circuit Card address is configured.

Configuring printers

Traffic log files

The Meridian 1 is capable of outputting information about its traffic. During normal operation there can be large amounts of information generated. Traffic information is typically printed out on a high capacity high speed printer.

553-0123T CI/OD

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. To maximize the effectiveness of your Meridian 1 administration efforts, take advantage of these courses and aids.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Configuring printers

Saving data

After adding or changing an I/O device by way of the ADAN prompt sequence, the data is saved before ADAN is reprompted. This allows you to exit overlay 17 by entering **** after I/O changes without having to carriage return through the remaining prompts.

What to have ready

The following checklist summarizes the steps you should take before setting up your printers.

Table 2
Checklist

Basic	Optional	Preparation
Đ		Identify your printing requirements.
Đ		Select interface cards and applications for each printer.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure your printers.

Configuring printers

```
                    ┌──────────────┐          ┌────────────────────────────────┐
                    │    Start     │          │  The flowchart summarizes the  │
                    └──────────────┘          │ procedure. Use the instructions│
                           │                  │   in the step-action table that│
                           ▼                  │    follows this flowchart to   │
                    ┌──────────────┐          │      perform the procedure.    │
                    │ Enter a device│         └────────────────────────────────┘
                    │  type and     │
                    │  number.      │
                    └──────────────┘
                           │
                           ▼
                    ┌──────────────┐
                    │  Select an    │
                    │ interface card│
                    │    type.      │
                    └──────────────┘
                           │
                           ▼
                    ┌──────────────┐
                    │Configure inter-│
                    │  face card    │
                    └──────────────┘
                           │
                           ▼
                    ┌──────────────┐
                    │ Specify a port│
                    │    user.      │
                    └──────────────┘
                           │
                           ▼
                    ┌──────────────┐
                    │  Enter the    │
                    │  customer     │
                    │  number.      │
                    └──────────────┘
                           │
                           ▼
                    ┌──────────────┐
                    │     End      │
                    └──────────────┘
```
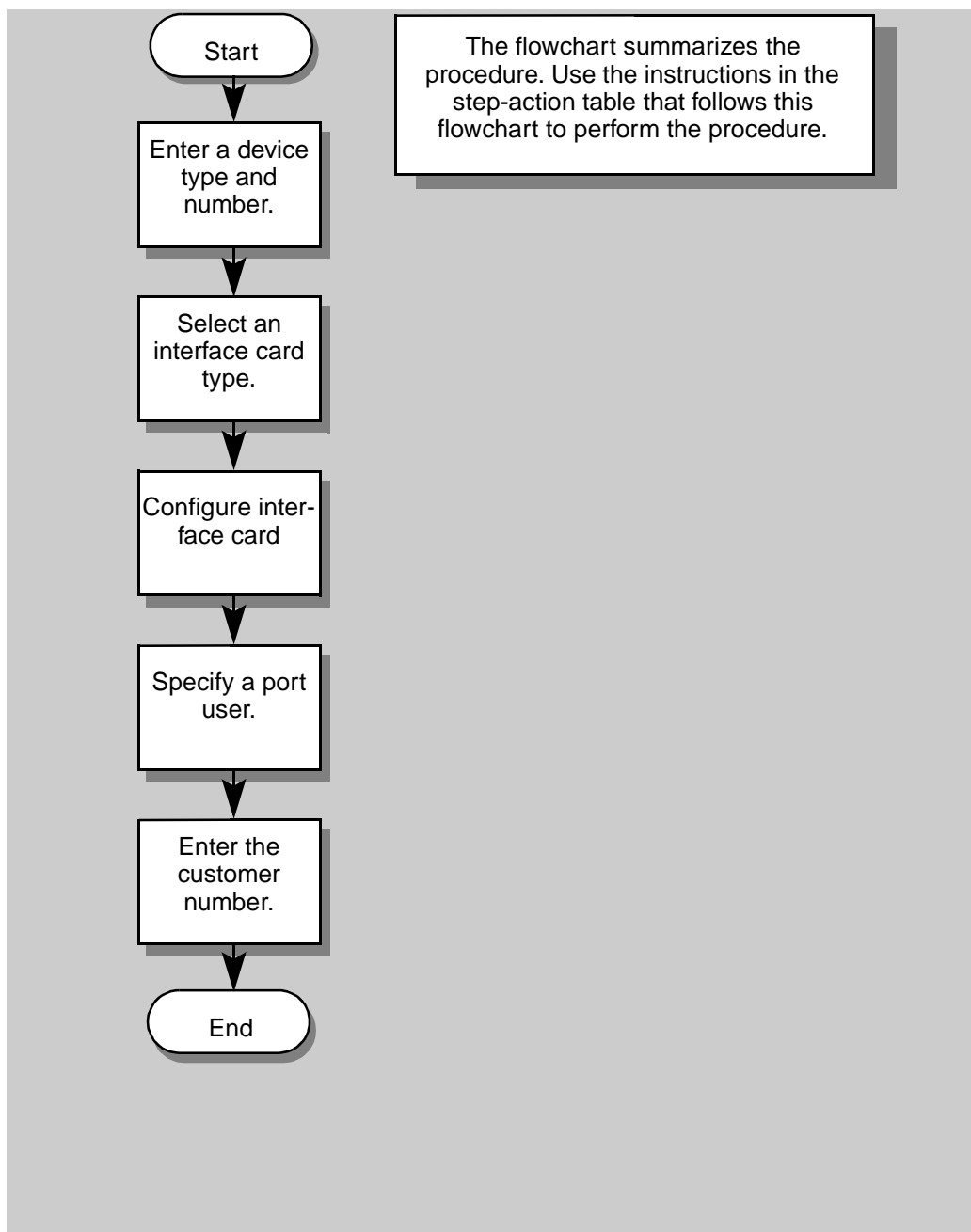
Configuring printers

The preceding material in this module contains essential information.
You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation
of printers.

STEP ACTION

1 Log in.

For information on proper login procedures, see *Basic Programming Instructions* in
Basic Telecom Management.

2 Set up printers.

>LD 17

REQ	CHG	
TYPE	CFN	Enter CFN to change the configuration record.
ADAN	NEW PRT X	Enter NEW TTY and the device number to create a new printer.
CTYP	aaa	Enter the card type that will support the terminal from the selection below.

To specify the card type	**Enter**
multipurpose serial data link	MSDL
four-port SDI	SDI4
SDI paddle board	XSDI

— **continued** —

Configuring printers

STEP	ACTION

2 continued …		
To specify the card type		**Enter**
Dual port SDI card		SDI2
four-port SDI		QSDI
Single Port SDI card		SDI
Single Port DCH card		SPDC
Enhanced SDI card		ESDI
Misc/SDI/Perip Signal card		MSPS
D-channel Interface card		DCHI
BPS	xxxxx	Asynchronous baud rates. Only applies to software configurable cards (MSDL).
		xxxxx **=**1200, 2400, 4800, 9600, 19200,48000,56000 or 64000
DNUM	X	x = 0 - 15
		Enter the device number for I/O ports. All ports on the MSDL card address settings must match the DNUM value. For all other ports such as SDI, DCHI, etc., the device number should match the port address switch settings.
PORT	0	x = 0
		Prompted only when CTYP = MSDL. A terminal port can only reside on port zero. X = 0
USER	aaa	Specify the user of the port.
— continued —		

Configuring printers

STEP	ACTION
	2 continued …
	To specify the port user **Enter**
	ACD printer (for reports) ACD
	background terminal BGD
	software error printer BUG
	CDR TTY port (outputing CDR records) CTY
	Maintenance (including AUD, BUG and ERR MTC messages)
	traffic TRF
	XMS (NO) YES Enter YES if the port is to be the system monitor.
	CUST X X = 0 - 99 Enter the customer number.
	Terminate the overlay by entering ****.
3	**Enable the terminal port**
	`>LD 37`
	. ENL PRT X Enter ENL PRT and the port number to enable the terminal port.
	. STAT Enter the STAT command to verify that the port is enabled.
	. **** Terminate the overlay by entering ****.
	— continued —

Configuring printers

STEP	ACTION
4	**Check your programming.**

>**LD 22**

REQ	PRT	Enter PRT.
TYPE	ADAN PRT X	Enter ADAN PRT and the device number to verify the terminal port settings. These setting must match those of the printer connected to the switch.
REQ	****	Terminate the overlay by entering ****.
		If possible, try all terminals to ensure that they are operating properly. If you cannot check all terminals at this time, review your programming to ensure that no errors were made.

5	**Perform a data dump to permanently store the programming you have just completed.**

CAUTION
Check your maintenance agreement
before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

— continued —

Configuring printers

STEP	ACTION
6	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
7	**Terminate this overlay program.**
	.
	****
8	**Terminate this programming session.**
	Log off.
	>LOGO
9	**You have completed the programming required to configure printers.**
	END

Configuring a floppy disk for Options 21, 51, 61 and 71

Purpose

The Meridian 1 allows the use of floppy disk drives. Floppy disks are used for loading software, for backing up databases, and for downloading logs. At system power-up or during a system reload, protected data store (office data) and program store information is automatically transferred from the disk drive (mass storage) unit to the system memory. During regular operation, the CPU accesses information from the memory.

If information in the protected data store is changed (such as a change in a telephone configuration), the information on the disk drive unit must be updated. Transferring data from the system memory to the disk drive unit is called a data dump. Data dumps can occur automatically or manually (when you issue software program commands).

The following types of disk drive units are used in Meridian 1 systems:

NTND15 FDU

The NTND15 Floppy Disk Unit is used in option 21E. It consists of two 3.5-inch floppy disk drives with a formatted capacity of 2.88 MB each; 5.76 MB total.

NTND16 Multi Disk Unit (MDU)

The NTND16 is used in options 51, 61, and 71. It consists of two 3.5-inch floppy disk drives with a formatted capacity 2.88 MB each; 5.76 MB total, and one 3.5-inch hard disk with 120 MB formatted capacity.

Configuring a floppy disk for Options 21, 51, 61 and 71

NT9D33 Small System Multi Disk Unit (SMDU)

The NT9D33 is used in option 21E and STE systems. It consists of two 3.5-inch floppy drives with a formatted capacity of 1.44 MB each; 2.88 MB total, and one 3.5-inch hard disk with a minimum formatted capacity of 20 MB.

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. To maximize the effectiveness of your Meridian 1 administration efforts, take advantage of these courses and aids.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Saving data

After adding or changing an I/O device via the ADAN prompt sequence, the data is saved before ADAN is reprompted. This allows you to exit LD 17 with **** after I/O changes without having to carriage return through the remaining prompts.

What to have ready

The following checklist summarizes the steps you should take before setting up your floppy disk drives.

Table 3
Checklist

Basic	Optional	Preparation
Đ		Identify your system configuration.

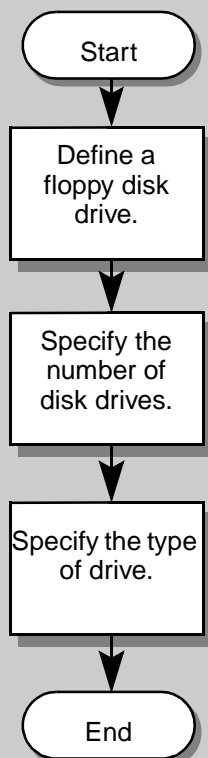## Configuring a floppy disk for Options 21, 51, 61 and 71

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure your floppy disk drives.

Configuring a floppy disk for Options 21, 51, 61 and 71

The flowchart summarizes the procedure. Use the instructions in the step-action table that follows this flowchart to perform the procedure.

```
        ( Start )
           │
           ▼
  ┌──────────────┐
  │  Define a    │
  │ floppy disk  │
  │   drive.     │
  └──────────────┘
           │
           ▼
  ┌──────────────┐
  │ Specify the  │
  │  number of   │
  │ disk drives. │
  └──────────────┘
           │
           ▼
  ┌──────────────┐
  │Specify the type│
  │  of drive.   │
  └──────────────┘
           │
           ▼
        ( End )
```

Configuring a floppy disk for Options 21, 51, 61 and 71

The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of floppy disk drives.

STEP	ACTION

1   Log in.

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2   Set up floppy disk drives.

Some responses may not be allowed depending upon machine type, options, and equipped packages.

```
>LD 17
```

REQ	CHG	
TYPE	CFN	Enter ADAN to create a new I/O device.
ADAN	CHG FDK X	Enter CHG FDK and device number to configure a floppy disk drive.
NUMD	(2) – 1	Specify the number of drives to be installed.
FTYP	aa	Floppy type (aa = (3), 3S, or 5)
		(3) = 3.5 inch high density type
		3S = 3.5 inch super density type
		5 = 5.25 inch floppy type

— **continued** —

Meridian 1 Options 21 through 81C   System Programming Guide   Standard 5.00 June 1999

Configuring a floppy disk for Options 21, 51, 61 and 71

STEP	ACTION

3 **Check your programming.**

```
>LD 22
```

REQ	PRT	Enter PRT.
TYPE	ADAN FDK X	Enter ADAN FDK and the device number to verify the Floppy disk configuration.
REQ	****	Terminate the overlay by entering ****.

4 **Perform a data dump to permanently store the programming you have just completed.**

> ⚠ **CAUTION**
> Check your maintenance agreement
> before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

— continued —

Configuring a floppy disk for Options 21, 51, 61 and 71

STEP	ACTION
5	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
6	**Terminate this overlay program.**
	.
	****
7	**Terminate this programming session.**
	Log off.
	>LOGO
8	**You have completed the programming required to configure floppy disk drives.**

END

Configuring a floppy disk for Options 21, 51, 61 and 71

Configuring a hard disk for Options 21, 51, 61 and 71

Purpose

The Meridian 1 allows the use of hard disk drives. Hard disks are used for storing software and the Meridian 1 database. At system power-up or during a system reload, protected data store (office data) and program store information is automatically transferred from the disk drive (mass storage) unit to the system memory. During regular operation, the CPU accesses information from the memory.

If information in the protected data store is changed (such as a change in a telephone configuration), the information on the disk drive unit must be updated. Transferring data from the system memory to the disk drive unit is called a data dump. Data dumps can occur automatically or manually (when you issue software program commands).

The following equipment configurations include hard drives:

NTND16 Multi Disk Unit (MDU)

The NTND16 is used in options 51, 61, and 71. It consists of two 3.5-inch floppy disk drives with a formatted capacity 2.88 MB each; 5.76 MB total, and one 3.5-inch hard disk with 120 MB formatted capacity.

NT9D33 Small System Multi Disk Unit (SMDU)

The NT9D33 is used in option 21E and STE systems. It consists of two 3.5-inch floppy drives with a formatted capacity of 1.44 MB each; 2.88 MB total, and one 3.5-inch hard disk with a minimum formatted capacity of 20 MB.

Configuring a hard disk for Options 21, 51, 61 and 71

NT6D64 Core Multi Drive Unit (CMDU)

The NT6D64 is used in the Option 81 Core Module, and in options 51C and 61C with X11 release 19 and later. It consists of one 3.5-inch floppy disk drive with a formatted capacity of 2.88 MB, and one 3.5-inch hard disk with 120 MB formatted capacity.

NT5D20 IOP/CMDU

The NT5D20 is used in options 51C, 61C, and 81C. It consists of one Input/output Processor (IOP), one 3.5-inch floppy disk drive with a formatted capacity of 2.88 MB, and one 3.5-inch hard disk with 120 MB formatted capacity.

Note: Two IOP/CMDUs, one in each Core/Network Module, are used in a redundant arrangement. Therefore, 2.88 MB of floppy disk storage, 120 MB of hard disk storage, and 48 MB of RAM are available in each module during system operation.

Certain Meridian 1 system options do not require or allow configuration of a hard disk drive. This section may not be needed for your system. Verify that your system is equipped with a hard disk drive and that disk drive configuration is required before proceeding. If you do not have to configure a hard drive, go to the next programming task.

To configure a hard drive on the Meridian 1, respond to the ADAN and NUMD prompts.

Configuring a hard disk for Options 21, 51, 61 and 71

Administration tips

A number of courses and administration aids are available from Nortel or your system supplier. To maximize the effectiveness of your Meridian 1 administration efforts, take advantage of these courses and aids.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Saving data

After adding or changing an I/O device via the ADAN prompt sequence, the data is saved before ADAN is reprompted. This allows you to exit LD 17 with **** after I/O changes without having to carriage return through the remaining prompts.

Configuring a hard disk for Options 21, 51, 61 and 71

What to have ready

The following checklist summarizes the steps you should take before setting up your had disk drive.

Table 4
Checklist

Basic	Optional	Preparation
Ð		Identify your system configuration.

What's next?

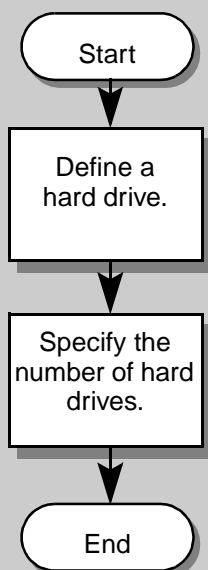A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure your hard disks.

Configuring a hard disk for Options 21, 51, 61 and 71

The flowchart summarizes the procedure. Use the instructions in the step-action table that follows this flowchart to perform the procedure.

```
            ( Start )
                │
                ▼
        ┌───────────────┐
        │  Define a     │
        │  hard drive.  │
        └───────────────┘
                │
                ▼
        ┌───────────────┐
        │  Specify the  │
        │ number of hard│
        │    drives.    │
        └───────────────┘
                │
                ▼
            (  End  )
```

Configuring a hard disk for Options 21, 51, 61 and 71

> The preceding material in this module contains essential information.
> You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the implementation
> of hard disk drives.

STEP	ACTION

1　**Log in.**

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2　**Set up hard disk drives.**

Some responses may not be allowed depending upon machine type, options, and equipped packages.

>LD 17

REQ	CHG	
TYPE	ADAN	Enter ADAN to create a new I/O device.
ADAN	NEW HDK 0	Enter NEW HDK 0 to configure a hard disk.
NUMD	1-2	Specify the number of drives to be installed.

— continued —

Configuring a hard disk for Options 21, 51, 61 and 71

STEP	ACTION

3   **Check your programming.**

If possible, try the hard disk drives to ensure that they are operating properly. If you cannot check the drives at this time, review your programming to ensure that no errors were made. Use the scroll feature of your terminal, check your printout, or use overlay 22 to examine the contents of the database. For more information about reviewing your programming, refer to the About the Meridian 1 section of this book.

If	Do
the programming is correct	step 4
the programming is not correct	step 1

4   **Perform a data dump to permanently store the programming you have just completed.**

> **CAUTION**
> Check your maintenance agreement before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

— **continued** —

Configuring a hard disk for Options 21, 51, 61 and 71

STEP	ACTION
5	**Verify that the data dump was successful.**
	On-screen or printed response:
	`NO GO BAD DATA`
	or
	`DATA DUMP COMPLETE`
6	**Terminate this overlay program.**
	`.`
	`****`
7	**Terminate this programming session.**
	Log off.
	`>LOGO`
8	**You have completed the programming required to configure hard disk drives.**
	END

IODU/C Release 23 and later

Purpose

Meridian 1 processors include the Thor processors: (options 51C, 61C, 81 and 81C). Thor systems have a very different architecture from the Omega systems (options 21, 21E, 51, 61 and 71). On Thor processors the number of software packages included is fixed: that is, all packages are included. Therefore, the storage requirements for Thor processors is fixed.

The configuration of Thor architecture is outside the scope of this guide. This section is for information purposes only.

Software installation and SYSLOAD

On the Thor machines, the SL-1 program is loaded to hard disk via an external medium and then SYSLOAD is performed from the hard disk. (Due to the need to accommodate a much larger and growing SL-1 program, this is a departure from the Omega machines, on which the floppies and the hard disk were interchangeable as means of uploading the SL-1 program and SYSLOAD could be performed from either.) At present the software uploading medium is either a stack of 8-16 4MB floppy disks, on systems purchased prior to Release 23, or a CD-ROM, on systems purchased from Release 23 on. The SL-1 customer database is loaded to the hard disk on a separate floppy, which can be rewritten via a "backup" operation or reread to hard disk via a "restore" operation (LD 43).

The hard disk total capacity is a function of whatever is currently available from the manufacturers. At present, the disks being shipped with the Meridian 1 are 2GB. Whatever the total capacity, however, the actual storage capacity available to the Meridian 1 is determined

IODU/C Release 23 and later

by the disk partitioning into the protected and unprotected area. Since Release 21 this has been set at 30MB for unprotected and 60MB for protected.

Pre-Release 23 : IOP/CMDU
Prior to Release 23, the software uploading medium was a 4MB disk drive. The SL-1 program was read in from a stack of 4MB floppies. (A stack of 8 in Release 18 and a stack of 16 by Release 23.) This is being replaced in Release 23 by the introduction of the Input/Output Disk Unit with CD-ROM (IODU/C) card, which introduces a CD-ROM - floppy drive combination discussed in the next section. IODU/C preserves the architectural characteristics of the IOP/CMDU recognized by the rest of the system - the CP-IOP interface, and the Ethernet and SCSI capabilities of the IOP family.

Release 23 : IODU/C
By means of the IODU/C feature, Release 23 introduces software delivery by CD-ROM to Meridian 1 systems. IODU/C incorporates a Keycode based S/W installation and feature expansion methodology. Highlights of IODU/C include:

Software delivery via CD plus single install floppy. This replaces the (large) stack of floppies required to install software in the past.

Replacement of single 4MB floppy drive with a 2MB drive.

The IODU/C hardware replaces the old IOP/CMDU pack in the exact same three slots; ie., the old and the new are incompatible. In Release 23 IODU/C will be shipped with all new systems and all hardware upgrades. The IOP/CMDU is still supported on upgrades to Release 23 that involve software only.

The following table provides the expected maximum floppy disk space required (before compression) by SL-1 databases for the supported option 51C/61C/81/81C machine types. These are conservative but realistic estimates; that is, not all sites with the given machine type will have databases as large as shown.

IODU/C Release 23 and later

Floppy Disk Space Requirements Projection for SL-1 Customer data

	Rls 23
51C with NT6D66 CP card	0.534
61C with NT6D66 CP card	0.816
81/81C with NT6D66 CP card	2.087
51C with NT9D19 CP card	0.746
61C with NT9D19 CP card	1.169
81/81C with NT9D19 CP card	3.076
51C with NT5D10 CP card	0.955
61C with NT5D10 CP card	1.519
81/81C with NT5D10 CP card	4.055

About the NT5D61 IODU/C card

The NT5D61 Input Output Disk Unit with CD-ROM (IODU/C) card introduces CD-ROM software delivery to Meridian 1 systems options 51C, 61C, 81 and 81C.

The software installation process for IODU/C based systems is similar to the process defined for IOP/CMDU or IOP and CMDU systems, with the following exceptions:

— software installation from CD-ROM and one Install Program diskette.

— During the software installation process, a security device and keycode diskette are used to activate features and ISM limits rather than a security cartridge.

— Database backup and restore is supported using an industry-standard 2 MB floppy drive rather than a 4 MB drive.

IODU/C Release 23 and later

— For redundant systems, software is installed onto Core 1 and then copied to the other Core. This eliminates software installation onto both Cores. (CP-BOOT ROM and IOP-ROM must be upgraded on both Cores.)

— For redundant systems, the database is copied from the redundant side.

— Each processor type (68060, 68040, 68030) has a distinct Install Program and Database Transfer Utility diskette

Software install kit

The IODU/C Software Install Kit consists of:

— a generic CD-ROM that contains nine software generics

— Install Program diskettes (one for each Call Processor card type, 68060, 68040, 68030)

— Keycode diskette

— Database Transfer Utility diskette

— Distributor Keycode Application diskette

— customer database diskettes

A complete software installation must be performed to:

— convert from one release to another

— convert to a later issue of the same release

— change software generic within the same release

Security device

The IODU/C security device and keycode replace the functionality of the IOP/CMDU security cartridge. The security device is located in the top right corner of the IODU/C motherboard and controls the software feature functionality and Incremental Software Management (ISM) limits.

IODU/C Release 23 and later

During software installation, the keycode must be validated against the information contained in the security device. To identify matching security devices and keycodes, refer to the 8-digit code on the security device and the keycode diskette label.

The security device is intended to serve the customer through system upgrades and features changes, and is to be replaced only if damaged.

Keycodes

A keycode is an electronic file that resides on a diskette or your PC and is installed using Overlay 143 or the Meridian 1 Software Installation Tool.

A new keycode is required when converting software releases, adding features, modifying ISM limits, and when replacing a security device. During the software installation process, you will be prompted to install a keycode diskette.

In addition to receiving a keycode diskette from Northern Telecom, you can download a keycode from the Distributor Keycode Server to your PC hard disk and copy it to a standard 2 MB floppy diskette.

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. To maximize the effectiveness of your Meridian 1 administration efforts, take advantage of these courses and aids.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

IODU/C Release 23 and later

Multi-purpose Serial Data Link

Purpose

The Multi-purpose Serial Data Link card facilitates smooth
communications between the Meridian 1 system and peripheral
devices or D-channels.

The following three D-channel options are covered:

◆ MSDL Idle Code Selection

◆ MSDL Port Overload Counter

◆ MSDL Status Enquiry Message Throttle

MSDL Idle Code Selection

When a T1 carrier is disabled at the remote end, the remote T1 or
ISDN PRI hardware raises a "Red Alarm" status and sends a "Yellow
Alarm," to the local (near end) Meridian 1. This takes all trunks and
channels out of service, and responds to the remote end by sending an
"Unassigned PCM" (FF) code. However, some switches do not
recognize the "Unassigned PCM" code, and instead expect an "Idle
PCM" (7F) code.

The Idle Code Selection feature allows a Meridian 1, upon receiving
a "Yellow Alarm" condition from the remote end with a disabled T1
carrier, to be configured to respond by sending an "Idle PCM" code
instead of an "Unassigned PCM" code. Therefore, a remote switch,
such as a Lucent 5ESS, which expects to receive an "Idle PCM" code

Multi-purpose Serial Data Link

can be cleared of a Red Alarm, the Meridian 1 can be cleared of a
Yellow Alarm, and trunks and channels can be brought back into
service.

What's next?

A step-action table explains the programming steps necessary to
activate the Idle Code Selection loop number.

Multi-purpose Serial Data Link

The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to programming MSDL Idle Code Selection.

STEP	ACTION
1	Log in.
	For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.
2	Activate a loop to send Idle PCM code.

CAUTION
Confirm that the remote end supports the "Idle PCM" code, before configuring this feature on a loop.

>LD 73

REQ	CHG	
TYPE	DDB	
ICS	xxx	Enter the Idle Code selection loop number to be activated. xxx = 0-159

You have completed the programming required to activate a loop to send Idle PCM code.

END

Multi-purpose Serial Data Link

MSDL Port Overload Counter

The MSDL Port Overload Counter feature provides the capability of locking out individual MSDL ports when incoming messages through a port exceed or equal the port overload threshold of 200 messages in a two second time period. This applies to Meridian 1 options 51C, 61C, 81, and 81C systems running X11 release 24 or later software.

When any of the four ports on the MSDL card reaches the port overload threshold it is locked-out, but the operation of other ports on the MSDL card will not be affected.

The MSDL card is still subject to a card overload threshold, which will cause a lock-out if it receives 300 or more messages per two seconds. However, when an individual MSDL port becomes overloaded, the messages to that port are subtracted from the total card messages used in performing the card overload check. Furthermore, port overload checks have priority over card overload checks.

The overloaded port on the MSDL card is locked-out so that the card stops responding to the incoming messages from the overloaded port. This prevents the Meridian 1 CPU from servicing a very high incoming message rate from the port, which could cause system degradation.

MSDL/MISP Interface Handler (MMIH)

The MMIH provides a software interface between the MSDL/MISP card and the Meridian 1 software, and allows applications on the MSDL/MISP card to access each other through the interface.

Previously, the interface software maintained a counter of incoming messages on an MSDL application basis. When the sum of all messages received indicated an excessive incoming message rate, the MSDL card was locked-out.

Now, the Port Overload Counter feature modifies the MMIH so that incoming message counters are maintained for individual MSDL ports

This feature changes the functionality of the MMIH for an MSDL card, but the MISP remains unchanged.

Multi-purpose Serial Data Link

DCH/SDI/AML Application

The Port Overload Counter feature changes the DCH/SDI/AML Application to cause the MSDL port to lockout when the incoming messages exceed the Port Overload threshold value.

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. To maximize the effectiveness of your Meridian 1 administration efforts, take advantage of these courses and aids.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information about Nortel support services, contact your system supplier.

What's next?

A step-action table explains the programming steps necessary to view the status of a MSDL card and ports.

Multi-purpose Serial Data Link

> The preceding material in this module contains essential information.
> You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to upgrading ISM
> parameters.

STEP	ACTION
1	Log in.
	For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.
2	Display the status of ports on a MSDL card for I/O Diagnostic.

    >LD 37
IOD000
.

.STAT MSDL xx   MSDL xx: ENBL
                         SDI 7 OVLD PORT 0
                         DCH 11 OVLD PORT 1
                         AML 12 OVLD PORT 2

Note: Where xx = the physical MSDL number.

| **3** | Display the status of an overloaded MSDL port running a SDI application. |

    >LD 37
IOD000
.

.STAT TTY xx   TTY XX: OVLD

Note: Where xx = logical SDI number.

— continued —

Multi-purpose Serial Data Link

STEP	ACTION
4	Display the status of ports on a MSDL card for Link Diagnostic.

>LD 48
.LNK000
.

.STAT MSDL xx   MSDL xx: ENBL
                       SDI 7 OVLD PORT 0
                       DCH 11 OVLD PORT 1
                       AML 12 OVLD PORT 2

Note: Where xx = the physical MSDL number.

5	Display the status of an overloaded AML port on a MSDL card.

>LD 48
.LNK000
.

STAT AML xx   AML: xx MSDL: yy PORT: zz DES: LYR2: **OVLD**

Note: Where xx = logical AML number, yy = physical MSDL number, and zz = MSDL port

6	Display the status of ports on a MSDL card for PRI D Channel Diagnostic.
7	

>LD 96
DCH000
.
.STAT MSDL xx   SDI 7 OVLD PORT 0
                       DCH 11 OVLD PORT 1
                       AML 12 OVLD PORT 2

Note: Where xx = physical MSDL number.

— continued —

Multi-purpose Serial Data Link

STEP	ACTION
8	Display the status of an overloaded MSDL port running a D Channel Application.

```
>LD 96
.DCH000
.
```

.STAT DCH xx	DCH xx : **OVLD** DES:

Note: Where xx = logical D Channel number.

You have completed viewing the status of the MSDL card and ports with the applicable overlays.

END

Multi-purpose Serial Data Link

MSDL Status Enquiry Message Throttle

When a D-channel recovers from data link failure, in a Meridian 1 to Meridian 1 network interface, the "network" (master) side of the "network" side to "user" (slave) side interface sends a Status Enquiry message to the "user" side, for every established B-channel, to request the call state.

The Status Enquiry Message Throttle feature regulates the sending of Status Enquiry messages, by limiting the Status Enquiry messages sent within a 128 millisecond time period. The Network side of the interface uses a fixed number of Status Enquiry messages that is configurable per D-channel through a Status Enquiry Message Throttle (SEMT) parameter in LD 17. By reducing the number of Status Enquiry messages sent in a given 128 msec time period, this feature improves the amount of network congestion experienced after a D-channel recovers from data link failure. This also frees up some timeslots for call processing.

What's next?

A step-action table covers the prompts related to programming the SEMT parameter in Configuration Record 1 LD 17.

Multi-purpose Serial Data Link

> The preceding material in this module contains essential information.
> You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to programming the
> SEMT parameter in Configuration Record 1 LD 17.

STEP	ACTION
1	Log in.

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2	**LD 17** – Configure the Status Enquiry Message Throttle (SEMT) parameter.

REQ	CHG	Change existing data.
TYPE	CEQU	Input/output devices.
ADAN	aaa DCH xx	Primary D-channel number: Where: aaa = NEW or CHG xx = 0-63
CTYP	MSDL	Multi-purpose Serial Data Link card.
GRP	0-4	Network Group number for options 81 and 81C.
DNUM	0-15	Device number for I/O ports.

Note: All ports on the MSDL card share the same DNUM. The MSDL card address settings must match the DNUM value.

— continued —

Multi-purpose Serial Data Link

STEP	ACTION		
	2 continued …		
	PORT	0-3	Port number for the MSDL card.
	USR	PRI	Primary Rate Interface. D-channel for ISDN PRA only.
	IFC	SL1	Meridian SL-1 interface
	DCHL	xxx	D-channel PRI loop number. Where xxx = 0-159.
	OTBF	1-(32)-127	Output Request Buffer
	DRAT		D-channel Transmission Rate
	SIDE	NET	Network, the controlling switch.
	SEMT	(1)-5	Number of Status Enquiry messages sent within 128 msec from the Network side.

Note: SEMT only applies to the "network" side interface of the Meridian 1 to Meridian 1 network.

	RLS	xx	Release ID of the switch at the remote (far) end of the D-channel.

You have completed the programming required to set the SEMT parameter.

END

Multi-purpose Serial Data Link

Incremental Software Management

Purpose

The Incremental Software Management (ISM) feature provides flexibility and control over system configuration and implementation. With ISM, software ordering and pricing is based on the total count of:

◆ Terminal Numbers (TNs),

◆ Automatic Call Distribution (ACD) positions (agents and supervisors),

◆ ACD Directory Numbers (ACD-DNs and Control DNs),

◆ Associate Telephone (AST) DNs,

◆ Digital Subscriber Loops (DSLs),

◆ Logical Terminal Identifiers (LTIDs),

◆ D-channels (DCHs),

◆ Application Module Links (AMLs),

◆ Recorded Announcement (RAN) Broadcast routes, and

◆ RAN and Music Broadcast connections that are to be purchased for a system.

For specific system requirements and limits, refer to the *Pricing Manual*.

Incremental Software Management

ISM counters for X11 Release 24

With X11 Release 24, two ISM counters are added and changes are made to the counting criteria for three existing ISM counters. The new ISM counters are Digital Telephones and Analog Telephones. The changed ISM counters are ACD Agents, AST, and Mobility TNs. The Mobility TNs' counter name has been changed to Wireless Telephones.

The Digital Telephone ISM counter will count every Digital Telephone configured in Overlay 11, except wireless sets. This includes AST sets, ACD agents, and AST sets configured as ACD agents.

The Analog Telephone ISM counter will count every Analog Telephone configured in Overlay 10, except wireless sets and phantom sets. This includes AST sets, ACD agents, and AST sets configured as ACD agents.

Modified ISM Counters

The ACD Agent counter is modified to exclude Meridian Mail and Call Pilot. All ACD Agents configured in Overlay 10 and 11 count as ACD Agents and Analog Telephones or Digital Telephones counters. See Table 5 for details. The port configured in Overlay 11 for Meridian Integrated Products such as MICB is an ACD Agent. It will count against ACD Agents and Digital Telephones counter.

The AST counter is modified to count against Digital Telephones and AST.

The Wireless Telephones counter (formerly named Mobility TNs) is modified to include CT2 and (M)DECT sets configured in Overlay 10 as well as the currently counted Microcellular sets configured in Overlay 11. See Table 5 for details.

Incremental Software Management

Table 5
X11 Release 24 ISMs counted

A TN configured in Overlay 10 and 11	Release 24 ISMs counted
A digital voice set	Digital Telephones
A digital data set	Digital Telephones
An ATA set	Digital Telephones
An MCA set	Digital Telephones
A Taurus set	Digital Telephones
An Analog set	Analog Telephones
A CLASS set	Analog Telephones
Line-Side T1/E1	Analog Telephones
A Phantom analog set	None
An MCMO (CT2) set	Wireless Telephones
An MDEC set	Wireless Telephones
An Microcellular set	Wireless Telephones
An ACD analog set	ACD Agents and Analog Telephones
An ACD Digital set	ACD Agents and Digital Telephones
An Meridian Mail/Call Pilot ACD port	None
An Meridian Integrated ACD port	ACD Agents and Digital Telephones
An analog AST set	AST and Analog Telephones
A digital AST set	AST and Digital Telephone
An analog AST and ACD set	AST, Analog Telephones and ACD Agents
An digital AST and ACD set	AST, Digital Telephones and ACD Agents
AST and Meridian Mail ACD	None

Incremental Software Management

ISM overlay headers

When an Overlay is loaded the available system memory and disk records are output in a header as follows:

With Release 24 and later software, Incremental Software Management (ISM) Header parameters for LD 10 will display as:

>ld 10

PBX000
MEM AVAIL: (U/P): nnnnnn USED U P: nnnnnn nnnnnn TOT: nnnnnn
DISK RECS AVAIL: xxx
TNS   AVAIL: xxx USED: xxx TOT: xxx
ACD AGENTS AVAIL: xxx   USED: xxx TOT: xxx
ANALOGUE TELEPHONES AVAIL: xxx   USED: xxx   TOT: xxx
AST   AVAIL: xxx USED: xxx TOT: xxx

With Release 24 and later software, Incremental Software Management (ISM) Header parameters for LD 11 will display as follows:

>ld 11

SL1000
MEM AVAIL: (U/P): nnnnnn USED U P: nnnnnn nnnnnn TOT: nnnnnn
DISK RECS AVAIL: xxx
TNS   AVAIL: xxx USED: xxx TOT: xxx
ACD AGENTS AVAIL: xxx   USED: xxx TOT: xxx
AST   AVAIL: xxx USED: xxx TOT: xxx
DIGITAL TELEPHONES AVAIL: xxx   USED: xxx   TOT: xxx

> *Note:* For all ISMs, other than TNs, if the limit of an ISM is set to the maximum value of 32767, the ISM information will not print.

Instant ISM

Purpose

The Incremental Software Management limits determine the maximum number of TNs, ACD positions, and other parameters on the Meridian 1. Previously, to increase ISM limits a user had to receive a keycode, deliver it to the Meridian 1, and perform a Sysload. This caused an undesirable service interruption.

The Instant Incremental Software Management (IISM) feature allows ISM limits to be upgraded on the Meridian 1 by delivering the keycode to the Meridian 1, *without* the need for a Sysload.

Keycode management

During keycode activation via the existing prompts in overlay 143, if the keycode is eligible for instant activation (i.e., ISM parameters are the only parameters that have changed relative to the current system keycode, and no ISM limits are decreasing), the ISM limits will be upgraded "instantly." Following successful activation, a system message introduced by the Instant ISM feature will be displayed. This message indicates that the keycode was accepted, ISM limits were increased, and that a Sysload is *not* required.

A keycode that is eligible for instant activation has ISM limits that are either unchanged or increased, has no addition or removal of feature packages, and has no changes to software release and issue, software generic, or AUX-ID.

Instant ISM

If a keycode is not eligible for instant activation (i.e., ISM parameters are lowered, or software packages are changed), system message CCBR009 ("New keycode accepted. It will be activated during the next restart.") is displayed and a Sysload *will* be required.

System requirements

The Instant ISM feature applies to option 51C, 61C, 81, and 81C systems running X11 release 24 or later software.

Each system must be equipped with the NT5D61 IODU/C card to support this feature. The reason for this requirement is that keycode enabling of software (which implements the activation of ISM limits and packages) on these systems requires IODU/C.

ISM limits can only be unchanged or increased - if they are decreased, a Sysload is still required to enable them. This feature does not support adding or removing packages, or changing software release and issue, software generic, or AUX-ID, without the need for a Sysload.

The Meridian 1 does not treat the option 11C MOPT parameter as an ISM limit, but rather as a package. The Instant ISM feature does not support instant MOPT changes. If the MOPT parameter is changed, a Sysload will be required.

System initialization

If system initialization occurs while a new keycode is being instantly activated, the Meridian 1 software will attempt to complete the keycode activation if at all possible. However, depending on when the initialization occurred, the software may not be able to complete keycode activation.

Therefore, after the system has completed initialization, the craftsperson should print the active ISM parameters via overlay 22. If the printed ISM parameters match the new keycode parameters, then the Meridian 1 software completed the keycode activation

Instant ISM

successfully. If the ISM parameters printed are the pre-upgrade parameters, the craftsperson should load overlay 143 to verify whether the new keycode is still on the harddrive by using the "KSHO HD" command. If the new keycode is still on the hard drive, then the craftsperson needs to remove the keycode from the harddrive using the "KOUT" command, and then perform the new keycode installation process again. If the new keycode is not on the harddrive, the craftsperson should perform the new keycode installation process in overlay 143.

Additional information

Incremental Software Management

Instant ISM does not change the operation of the various ISM limits. Instant ISM simply allows the user to upgrade ISM limits without having to Sysload.

IS-41 Networking

Instant ISM supports the MOB ISM parameter introduced by the IS-41 Networking feature in X11 release 24.

RAN and Music Broadcast

Certain traffic reports peg the number of times the RAN and Music ISM limits had been reached. Due to the fact that ISM limits may change instantly (without a Sysload), a traffic report that is counting the ISM hits over a period may be checking against two different values consecutively. Therefore, for one single calculation period the report will have an aberration.

Electronic Brand Line (EBLN/BRAND)

Unlike other ISM parameters which define the maximum configuration limits for various resources, the BRAND ISM parameter defines which Electronic Brand Line feature option the system is allowed to use.

Instant ISM

The same limitation applies to the BRAND parameter as applies to other ISM limits, that is, the BRAND parameter must be unchanged or increased if the ISM limits are to be updated instantly without the need for a Sysload.

Once the BRAND ISM parameter has been increased, the user still has to load overlay 17, in order to configure the actual string that is to be displayed, as per existing operation.

Telephone displays that display brandline information (when in an idle state) will not have the brandline updated immediately. The update will occur on a set the next time LAMPAUDIT audits the set.

What's next

Step-action tables explain the programming necessary for Instant ISM parameter upgrade operation for each option:

◆ Instant ISM parameter upgrade using a keycode diskette

◆ Instant ISM parameter upgrade using HyperTerminal

Note: For a dual-CPU (redundant) system, leave the system in full redundant mode (hard-disk and CPU redundancy).

Instant ISM

The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to upgrading ISM parameters.

STEP	ACTION
1	Log in.
	For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.
2	Instant ISM parameter upgrade using a keycode diskette for options 51C - 81C without a sysload.

>LD 143
CCB000
.

Insert the diskette into the floppy drive on the active IODU/C

> ⚠ **CAUTION**
> Ensure that the new keycode does not lower ISM limits or reduce features compared with the existing keycode.

STEP	ACTION
3	Compare keycodes.

.KDIF REC F0   Currently used keycode (REC) will be compared with the new keycode disk in floppy drive (F0).

— continued —

Instant ISM

STEP	ACTION

3 continued …

On-screen or printed response. The limits show are
for example purposes only.

```
Validating Keycode File /p/install/keycodes.rec .. OK
Validating Keycode File /f0/keycodes.kcd ... OK

System parameters:    1st keycode: 2nd keycode:
System Serial Number: 46XX         46XX
Software Version:     2311         2311
System Type:          Option 61C   Option 61C
Call Processor:       CP68040      CP68040
Release:              24           24
Issue:                XX           XX
NTI Order Number:
NT SDID - 1:
NT SDID - 2:
Date and Time of Manufacture:

Note:( )indicates that information is not available

ISM Limits in the     1st keycode: 2nd keycode:
Loop Limit:           32           32
Sys TNs Limit:        10           11
ACD Agt Limit:        10           10
ACD DNs Limit:        10           10
AST Limit:            10           10
......
Common packages for both keycodes:
0-2 4-5 7-25 28-29 32-55 58-65
......
```

Additional packages in the 2nd keycode:
< **30-31**

> **CAUTION**
> If the new keycode lowers ISM limits or
> reduces features, do not continue with the
> .KNEW command.

— continued —

Instant ISM

STEP	ACTION
4	Activate the new keycode.

>.KNEW F0   F0 = candidate keycode on diskette in floppy
                          drive /f0

If the keycode is eligible for activation, it will be activated without further user action, and the following system message is given:

CCBR020 New Keycode accepted and activated successfully. Sysload is not needed.

| **5** | Load Overlay 22 and confirm the ISM parameters have been updated. |

>LD 22

REQ   SLT

```
On-screen or printed response. The limits show are
for example purposes only.
TNS        32767      LEFT 32765    USED 2
ACDN       24000      LEFT 24000    USED 0
AML        32         LEFT 32       USED 0
IDLE_SET_DISPLAY
```

| **6** | You have completed the programming required to update ISM parameters from a diskette for options 51C - 81C without a Sysload. |

END

Instant ISM

The preceding material in this module contains essential information.
You should be aware of this information before you proceed.

This step-action table covers the prompts related to upgrading ISM
parameters.

STEP	ACTION

1 Log in.

For information on proper login procedures, see *Basic Programming
Instructions* in *Basic Telecom Management*.

2 Instant ISM parameter upgrade using HyperTerminal® for options 51C - 81C
without a Sysload.

On a PC, access the Meridian 1 system (via a modem) with HyperTerminal®
(provided with Windows 95):

Click the **Start button | Programs | Accessories | HyperTerminal.**

Double-click the HyperTerminal client to the Meridian 1 system.

Log into the Meridian 1 system.

>LD 143
CCB000
.

.KUPL   to upload keycodes to the hard disk on the target system.

Click the **Transfer** menu in HyperTerminal and select **Send Text File**.

From the **Files of type** pull-down menu, select **All Files (*.*)**.

Locate and select the keycode file on the PC. Use the **Look in** pull-down menu
to select the drive on which the keycode is located.

Click **Open**.

The KUPL and keycode will be displayed. Example for display only.

KUPL 0001PBX 0101
9FPAMSRHNN17KRUQAFFSPREQEVMTHIDHRKDJHRKEJR56

— continued —

Instant ISM

STEP	ACTION

2 continued …

Press the **Enter** key.

The KUPL and keycode will be displayed. Example for display only.

KUPL 0001PBX 0101
9FPAMSRHNN17KRUQAFFSPREQEVMTHIDHRKDJHRKEJR56

Press the **Enter** key.

The Keycode is checked for CRC errors and is uploaded to the hard disk.

> **CAUTION**
> Ensure that the new keycode does not lower
> ISM limits or reduce features compared with
> the existing keycode.

3	Compare the keycode

KDIF REC HD	Currently used keycode (REC) will be compared with the new keycode on the hard drive (HD).

— continued —

Instant ISM

STEP	ACTION

3 continued …

```
On-screen or printed response. The limits show are
for example purposes only.
System parameters:    1st keycode: 2nd keycode:
System Serial Number: 46XX          46XX
Software Version:     2311          2311
System Type:          Option 61C    Option 61C
Call Processor:       CP68040       CP68040
Release:              24            24
Issue:                XX            XX
NTI Order Number:
NT SDID - 1:
NT SDID - 2:
Date and Time of Manufacture:

Note:( )indicates that information is not available

ISM Limits in the     1st keycode: 2nd keycode:
Loop Limit:           32            32
Sys TNs Limit:        10            11
ACD Agt Limit:        10            10
ACD DNs Limit:        10            10
AST Limit:            10            10
......
Common packages for both keycodes:
0-2 4-5 7-25 28-29 32-55 58-65
......
```
Additional packages in the 2nd keycode:
<   **30-31**

> **CAUTION**
> If the new keycode lowers ISM limits or
> reduces features, do not continue with the
> .KNEW command.

— continued —

Instant ISM

STEP	ACTION
4	Activate the new keycode using the KNEW command.
	.KNEW XX XX = **HD** keycode source hard drive XX = **F0** (floppy drive on Core 0) or **F1** (floppy drive on Core 1)
	CCBR020 New Keycode accepted and activated successfully. Sysload is not needed.
5	Load Overlay 22 and confirm the ISM parameters have been updated.

	`>LD 22`
	
	`REQ     SLT`
	
	`On-screen or printed response. The limits show are`
	`for example purposes only.`
	`TNS        32767       LEFT 32765    USED 2`
	`ACDN       24000       LEFT 24000    USED 0`
	`AML        32          LEFT 32       USED 0`
	`IDLE_SET_DISPLAY`

6	You have completed the programming required to update ISM parameters using HyperTerminal® for options 51C - 81C without a Sysload.
	END

Instant ISM

Reverting to the previous keycode with the KRVR command

On options 51C, 61C, 81, and 81C systems, the KRVR command can be used to revert to the old keycode "instantly."

Note: The terms "old" and "new" keycode as discussed here refer to the most recent previous KNEW command. The "old" keycode is the former keycode, prior to the KNEW command. The "new" keycode is the keycode that was activated by the KNEW command.

The old keycode is eligible for instant activation with the KRVR command if the only difference between the old keycode and the new keycode is that some or all of the ISM parameters in the old keycode are *higher*.

Instant ISM

> The preceding material in this module contains essential information.
> You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to upgrading ISM
> parameters.

STEP	ACTION
1	Log in.
	For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.
2	Revert to the previous keycode with the .KRVR command.
	>LD 143 CCB000 . .KRVR If the keycode is eligible for instant activation, it will be activated without further user action, and the following system message is given: CCBR020 New Keycode accepted and activated successfully. Sysload is NOT needed!
	You have completed the programming required to revert to the old keycode "instantly" for options 51C - 81C without a Sysload.
	END

Instant ISM

Configuring application module links

Purpose

The Application Module Link (AML) provides supervisory and control functions for the link that allows host computers and other external processors access to Integrated Services Digital Network (ISDN) network services on the Meridian 1. Tasks performed by the Application Module Link include link activation, fault detection, maintenance, and traffic reporting. The AML provides the association of telephones with one or more Directory Numbers (DN) with the host computer. This allows a computer to access basic telephone features of the Meridian 1. Telemarketing, electronic mail, and other features can take full advantage of ISDN services using the AML.

Procedures for entering the required information are provided later in this section.

553-0121T CI/OD
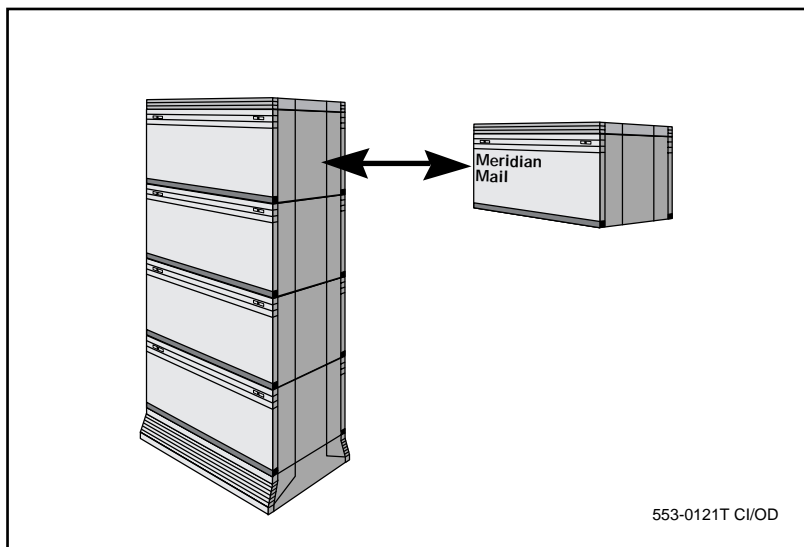
Configuring application module links

Applications

A number of applications take advantage of Application Module Links (AML). The configuration of these applications is outside the scope of this guide. For more information about configuring applications, refer to the documentation for the specific application, or refer to the *Input/Output Guide*.

Interface cards

AML requires the use of an Enhanced Serial Data Interface (ESDI) card or a Multipurpose Serial Data Line (MSDL) card.

AML ports are addressed by logical port number rather than by physical address. The logical number is defined at the ADAN prompt ADAN NEW AML 0-15. The association to the device number or physical address is defined at the DNUM prompt.

Multi-purpose Serial Data Interface (MSDL) Card

To configure an MSDL card, refer to the instructions in Task 1 of this guide. Once the MSDL switch settings are verified and the card is installed, use the procedure later in this section to complete programming.

QPC513 Enhanced Serial Data Interface (SDI) Card

To set the physical port number on the QPC513 Enhanced SDI card you must be on site at the Meridian 1 installation. Follow the detailed instructions in *Serial Data Interface Cards Description* to locate and remove the card.

Set the physical address using switch S2. The switch settings used to select the address vary depending on whether the card is Style A or Style B. The "Style" can be read on the printed circuit board silk screen. The address of the card is set to match the device address defined in software. (See Table 6.)

Configuring application module links

Table 6
QPC513 Enhanced SDI Card address switch settings

Device Number		Switch S2 style A				Switch S2 style B			
Port 1	**Port 2**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
0	1	Off	Off	Off	On	Off	Off	Off	*
2	3	On	Off	Off	On	Off	Off	On	*
4	5	Off	On	Off	On	Off	On	Off	*
6	7	On	On	Off	On	Off	On	On	*
8	9	Off	Off	On	On	On	Off	Off	*
10	11	On	Off	On	On	On	Off	On	*
12	13	Off	On	On	On	On	On	Off	*
14	15	On	On	On	On	On	On	On	*

Switch S2 position 4 is not used on Style B cards.

Synchronous port address space is the same as asynchronous port address space. When selecting an address for the ESDI card, make sure that it will not conflict with an address currently being used by an asynchronous card.

The interface for each ESDI port is configured independently. You must configure ports both for the electrical interface (RS-232-C or high-speed) and the mode (DTE or DCE). With the proper options set, an ESDI port configured as DTE appears as a terminal to the user equipment, and an ESDI port configured as DCE appears as a modem to the user equipment. (See Table 7.)

Configuring application module links

Table 7
QPC513 Enhanced SDI Card interface mode settings

Mode	Port	Jumper socket designations	
Data communication equipment (DTE)	1	UA10	UA12
Data terminal equipment (DCE)	1	UA9	UA11
Data communication equipment (DTE)	2	UA17	UA19
Data terminal equipment (DCE)	2	UA16	UA18
RS-232-C interface	1	UB9	UB11
High-speed interface	1	UB10	UB12
RS-232-C interface	2	UB16	UB18
High-speed interface	2	UB17	UB19

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. To maximize the effectiveness of your Meridian 1 administration efforts, take advantage of these courses and aids.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Saving data

After adding or changing an I/O device by way of the ADAN prompt sequence, the data is saved before ADAN is reprompted. This allows you to exit overlay 17 by entering **** after I/O changes without having to carriage return through the remaining prompts.

Configuring application module links

What to have ready

The following checklist summarizes the steps you should take before setting up Application Module Links.

Table 8
Checklist

Basic	Optional	Preparation
Ð		Identify all application requirements.
Ð		Select interface cards to provide each link.
Ð		Specify parameters for each link.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure Application Module Links.

Configuring application module links

The flowchart summarizes the procedure. Use the instructions in the step-action table that follows this flowchart to perform the procedure.

```
┌─────────┐
│  Start  │
└─────────┘
     │
     ▼
┌──────────────┐
│ Specify the port │
│  card type,   │
│ number and    │
│    user.      │
└──────────────┘
     │
     ▼
┌──────────────┐
│   Set ACD    │
│ parameters.  │
└──────────────┘
     │
     ▼
┌──────────────┐
│ Specify a port │
│  designator.  │
└──────────────┘
     │
     ▼
┌─────────┐
│   End   │
└─────────┘
```
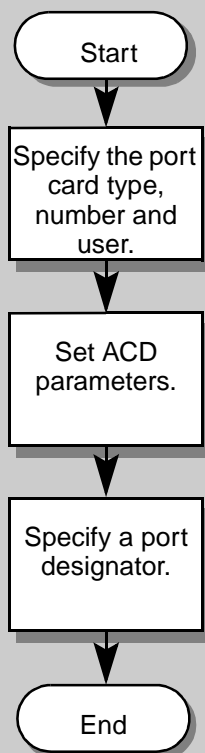
Configuring application module links

> The preceding material in this module contains essential information.
> You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the implementation
> of Application Link Modules.

STEP	ACTION

1   **Log in.**

For information on proper login procedures, see *Basic Programming Instructions* in
Basic Telecom Management.

2   **Set up Application Module Links.**

>LD 17		
REQ	CHG	
TYPE	ADAN	Enter ADAN to create a new AML.
ADAN	NEW AML 0-15	
		Enter NEW AML followed by a device number to create a new application module link.
CTYP	aaa	Specify the I/O port card type.

To specify the card type	**Enter**
enhanced serial data interface	ESDI
multipurpose serial data link	MSDL

DNUM	0-15	Enter the device number for I/O ports.
PORT	0-15	Enter the port number on MSDL cards.

— continued —

Configuring application module links

STEP	ACTION

2 continued …

USER   aaa   Specify the user of the port.

To specify the port user	Enter
ACD printer (for reports)	ACD
auxiliary processor link for IVMS	APL
CDR data link	CDL
communications management center	CMC
command and status link	CMS
intercept computer link	ICP5
customer service changes (automatic set relocation and attendant administration)	CSC
CDR TTY port (outputting CDR records)	CTY
ACD/D high-speed AUX link	HSL
ACD/D low-speed AUX link	LSL
Meridian Mail administrator maintenance access	LSL
Property Management System interface	PMS

CUST	0-99	Enter the customer number.
SSUP	(NO) YES	Specify if the port is used by the senior supervisor/load manager. Do not enter YES if you will be configuring the port for an ACD printer.
APRT	(NO) YES	Specify if the port is used by the ACD printer.
AXQI	20-255	Enter the size of the auxiliary input queue. The maximum is 255, or 25% of call registers, whichever is less.
AXQO	20-255	Enter the size of the auxiliary output queue.

— continued —

Configuring application module links

STEP	ACTION

2 continued …

DES	aaa...a	Enter an AML port designation (up to 16 alphanumeric characters). Spaces are removed by the system. For example "MERIDIAN MAIL" becomes "MERIDIANMAIL". Use the underscore character instead, such as MERIDIAN_MAIL.

Terminate the overlay by entering ****.

3	**Check your programming.**

If possible, try all applications and links to ensure that they are operating properly. If you cannot check all links at this time, review your programming to ensure that no errors were made. Use the scroll feature of your terminal, check your printout, or use overlay 22 to examine the contents of the database. For more information about reviewing your programming, refer to the *About the Meridian 1* section of this guide.

If	**Do**
the programming is correct	step 4
the programming is not correct	step 1

— **continued** —

Configuring application module links

STEP	ACTION

4	**Perform a data dump to permanently store the programming you have just completed.**

> ⚠️ **CAUTION**
> Check your maintenance agreement before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

5	**Verify that the data dump was successful.**

On-screen or printed response:

NO GO BAD DATA

or

DATA DUMP COMPLETE

6	**Terminate this overlay program.**

.

* * * *

— continued —

Configuring application module links

STEP	ACTION
7	**Terminate this programming session.**
	Log off.
	>LOGO
8	**You have completed the programming required to configure Application Module Links.**

END

Configuring application module links

Configuring history and log files

Purpose

The Meridian 1 maintains a running log of system events and traffic.
This information is stored in log and history files, or output to printers.

History file feature

If you have a printer connected to the system, each system message is
printed as it is received. If you do not have a printer connected, you
can use the History File to store a limited number of system messages
in protected memory. The contents of the file may then be printed on
demand.The messages stored are specified on a system basis and can
be one or more of the following types:

— customer service changes (CSC)

— maintenance messages (MTC)

— service changes (SCH)

— software errors (BUG)

— initialization and sysload messages (INI and SYS)

— traffic messages (TRF)

The contents of the History File are erased during a sysload or if you
change the History File's length. However, because the History File
is located in protected data store, the contents survive an initialization.

Configuring history and log files

You can change the length of the History File with the prompt HIST
in the Configuration Record (LD 17). The maximum length of the file
depends on the amount of protected data store available, which in turn
depends on the number of system features that require protected data
store.

If the History File is full, the first messages stored are replaced by
incoming messages. If this happens, the system gives a "file
overflow" message at the start of a printout so you know some
information has been replaced by newer messages.

TTY log files

With the Multi-User Login feature enabled, the log files associated
with system TTY terminals record messages relating to service
changes, traffic (if not redirected to a Traffic Log File), CDR activity,
software bugs, and so forth. Messages recorded in a TTY Log File are
not written to the History File.

Configuring history and log files

Traffic log files

The Meridian 1 is capable of outputting information about its traffic. During normal operation there can be large amounts of information generated. Traffic information is typically printed out on a high capacity high speed printer. If you choose not to use a printer, you can create a traffic log file instead.

553-0123T CI/OD
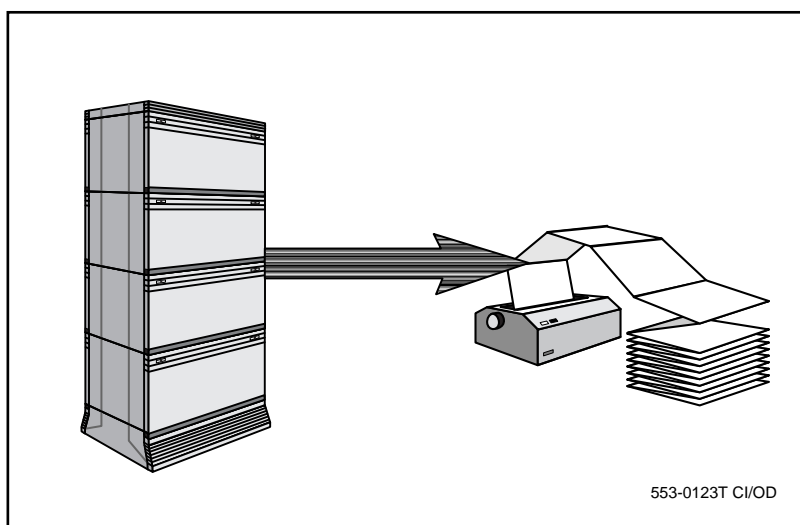
You can create one traffic log file. All system-generated traffic reports are recorded in that file rather than in the History File, making these reports more accessible.

Log size

You can specify a size for the traffic log. The larger the log, the more memory it uses up and the greater its ability to buffer during overflow conditions.

Traffic parameters

Once you have created the traffic log file, set traffic monitoring parameters in overlay 2. For more information about overlay 2 and the traffic parameters, refer to the *Input/Output Guide*.

Configuring history and log files

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. To maximize the effectiveness of your Meridian 1 administration efforts, take advantage of these courses and aids.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Saving data

After adding or changing an I/O device via the ADAN prompt sequence, the data is saved before ADAN is reprompted. This allows you to exit LD 17 with **** after I/O changes without having to carriage return through the remaining prompts.

What to have ready

The following checklist summarizes the steps you should take before setting up your history and traffic log files.

Table 9
Checklist

Basic	Optional	Preparation
Đ		Define your history log file requirements and log size.
Đ		Define your traffic log file requirements and log size.

Configuring history and log files

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure your history and traffic log files.

Configuring history and log files

```
            ┌─────────────┐          ┌──────────────────────────────┐
            │    Start    │          │  The flowchart summarizes the │
            └─────────────┘          │  procedure. Use the instructions in the │
                   │                 │  step-action table that follows this │
                   ▼                 │  flowchart to perform the procedure. │
            ┌─────────────┐          └──────────────────────────────┘
            │  Create a   │
            │ history file.│
            └─────────────┘
                   │
                   ▼
            ┌─────────────┐
            │ Set the size│
            │ of the history│
            │   file.     │
            └─────────────┘
                   │
                   ▼
            ┌─────────────┐
            │   Specify   │
            │ message types│
            │ to be recorded.│
            └─────────────┘
                   │
                   ▼
            ┌─────────────┐
            │  Create a   │
            │ traffic log.│
            └─────────────┘
                   │
                   ▼
            ┌─────────────┐
            │ Set the size of│
            │ the traffic log.│
            └─────────────┘
                   │
                   ▼
            ┌─────────────┐
            │     End     │
            └─────────────┘
```
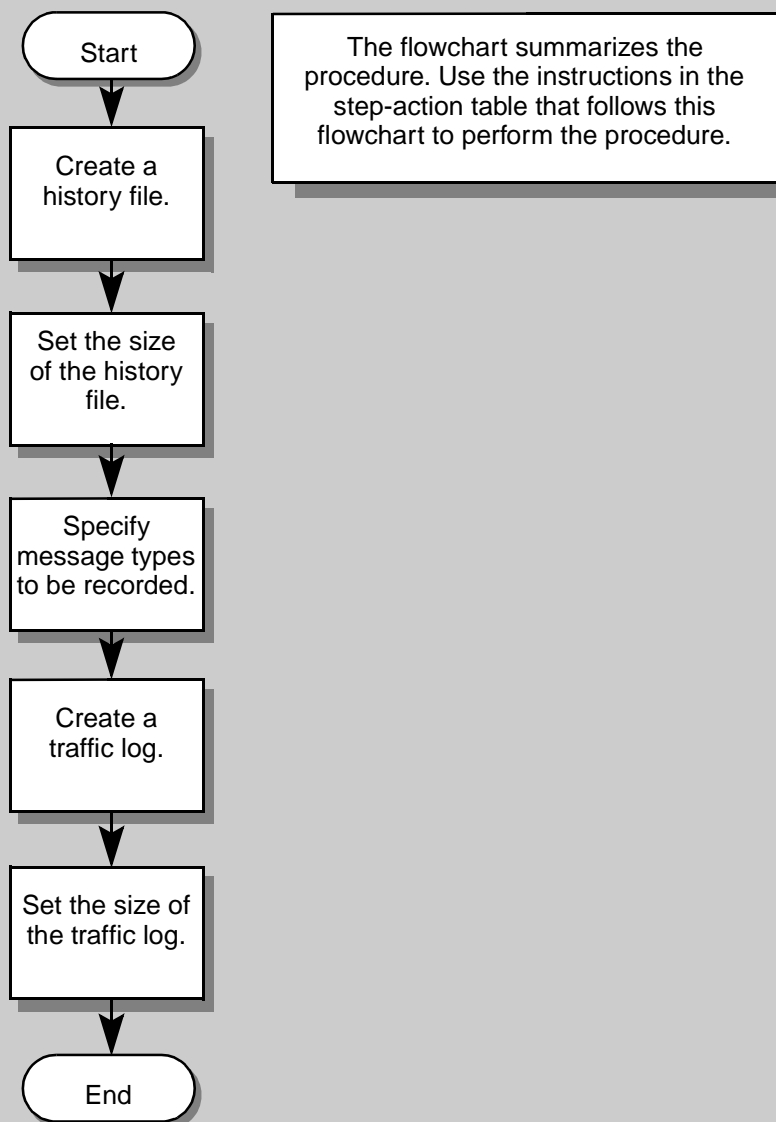
Configuring history and log files

The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of history and traffic files.

STEP	ACTION

1   Log in.

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2   Set up a history file.

> **>LD 17**

REQ	CHG	Enter CFN to change configuration record.
TYPE	ADAN	Enter ADAN to create a new history file.
ADAN	NEW HST	Enter NEW to create a new history file.
SIZE	(0)- 65534	Set the size of the history file buffer.
USER	aaa	Specify the message types to be stored in the History File (one of MTC, SCH, TRF, BUG, CSC).

Terminate the Overlay by entering ****.

— continued —

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Configuring history and log files

STEP	ACTION		
3	**Set up a traffic file.**		
	>LD 17		
	REQ	CHG	
	TYPE	CFN	Enter CFN to change configuration record.
	ADAN	NEW TRF	Enter NEW TRF to create a new traffic log.
	SIZE	(0)- 65534	Set the size of the traffic log.
	Terminate the overlay by entering ****.		
4	**Check your programming.**		
	>LD 22		
	REQ	PRT	Enter PRT.
	TYPE	ADAN HST	Enter ADAN HST to verify that a history file was created.
	REQ	PRT	Enter PRT.
	TYPE	ADAN TRF	Enter ADAN TRF to verify that a traffic file was created.
	REQ	****	Terminate the overlay by entering ****.

— continued —

Configuring history and log files

STEP	ACTION
5	**Perform a data dump to permanently store the programming you have just completed.**

> **CAUTION**
> Check your maintenance agreement
> before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

6	**Verify that the data dump was successful.**

On-screen or printed response:

NO GO BAD DATA

or

DATA DUMP COMPLETE

7	**Terminate this programming session.**

Log off.

>LOGO

8	**You have completed the programming required to configure a history or traffic file.**

END

Configuring history and log files

Setting up passwords

Purpose

The Meridian 1 is protected from accidental and malicious tampering by passwords that control access to various overlays and customers, and to the system as a whole.

Configure passwords for all users using overlay 17.

Password control is sophisticated, allowing precise control of the areas of the system available to each password user. The Meridian 1 provides a number of different types of passwords letting you limit access to varying degrees.

User names

You can force users to log in using a name as well as a password by turning on the login name option. To do this, enter YES at the LNAME_OPTION prompt in overlay 17. When the option is turned on, ADMIN1 is applied to the current PWD1, ADMIN2 is applied to the current PWD2, USER0 is applied to the current Password 00, USER1 is applied to the current Password 01, and so on to USER 99.

Multi-user login

With Multi-User Login enabled, more than one user can be logged in with the same combination of name and password. (No two login names can have the same password associated with them.)

Setting up passwords

When a HOST user logs in, the outputs set up for the port are only output to that port. For example, if two ports are set up (by way of the USER prompt) to output BUG and SCH messages, and a HOST user logs in to one of these ports, the other port does not output BUG and SCH messages until the HOST user logs out. This feature removes the restriction that ports with the same output must operate at the speed of the slowest port.

Basic passwords

Basic user passwords provide access to all the overlay programs available on the Meridian 1. They are intended for use by administrators who need access to the entire Meridian 1 system.

To change passwords, log into the Meridian 1 using an existing administration password.

Administration passwords

The administration password is used to change passwords PW1, PWD2 and SPWD.

To change the first-level administration password, respond to the NPW1 prompt in overlay 17. To change a second-level administration password, respond to the NPW2 prompt.

Logging in using the second-level administration password

If your system has the login name option enabled (LNAME_OPTION set to YES), log in by entering ADMIN2 at the LOGIN prompt. Enter the current second level administration password at the PASS prompt.

Setting up passwords

Limited Access to Overlays passwords

If your Meridian 1 has the Limited Access to Overlays (LAPW) package installed, you can allow specific users access to specific overlay programs. This helps maintain system security and can prevent accidental and damaging changes to system data.

You can also use this feature to allow customer administrators direct access to their data on the Meridian 1. The LAPW feature lets you limit an administrator's access to a specific customer's or tenant's data.

Enter the Limited Access to Overlays password number at the LAPW prompt in overlay 17, the password itself at the PW*nn* prompt, and the overlays available to that password at the OVLA prompt. You can also specify customers available to the password at the CUST prompt, and tenants available at the TEN prompt.

To enable host mode access for the password, respond to the HOST prompt.

Changing Limited Access to Overlays passwords

To change a password, enter the old password at the NPWD prompt in overlay 17, and the new password at the NLPW prompt.

Security thresholds

Attempts at password breaking, or hacking, result in lock-outs of affected ports. Lock outs are logged on maintenance terminals and supervisory stations, providing an indication of potential security problems.

Setting up passwords

To set the Failed Login Threshold (the number of failed logins needed to trigger a lockout of the port), respond to the FLTH prompt in overlay 17. To set a lock-out time (the time, in minutes, a port is locked out after the Failed Login threshold is exceeded), respond to the LOCK prompt.

Administration tips

A number of courses and administration aids are available from Nortel or your system supplier. To maximize the effectiveness of your Meridian 1 administration efforts, take advantage of these courses and aids.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information about Nortel support services, contact your system supplier.

Setting up passwords

What to have ready

The following checklist summarizes the steps you should take before defining passwords.

Table 10
Checklist

Basic	Optional	Preparation
Ð		Choose user names.
Ð		Choose a password for each user name.
	Ð	Select appropriate failed login thresholds.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to define passwords.

Setting up passwords

Start

The flowchart summarizes the procedure. Use the instructions in the step-action table that follows this flowchart to perform the procedure.

Enable or disable the login name option.

Specify passwords.

Set the LAO passwords.

Specify available overlays.

Specify available customers.

Specify available tenants.

Enable or disable HOST login mode.

Set options and thresholds.

End

Setting up passwords

The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to passwords.

STEP	ACTION

1   **Log in.**

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2   **Define passwords.**

>LD 17

REQ   CHG

TYPE   CFN   Enter CHG to change the Configuration record.

PWD   YES   Enter YES to configure passwords.

PWD2   x...x   Enter current second level administration password. This password is required to change existing passwords PW1, and PWD2.

— continued —

Setting up passwords

STEP	ACTION

2 continued …

LNAME_OPTION YES, NO Enter yes to require a login name for password access.

If you enter YES, each password currently in the system is given a default name which is used until you assign new names. The default names the system applies to the passwords are:

— ADMIN1 for current PWD1

— ADMIN2 for current PWD2

— USER0 for current Password 00

— USER1 for current Password 01 (and so on to USER 99)

If you enter YES at the LNAME_OPTION prompt, the system types out:

```
DEFAULT LOGIN NAMES SAVED
```

If you change the option from YES to NO, the system assigns random passwords to prevent password duplication. The default password for PWD2 is output to the terminal when this option is disabled. The system types out:

```
WARNING: PASSWORDS WILL BE CHANGED TO DEFAULT VALUES.
OK? (Y/N)
```

If you then enter Y, the following appears:

```
DEFAULT PASSWORDS SAVED
PWD2 = <pwd2 password>
```

To find other default passwords assigned by the system, load overlay 22 and print PWD.

— continued —

Setting up passwords

STEP	ACTION

2 continued …

Continue specifying passwords:

NPW1   x...x   Enter a new level 1 or PW1 Log-in password, or
                         press Return. Valid characters are 0-9, A-Z and
                         a-z.   Length is 4-16 characters with Limited
                         Access to Overlays (LAPW) package 164.

LOGIN_NAME aaa...aaa   Log In name for password access.

                         When LNAME_OPTION is YES, the names
                         must be associated with each Log In password.
                         This can be up to 11 alphanumeric characters
                         (0-9, A-Z, a-z).

NPW2   x...x   Enter a new second level administration
                         password, or press Return. Valid characters are
                         0-9, A-Z and a-z.   Length is 4-16 characters
                         with Limited Access to Overlays (LAPW)
                         package 164.

LOGIN_NAME aaa...aaa   Log In name for password access.

                         When LNAME_OPTION is YES, the names
                         must be associated with each Log In password.
                         This can be up to 11 alphanumeric characters
                         (0-9, A-Z, a-z).

LAPW   nn, Xnn   Enter the LAO Password number, or enter X
                         followedbyapasswordnumbertodeletethenumber.
                         Valid range is 0-99.

PWTP   (OVLY) SBA   Enter the password type of access Overlay
                         access default or Set Based Administration
                         password access.

— continued —

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Setting up passwords

STEP	ACTION		
	PWnn	x...x	Enter the Limited Access to Overlays password to be used for PWnn. Valid characters are 0-9, A-Z and a-z. Length is 4-16 characters with Limited Access to Overlays (LAPW) package 164.
	OVLA	xxx xxx...xxx	Enter a list of overlay programs to be available using the password PWnn. Valid range is 1-99. Enter ALL to allow access to all overlays, or XALL to prevent access to all overlays.
	CUST	xxx xxx...xxx	Enter a list of customers to be available using password PWnn. Enter ALL to allow access to all customers, or XALL to prevent access to all customers.
	HOST	YES, NO	Enter YES to enable the HOST mode login for password PWnn.
	MAT	(NO), YES	Enable MAT 5.0 Log in for passwork PWnn.
	OPT	xxxx	Options for password PWnn. Multiple entries must be separated by a space. (See I/O guide)
	LAPW	nn, Xnn	Create another LAO Password number, or enter X followed by a password number to delete the number. Valid range is 0-99.
	LOGIN_NAME	aaa...aaa	Enter a new login name for password access, or press Return. Valid characters are 0-9, A-Z and a-z. Length is up to 11 characters.
	FLTH	0-(3)-7	Enter a Failed Login Threshold (the number of failed logins needed to trigger a lockout of the port).
	TEN	xxx xxx...xxx	Enter a list of tenants to be available using password PWnn. Valid range is 1-511. Enter ALL to allow access to all tenants, or XALL to prevent access to all tenants.
	LOCK	0-(60)-270	Enter a lock-out time (the time, in minutes, a port is locked out after the Failed Login threshold is exceeded).

— continued —

Setting up passwords

STEP	ACTION

2 continued …

AUDT	(NO) YES	Enter YES to select an audit trail for password use, or NO to suppress the audit trail.
SIZE	(0)-65534	Enter a word size for the audit trail buffer, or press the return key to assume default values. (This prompt appears only if you enable the audit trail.
LLID	(NO) YES	Enter YES to provide an identification display of last login and failed login attempts, or NO to suppress the display.
INIT	(YES) NO	Enter YES to reset locked out ports during a manual initialization, or NO to prevent resets.

3	**Check your programming.**
	>LD 22

REQ	PRT	Enter PRT.
TYPE	PWD	Enter PWD.
PWD2	xxxx	Enter the Level 2 password.
REQ	****	Terminate the overlay by entering ****.

— continued —

Setting up passwords

STEP	ACTION
4	**Perform a data dump to permanently store the programming you have just completed.**

> **CAUTION**
> Check your maintenance agreement
> before working in LD 43.

	Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.
	> LD 43
	. EDD <cr>
5	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
6	**Terminate this overlay program.**
	****
7	**Terminate this programming session.**
	Log off.
	>LOGO
8	**You have completed the programming required to configure passwords.**

END

Setting up system parameters

Purpose

You can set system parameters that control how the Meridian 1 uses signal companding, how it handles timeslot faults, and how it uses signaling such as switch-hook flashes and pulse dialing.

The information you enter during this stage of basic configuration is described in detail below. Procedures for entering this information are provided later in this chapter.

> *Note:* Attempts to readjust the system parameters without detailed system knowledge could cause severe disruption in service.

System parameters

To use the µ-Law international companding law, enter YES at the INTN prompt. To use the A-law international companding law, enter NO.

To set the maintenance threshold for timeslot continuity faults, respond to the CONT prompt. To set the maintenance threshold for cyclic redundancy check (CRC) continuity faults, respond to the CRCF prompt.

To set the switchhook flash time, respond to the FLSH prompt. To set the off-hook validation timer for an extended flexible analog line card, respond to the TOHY prompt.

To set the minimum time allowed for pulse dialing, respond to the TDP prompt. To set the maximum time for pulse dialing, respond to the TID prompt.

Setting up system parameters

Loss plans

The Meridian 1 compensates for line quality and line characteristics to provide uniform service over a variety of trunk and line types. In order to match itself to a particular type of trunk or line, the Meridian 1 needs information about the line.

As part of configuring EPE, you must enter loss and level information for each trunk. Loss planning can be complex, and is usually done before the Meridian 1 is installed.

Selecting tables

When creating a customized loss and level table, or disabling an active table, you must enter a second-level administration password.

To select the North American transmission plan for central-office trunks (COT), enter YES at the NATP prompt. If you are not using the North American transmission plan, enter NO.

Enter the B34 table type at the TTYP prompt. Enter the number of a predefined table, if one is to be used, at the TNUM prompt.

Trunk transmit and receive levels

Central office trunks

Enter receive and transmit levels for the central office trunk short-line class of service at the COTS prompt. Enter receive and transmit levels for the central office trunk long-line class of service at the COTL prompt.

Direct inward and outward dial trunks

Enter receive and transmit levels for the direct inward dial and direct outward dial short-line class of service at the DIDS prompt.

TIE trunks

Enter receive and transmit levels for the TIE trunk two-wire compensated class of service at the T2WT prompt. Enter receive and transmit levels for the TIE trunk two-wire uncompensated class of

Setting up system parameters

service at the T2WN prompt. Enter receive and transmit levels for the
TIE trunk two-wire via-network-loss (VNL) class of service at the
T2WV prompt.

Enter receive and transmit levels for the TIE trunk four-wire
compensated class of service at the T4WT prompt. Enter receive and
transmit levels for the TIE trunk four-wire uncompensated class of
service at the T4WN prompt. Enter receive and transmit levels for the
TIE trunk four-wire via-network-loss (VNL) class of service at the
T4WV prompt.

Paging trunks
Enter a coded transmit relative input/output level for paging trunks at
the PAGT prompt.

Recorded announcement trunks
Enter a coded receive relative input/output level for recorded
announcement trunks at the RANR prompt.

Analog line cards
If your Meridian 1 has analog line cards installed, enter the analog line
card unit short line class of service transmit and receive levels at the
ALUS prompt. Enter the long line class of service transmit and
receive levels at the ALUL prompt.

Administration tips

EFFICIENCY

A number of courses and administration aids are available from
Nortel or your system supplier. Taking advantage of these courses and
aids maximizes the effectiveness of your Meridian 1 administration
efforts.

Nortel's support helpline is available to customers who want help
setting up their Meridian 1. For more information, call your system
supplier.

Setting up system parameters

What to have ready

The following checklist summarizes the steps you should take before
setting system parameters.

Table 11
Checklist

Basic	Optional	Preparation
Ð		Decide what system parameters must be set.
Ð		Perform loss and level planning.

What's next?

A flowchart follows which summarizes the implementation decisions
and procedures.

A step-action table follows the flowchart. The table explains the
programming steps necessary to set system parameters.

Setting up system parameters

```
┌──────────┐          ┌─────────────────────────────┐
│  Start   │          │  The flowchart summarizes the│
└────┬─────┘          │  procedure. Use the instructions in the│
     │                │  step-action table that follows this│
     ▼                │  flowchart to perform the procedure.│
┌──────────┐          └─────────────────────────────┘
│ Set loss and │
│ level plans. │
└────┬─────┘
     │
     ▼
┌──────────┐
│ Select a │
│ companding │
│ law.     │
└────┬─────┘
     │                              ┌──────────┐
     ▼                              ▼          │
┌──────────┐                  ┌──────────┐
│ Define   │                  │ Set ISM  │
│ maintenance │               │ parameters. │
│ thresholds. │               └────┬─────┘
└────┬─────┘                        │
     │                              ▼
     ▼                        ┌──────────┐
┌──────────┐                  │ Set Meridian │
│ Set timers. │               │ Mail options. │
└────┬─────┘                  └────┬─────┘
     │                              │
     ▼                              ▼
┌──────────┐                  ┌──────────┐
│ Set      │                  │ Set other PE │
│ defaults for │               │ parameters. │
│ telephones. │                └────┬─────┘
└────┬─────┘                        │
     │                              ▼
     └──────────────────────► ┌──────────┐
                              │   End    │
                              └──────────┘
```
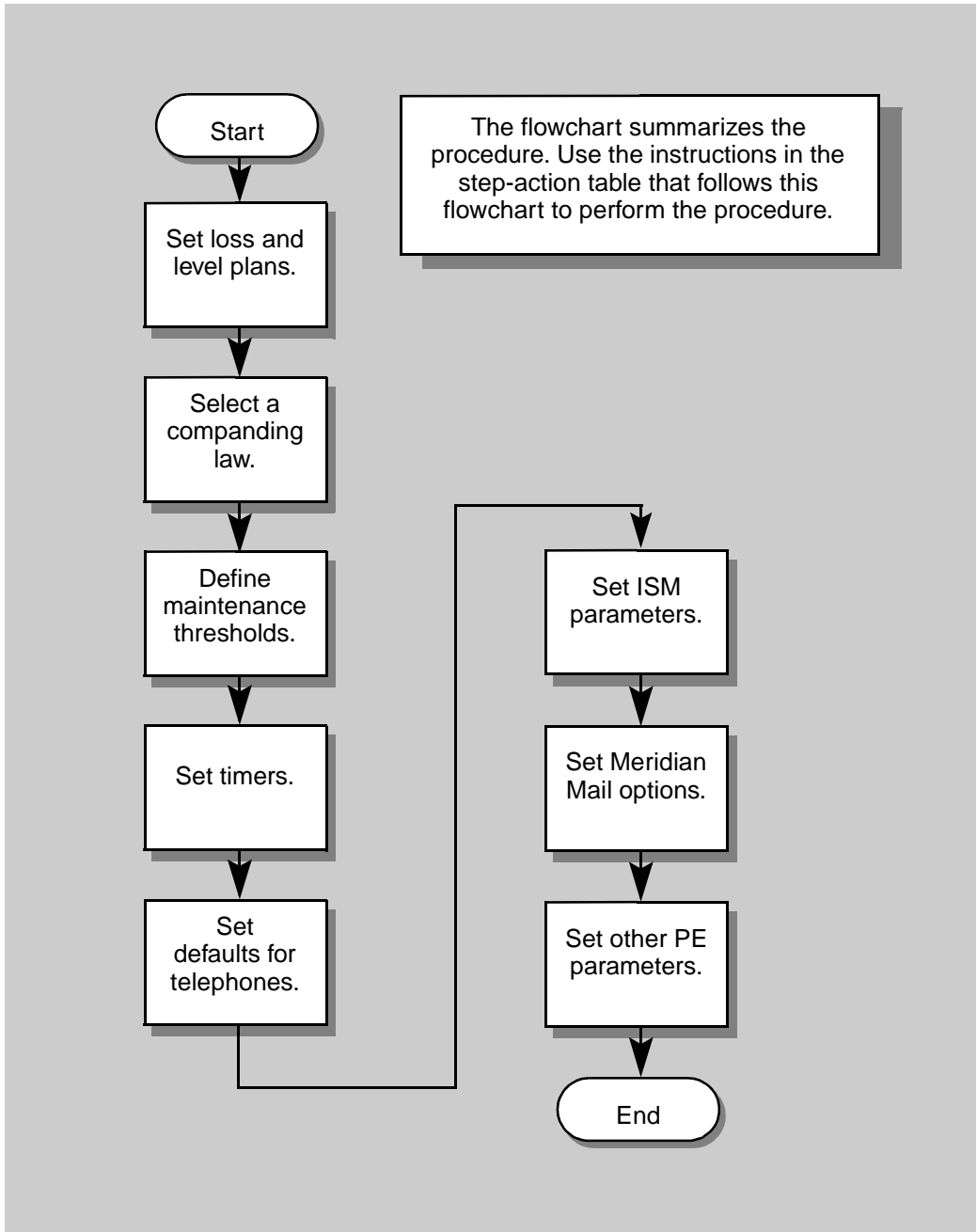
Setting up system parameters

The preceding material in this chapter contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the setting of system parameters.

STEP	ACTION
1	**Log in.**

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2	**Set loss and level plan parameters.**

>**LD 97**

REQ	CHG	
TYPE	LOSP	Change the Loss and Level plan parameters.
NATP	YES, NO	Enter YES to select the North American Transmission Plan for generic XFCOT.
TTYP	STAT, DYNM	Enter STAT to install a B34 Static Loss Plan Table, or DYNM to install a B34 Dynamic Loss Plan Alternative Level Table.
TNUM	1-27	Enter the predefined table number to be used. The range is 1-27 when using the B34 Static Loss Plan, and 1-5 when using the Alternative Level Table.

Respond to the PWD2 prompt if it appears:

PWD2	xxxx	Enter the Second Level Administration Password. This password is required to "Disable" an active table or "Create" a customized table.

— continued —

Setting up system parameters

STEP	ACTION		
	2 continued …		

COTS	8–39 0–31	Enter levels for the Central Office Trunk Short line class of service. The first field is the Receive (A/D) level, the second field is the Transmit (D/A) level.
COTL	8–39 0–31	Enter levels for the Central Office Trunk Long line class of service. The first field is the Receive (A/D) level, the second field is the Transmit (D/A) level.
DIDS	8–39 0–31	Enter levels for the DID/DOD Short line class of service. The first field is the Receive (A/D) level, the second field is the Transmit (D/A) level.
T2WT	8–39 0–31	Enter levels for the TIE trunk 2-Wire TRC (Transmission Compensated) class of service. The first field is the Receive (A/D) level, the second field is the Transmit (D/A) level.
T2WN	8–39 0–31	Enter levels for the TIE trunk 2-Wire NTC (Non-Transmission Compensated) class of service. The first field is the Receive (A/D) level, the second field is the Transmit (D/A) level.
T2WV	8–39 0–31	Enter levels for the TIE trunk 2-Wire NTC (Non-Transmission Compensated) class of service. The first field is the Receive (A/D) level, the second field is the Transmit (D/A) level.
T4WT	8–39 0–31	Enter levels for the TIE trunk 4-Wire TRC (Transmission Compensated) class of service. The first field is the Receive (A/D) level, the second field is the Transmit (D/A) level.
T4WN	8–39 0–31	Enter levels for the TIE trunk 4-Wire NTC (Non-Transmission Compensated) class of service. The first field is the Receive (A/D) level, the second field is the Transmit (D/A) level.
T4WV	8–39 0–31	Enter levels for the TIE trunk 4-Wire VNL (Via Network Loss) class of service. The first field is the Receive (A/D) level, the second field is the Transmit (D/A) level.

— continued —

Setting up system parameters

STEP	ACTION		
	2 continued …		
	PAGT	0-31	Enter levels for the paging trunk coded Transmit (D/A) input/output relative level.
	RANR	8-39	Enter levels for the recorded announcement trunk coded Receive (A/D) input/output relative level.
	Respond to the ALUS and ALUL prompts if they appear:		
	ALUS	8-39 0-31	Enter levels for the Analog Line card Unit Short line class of service. The first field is the Receive (A/D) level, the second field is the Transmit (D/A) level.
	ALUL	8-39 0-31	Enter levels for the Analog Line card Unit Long line class of service. The first field is the Receive (A/D) level, the second field is the Transmit (D/A) level.
3	**Change Peripheral Equipment parameters.**		
	REQ	CHG	
	TYPE	SYSP	Enter SYSP to change system detection and PE parameters.
	INTN	YES, NO	Enter YES to change the International companding law to µ-Law, or NO to change to A-law.

— continued —

Setting up system parameters

STEP	ACTION

3 continued …

CODE	0	
CONT	1–32767	Enter the maintenance threshold for number of continuity faults per timeslot.
CRCF	1–32767	Enter the Cyclic Redundancy Check (CRC) maintenance threshold for number of continuity faults per timeslot.
FLSH	120–768	Enter the switchhook flash time in milliseconds for 500/2500 sets (NT8D PE only).
TOHY	0–1275	Enter the off-hook validation timer for Extended Flexible Analog Line Card (XFALC)NT5K02.
TDP	15–1275	Enter the minimum time for dial pulse for NT5K02.
TID	0–1275	Enter a maximum time for dial pulse for NT5K02.
TDPO	0–1275	Enter a maximum time for dial pulse for NT5K02.
TPF	0–1275	Enter the post flash timer for NT5K02.
MFRL	0–3	Enter the multifrequency minimum Receiver Level for XMFC/XMFE (NT5K21) for Meridian 1 (superloop) only.

Codes	Level Values
0	-28 dBmO
1	-32 dBmO
2	-36 dBmO
3	-40 dBmO

P10R	50–70	Enter a make-break ratio for 12 PPS dial pulse dialing. Range is 50% to 70%, in steps of 1. For example, at 70% the signal is on for 30 ms and off for 70 ms, making a 100 ms cycle for one pulse. To use on individual XUT, XUTJ and XEM trunks, set CLS to P12 in LD 14.

— continued —

Setting up system parameters

STEP	ACTION

3 continued …

P20R	50-70	Enter the make-break ratio for 20PPS dial pulse dialing. Range is 50% to 70%, in steps of 1. For example, at 70% the signal is on for 15 ms and off for 35 ms, making a 50 ms cycle for one pulse. To use on individual XUT, XUTJ and XEM trunks, set CLS to P20 in LD 14.
INSO	YES, NO	Enter YES to change installation options.
DEFS	YES, NO	Enter YES to accept default sets.
DEF 2006 xxyy		Enter a new default number for 2006 sets, where xx is the old default number.
DEF 2008 xxyy		Enter a new default number for 2008 sets, where xx is the old default number.
DEF 2216 xxyy		Enter a new default number for 2216 sets, where xx is the old default number.
DEF 2616 xxyy		Enter a new default number for 2616 sets, where xx is the old default number.
DEF 500 xxyy		Enter a new default number for 500 sets, where xx is the old default number.
DEF 2500 xxyy		Enter a new default number for 2500 sets, where xx is the old default number.
FNUM wwww zzzz		Enter the first DN in the default numbering plan, (where wwww shows you the current setting).
ISM	YES, NO	Enter YES to enable Incremental Software Management.
TNS	0-32767	Set the maximum number of terminals.
AGNT	0-32767	Set the maximum number of ACD agents.
ACDN	0-32767	Set the maximum number of ACD directory numbers.
AST	0-32767	Set the maximum number of associated sets.
DSL	0-32767	Set the maximum number of digital subscriber loops.

— continued —

Setting up system parameters

STEP	ACTION

3 continued …

LTID	0-32767	Set the maximum number of logical terminal IDs.
MOPT	0-11	Select the Meridian Mail option.
KEY1	xxxxxxxx	Enter the first eight digit security key 1 provided by NT.
KEY2	xxxxxxxx	Enter the second eight digit security key 1 provided by NT.
KEY3	xxxxxxxx	Enter the third eight digit security key 1 provided by NT.
XPEC	0-95	Enter peripheral controller numbers. (Enter 0 to have the Meridian 1 assign controller numbers automatically.)
LOC	xxxxxx	Enter a location code for the peripheral controller. The code should be equal to the column number assigned to the system monitor and the universal equipment module that contains the controller.
MED	COP	Select copper cabling for the connection to the peripheral controller.
RGTP	8-16	Set the maximum number of 500/2500 telephones which can be rung at the same time. (Before allowing 16 concurrent ringers, make sure that the NT6D42CA Ringing Generator is installed. Otherwise, intermittent alarms may appear on the ringing generator.)
SUPL	0-156	Enter a Superloop number (a multiple of 4). To create a phantom loop for a third-party application, type **C** before the number. To create a phantom loop, type **N** before the number.

— continued —

Setting up system parameters

STEP	ACTION

3 continued …

ST21	YES, NO	Enter YES if you are configuring an Option 21 system. For all other systems, enter NO.
SLOT	L, R	Specify the side of the slot the network card is installed in. If the card is located in the lower-numbered network pair (the left slot), enter **L**.
XPEO	x y z	Enter extended peripheral controller 0's number, starting segment, and ending segment. x = Controller number (1-95) for Superloop's shelf 0 y = starting shelf segment number (0-3) z = ending shelf segment number (0-3)
XPE1	x y z	Enter extended peripheral controller 1's number, starting segment, and ending segment. x = Controller number (1-95) for Superloop's shelf 0 y = starting shelf segment number (0-3) z = ending shelf segment number (0-3)

4   Check your programming.

Review your programming to ensure that no errors were made. Use the scroll feature of your terminal, check your printout, or use overlay 22 to examine the contents of the database. For more information about reviewing your programming, refer to the About the Meridian 1 section of this book.

If	Do
the programming is correct	step 5
the programming is not correct	step 1

— continued —

Setting up system parameters

STEP	ACTION
5	**Perform a data dump to permanently store the programming you have just completed.**

> ⚠️ **CAUTION**
> Check your maintenance agreement before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

6	**Verify that the data dump was successful.**

On-screen or printed response:

NO GO BAD DATA

or

DATA DUMP COMPLETE

7	**Terminate this overlay program.**

****

8	**Terminate this programming session.**

Log off.

>LOGO

— continued —

Setting up system parameters

STEP	ACTION
9	**You have completed the programming required to set system parameters.**

END

Network configuration

Network switching

Network switching, based on digital multiplexed loops, interconnects peripheral ports. A loop transmits voice, data, and signaling information over a bidirectional path between the network and peripheral ports.

Network cards digitally transmit voice and data signals, using space switching and time division multiplexing technology. Network switching also requires service loops (such as conference and TDS loops), which provide call progress tones and outpulsing.

Two types of cards provide network switching control:

— the NT8D04 Superloop Network Card, which provides four loops grouped together in an entity called a superloop which supports Intelligent Peripheral Equipment cards

— the QPC414 Network Card, which provides two loops which support Peripheral Equipment cards

Network organization

On most Meridian 1 system options, network loops are organized into groups. A system is generally configured as one of the following:

— a half-group system that provides up to 16 loops

— a full-group system that provides up to 32 loops

— a multiple-group system that provides up to 160 loops

Network configuration

An additional switching stage is required between groups in multiple-group configurations. This switching stage, an extension of the originating and terminating network loops, is provided through the intergroup switch cards in Network Modules and the junctor board in the InterGroup Module.

Superloop network configurations

By combining four network loops, the superloop network card makes 120 timeslots available to IPE cards. Compared to regular network loops, the increased bandwidth and a larger pool of timeslots increases network traffic capacity for each 120-timeslot bundle by 25 percent (at a P0.1 grade of service).

The NT8D37 IPE Module is divided into segments numbered 0–3 of four card slots each (see Figures 2). Segment 0 consists of slots 0–3, segment 1 consists of slots 4–7, segment 2 consists of slots 8–11, and segment 3 consists of slots 12–15.

Figure 2
Superloop segments in the IPE Module
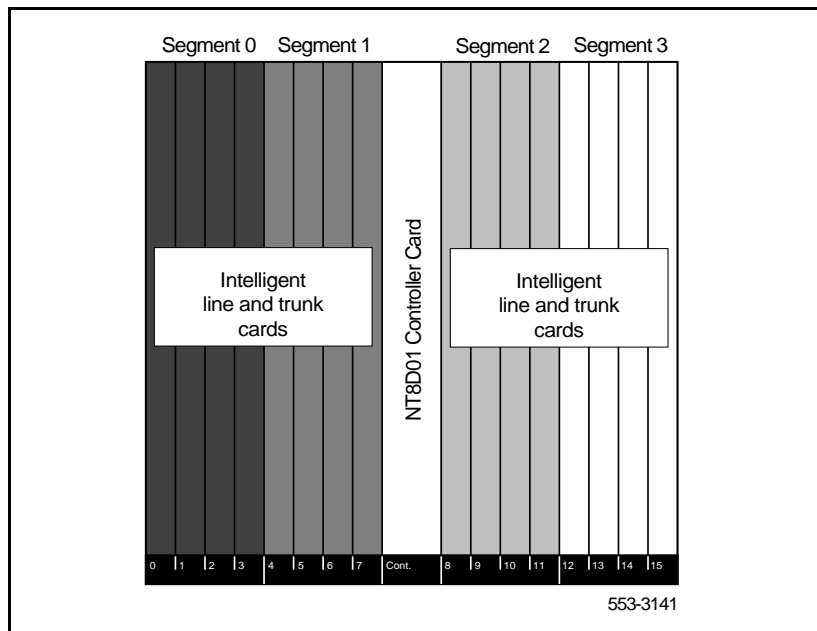
Network configuration

A superloop is made up of NT8D04 Superloop Network cards, NT8D01AC or NT8D01BC Controller-4 or NT8D01AD Controller-2 cards, and from one to eight IPE segments. The NT8D01BC Controller-4 replaces the NT8D01AC and NT8D01AD Controller cards for replacements and new installations.

A number of superloop-to-segment configurations are possible:

— one segment per superloop requires four superloop network cards and one controller-4 card

— two segments per superloop requires two superloop network cards and one controller-2 card

— four segments per superloop requires one superloop network card and one controller-2 card

— eight segments per superloop requires one superloop network card and two controller-2 cards

— one segment per superloop/three segments per another superloop requires two superloop network cards and one controller-2 card

— two segments per superloop/six segments per another superloop requires two superloop network cards and two controller-2 cards

As an example of a superloop configuration, Figure 3 shows eight segments per superloop. If a segment in this configuration is equipped with analog line cards and trunk cards, a high concentration environment of 120 timeslots to 128–512 terminal numbers (TNs) is provided. If half of the data TNs on digital line cards are enabled, this configuration provides a concentration of 120 timeslots to 768 TNs.

For a detailed description of superloop-to-segment configurations, see *Meridian 1 system engineering* (553-3001-151).

Network configuration

Figure 3
Eight segments per superloop
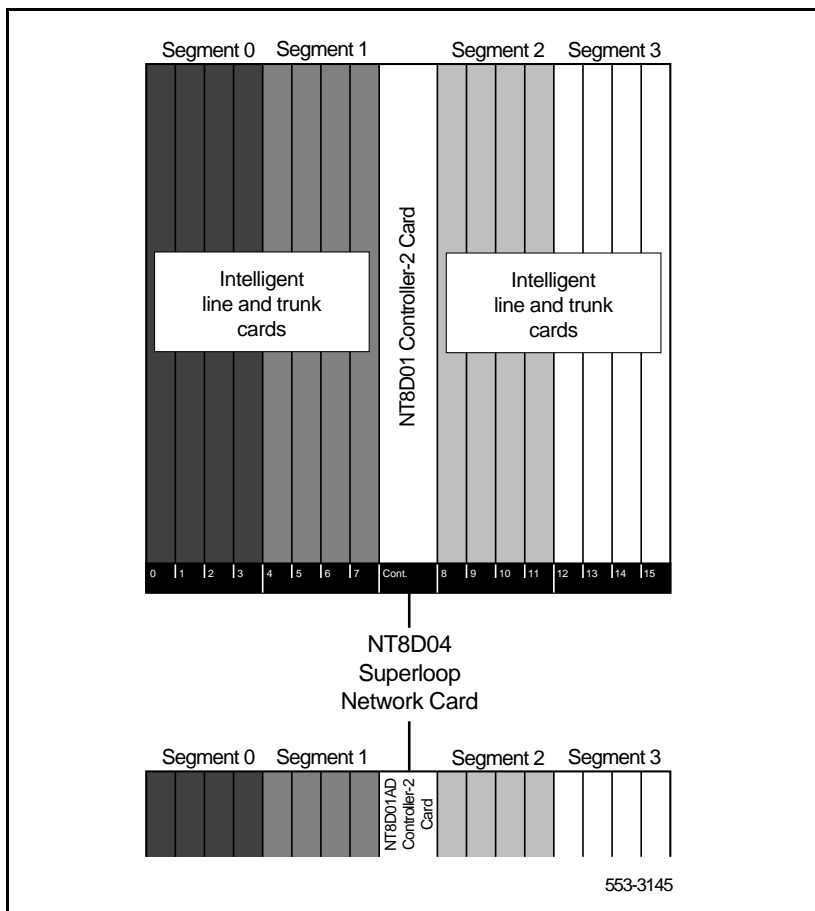
Intelligent peripheral equipment

Peripheral equipment is associated with network loops. Intelligent
peripheral equipment (IPE) cards are supported by NT8D04
Superloop Network Card loops. The traffic requirements of all
peripheral equipment cards provisioned on a particular network loop
must match the traffic capacity of that loop.

Network configuration

IPE cards are housed in the NT8D37 IPE Module or the NT8D11 CE/PE Module. PE and IPE cards cannot be mixed within a module.

Intelligent peripheral equipment includes:

— controller cards (XPE) that provide timing and control sequences and monitoring capabilities

— analog and digital line and trunk cards that provide interfaces to equipment outside the modules (such as telephones, data terminals, and trunks)

The IPE Module houses one NT8D01 Controller Card and up to 16 IPE cards (such as line and trunk cards), supporting up to 512 terminal numbers (256 voice and 256 data). The controller card is cabled to the NT8D04 Superloop Network Card.

Note: **The controller card must be installed in the card slot labeled Cont (for controller)**.

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. Taking advantage of these courses and aids maximizes the effectiveness of your Meridian 1 administration efforts.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Network configuration

What to have ready

The following checklist summarizes the steps you should take before configuring Superloops and controllers.

**Table 12
Checklist**

Basic	Optional	Preparation
Ð		Identify the network slot which the superloop card will reside in.
Ð		Identify the number which will be used by the peripheral controller.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure loops and Superloops.

Network configuration

```
        ┌──────────┐          ┌────────────────────────────┐
        │  Start   │          │  The flowchart summarizes the
        └────┬─────┘          │  procedure. Use the instructions in the
             │                │  step-action table that follows this
             ▼                │  flowchart to perform the procedure.
     ┌───────────────┐        └────────────────────────────┘
     │  Choose XPE   │
     │ controller num-│
     │     ber       │
     └───────┬───────┘
             ▼
     ┌───────────────┐
     │ Configure XPE │
     │controller data│
     └───────┬───────┘
             ▼
     ┌───────────────┐                  ┌───────────────┐
     │   Identify    │                  │  Enable IPE   │
     │ Network card  │                  │  controller   │
     │  locations    │                  └───────┬───────┘
     └───────┬───────┘                          ▼
             ▼                          ┌───────────────┐
     ┌───────────────┐                  │   Preform     │
     │  Configure    │                  │equipment data │
     │ superloop data│                  │    dump       │
     └───────┬───────┘                  └───────┬───────┘
             ▼                                  ▼
     ┌───────────────┐                   ┌──────────┐
     │ Enable super- │                   │   End    │
     │     loop      │                   └──────────┘
     └───────┬───────┘
             └──────────────────────────────┘
```
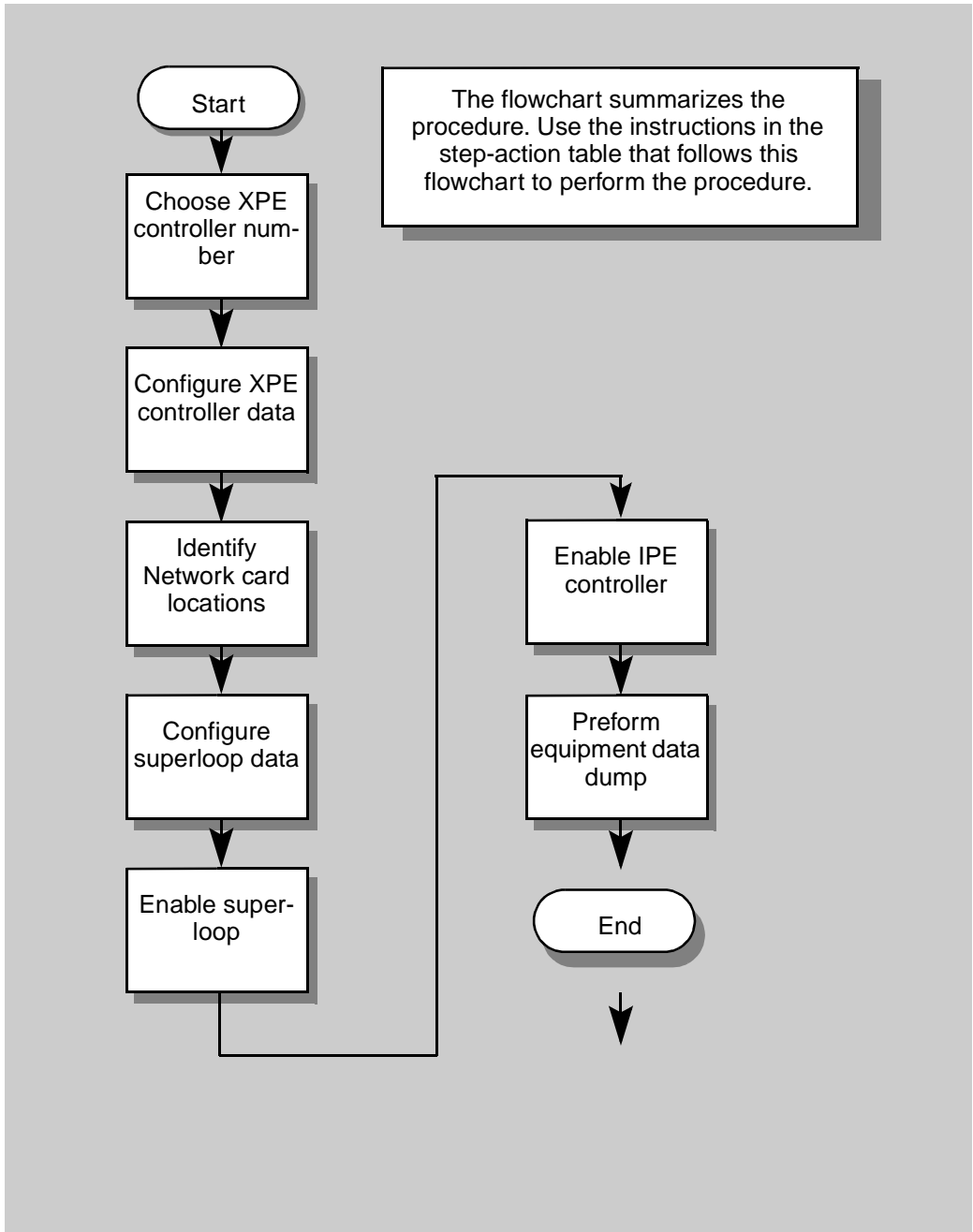
Network configuration

The preceding material in this chapter contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of loops and Superloops.

STEP	ACTION

1   **Log in.**

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2   **Define the XPE: Extended Peripheral Equipment shelf data block.**

> **LD 97**

REQ	CHG	
TYPE	XPE	Enter XPE to make changes to Extended Peripheral Equipment shelf data block.
XPEC	(0)-95	Enter the Extended Peripheral Equipment Controller number to be created
LOC	xxxxxx	Location code for the Peripheral Controller
MED	(COC)	Connection Media to Peripheral Controller (copper cabling).
RGTP	(8) 16	Ringing Generator Type (8 or 16 concurrent ringers; 16 requires NT6D42CA Ringing Generator). This prompt determines the maximum number of 500/2500 telephones which can be in the active ringing state at the same time.

— continued —

Network configuration

STEP	ACTION
3	**Configure Superloops.**

>LD 97

REQ	CHG	
TYPE	SUPL	Enter SUPL to configure Superloop parameters.
SUPL	0-156	Enter a Superloop number (a multiple of 4). To create a phantom loop, precede the entry with C.
ST21	YES, NO	Enter YES if you are configuring an Option 21 system, or NO if you are configuring another type of system.
SLOT	L, R	Enter L if the Network card is in the left slot (the lower numbered network pair), or R if it is in the right slot (the higher numbered network pair).
SUPT	STD, CARR, FIRE	
		Specify the Superloop type. Enter STD for normal copper cable connections between the XNET and XPEC, CARR for Carrier Link Superloop type connections between an LCI and RCI, or FIRE for fibre link connections between an FXNET and an FXPEC.
XPE0	1-95 0-3 0-3	
		Identify Extended Peripheral Equipment controller 0 (Configured in Step Action 2). Enter the controller number, the starting shelf segment number, and the ending shelf segment number.

— continued —

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Network configuration

STEP	ACTION

3 continued …

XPE1	1–95 0–3 0–3	Identify Extended Peripheral Equipment controller 1. Enter the controller number, the starting shelf segment number, and the ending shelf segment number.
XPEC	1–95	Specify a SUPL. For copper connections, the block is built with all segments (0-3) of the peripheral shelf (RCI) which are associated with this SUPL (LCI). This ensures that one LCI is configured to only one RCI, and that all segments on the RCI are associated with the LCI.
		For fibre connections, the block is built with all segments (0-3) of the peripheral shelf (FXPEC) which are associated with this SUPL (FXNET). This ensures that one FXNET is configured to only one FXPEC, and that all segments on the FXPEC are associated with the FXNET.
REQ	END	Exit the overlay.

4   **Cable the Superloop to the XPE and check programming.**

Cable the Superloop to XPE using the cable specified in Installation and Maintenance guide. Review your programming to ensure that no errors were made. Use overlay 97 to examine the contents of the database (REQ = PRT). For more information about reviewing your programming, refer to the About the Meridian 1 section of this book.

If	Do
the programming is correct	step 5
the programming is not correct	step 1

— continued —

Network configuration

STEP	ACTION

5   Enable the superloop and XPE controller.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on

LD 32.

> LD 32

. ENLL xxx <cr>   Enable the superloop configured in step 3.

. ENXP xx <cr>   Enable the XPE configured in step 4

. **** <cr>   Exit the overlay.

Note: The LED on the superloop card will go out if the card is enabled. If the LED does not go out, check to see that the card is in the correct network slot (right or left) and enable the card again.

Note: The LEDs of the XPE when enabled should flash the controller number configured in step 3. If the LEDs do not flash the XPE number, suspect a cabling fault with the configured superloop card.Confirm that the superloop is enabled and is correctly cabled to the XPE card. Enable the XPE again.

6   Perform a data dump to permanently store the programming you have just completed.

> **CAUTION**
> Check your maintenance agreement
> before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

— continued —

Network configuration

STEP	ACTION
7	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
8	**Terminate this programming session.**
	Log off.
	>LOGO
9	**You have completed the programming required to add Superloops.**
	END

Service loops and circuits

Purpose

Service loops and circuits are required in call processing to provide specific functions to satisfy the requirements of a given application. They are system resources. Service circuits also consume system resources, such as physical space, real time, memory and so on. This section will describe how service loops serve trunks and telephone lines, provide conferencing and music.

Service loop types

Tone and digit switch loops

The Tone and Digit Switch (TDS) loop is a part of the dual loop NT8D17 Conf/TDS card. The TDS loop in Meridian 1 provides dial tone, busy tone, overflow tone, ringing tone, audible ringback tone, DP or dual tone multifrequency (DTMF) outpulsing and miscellaneous tones. All these tones are provided through the maximum 30 time slots in the TDS loop.

In other words, the maximum number of simultaneous users of tone circuits is 30, whether it be 30 of one tone or a combination of many different types of tones. One TDS loop is normally recommended for each Network Module or half network group of 14 traffic loops. Additional TDS loops may be added if needed, but this is rare.

Note: The NT8D17 Conf/TDS card installs in any network slot, but it is recommended that at least one of these cards be installed in the slot addressing loops 0 and 1. In this case, the conference function of the card will address the odd numbered loop and the TDS function will address the even numbered loop.

Service loops and circuits

Conference loops

The Conference loop is a part of the dual loop NT8D17 Conf/TDS card. It provides circuits for 3-way or 6-way conferences. It can also broadcast music from a source to a maximum of 30 users simultaneously. In addition, a Conference loop also provides temporary hold for a variety of features, chief among them, the End to End Signaling. One Conference loop is normally recommended for each half network group or 14 traffic loops.

> *Note:* The NT8D17 Conf/TDS card installs in any network slot, but it is recommended that at least one of these cards be installed in the slot addressing loops 0 and 1. In this case, the conference function of the card will address the odd numbered loop and the TDS function will address the even numbered loop.

Terminal equipment loops

Terminal equipment loops serve telephones and other terminal devices. To create a single-density terminal equipment loop, respond to the TERM prompt. To create a double-density terminal equipment loop, respond to the TERD prompt. To create a quadruple-density terminal equipment loop, respond to the TERQ prompt.

Music

MUSic is provided through conferencing a caller to a MUS source. Therefore, a Conference loop is required for the Music on Hold feature. Each set of 30 simultaneous music users will require a Conference loop, thus a NT8D17 Conf/TDS card, since these two service loops are not separable. For a small system, music users can share a conference loop with other applications.

Service loops and circuits

Application and hardware service loops

A number of applications and hardware require the configuration of specific service loops. The configuration of these service loops is outside the scope of this guide. For information about configuring hardware and applications, refer to the documentation for the specific application or hardware. An Example of some of these application or hardware is provided for information purposes.

Remote peripheral equipment loops

In addition to supporting peripheral equipment cards collocated with the common equipment, Meridian 1 systems may be configured to support Remote Peripheral Equipment (RPE). Depending on the type of transmission media required between the host site (Meridian 1 system) and the remote site and the type of peripheral equipment cards selected, the following RPE products are supported:

- Remote Peripheral Equipment

- Carrier Remote IPE

- Fiber Remote IPE

- Fiber Remote Multi-IPE

Each of these remote products allow the peripheral cards to be located remotely from the host system. In the case of Remote Peripheral Equipment (RPE) and Carrier Remote IPE, these products allow the system network interface to be converted and transported across commonly used T1 or E1 digital facilities including digital microwave radio. The Fiber Remote IPE and Fiber Remote Multi-IPE products provide the same network conversion requirements, but transported use fiber facilities instead of T1 or E1. All of these products offer the remote users the same level of feature functionality provided to the local users. Essentially, these remote products allow the remote peripherals to function as if they were collocated with the local peripheral equipment.

For more information, refer to the Remote Services Guide.

Service loops and circuits

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. Taking advantage of these courses and aids maximizes the effectiveness of your Meridian 1 administration efforts.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

What to have ready

The following checklist summarizes the steps you should take before configuring loops and Superloops.

**Table 13
Checklist**

Basic	Optional	Preparation
Đ		Decide on the required number and types of loops.
Đ		Identify the service loop slots to be programmed.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure loops and Superloops.

Service loops and circuits

```
        ┌──────────┐
        │  Start   │
        └────┬─────┘
             ▼
    ┌──────────────┐
    │ Identify     │
    │ Network card │
    │ locations.   │
    └──────┬───────┘
           ▼
    ┌──────────────┐
    │ Enter loop   │
    │ numbers for  │
    │ new loops.   │
    └──────┬───────┘
           ▼
    ┌──────────────┐
    │ Set up DTD   │
    │ tests.       │
    └──────┬───────┘
           ▼
        ┌──────────┐
        │   End    │
        └──────────┘
```

The flowchart summarizes the procedure. Use the instructions in the step-action table that follows this flowchart to perform the procedure.
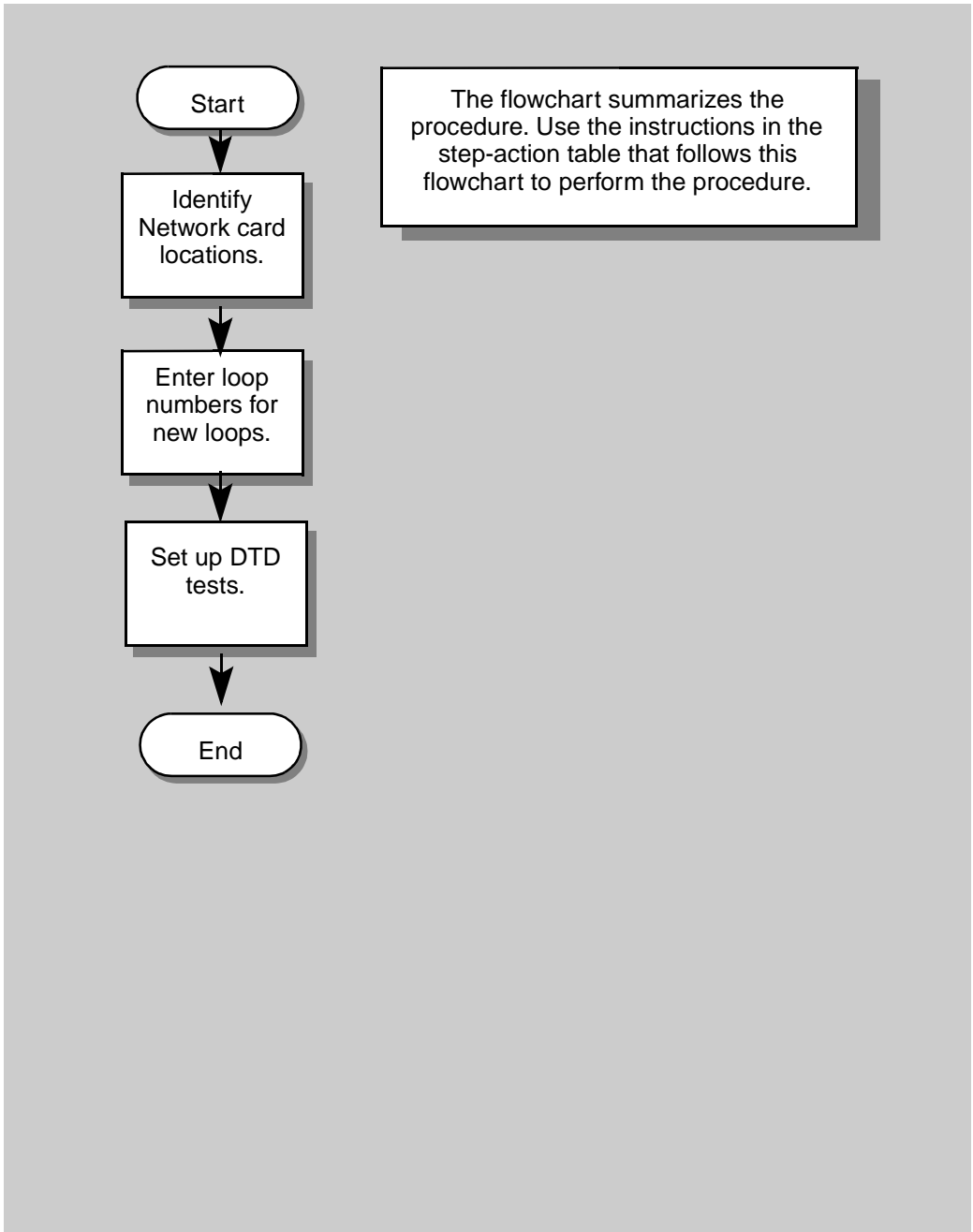
Service loops and circuits

> The preceding material in this chapter contains essential information. You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the implementation of loops and Superloops.

STEP	ACTION

1   Log in.

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2   Define the Conference and Tone and digit switch loops.

>LD 17

REQ	CHG	
TYPE	CEQU	Enter CEQU to make changes to common equipment parameters.
XCT	0,2,...158	Enter an even loop number for the NT8D17 Conference/TDS/MFS card. The Conference function is automatically assigned to the next higher (odd numbered) loop number. System prints: TDS n MFS n CNF n+1 This indicates that TDS and MFS functions are configured on the even loop "n" and conference function is configured on the next higher odd loop. Precede with X to remove. Both loops must be disabled first. Since TN 0 0 0 0 cannot be used in non-multigroup systems, it is recommended that Conference/TDS/MFS card be placed in loop 0. Configuring more than 16 conference loops may cause the system to lock up.

— continued —

Service loops and circuits

STEP	ACTION

	2 continued …

REQ END Exit the overlay.

3	**Enable the Conference and Tone and digit switch loops.**

>**LD 34**

. ENLX l Enable Conf/TDS/MFS card on loop l and l+1.
This command can be used in LD 34, LD 38 and LD 46.
Enables the entire combined Conference, Tone and Digit Switch, and MF Sender (NT8D17) card. Both the even numbered TDS/MFS/loop and adjacent conference loop are enabled (loop = 0, 2, 4,... 158). The Conf/TDS card is not enabled automatically when it is inserted.

REQ **** Exit the overlay.

4	**Check your programming.**

Review your programming to ensure that no errors were made. Use the scroll feature of your terminal, check your printout, or use overlay 32 to examine the contents of the database. For more information about reviewing your programming, refer to the About the Meridian 1 section of this book.

If **Do**

the programming is correct step 5

the programming is not correct step 1

— continued —

Service loops and circuits

STEP	ACTION
5	**Perform a data dump to permanently store the programming you have just completed.**

> ⚠ **CAUTION**
> Check your maintenance agreement before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

6	**Verify that the data dump was successful.**

On-screen or printed response:

NO GO BAD DATA

or

DATA DUMP COMPLETE

7	**Terminate this overlay program.**

****

— continued —

Service loops and circuits

STEP	ACTION
8	**Terminate this programming session.**
	Log off.
	>LOGO
9	**You have completed the programming required to add loops and Superloops.**

END

Service loops and circuits

Configuring memory and buffers

Purpose

Additional information which you must enter into the Meridian 1 includes:

◆ memory configuration

◆ buffer sizes

The information you enter during this stage of configuration is described in detail below. Procedures for entering this information are provided later in this chapter.

Memory

The Meridian 1 can be equipped with different memory options, depending on your requirements and the type of Meridian 1 system you are configuring. Identify your memory configuration during basic configuration.

Configuring memory and buffers

Available configurations

The following memory configurations are available:

128

Configuration 128 consists of a 128 Kbyte card as module 0. This configuration is available for all machine Options except 51, 61, and 71.

128 128

Configuration 128 128 consists of two 128 Kbyte cards, or one 256 Kbyte card. This configuration is available for all machine Options except 51, 61, and 71.

192

Configuration 192 consists of a 192 Kbyte card as module 0. This configuration is available for all machine Options except 51, 61, and 71.

512

Configuration 512 consists of a 512 Kbyte card as module 0. This configuration is available for Option 21 systems.

768

Configuration 768 consists of a 768 Kbyte card as module 0. This configuration is available for Options 21, 51, and 61.

768 768

Configuration 768 768 consists of 768 Kbyte cards as module 0 and module 1. This configuration is available for Option 71.

768 768 768

Configuration 768 768 768 consists of 768 Kbyte cards as module 0, module 1 and module 2. This configuration is available for Option 71.

2M

Configuration 2M consists of a 2 Mbyte card.

4M

Configuration 4M consists of a 4 Mbyte card.

Configuring memory and buffers

Buffer sizes

Buffers in the Meridian 1 act to increase high-traffic reliability on critical communications links, including Integrated Services Digital Network (ISDN) D-channel links, terminal console input and output links, and links to telephones. Buffers also serve to protect the integrity of the history file during periods of high activity.

Set the size of buffers based on the expected level of traffic and the need for reliability. When increasing buffer sizes, you are compromising the overall system memory capacity in favor of increased reliability.

Buffer types

Meridian 1 buffers include:

◆ high-priority buffers

◆ low-priority buffers

◆ 500/2500 buffers

◆ Meridian 1 output buffers (OB)

Password audit buffer

The Meridian 1 lets you track the use of passwords on the system. Use of passwords is written to an audit buffer.

To implement the monitoring of password usage, set the buffer size by responding to the AUDT and SIZE prompts. The size of the buffer depends on the level of activity on your system and the frequency of your security checks. If your system will have very active administrators, make the buffer size large. If the password audit is going to be checked very frequently, the password audit buffer can be smaller.

Configuring memory and buffers

History buffer

The history buffer serves to prevent loss of data being written to the history file. During periods of high system traffic, the output of event records may exceed the ability of the output device to store those records.

The History File stores system messages in Protected Data or P data and uses an SDI port address. The History File survives initialization, but is lost when SYSLOAD occurs or the length of the file is changed.

To set the size of the history file buffer, respond to the SIZE prompt.

Traffic buffer

The traffic buffer serves to prevent loss of traffic data during periods of high system traffic. The buffer stores system messages in Protected Data or P data and uses an SDI port address. The traffic buffer survives initialization, but is lost when SYSLOAD occurs or the length of the file is changed.

To set the size of the traffic buffer, respond to the SIZE prompt.

Additional information

For information about recommended buffer sizes, refer to *Meridian 1 System Engineering* and *Capacity Engineering*.

For more information about 500/2500 buffers, refer to *500/2500 Line Cards*. For more information about Meridian 1 output buffers, refer to *SL-1 Telephone Line Cards*.

For information about buffers used for ISDN Basic Rate Interface (BRI), refer to *ISDN Basic Rate Interface*.

If you are installing automatic call distribution (ACD) on the Meridian 1, refer to *Engineering and Assignment of Equipment* to identify additional impacts on Meridian 1 buffers.

Configuring memory and buffers

Traffic studies

Once you have defined your buffers, you need to perform traffic studies to ensure that the buffer parameters are appropriate. For more information about performing and evaluating traffic studies, refer to Task 30, "Completing programming."

Configuring memory and buffers

Administration tips

A number of courses and administration aids are available from Nortel or your system supplier. Taking advantage of these courses and aids maximizes the effectiveness of your Meridian 1 administration efforts.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Configuring memory and buffers

What to have ready

The following checklist summarizes the steps you should take before configuring memory.

Table 14
Checklist

Basic	Optional	Preparation
Đ		Identify your memory configuration.
Đ		Calculate your optimal buffer sizes.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure memory.

Configuring memory and buffers

```
        ┌─────────────┐       ┌──────────────────────────────┐
        │    Start    │       │  The flowchart summarizes the │
        └──────┬──────┘       │  procedure. Use the instructions in the │
               │              │  step-action table that follows this │
               ▼              │  flowchart to perform the procedure. │
     ┌──────────────────┐     └──────────────────────────────┘
     │ Configure the    │
     │ password audit   │
     │ trail buffer.    │
     └────────┬─────────┘
              │
              ▼
     ┌──────────────────┐
     │ Configure the    │
     │ history file     │
     │ buffer.          │
     └────────┬─────────┘
              │
              ▼
     ┌──────────────────┐
     │ Configure the    │
     │ traffic log      │
     │ buffer.          │
     └────────┬─────────┘
              │
              ▼
     ┌──────────────────┐
     │ Configure        │
     │ memory.          │
     └────────┬─────────┘
              │
              ▼
        ┌─────────────┐
        │     End     │
        └─────────────┘
```
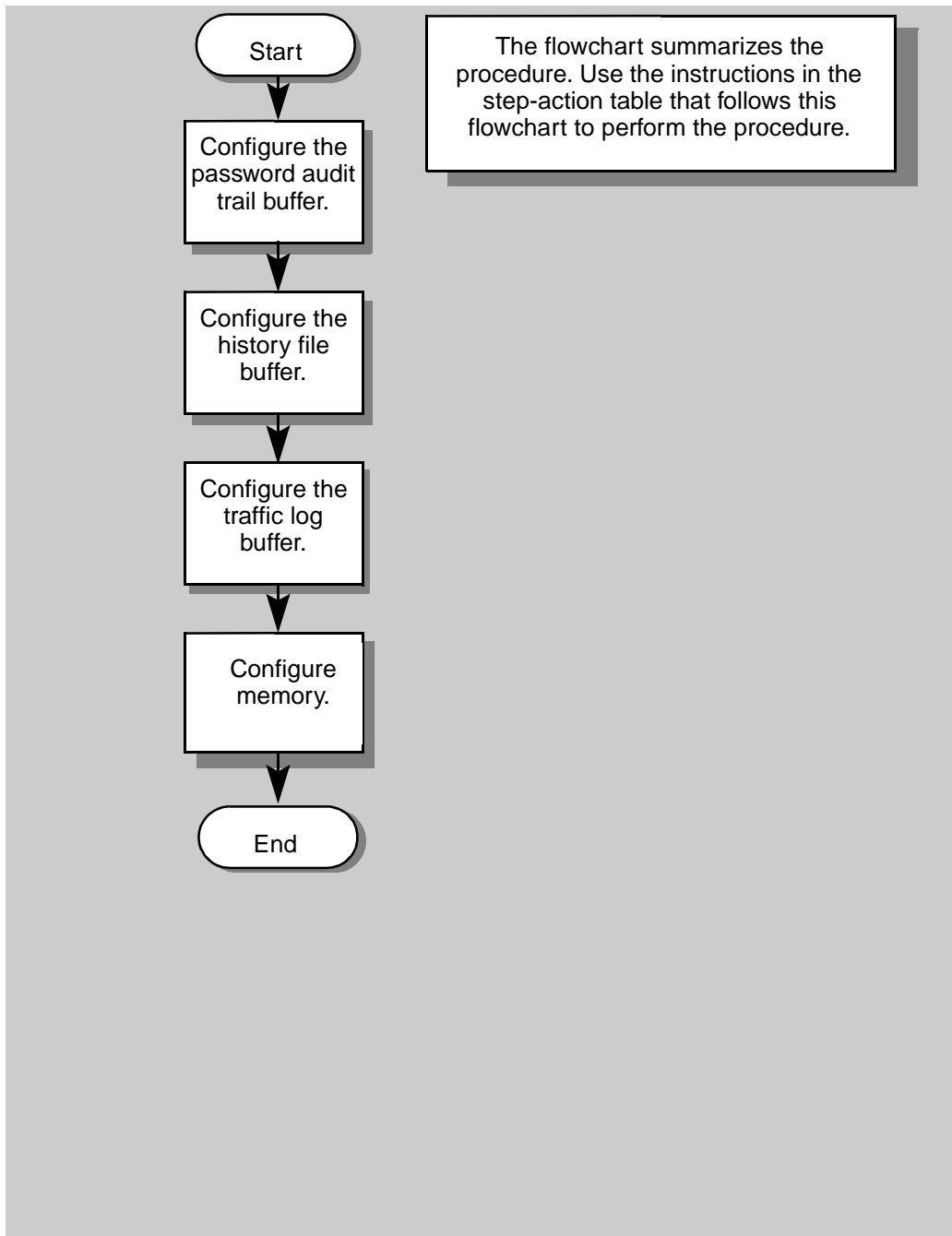
Configuring memory and buffers

> The preceding material in this chapter contains essential information. You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the implementation of memory.

STEP	ACTION

1   Log in.

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2   Set up the password audit trail buffer.

REQ	CHG	Request
TYPE	CFN	Enter CFN to modify the configuration record.
PWD	YES	Enter YES to modify the password parameters.
PWD2	x...x	Enter the current second level administration password.
AUDT	YES	Enter YES to enable a password use audit trail.
SIZE	(0)-65534	Enter a word size for the audit trail buffer. (Use a multiple of 50.)
REQ	****	Terminate the overlay by entering ****.

— continued —

Configuring memory and buffers

STEP	ACTION

3	**Set the history file and traffic log buffer sizes.**

>LD 17

REQ	CHG	Request
TYPE	CFN	Enter CFN to modify the configuration record.
ADAN	CHG HST	Change the history file buffer.
SIZE	(0)-65534	Enter a size for the history buffer.
ADAN	CHG TRF	Change the traffic log buffer.
SIZE	(0)-65534	Enter a size for the traffic log buffer.
REQ	****	Terminate the overlay by entering ****.

4	**Set the RPE buffer.**

Not all systems require configuration of the Remote Peripheral Equipment (RPE) buffer. Respond to the RPEB prompt below if it appears.

REQ	CHG	Request
TYPE	CFN	Enter CFN to modify the configuration record.
PARM	YES	Enter YES to change system parameters.
RPEB	16-1000	Enter the number of RPE buffers.

<div align="center">— continued —</div>

Configuring memory and buffers

STEP	ACTION

5 Configure the CPUs.

Not all systems require configuration of CPUs. Respond to the prompts below if they appear.

REQ	CHG	
TYPE	CEQU	
EXT0	x aaa bbb	Identify extenders for CPU0 (on Option 51, 61, 71, and 81 systems), where • x is the group number • aaa is the extender type in the CPU shelf • bbb is the extender type on the network shelf
EXT1	x aaa bbb	Identify extenders for CPU1.

If the configuration is	Enter
ACB cables or passive Bus Extender on CPU shelf 0, and no network shelf equipped	0-4 NIL NIL
Segmented Bus Extender on CPU shelf 0, and a 3-Port Extender on Network shelf, cabled to the SBE on CPU shelf 0	0-4 SBE 3PE

SBE	YES, NO	Enter YES if a segmented bus extender is equipped.

— continued —

Configuring memory and buffers

STEP	ACTION

| **6** | **Configure the memory.** |

Not all systems require configuration of memory. Respond to the MTYP prompt below if it appears.

MTYP   xx xx   Select a memory type.

If the configuration is	**Enter**
to be determined by prompt MEM	0
128K card for module 0, except on Options 51, 61 and 71	128
128K cards for modules 0 and 1, or one 128K card in one module and one 256K card in the other, except on Options 51, 61 and 71	128 128
192K card for module 0, and module 1 not equipped, except on Options 51, 61 and 71	192
512K card for module 0 on an Option 21	512
768K card for module 0 on an Option 21, 51 or 61	768
768K cards for modules 0 and 1 on an Option 71	768 768
768K cards for modules 0, 1 and 2 on an Option 71	768 768 768
2 Mbyte card	2M
4 Mbyte card	4M

You can enter multiple responses (such as 2M, 2M) for Option 71 systems as long as the total does not exceed four mega-words per CPU. The memory types must be the same; that is, all 2M, or all 768K. You must perform a SYSLOAD to change the memory type from 786K to 2M, or vice versa.

— continued —

Configuring memory and buffers

STEP	ACTION

6 continued …

CNI	s p g	Specify the core-to-network interface card location (slot 8-12, port 0-1, and group 0- 4).

Respond to the following prompts if they appear:

SMEM	YES, NO	Enter YES to choose a short one-pass memory test during manual Sysload, or NO to allow the normal six-pass test.
BATT	YES, NO	Enter YES if a battery backup for memory is installed.
REQ	END	Terminate your programming in overlay 17 and save your updates.

7 Check that your programming is correct.

Review your programming to ensure that it is correct, either by scrolling up in your terminal window or by reading the terminal's printer output. If you are using a terminal without scroll or printing capabilities, use overlay 20 to print out the data you have entered. For more information about overlay 20, see the beginning of this guide.

If	**Do**
the programming is correct	step 8
the programming is not correct	step 1

— continued —

Configuring memory and buffers

STEP	ACTION
8	**Perform a data dump to permanently store the programming you have just completed.**

> **CAUTION**
> Check your maintenance agreement
> before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD **<cr>**

9	**Verify that the data dump was successful.**

On-screen or printed response:

NO GO BAD DATA

or

DATA DUMP COMPLETE

10	**Terminate this overlay program.**

.****

11	**Terminate this programming session.**

>LOGO

— continued —

Configuring memory and buffers

STEP	ACTION
12	**You have completed the programming required to configure memory.**

END

Configuring memory and buffers

Configuring overlay options

Purpose

A number of overlay program options are available, depending on your needs. Choose the options that best suit your maintenance requirements.

The information you enter is described in detail below. Procedures for entering this information are provided later in this section.

Date and time

The Meridian 1 system clock provides the time and date used for display on telephones, for the timestamping of logs and call detail recording, and for the scheduling of automatic maintenance routines. Set the time and date in overlay 2 before configuring other overlay options.

System ID

Each Meridian 1 system has a unique system ID number (SID) from 0000 to 9999. The system ID is used in reports and networking.

The 4-digit ID number can be printed or set by the following commands in overlay 2:

◆ To print the current SID: Enter TSID sid

◆ To change the SID: Enter SSID sid -- SID

Configuring overlay options

For more information, see the step-action procedure later in this guide.

Keeping overlays in cache memory

Up to 32 overlay programs can reside in the system memory. This reduces the overlay loading time to about one second.

The first time an administrator requests an overlay using the LD command, the overlay is loaded from disk and placed in the cache memory. If the cache area is full, the oldest used non-priority overlay in cache memory is replaced by the new overlay. Background or daily routine overlays are not stored in cache.

To set the number of overlay programs allowed to remain in the cache, respond to the CACH prompt. To specify which overlay programs are of highest priority, and will remain in the cache even when a new overlay is loaded, respond to the PRTY prompt.

Note: This feature is not applicable to Options 51C, 61C, 81 and 81C. On these Options, all overlays are loaded into memory.

Background overlay programs

The Meridian 1 can run overlay programs continuously in the background during normal operations. Background overlay programs can perform ongoing diagnostics and maintenance without affecting system operation. You can specify as many background overlay programs as you need. The Meridian 1 loads these overlays sequentially.

To specify the overlay programs that are to run in the background, respond to the BKGD prompt.

Configuring overlay options

Traffic studies

Consider setting up traffic studies while configuring maintenance schedules and routines. Traffic studies monitor the performance of your system under typical working conditions, and provide the information needed to maintain a high level of service for end users.

For more information about configuring traffic studies and using the information they provide, refer to the *Basic Telecom Management Guide*.

Automatic maintenance

The Meridian 1 can perform a number of automated maintenance routines at specified intervals or times. Automated maintenance helps to identify and correct faults before users become aware of them.

Message waiting lamp tests

The Meridian 1 can be set to test all message waiting lamps at a specified time (ideally when testing will not affect users). To set the time for lamp tests, respond to the PBXH prompt.

Daily routines

The Meridian 1 can run sets of diagnostic overlay programs at a specified time. To set the time for the running of daily routines, respond to the TODR prompt. To select the overlay programs to be run during the daily routine, respond to the DROL prompt.

Remote peripheral equipment loopback tests

The Meridian 1 can, as part of the daily routines, perform automated 2.0 Mbit/s remote peripheral equipment (RPE) loopback testing. This testing includes local loopback. To specify a loop for testing, respond to the TRLL prompt.

Configuring overlay options

Fault detection

When the Meridian 1 detects a fault during daily routines, it will automatically run a diagnostic program, overlay program 45, to identify the fault condition. To specify the number of times overlay 45 will run after a fault is detected, respond to the CY45 prompt.

Administration tips

A number of courses and administration aids are available from Nortel or your system supplier. To maximize the effectiveness of your Meridian 1 administration efforts, take advantage of these courses and aids.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Configuring overlay options

What to have ready

The following checklist summarizes the steps you should take before setting up your overlay options.

**Table 15
Checklist**

Basic	Optional	Preparation
	Đ	Select overlay programs to reside in cache.
Đ		Select overlay programs to run in background.
Đ		Plan the implementation and scheduling of automated tests.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to set up overlay options.

Configuring overlay options

```
                    ┌──────────────────────────────────┐
   ╭──────────╮      │  The flowchart summarizes the    │
   │   Start   │     │  procedure. Use the instructions │
   ╰──────────╯      │  in the step-action table that   │
        │            │  follows this flowchart to       │
        ▼            │  perform the procedure.          │
   ┌──────────┐      └──────────────────────────────────┘
   │ Check date,│
   │ time and   │
   │ system ID. │
   └──────────┘
        │
        ▼
   ┌──────────┐
   │ Set up     │
   │ background │
   │ diagnostics.│
   └──────────┘
        │
        ▼                                    ┌──────────┐
   ┌──────────┐                              │ Set the   │
   │ Set up     │                            │ priorities │
   │ message    │                            │ for        │
   │ waiting lamp│                           │ overlays.  │
   │ tests.     │                            └──────────┘
   └──────────┘                                   │
        │                                         ▼
        ▼                                    ┌──────────┐
   ┌──────────┐                              │ Turn       │
   │ Set up daily│                           │ multi-user │
   │ routines.  │                            │ access on  │
   └──────────┘                              │ or off.    │
        │                                    └──────────┘
        ▼                                         │
   ┌──────────┐                                   ▼
   │ Specify the│                             ┌──────────┐
   │ overlays to│                             │ Configure │
   │ remain in  │                             │ RPE       │
   │ cache.     │                             │ loopback  │
   └──────────┘                              │ tests.    │
        │                                    └──────────┘
        └───────────────────────────┐            │
                                     │            ▼
                                     │       ╭──────────╮
                                     └──────▶│   End     │
                                             ╰──────────╯
```

Configuring overlay options

The preceding material in this module contains essential information.
You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation
of overlay options.

STEP	ACTION

1   **Log in.**

For information on proper login procedures, see *Basic Programming Instructions* in
Basic Telecom Management.

2   **Check the date, time and system ID.**

> LD 2

. TSID   Print the system ID.

. TTAD   Print the current time and date.

The format of the printed date and time is day-of-week day month year hour
minute second.

If the time and date are incorrect, update them using the following command:

. STAD day month year hour min sec

Note: Except for the year, the other entries in the time of day output are 2-digit
numbers. The year may be any year from 1901 to 2099 inclusive. It may be entered as a
full 4-digit field or as a 2-digit short form. The 2-digit short form is assumed to be in the
range 1976 to 2075 and the appropriate addition is made when calculating the
day-of-week and leap years.

Leave overlay 2 by typing ****:

.   ****   Leave overlay 2.

— continued —

Configuring overlay options

STEP	ACTION

3	**Set up automatic maintenance routines and overlay options.**

>LD 17

REQ	CHG	
TYPE	CFN	Enter CFN to change the configuration record.
OVLY	YES	Enter YES to make changes to overlay area options.
SID	xxxx	Enter the system ID number used for polling in ACD, CDR and traffic reports.
BKGD	xx xx	Enter the number of the diagnostic program to run in the background. More than one program can run in the background, each one running sequentially. Valid programs are 30, 33, 34, 35, 36, 37, 38, 40, 41, 43, 44, 45, 46, 53 and 135. (To remove an overlay, type X before the overlay number.)

More than one overlay can be run in background. They will run sequentially.

Note: The data dump routine LD 43 should be reserved for the DROL to preserve data integrity. On Option 51C and 61C systems, overlay 35 is replaced with overlay 135.

PBXH	00-23	Specify the hour at which message waiting lamp maintenance tests are performed.
TODR	00-23	Specify the time of daily routines.
DROL	xx xx	Specify the overlay programs run during daily routines. Valid programs are 30, 32, 33, 34, 35, 36, 37, 38, 40, 41, 43, 44, 45, 46, 51, 53, 60, 61 and 135. (To remove an overlay, type X before the overlay number.)

On Option 21A systems, overlay 35 is always run in the midnight routines even if you do not specify it. On Option 51C and 61C systems, overlay 35 is replaced with overlay 135.

<div align="center">

— continued —

</div>

Configuring overlay options

STEP	ACTION

3 continued …

CACH	(0) 2–32	Set the number of overlay programs stored in cache buffers. Enter 0 if all overlays are to load from the disk.
PRTY	xx xx xx	Specify priority overlays that are to stay in cache buffers when a new overlay is loaded.
MULTI_USER	(OFF) ON	Enter ON to allow more than one user to log in at a time, or OFF to limit logins to one user.
TRLL	1–31 1–31	Enter numbers for RPE local loopback, to perform complete 2.0 Mb/s RPE loop testing, including local loop back, in the RPE groups as part of the daily routine if applicable.
CY45	(0)–31	Set the number of times overlay 45 is to run once a fault is detected by the Meridian 1. Enter 0 to allow the system to operate without limiting the number of overlay 45 iterations.
REQ	END	Terminate overlay 17.

— continued —

Configuring overlay options

STEP	ACTION
4	**Check that the overlay options you have programmed are in effect.**

Verify that you programmed the overlay options as intended, either by letting overlay options take effect, or by scrolling through or printing out overlay information.

If	**Do**
everything is programmed properly	step 5
everything is not programmed properly	step 1

| **5** | **Perform a data dump to permanently store the programming you have just completed.** |

CAUTION
Check your maintenance agreement
before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

— continued —

Configuring overlay options

STEP	ACTION
6	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
7	**Terminate this overlay program.**
	****
8	**Terminate this programming session.**
	Log off.
	>LOGO
9	**You have completed the programming required to set your overlay options.**

END

Configuring overlay options

Setting digital telephone parameters

Purpose

Meridian Digital Telephones are connected to the Meridian 1 by
digital links. The links and the operation of Meridian Digital
Telephones are controlled by system parameters. Configure these
parameters in overlay 17.

The information you enter during this stage of basic configuration is
described in detail below. Procedures for entering this information are
provided later in this chapter.

> *Note:* Attempts to readjust the digital telephone parameters
> without detailed system knowledge could cause severe disruption
> in service.

Meridian Digital Telephones

Meridian Digital Telephones are digital telephones designed to
operate with the Meridian 1. They feature adjustable volume controls,
handset and headset operation, and automatic gain control.

Setting digital telephone parameters

Parameters

Programmable parameters control how the Meridian 1 communicates with Meridian Digital Telephones to provide voice paths, and how the telephones behave with regards to sidetones and volume levels.

CODEC coding

Three coding schemes are available for communicating with Meridian Digital Telephones:

◆ Mu law coding

◆ Inverted A law coding

◆ Even-bit interleaved A law coding

Mu law coding is used in North America. Inverted A law coding is used in Sweden. In other markets, any one of the three coding schemes may be in use.

Sidetone loudness

Sidetone loudness does not apply to M2216 telephones. To set sidetone loudness for all other Meridian Digital Telephones, respond to the SOLR prompt.

Changes to sidetone loudness do not take effect until you perform a SYSLOAD.

Automatic gain control

Automatic gain control (AGC) acts to maintain a constant volume level despite changing line levels and loudness of speech. To turn AGC on and off for Meridian Digital Telephones, respond to the AGCD prompt.

Volume reset

Volume reset operates to set volume levels back to default settings on Meridian Digital Telephones when a call is ended. To turn the volume reset option on or off, respond to the VOLR prompt.

Setting digital telephone parameters

Pad values

Respond to the DSET prompt in overlay 73 to set the pad values for
Meridian Digital Telephones. Table 16 shows the relationship
between pad code and gain or loss.

Table 16
Pad values

Code	Value (dB)	Code	Value (dB)	Code	Value (dB)
0	0.0	9	+9.0	18	-4.0
1	+1.0	10	+10.0	19	-5.0
2	+2.0	11	+11.0	20	-6.0
3	+3.0	12	+12.0	21	-7.0
4	+4.0	13	+13.0	22	-8.0
5	+5.0	14	+14.0	23	-9.0
6	+6.0	15	-1.0	24	-10.0
7	+7.0	16	-2.0	25	Idle
8	+8.0	17	-3.0	26	+6.0

Positive dB represents loss, and negative dB represents gain.

Code 0 (pad value 0.0) is equivalent to no pad. It is used for Data Only
(DTA) and Voice or Data (VOD) call types.

PCM signals are converted to silence when the pad value is 'idle'.

Administration tips

EFFICIENCY

A number of courses and administration aids are available from
Nortel or your system supplier. Taking advantage of these courses and
aids maximizes the effectiveness of your Meridian 1 administration
efforts.

Setting digital telephone parameters

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

What to have ready

The following checklist summarizes the steps you should take before setting Meridian Digital Telephone parameters.

Table 17
Checklist

Basic	Optional	Preparation
Ð		Identify the CODEC coding scheme used in your market.
	Ð	Decide what sidetone levels are required.
	Ð	Decide what options are to be turned on or off, including AGC and volume reset.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to program Meridian Digital Telephone parameters.

Setting digital telephone parameters

```
        ┌─────────┐          ┌────────────────────────────┐
        │  Start  │          │ The flowchart summarizes the│
        └─────────┘          │ procedure. Use the instructions in the│
             │                │ step-action table that follows this│
             ▼                │ flowchart to perform the procedure.│
        ┌─────────┐          └────────────────────────────┘
        │Select the│
        │CODEC law.│
        └─────────┘
             │
             ▼
        ┌─────────┐
        │Set the   │
        │sidetone  │
        │loudness. │
        └─────────┘
             │
             ▼
        ┌─────────┐
        │Select AGC.│
        └─────────┘
             │
             ▼
        ┌─────────┐
        │Select the│
        │volume reset│
        │option.   │
        └─────────┘
             │
             ▼
        ┌─────────┐
        │Set pad values.│
        └─────────┘
             │
             ▼
        ┌─────────┐
        │   End   │
        └─────────┘
```
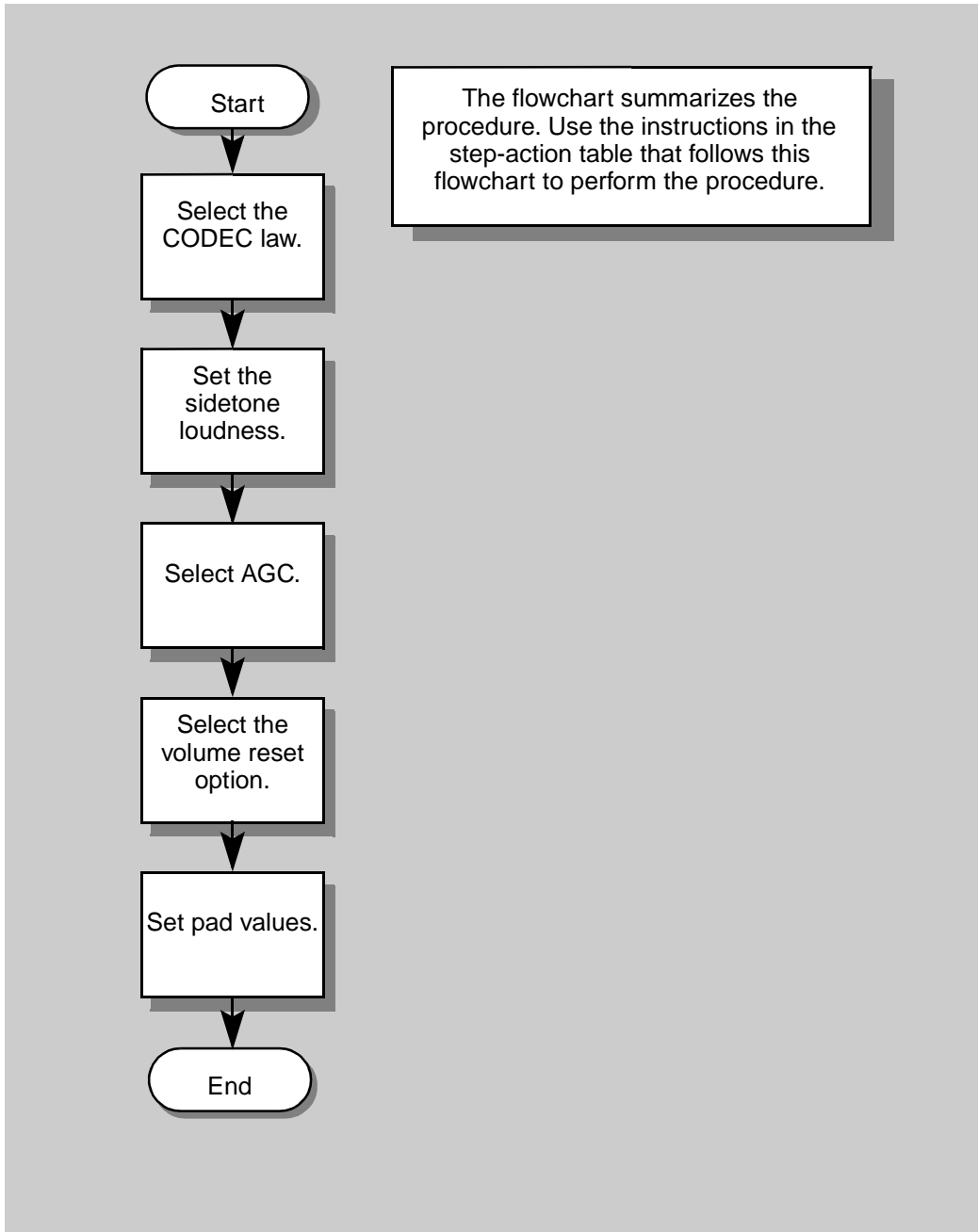
Setting digital telephone parameters

> The preceding material in this chapter contains essential information. You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the programming of Meridian Modular Telephone parameters.

STEP	ACTION

1   **Log in.**

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2   **Set parameters for Meridian Digital Telephones.**

>**>LD 17**

REQ   CHG

TYPE   ATRN   Enter ATRN to change parameters for Meridian Digital Telephones.

CODE   0-2   Select the CODEC coding law.

To select	Enter
Mu law coding, for North America	0
A law coding inverted, for Sweden	1
A law coding even-bit interleaved	2

— continued —

Setting digital telephone parameters

STEP	ACTION		

2 continued …

SOLR	0-4	Select a sidetone objective loudness rating.

To select	**Enter**
7 dB offset	0
12 dB offset, recommended for North America	1
17 dB offset	2
22 dB offset	3
disabled sidetone	4

AGCD	YES, NO	Enter YES to turn off automatic gain control (AGC), or NO to turn on AGC.
VOLR	YES, NO	Enter YES to turn on volume reset, or NO to turn off volume reset.
REQ	END	Exit the overlay.

3   Set PAD levels for Meridian Digital Telephones.

>LD 73

REQ	NEW	
TYPE	DTI, PRI	Enter DTI or PRI to set PAD levels for for Meridian Digital Telephones
DSET	0-15 0-15	Enter the PAD level for Meridian Digital Telephones.
REQ	END	Exit the overlay.

— continued —

Setting digital telephone parameters

STEP	ACTION

4   **Check that your programming is correct.**

Review your programming to ensure that it is correct, either by scrolling up in your terminal window or by reading the terminal's printer output. If you are using a terminal without scroll or printing capabilities, use overlay 22 to print out the data you have entered. For more information about overlay 22, see the beginning of this guide.

If	Do
parameters are correct	step 5
parameters are not correct	step 1

5   **Perform a data dump to permanently store the programming you have just completed.**

> **CAUTION**
> Check your maintenance agreement
> before working in LD 43

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

— continued —

Setting digital telephone parameters

STEP	ACTION
6	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
7	**Terminate this overlay program.**
	****
8	**Terminate this programming session.**
	Log off.
	>LOGO
9	**You have completed the programming required to define the parameters for Meridian Modular Telephones.**
	END

Setting digital telephone parameters

Configuring Peripheral Equipment

Purpose

Peripheral equipment on the Meridian 1 performs tasks including interface with telephones and with trunks to other telephone systems. To connect your Meridian 1 to its own telephones and to the outside world, you must configure your peripheral equipment.

Information about configuring telephones is provided in Task 27, "Setting up telephones".

Peripheral Equipment

Telephones and trunks make the connection with your Meridian 1 through cards that sit on shelves. The shelves are housed in modules called peripheral equipment modules.

More than one telephone or trunk can be connected to each card. The version of the card determines how many can be connected.

There are line cards for telephones and trunk cards for trunks. Unique cards have been designed for each type of telephone and trunk.

There are two versions of cards:

◆ Intelligent Peripheral Equipment (IPE)

◆ Peripheral Equipment (PE)

Intelligent line cards and trunk cards can have more telephones and trunks connected to them than the older, non-intelligent kinds of cards. This saves room and helps keep your system small.

Configuring Peripheral Equipment

Intelligent cards are connected to Superloops. Non-intelligent cards are connected to Loops. Superloops have more timeslots than Loops.

Enhanced Peripheral Equipment (EPE) cards are sometimes called grey cards. They predate IPE cards. EPE cards depend on ENET for support. IPE cards are supported by Superloops.

Tone senders and receivers

Peripheral equipment includes cards that send and receive tones used for signaling between telephones and telephone systems. As part of peripheral equipment configuration, you must set parameters that control the tone cards as a group.

Later in this guide, you will be asked to enter additional information about specific sending and receiving cards.

Digitone receivers

Digitone receivers (DTR) listen to tone signals generated by telephones and other telephone systems and translate the signals into dial sequences. When a telephone user picks up the handset and starts dialing out, the DTR converts the tones the user's telephone transmits into a string of numbers (typically the telephone number being called), which the Meridian 1 then uses to process the call.

Traffic

When installing Digitone receivers, consider the traffic load and the impact of extra traffic on the loop or Superloop to which the receiver is connected. Loops and Superloops perform best when they share equally in the total traffic load offered to the system.

Blockage within the system will be negligible if you keep the traffic load per loop or Superloop within the recommended guidelines. If all your existing loops or Superloops have reached their recommended capacity consider adding more to your system, especially if you will be adding more Digitone receivers, telephones, or data terminals in the future.

Configuring Peripheral Equipment

Prompts

To set the sensitivity of Digitone receivers (the minimum accept level), respond to the MINL prompt.

Dial tone detectors

Dial tone detectors (DTD) are used by the Meridian 1 to detect dial tone on outgoing trunks. Dial tone detection is configured in software using DTR tables. The Meridian 1 allows up to seven DTR tables. Table 0 comes preconfigured with default settings, and cannot be removed.

You can change the frequency band, sensitivity, delay, and break delay used when detecting dial tone, customizing the Meridian 1 to the dial tone used in your country. Recommended settings for a number of countries are provided in the step-action table later in this section. If your country does not appear on the list, but uses a dial tone similar to one that does, try using the settings suggested for the listed country.

To select a DTR table, respond to the XTDT prompt. To set the frequency band for detection of the first dial tone, respond to the DFQ prompt. To set the sensitivity (the minimum signal level needed to detect the dial tone), respond to the MDL prompt. To set the break delay, respond to the BRK prompt.

Detecting first- and second-stage dial tone

The Meridian 1 can discriminate between first- and second-stage dial tone by identifying the cadence, or pattern, or the dial tone. First stage dial tone typically has a steady cadence, for example.

To set the cadence type used to detect the first dial tone, respond to the CAD prompt. To set the cadence type used to detect second dial tone, respond to the SSC prompt.

Configuring Peripheral Equipment

Serial data link and signaling cards

Multipurpose serial data link (MSDL) cards provide an interface between the Meridian 1 and external devices. Card types include:

◆ Multi-purpose ISDN Signaling Link cards

◆ Basic Rate Interface Line and Trunk cards

◆ Basic Rate Interface Trunk Universal ISDN Protocol Engine cards

◆ Primary Rate Interface Universal ISDN Protocol Engine cards

◆ Serial Data Interface cards

◆ D-Channel cards

◆ Applications Module Link cards

To set the card type and downloading mode, respond to the FDLC prompt. The mode can be either F (for forced download after initialization), or C (for conditional download only if there is a major fault in the firmware or after a power failure).

Note: If you select forced download, the setting applies only to the first initialization that takes place after your entry. After an initialization, the system reverts to conditional download.

Configuring Peripheral Equipment

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. Taking advantage of these courses and aids maximizes the effectiveness of your Meridian 1 administration efforts.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

What to have ready

The following checklist summarizes the steps you should take before setting up peripheral equipment.

Table 18
Checklist

Basic	Optional	Preparation
Ð		Decide on dial tone detector configuration.
Ð		Decide on Digitone receiver configuration.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure peripheral equipment.

Configuring Peripheral Equipment

```
        ┌─────────────┐        ┌──────────────────────────────┐
        │    Start    │        │   The flowchart summarizes the │
        └─────────────┘        │  procedure. Use the instructions in the │
               │               │   step-action table that follows this │
               ▼               │    flowchart to perform the procedure. │
        ┌─────────────┐        └──────────────────────────────┘
        │ Set dial tone │
        │  detection   │
        │ parameters.  │
        └─────────────┘
               │
               ▼
        ┌─────────────┐
        │ Set Digitone │
        │  Receiver    │
        │ parameters.  │
        └─────────────┘
               │
               ▼
        ┌─────────────┐
        │ Change forced │
        │  download    │
        │ parameters.  │
        └─────────────┘
               │
               ▼
        ┌─────────────┐
        │  Set sender  │
        │ parameters.  │
        └─────────────┘
               │
               ▼
        ┌─────────────┐
        │ Set Extended/ │
        │   Network    │
        │   Digitone   │
        │ parameters.  │
        └─────────────┘
               │
               ▼
        ┌─────────────┐
        │     End     │
        └─────────────┘
```
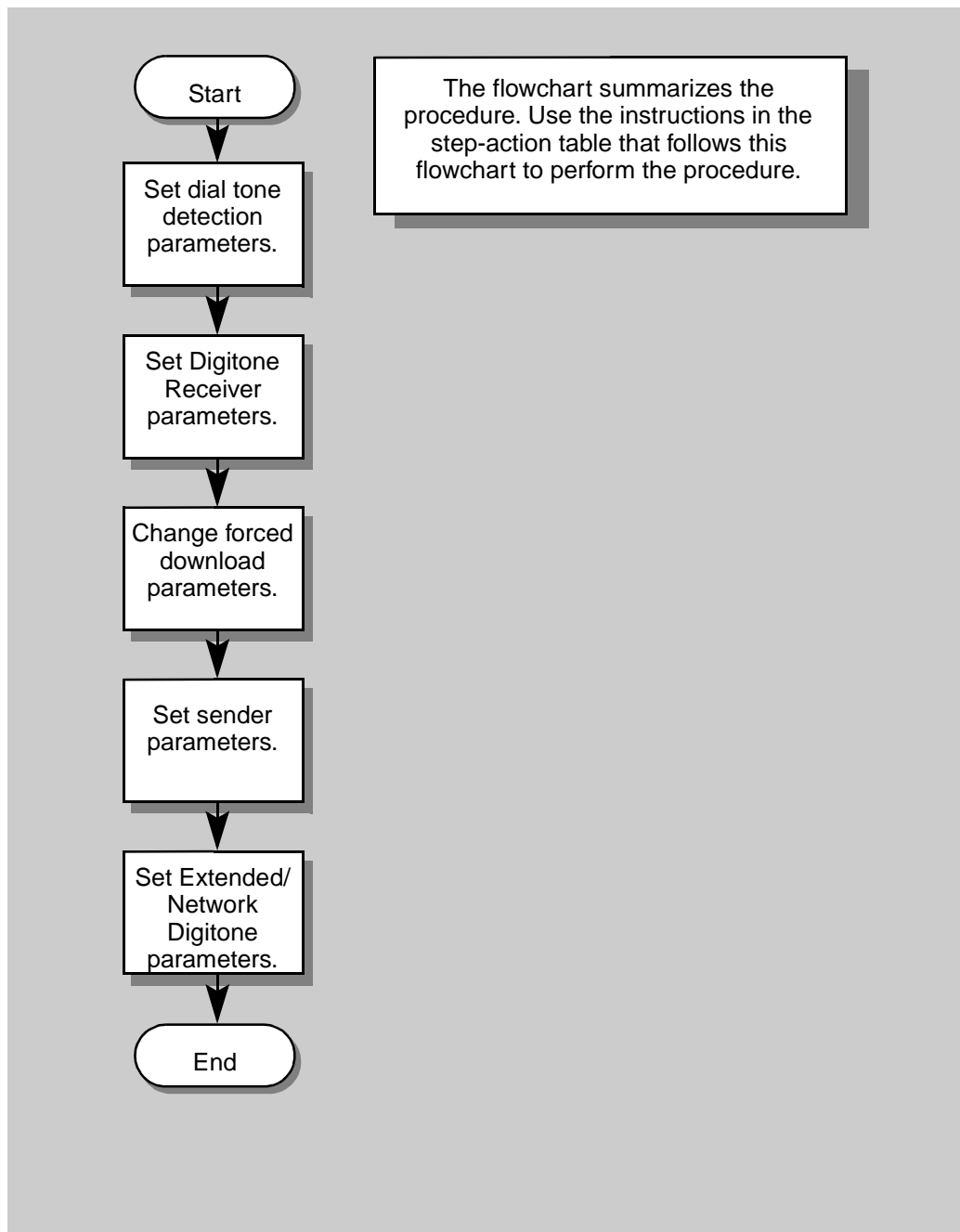
Configuring Peripheral Equipment

> The preceding material in this module contains essential information. You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the implementation of peripheral equipment.

STEP	ACTION

1   Log in.

For information on proper login procedures, see *Basic Programming Instructions* in the *Basic Telecom Guide*.

2   Set up dial tone detection.

>LD 97

REQ	CHG	
TYPE	DTD	Change the Dial Tone Detection parameters.
XTDT	0-7	Select an Extended Tone Detection Table.
DFQ	0-15	Select the Dial Tone Frequency band for 1st dial tone.

In	**Enter**	**To select**
UK (330/440)	0	300-500 Hz
UK (33/50)	3	0-500 Hz
France	0	300-500 Hz
Denmark	1	350-500 Hz
Germany	1	350-500 Hz
New Zealand	1	350-500 Hz
Sweden	1	350-500 Hz
Norway	1	350-500 Hz
Spain	2	320-630 Hz
Switzerland	4	355-550 Hz

— continued —

Configuring Peripheral Equipment

STEP	ACTION

2 continued …

MDL	10-40	Select the Minimum Detect Level for 1st Dial Tone.

In	Enter	To select
UK	30	30 dBm
France	24	24 dBm
Denmark	26	26 dBm
Holland	26	26 dBm
Germany	22	22 dBm
Sweden	28	28 dBm
Norway	30	30 dBm
Spain	32	32 dBm
Switzerland	30	30 dBm

MYT	100-1600	Select the Minimum Validation Time for 1st Dial Tone.

In	Enter	To select
UK	300	300 ms
France	1000	1000 ms
Denmark	1200	1200 ms
Holland	1200	1200 ms
Germany	900	900 ms
Sweden	300	300 ms
Norway	1000	1000 ms
Spain	1000	1000 ms
Switzerland	400	400 ms

— continued —

Configuring Peripheral Equipment

STEP	ACTION

2 continued …

BRK	0-240	Set the Break Duration (maximum) for 1st Dial Tone.

In	**Enter**	**To select**
UK	0	0 ms
France	32	32 ms
Denmark	0	0 ms
Germany	0	0 ms
Sweden	48	48 ms
Norway	0	0 ms
Spain	0	0 ms
Switzerland	0	0 ms

CAD	0-15	Set the Cadence type for 1st Dial Tone. Enter 0 for no cadence or continuous tone. Enter 1 for Italian complex cadence.
SSC	0-15	Set the Cadence type for second stage dial tone. Enter 0 for no cadence or continuous tone. Enter 1 for Italian complex cadence.

— continued —

Configuring Peripheral Equipment

STEP	ACTION

3	Configure Digitone receivers

	REQ	CHG	
	TYPE	DTR	Change the Digitone Receiver parameters.
	MINL	3-48	Set the Minimum accept Level for Digitone receivers.

In	Enter	To select
UK	45	-45 dBm
France	30	-30 dBm
Denmark	25	-25 dBm
Holland	30	-30 dBm
Germany	30	-30 dBm
Sweden	27	-27 dBm
Norway	45	-45 dBm
Spain	30	-30 dBm
Switzerland	30	-30 dBm
New Zealand	45	-45 dBm

	MDL	100-1600	Select the Minimum Validation Time for 1st Dial Tone.

— continued —

Configuring Peripheral Equipment

STEP	ACTION

4	**Set parameters for MSDL and MISP cards.**

REQ   CHG

TYPE   SYSM   Change the MSDL and MISP card parameters.

FDLC   p1 p2 p3 p4

Select a card type and downloading mode.

To select	**For p1, enter**
Multipurpose serial data link cards	MSDL
Multipurpose ISDN signaling link cards	MISP
Basic rate interface line cards	BRIL
Basic rate interface trunk cards	BRIT
Basic rate interface Universal ISDN Protocol Engine	BRIE
Primary rate interface Universal ISDN Protocol Engine	PRIE
Serial data interface cards	SDI
D-channel cards	DCH
Application link module	AML

To select	**For p2, enter**
Forced download after initialization	F
Download only after a major firmware fault or power failure	C

— continued —

Configuring Peripheral Equipment

STEP	ACTION

5	**Change Sender parameters.**	
	REQ	CHG	
	TYPE	XCTP	Change the Sender parameters.
	CPAD	0, 1	Enter 0 to use software PAD values, or 1 to use PAD values determined by switch settings (on circuit pack NT8D17).
	DTMF	0-255	Enter the tone table index of the first DTMF digit used. For North American tones, enter 14.
	INTU	YES, NO	Enter YES to insert intrusion tones in conferences, or NO to prevent intrusion tones.
	P10P	0-255	Enter the tone table index for primary 10 pps sets. For North American tones, enter 30.
	S10P	0-255	Enter the tone table index for secondary 10 pps sets. For North American tones, enter 31.
	20PPS	0-255	Enter the tone table index for primary 20 pps sets. For North American tones, enter 32.

6	**Set Extended/Network Digitone parameters.**	
	REQ	CHG	
	TYPE	XNPD	Change the Extended/Network Digitone parameters.
	XNPD	28	Enter 28, the network loop number for the Network/Digitone receiver (XNPD) card.

The NT8D18 card contains a superloop and 8 Digitone Receivers. It is located in network slot 10 of an Option 21/21A and must be defined as superloop 28. The Digitone Receivers are defined in LD 13.

	XPEC	0-95	Assign a peripheral equipment controller number. (If you enter 0, the Meridian 1 assigns numbers automatically.)

— continued —

Configuring Peripheral Equipment

STEP	ACTION

7   Check that your configuration is correct.

Ensure that peripheral equipment is configured properly.

If	**Do**
everything works	step 8
something does not work	step 1

8   Perform a data dump to permanently store the programming you have just completed.

> ⚠ **CAUTION**
> Check your maintenance agreement before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> `LD 43`

. `EDD` **<cr>**

9   Verify that the data dump was successful.

On-screen or printed response:

NO GO BAD DATA

or

DATA DUMP COMPLETE

— continued —

Configuring Peripheral Equipment

STEP	ACTION
10	**Terminate this overlay program.**
	****
11	**Terminate this programming session.**
	Log off.
	>LOGO
12	**You have completed the programming required to configure peripheral equipment.**

END

Entering customer data

Purpose

Each customer in the Meridian 1 has a Customer Data Block (CDB). The CDB is a set of parameters that control specific features and options for the customer. Enter information for each customer who will be sharing the Meridian 1.

Departmental listed directory numbers

You can group customer telephones together using the Departmental Listed Directory Number (DLDN) feature. Telephones ring as a group.

Each customer can have up to four DLDN groups. Each group is identified by one of the customer's listed directory numbers (LDN).

Dial intercom groups

You can separate a customer's telephones into Dial Intercom Groups (DIG). Telephones within a group can call each other using one- or two-digit codes, providing intercom-like service. (Two-digit dialing is required for a DIG of more than ten stations.)

A total of 100 telephone extensions can belong to each DIG.

Night service

Telecommunications needs change during non-business hours. Incoming calls may be routed to a security desk instead of to the attendant. Night service automatically changes the routing of calls during off hours, permitting incoming calls normally directed to the attendant to be routed to another destination.

Normal Night Service

With the feature active, the existing Night Service feature is enhanced by providing a night (NITE) prompt for applicable DID trunks. Night numbers for DID trunks can be defined in their respective trunk blocks against the prompt. Attendants will be able to change their night numbers by specifying their corresponding access codes and member numbers using the existing Flexible Night Service feature.

Entering customer data

Group Night Service

The customer is allowed to assign individual Public Switched Telephone Network (PSTN) trunks to one of ten night group numbers (0 to 9). Each Night group has up to ten night directory numbers associated with it. During Night Service, incoming calls on a trunk will be routed to one of the directory numbers associated with that trunk. The actual number called is determined by a Night Service Option number corresponding to the Night Group number programmed by the attendant during day service.

When an incoming call is routed to a busy directory number, an optional Night Call Waiting tone may be applied to that number to notify the user that a call is waiting. The call on the trunk will be queued until the night directory number becomes free.

The same feature requirements apply as for Night Service, as well as the following requirements:

◆ Enhanced Night Service does not apply to Auto-terminate trunks.

◆ Enhanced Night Service is permanently activated if the system has no attendant and the ENS option is set to YES. In this case, the Night Service Option Number can only be programmed from the Customer Data block (LD 15).

◆ Enhanced Night Service makes use of only one Speed Call list as the Night Number Table.

◆ The operation of the optional Night Call Waiting Tone is the same as those of the Call Waiting Tone.

Night Service Option 0 and Night Service Group 0 are reserved for the customer Night number and should not be programmed in LD 18.

Entering customer data

Feature interactions

Call Waiting

This feature will terminate incoming Night calls to busy DNs by applying Call Waiting. This will be done even if the Night DN is an analog (500/2500 type) telephone with Call Waiting Denied (CWD) Class of Service, or if the Night DN is a Meridian 1 telephone without a Call Waiting (CWT) key assigned.

All telephones (analog 500/2500 type and Meridian 1) will be given Night Call Waiting tone, if the NWT prompt in LD 15 was responded to with "YES", regardless of the Warning Tone (WTA,WTD) Class of Service setting of the set. Meridian 1 telephones will be given Night Call Waiting tone in the handset instead of the speaker buzz for Call Waiting.

Direct Inward System Access (DISA)

It is not possible to assign a Night Service Group Number to any trunk that is a member of a route which is set to auto-terminate on a DISA DN.

Multi-Tenant Service

Any restrictions that exist in the system preventing individual tenant access to certain routes will not be checked when programming the Night Number Table. It will be up to the craftsperson to ensure all such restrictions are taken into consideration.

The tenant to route restrictions will be enforced when an attempt is made to terminate an incoming call on a Night DN via the Night Number Table. If the termination to the Night DN is not allowed, overflow tone (fast busy) will be given to the incoming trunk.

Trunk Barring (Sets)

Any incoming call that is routed by Enhanced Night Service to a set from which it is barred will not be connected. Overflow tone (fast busy) will be given to the incoming trunk instead.

Entering customer data

Trunk to Trunk Barring

Any incoming trunk call that is routed to an outgoing PSTN trunk will be barred if Enhanced Night Service is active. Overflow tone will be given to the incoming trunk instead. This restriction is in addition to the configured trunk barring for the system.

Warning Tone

All telephones (analog 500/2500 type and Meridian 1) will be given Night Call Waiting tone, if the NWT prompt in LD 15 was responded to with "YES", regardless of the Warning Tone (WTA/WTD) Class of Service setting of the set.

Special prefix codes

Special prefix (SPRE) codes let telephone users access features that are not available as feature keys on their telephone sets. Users of 500/2500-sets can use SPRE codes to take advantage of advanced call features.

Attendant directory number

The Attendant Directory Number lets internal telephone and TIE trunk users call the attendant by dialing a code (typically 0).

Entering customer data

Customer options

You can specify a number of options for each customer. These options are described below.

Camp-on tone

Camp-on tone is a tone provided to a caller waiting for a called telephone to become idle.

Enhanced busy lamp field

The customer can have an enhanced busy lamp field on M2250 attendant consoles.

Incoming call indicators

The customer can have either 10 or 20 incoming call indicators on M2250 attendant consoles. The default is 10.

Trunk group busy lamp field

This option lets users see on their telephone displays whether trunk groups to specific destinations are busy.

Originating side ringing cadence

The customer can have ringing cadence determined by the originating party.

Entering customer data

Intercept treatments

You must specify intercept treatments to be used for the customer under various situations. When a call cannot be completed, for whatever reason, it is intercepted by the system. The caller may hear a recorded announcement or some kind of tone.

553-0125T ECD
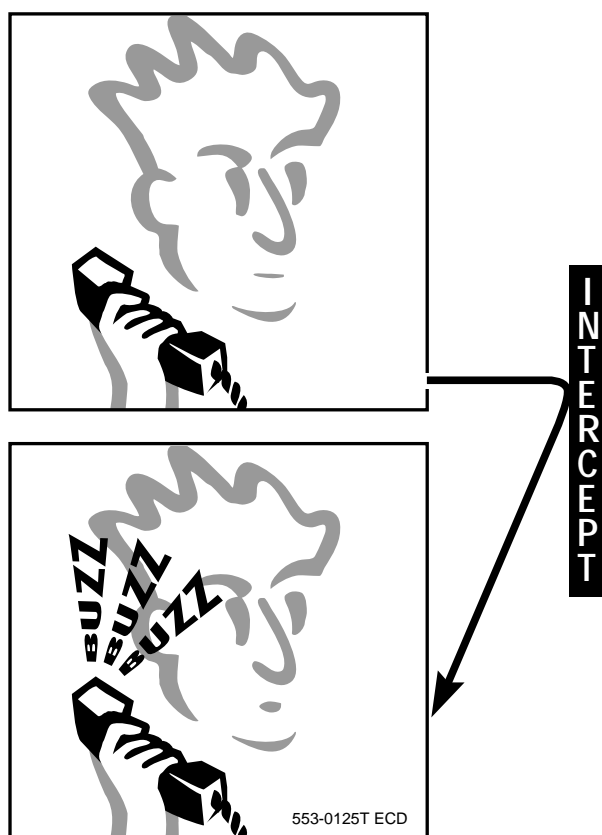
Entering customer data

TIE trunk intercepts

When a caller places a call over a TIE trunk to an extension on your Meridian 1, and the call is blocked by your Meridian 1, the caller receives intercept treatment. You can specify what kind of treatment the caller gets.
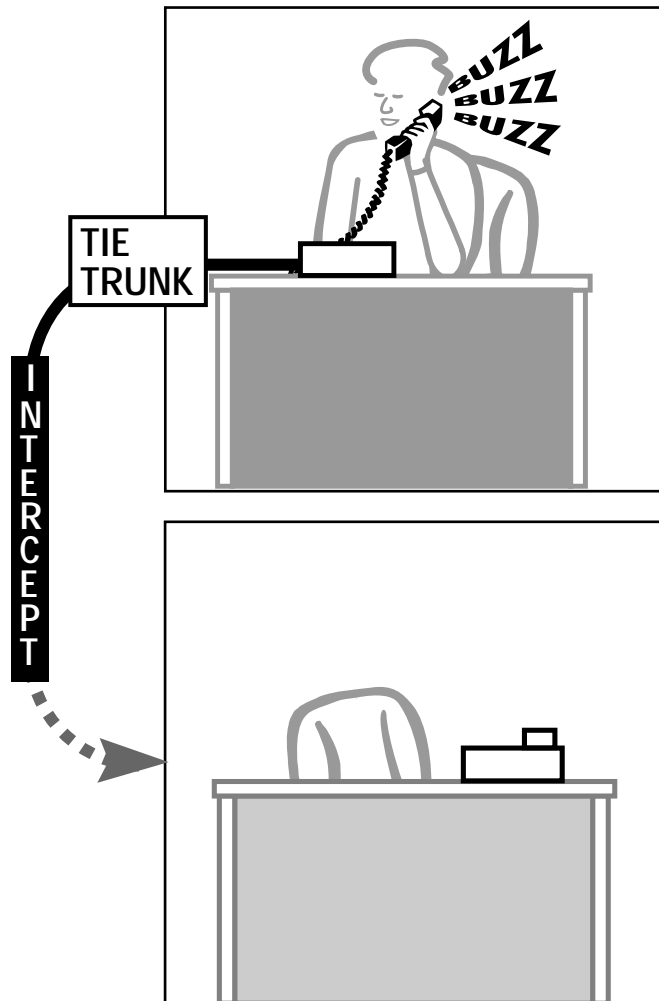
553-0126T ECD

Entering customer data

A caller coming into your Meridian 1 over a TIE trunk is likely to be someone calling from one of the customer's other offices. The caller can receive a busy signal, an overflow tone, or be routed to the attendant.
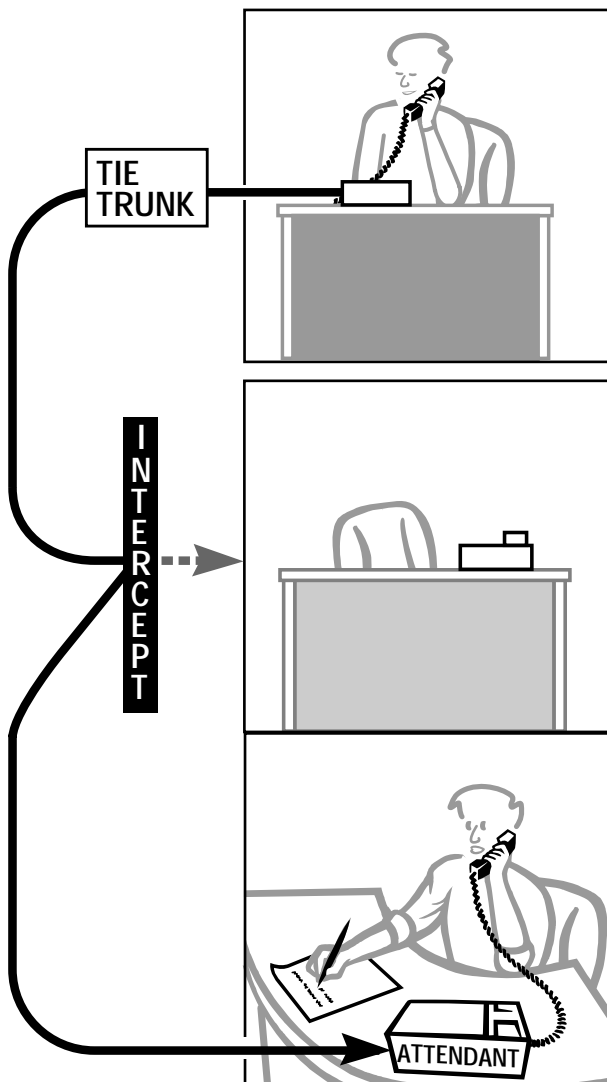
553-0127T ECD

Entering customer data

DID trunk intercepts

When a caller places a call over a DID trunk to an extension on your Meridian 1, and the call is blocked by your Meridian 1, the caller receives intercept treatment. You can specify what kind of treatment the caller gets.
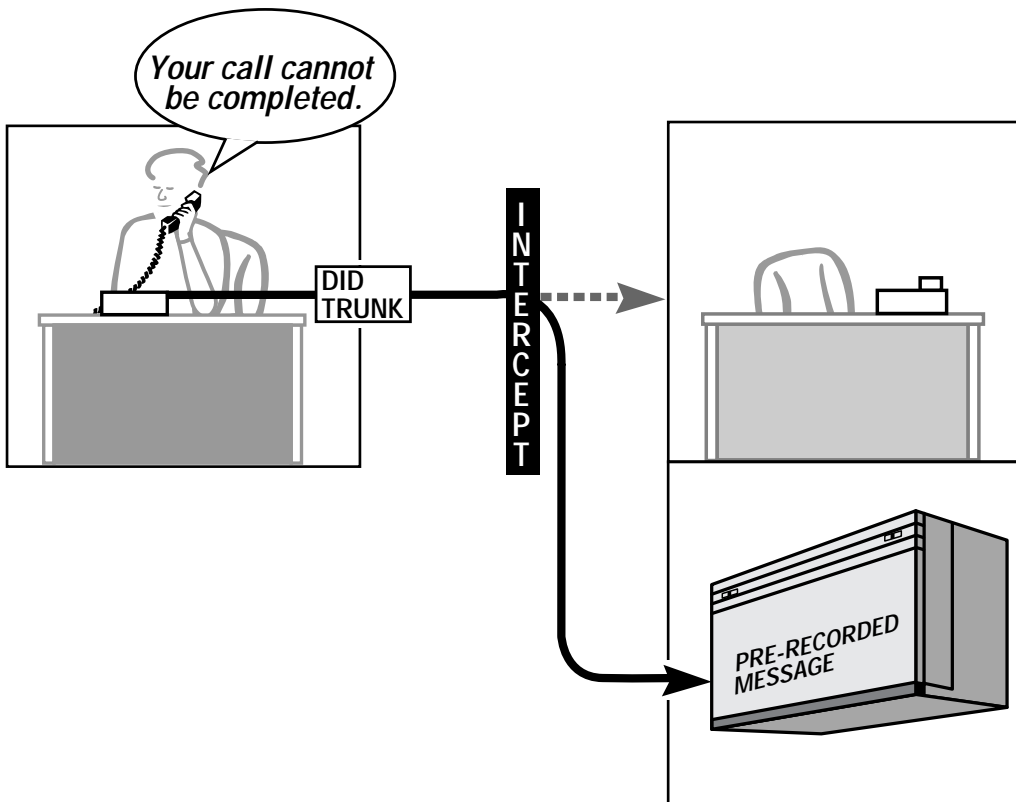
553-0128T ECD

Entering customer data

A caller coming into your Meridian 1 over a DID trunk is likely to be someone calling in from outside the customer. The caller can receive a busy signal, a recorded announcement, or be routed to the attendant.
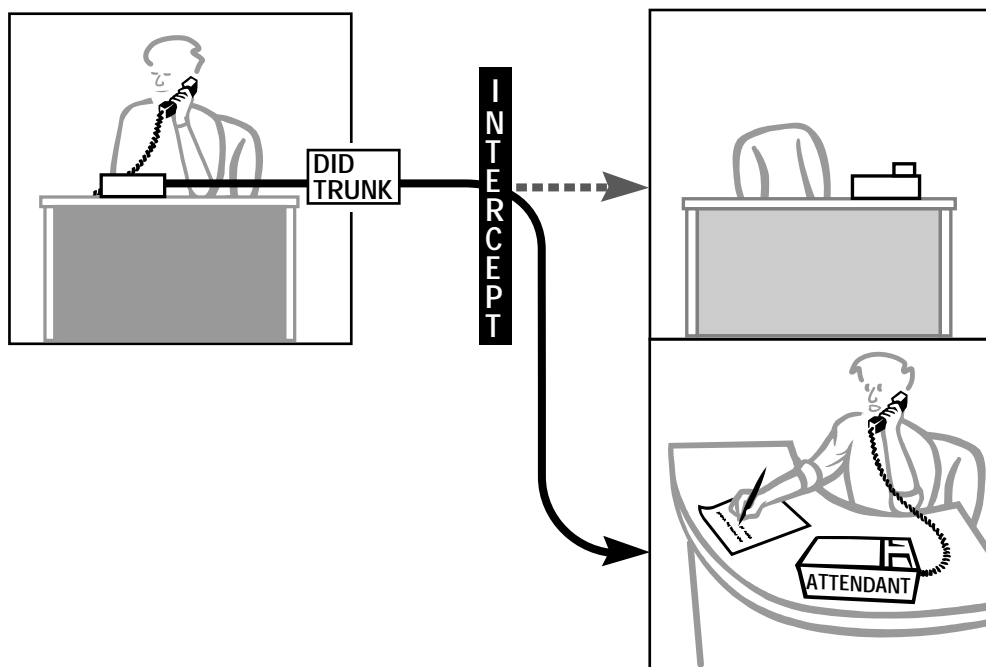
553-0129T ECD

Entering customer data

Attendant console intercept treatments

When an attendant places a call, and the call is blocked by your
Meridian 1, the attendant receives intercept treatment. You can
specify what kind of treatment the attendant gets.

553-0130T ECD
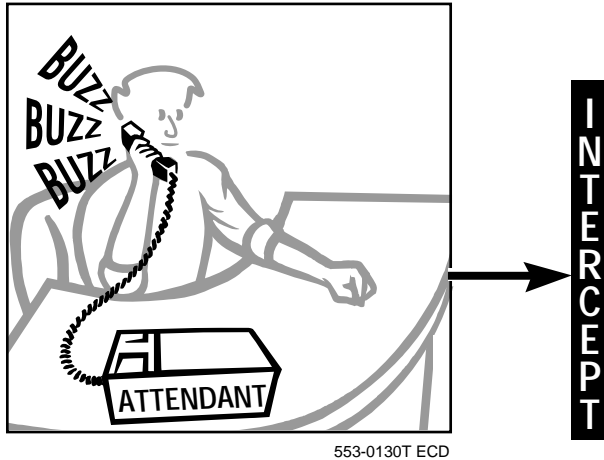
The attendant can receive a busy signal, overflow tone, or a recorded
announcement.

Entering customer data

Call redirection

The Meridian 1 provides several forms of call redirection. Call Redirection by Time of Day applies to calls that are redirected by way of Call Forward No Answer or Hunt, to automatically forward to a second, alternate DN, typically after business hours. It allows up to four different alternate time periods to be defined in the Customer Data Block for unanswered (Call Forward No Answer) or busy (Hunt) calls.

Assign Call Redirection by Time of Day to individual telephones using Class of Service. You must also assign alternate time periods and redirection DNs for each telephone.
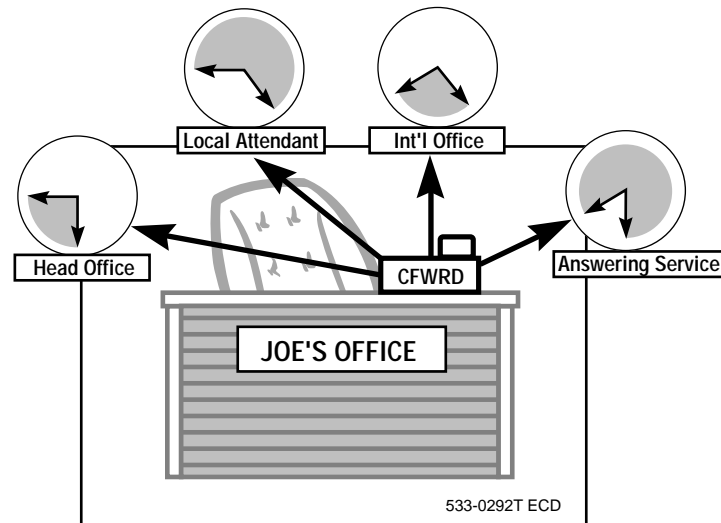
For example, in an office environment, you may have calls forward to the local attendant during the day, to the International Office from 5PM to 8PM, to the answering service from 8PM to 6AM, and then to the Head Office from 6AM to 8AM.

Entering customer data

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. Taking advantage of these courses and aids maximizes the effectiveness of your Meridian 1 administration efforts.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Entering customer data

What to have ready

The following checklist summarizes the steps you should take before entering customer data.

Table 19
Checklist

Basic	Optional	Preparation
Ð		Choose an attendant DN.
	Ð	Decide what call routings will change during night service.
	Ð	Identify departmental listed directory numbers.
	Ð	Select special prefix codes.
	Ð	Make lists of telephones to be included in dial intercom groups.
	Ð	Decide on intercept treatments.
	Ð	Plan time-of-day call redirections.
	Ð	Select other customer options, as discussed earlier in this section.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to enter customer data.

Entering customer data

```
                    ┌──────────────────────────────┐
      ╭─────────╮   │  The flowchart summarizes the │
      │  Start  │   │  procedure. Use the instructions in the │
      ╰─────────╯   │  step-action table that follows this │
           │        │  flowchart to perform the procedure. │
           ▼        └──────────────────────────────┘
   ┌──────────────┐
   │   Print the  │
   │   existing   │
   │ customer data.│
   └──────────────┘
           │
           ▼
   ┌──────────────┐
   │   Program    │
   │   DLDNs.     │
   └──────────────┘
           │
           ▼
   ┌──────────────┐                    ┌──────────────┐
   │ Define DIGs. │                    │    Specify   │
   │              │                    │ an attendant │
   └──────────────┘                    │     DN.      │
           │                           └──────────────┘
           ▼                                  │
   ┌──────────────┐                           ▼
   │ Set up SPRE. │                    ┌──────────────┐
   │              │                    │    Select    │
   └──────────────┘                    │ additional cus-│
           │                           │ tomer options.│
           ▼                           └──────────────┘
   ┌──────────────┐                           │
   │Configure Night│                          ▼
   │  Service.    │                    ┌──────────────┐
   └──────────────┘                    │    Define    │
                                       │ intercept treat-│
                                       │    ments.    │
                                       └──────────────┘
                                              │
                                              ▼
                                        ╭─────────╮
                                        │   End   │
                                        ╰─────────╯
```
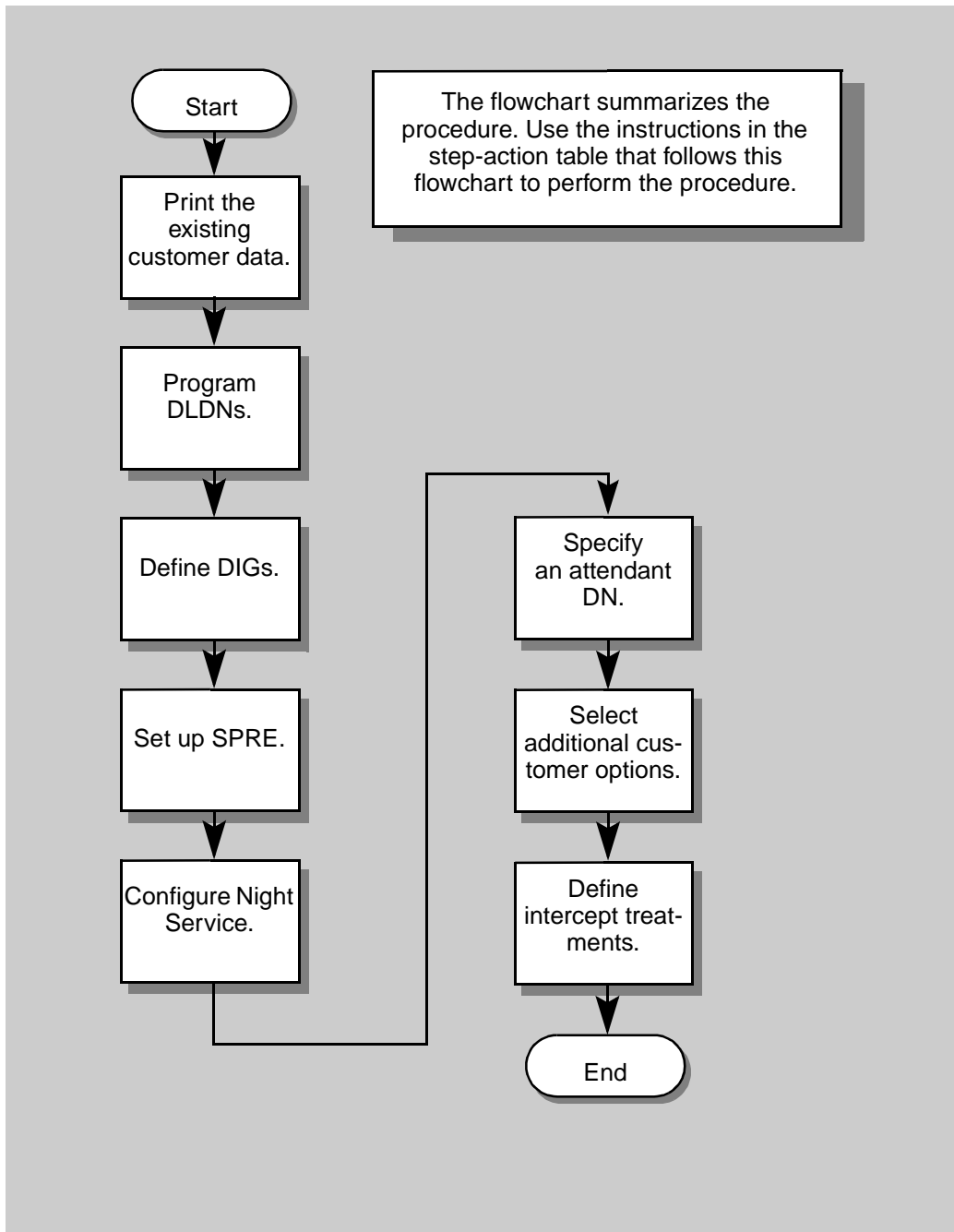
Entering customer data

> The preceding material in this module contains essential information.
> You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the input of customer
> data.

STEP	ACTION

1   Log in.

For information on proper login procedures, see *Basic Programming
Instructions* in *Basic Telecom Management*.

2   Print the configuration record.

>LD 21

REQ   PRT

TYPE   CDB   Print the configuration record.

The system prints out the present customer data.

REQ   * * * *

The overlay program ends.

Compare the existing data entries on the configuration printouts with the ones
required for this installation and make the necessary changes as described in
the following procedure.

— continued —

Entering customer data

STEP	ACTION	
3	**Create a customer number.**	
	>LD 15	
	REQ CHG	
	TYPE CDB	Create a new customer.
	CUST 0-99	Enter a customer number for the new customer.
4	**Set up departmental listed directory numbers.**	
	REQ CHG	
	TYPE LDN_DATA	Define DLDNs.
	CUST 0-99	Enter the customer number.
	OPT aaa	Specify options.
	DLDN YES, NO	Enter YES to define DLDNs.
	LDN0 xxxx	Enter a listed DN 0.
	LDA0 1-63 ALL	Identify attendant consoles associated with LDN0.
	LDN1 xxxx	Enter a listed DN 1.
	LDA1 1-63 ALL	Identify attendant consoles associated with LDN1.
	— continued —	

Entering customer data

STEP	ACTION		
	4 continued …		
	LDN2	xxxx	Enter a listed DN 2.
	LDA2	1-63 ALL	Identify attendant consoles associated with LDN2.
	LDN3	xxxx	Enter a listed DN 3.
	LDA3	1-63 ALL	Identify attendant consoles associated with LDN3.
	LDN4	xxxx	Enter a listed DN 4.
	LDA4	1-63 ALL	Identify attendant consoles associated with LDN4.
	LDN5	xxxx	Enter a listed DN 5.
	LDA5	1-63 ALL	Identify attendant consoles associated with LDN5.
	ICI	0-19 aaa	Turn on attendant incoming call indicators, where aaa is LD0 for incoming call indication of LDN0, LD1 for LDN1, LD2 for LDN2, LD3 for LDN3, LD4 for LDN4, and LD5 for LDN5.
5	**Define dial intercom groups.**		
	REQ	CHG	
	TYPE	FTR_DATA	Enter FTR_DATA to set customer features.
	CUST	0-99	Enter the customer number.
	OPT	aaa	Specify options.
	DGRP	0-2046	Specify the maximum number of dial intercom groups that can be assigned to the customer. (Enter 0 to disable dial intercom groups.)
	INRG	YES, NO	Enter YES to turn on distinctive ringing for this customer's dial intercoms, or NO to leave distinctive ringing turned off.
	— continued —		

T A S K

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Entering customer data

STEP	ACTION		
6	**Program SPRE.**		
	SPRE	xxxx	Enter the code assigned as a special prefix (SPRE) code. (Press the RETURN key to leave SPRE unconfigured.)
7	**Set up night service.**		
	REQ	CHG	
	TYPE	NIT_DATA	Enter NIT_DATA to configure night service.
	CUST	0-99	Enter the customer number.
	NIT1	xxx...x	Enter the first Night Service DN. (Press the RETURN key to disable Night Service.)
	TIM1	0-23 0-59	Enter the hour and minute when the first Night Service DN takes effect. TIM1 should be set earlier than TIM2, 3 or 4. To remove the time and force the system to use a 24-hour clock, enter x.
	NIT2	xxx...x	Enter the second Night Service DN. (If you have no second DN, press the RETURN key.)
	TIM2	0-23 0-59	Enter the hour and minute when the second Night Service DN takes over.
	NIT3	xxx...x	Enter the third Night Service DN. (If you have no third DN, press the RETURN key.)
	TIM3	0-23 0-59	Enter the hour and minute when the third Night Service DN takes over.
	NIT4	xxx...x	Enter the fourth Night Service DN. (If you have no fourth DN, press the RETURN key.)
	TIM4	0-23 0-59	Enter the hour and minute when the fourth Night Service DN takes over.
	— continued —		

Entering customer data

STEP	ACTION
8	**Specify an attendant DN.**

REQ	CHG	
TYPE	ATT_DATA	Enter ATT_DATA to set attendant console options.
CUST	0-99	Enter the customer number.
OPT	aaa	Specify options.
ATDN	0-xxxx	Enter the attendant DN. (Press the RETURN key to assign 0 as the attendant DN.)

— continued —

Entering customer data

STEP	ACTION		
9	**Select additional options for the customer.**		
	REQ	CHG	
	CUST	0-99	Enter the customer number.
	OPT	CFF	Select Call Forward forwarding party class of service.
	OPT	CTA	Select camp-on tone.
	OPT	DBA	Select flexible incoming tones.
	OPT	IBL	Select enhanced busy lamp field (for the M2250 attendant console).
	OPT	IC2	Select 20 incoming call indicators (instead of 10).
	OPT	IHA	Select individual hold.
	OPT	ILF	Select busy lamp field (for the QCW-type attendant console).
	OPT	ITG	Select trunk group busy lamp field.
	OPT	LOA	Select lockout.
	OPT	ROR	Specify that originating side determines ringing cadence.
	OPT	SBA	Select flexible incoming tones.
	OPT	SVA	Select secrecy on attendant consoles.

— continued —

Entering customer data

STEP	ACTION

10   Define intercept treatments for invalid calls.

REQ	CHG	
TYPE	INT_DATA	Enter INT_DATA to define intercept treatments.
CUST	0-99	Enter the customer number.

Default entries are shown for each of the following prompts. You can also enter OVF to specify overflow tone, ATN to specify attendant console, RAN to specify recorded announcement, or BSY to specify busy signal. NAP is used when no intercept treatment can be applied.

ACCD	OVF OVF OVF ATN	Enter an intercept treatment for calls to access-denied numbers (station calls, attendant calls, TIE trunk calls, and DID trunk calls).
CTVN	OVF OVF OVF ATN	Enter an intercept treatment for calls to vacant numbers (station calls, attendant calls, TIE trunk calls, and DID trunk calls).
MBNR	OVF OVF OVF ATN	Enter an intercept treatment for calls to maintenance-busy numbers (station calls, attendant calls, TIE trunk calls, and DID trunk calls).
CTRC	OVF NAP OVF NAP	Enter an intercept treatment for a code or toll restricted call placed by a toll restricted station or Tie trunk (station calls, attendant calls, TIE trunk calls, and DID trunk calls).
CLDN	NAP OVF NAP NAP	Enter an intercept treatment for calls to a listed DN (station calls, attendant calls, TIE trunk calls, and DID trunk calls).
RANR	0-511	Enter a recorded announcement (RAN) route number for RAN intercepted calls (station calls, attendant calls, TIE trunk calls, and DID trunk calls).

— continued —

Entering customer data

STEP	ACTION

11   Check your programming.

Review your programming to ensure that no errors were made. Use the scroll feature of your terminal, check your printout, or use overlay 22 to examine the contents of the database. For more information about reviewing your programming, refer to the About the Meridian 1 section of this book.

If	Do
the programming is correct	step 12
the programming is not correct	step 1

12   Arrange for a data dump to be performed.

If	Do
you do not have access to LD 43	contact your system supplier
you have access to LD 43	step 13

13   Perform a data dump to permanently store the programming you have just completed.

> **CAUTION**
> Check your maintenance agreement
> before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

```
> LD 43
. EDD <cr>
```

— continued —

Entering customer data

STEP	ACTION
14	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE

If	**Do**
data dump fails	contact your system supplier
data dump succeeds	step 15

STEP	ACTION
15	**Terminate this overlay program.**
	* * * *
16	**Terminate this programming session.**
	Log off.
	>LOGO
17	**You have completed the programming required to enter customer data.**

END

Entering customer data

Setting up analog trunks

Purpose

Trunks are communications channels that carry signaling and calls between telephone switches. Trunks link your Meridian 1 to other telephone switches, letting Meridian 1 users access your corporate telephone network or the public switched telephone network (PSTN).

The proper provisioning of trunks is essential to your telephone network access. If trunks are not properly provisioned, users may have difficulty placing calls to destinations served by other telephone switches.

Trunks

Analog trunks can take many forms, including twisted pair cable, and channels on multiplexed cable. The provisioning in software of these different types of trunks is the same.

Traffic

When planning to configure new trunks, you should consider the traffic load. Consider the impact of extra traffic load on the loop or Superloop to which the trunk is connected. Loops and Superloops perform best when they share equally in the total traffic load offered to the system.

Blockage within the system will be negligible when the traffic load per loop or Superloop is kept within the recommended guidelines. If all your existing loops and Superloops are at their recommended capacity, consider adding more to your system (especially if you will be adding more digitone receivers, telephones, or data terminals in the future).

Setting up analog trunks

Trunk types

Automatic Wake Up Recorded Announcement trunks

Automatic wake-up recorded announcement trunks carry the recorded announcements used for the Automatic Wake Up hospitality feature.

Common Controlled Switching Arrangement trunks

Common Controlled Switching Arrangement (CCSA) trunks provide connectivity between the Meridian 1 and other telephone switches employing CCSA switching. CCSA trunks carry both incoming and outgoing calls.

Central Office trunks

Central office trunks (COT) connect the Meridian 1 to central office (CO) telephone switches, typically part of the public switched telephone network (PSTN).

Incoming calls carried by a CO trunk are routed to the attendant, who then transfers the call to the appropriate extension.

CO trunks carry both incoming and outgoing calls.

553-0132T SUTR
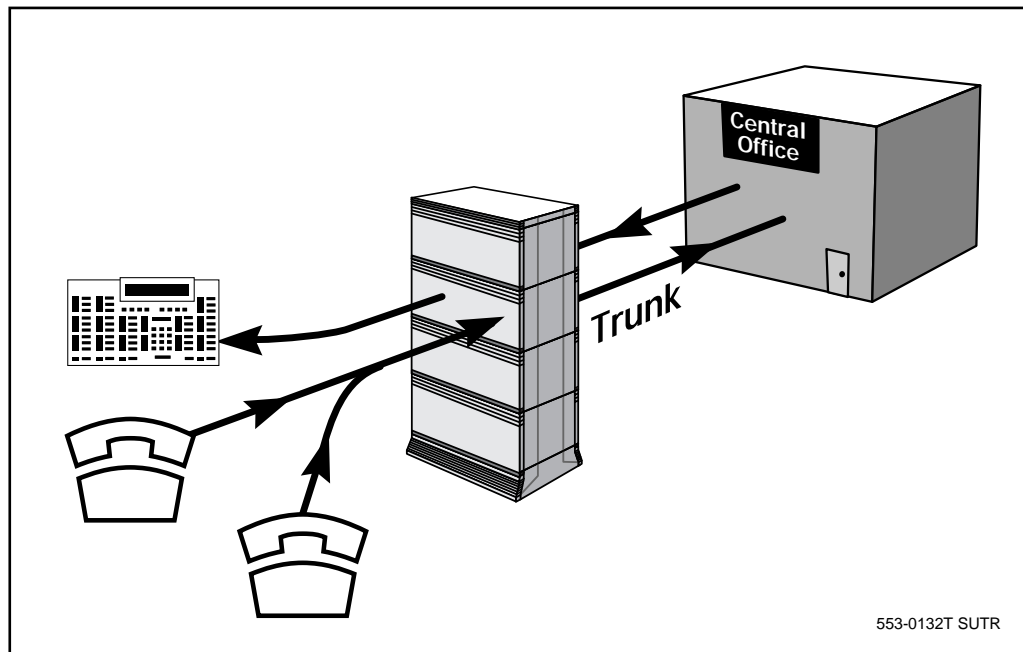
Setting up analog trunks

You can connect CO trunks to NT8D14AA Universal Trunk Cards.

Direct Inward Dial trunks

Direct Inward Dial (DID) trunks connect the Meridian 1 to central office telephone switches and carry incoming telephone calls.

DID trunks give remote callers direct dial access to specific extensions on the Meridian 1. Each telephone on the Meridian 1 can have a unique telephone number accessible to callers on the public network.

DID trunks carry only incoming calls.

553-0133T STUTR
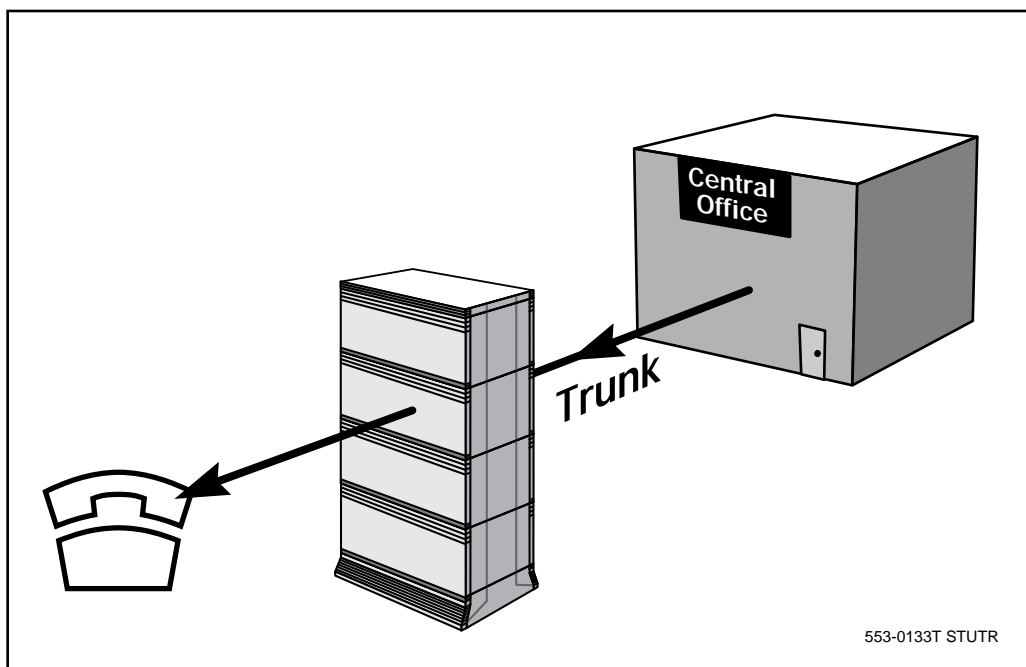
You can connect DID trunks to NT8D14AA Universal Trunk Cards.

Foreign Exchange trunks

Foreign exchange (FEX) trunks connect the Meridian 1 to PSTN telephone switches outside the local area. FEX trunks carry both incoming and outgoing calls.

Setting up analog trunks

You can connect FEX trunks to NT8D14AA Universal Trunk Cards.

Music trunks

Music trunks carry the recorded music used for Music On Hold. You can connect music trunks to NT8D14AA Universal Trunk Cards.

Paging trunks

Paging trunks connect the Meridian 1 to equipment used for paging.

Low resistance paging trunks can be connected to NT8D14AA Universal Trunk Cards. You can connect high resistance paging trunks to NT8D15AA E&M Trunk Cards.

Recorded Announcement trunks

Recorded announcement (RAN) trunks carry the recorded announcements used by the Meridian 1. You can connect RAN trunks to NT8D14AA Universal Trunk Cards.

TIE trunks

TIE trunks connect the Meridian 1 to a second Meridian 1 at a remote location. TIE trunks carry both incoming and outgoing calls, and make up the company's private network.

553-0134T SUTR
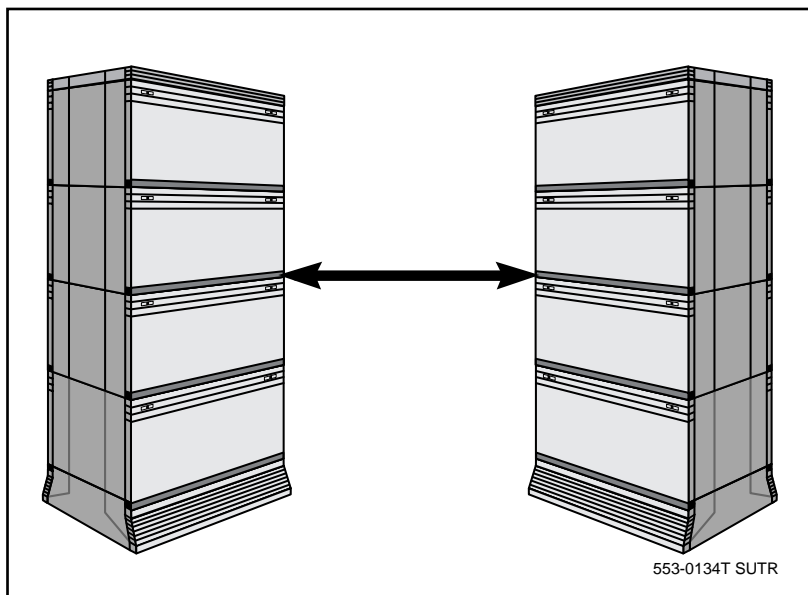
Setting up analog trunks

You can connect TIE trunks to NT8D14AA Universal Trunk Cards.

WATS trunks

Wide Area Telephone Service (WATS) trunks provide long distance telephone service within North America at reduced rates.

You can connect WATS trunks to NT8D14AA Universal Trunk Cards.

Trunk options

Extended trunks

To identify an extended trunk card, respond to the XTRK prompt in overlay 14. This prompt appears when you define the first Superloop.

Valid trunk cards for extended trunks include:

◆ Enhanced Extended Universal Trunk

◆ Extended CO trunk card

◆ Extended DID trunk card

◆ Extended E & M trunk card

◆ Extended Flexible E & M trunk card

◆ Extended Universal Trunk card

Firmware timing

To enable Firmware Timing for trunk hook flash, respond to the FWTM prompt in overlay 14. Set this option on a trunk by trunk basis.

Step-by-step trunks

To configure a step-by-step CO trunk, respond to the SXS prompt in overlay 16.

PAD level compensation

Select a Pad Category table number by responding to the PDCA prompt in overlay 16.

You can manually define transmit and receive pad levels for analog COT and WATS trunks, analog Foreign Exchange trunks, and analog Direct Inward Dial trunks by responding to the ACO, AFX and ADD prompts in overlay 73. The default pad levels are listed in Table 20.

Setting up analog trunks

Table 20
Default pad levels

Connection type	Rx PAD Rx code	Rx PAD (dB)	Tx code	(dB)
ACO	11	+4.0	14	+1.0
AFX	11	+4.0	14	+1.0
ADD	11	+4.0	14	+1.0

Companding

Two forms of signal companding are supported on Meridian 1 trunks:
A-law and Mu-law companding. Select Mu-law or A-law
companding by responding to the PCML prompt in overlay 16.

Network Class of Service

The Meridian 1 lets you assign classes of service to trunks, providing
control of trunk usage and restrictions in a way similar to telephone
class of service. To specify the Network Class of Service group,
respond to the NCOS prompt.

Modem TNs

Specify the modem TN by responding to the MTN prompt in overlay
14. The modem TN can be up to seven digits long. You can also enter
a Group Hunt pilot DN. The trunk class of service should be MIA.

Private line DNs

To specify the Private Line Directory Number, respond to the PRDN
prompt in overlay 14.

Call Modification features restriction

You can allow or deny call modifications on a given trunk. To control
the Call Modification restriction, respond to the CMF prompt in
overlay 14.

Release Link Trunk DN

To specify the Release Link Trunk Directory Number, respond to the
RLDN prompt in overlay 14.

Setting up analog trunks

Night Service

To set up Night Service on trunks, define a Night Service group number and a Night Service DN. Respond to the NGRP and NITE prompts in overlay 14.

Auto-terminate DN

To specify an Auto Terminate DN, respond to the ATDN prompt in overlay 14. The DN can be up to seven digits. You can also enter a Group Hunt pilot DN. If a DNIS route is defined, then the response must be an ACD DN. If no DN is assigned, the NITE number of the trunk is used. The auto-termination option must be selected for the trunk route in overlay 16.

Manual DN

Enter a Manual Directory Number at the MNDN prompt in overlay 14. The DN can be up to seven digits. You can enter a Group Hunt pilot DN. The class of service should be MIA.

Trunk Group Access Restriction

Trunk Group Access Restriction (TGAR) controls access to the exchange network, TIE trunks, CCSA trunks, and paging and dictation services. Telephones, TIE trunks, Direct Inward System Access (DISA) trunks, Meridian Mail channels, and Authorization Codes can be assigned a TGAR code, which is used to block access to certain trunk groups. There can be up to 32 TGAR codes in use on a system.

Specify a Trunk Group Access Restriction at the TGAR prompt in overlay 14.

Trunk signaling

To set up trunk signaling on a trunk route, respond to the SIGL, XDIC, and EMTY prompts in overlay 16. Turn Carrier Pad on or off for 4-wireE&MduplextrunksbyrespondingtotheCPADprompt.Configure Loop Dial Outpulsing (LOOP) or Battery Outpulsing by responding to the DLOP prompt.

Setting up analog trunks

Impedance

Set the termination impedance used for Extended E & M trunk cards and Extended Universal Trunk cards by responding to the TIMP prompt in overlay 14. Set the balance impedance by responding to the BIMP prompt.

Incoming start arrangements

To specify which type of signaling will be used by the trunk to initiate digit sending or collection, respond to the STRI prompt in overlay 14. Your response should reflect the type of operation in use at the near end.

To select Delayed Dial, respond with DDL The terminating trunk returns an off-hook to the originating trunk, which is interpreted as an instruction not to send digits immediately. This delay allows the terminating end to find and attach digit collections equipment. When the equipment is attached, the terminating end returns on-hook which is interpreted as a signal to start sending digits.

To select Immediate Start, respond with IMM. The terminating trunk is not expected to return a pulse telling the originating end to begin sending digits.

To select Wink or Fast Flash start, respond with WNK. The terminating trunk sends an off-hook/on-hook wink. The pulse is interpreted as a signal that digit collection equipment has been attached.

To select Off-Hook Wink for RLR trunks equipped with a signaling converter, respond with OWK. This mode of operation is similar to wink except that the Meridian 1 waits one second after seizure before sending a wink start pulse. This arrangement applies only to release link remote trunks.

To select Seize Acknowledge for CEPT L1 signaling, respond with SACK. This signaling arrangement is allowed only on TIE trunks using WR4 signaling.

Setting up analog trunks

To select Proceed to Send signaling for CEPT L1 signaling, respond with PTSD. This arrangement is allowed only for TIE trunks using WR4 signaling.

To select the RON/TRON start arrangement, respond with RT.

Outgoing start arrangements

To specify the type of outgoing start arrangement used on the trunk, respond to the STRO prompt in overlay 14. Your response to STRO determines which type of signaling will be used by the trunk to initiate digit sending or collection. Your STRO response should reflect the type of operation in use at the far end.

To select Delayed Dial Immediate Off-Hook Wink for RLR trunks equipped with a signaling converter, respond with DDL.

To select Seize Acknowledge for CEPT L1 signaling, respond with SACK. This response is allowed only for TIE trunks using WR4 signaling.

To select Proceed to Send for CEPT L1 signaling, respond with PTSD. This response is allowed only for TIE trunks using WR4 signaling.

To select a RON/TRON start arrangement, respond with RT.

To select a Wink or Fast Flash start arrangement, respond with WNK.

Specify whether answer and disconnect supervision is required by responding to the SUPN prompt. Specify the type of supervision by responding to the STYP prompt.

To select Automatic Guard Detection for outgoing trunks, respond to the SEIZ prompt.

Country identification

To identify the country, respond to the PPID and BTID prompts in overlay 14.

Setting up analog trunks

Trunk cards

Trunk cards provide the interface between the Meridian 1 and any connected trunks. Trunk cards reside on peripheral equipment shelves.

Trunk Cards provide the interface between the Meridian 1 and all trunk facilities, including not only public and private network trunks (CO, TIE), but those that connect the Meridian 1 to special features (Recorded Announcement, Paging, and so forth).

The following trunk cards are discussed here:

◆ NT8D14AA Universal

◆ NT8D15AA E&M

Universal Trunk Cards

The Universal Trunk Card supports up to eight trunks.

The Universal Trunk Card can be used with any combination of CO, DID, FEX, RAN, Paging (low resistance), WATS, TIE, or Music trunks.

E&M trunk cards

The E&M Trunk Card supports up to four trunks.

The E&M Trunk Card can be used with any combination of two-wire E&M, four-wire E&M, four-wire duplex, Paging (high resistance), or Emergency Recorder trunks.

Setting up analog trunks

Network Attendant Service

Network Attendant Service is a feature that allows attendants to be shared by Meridian 1 switches across a network. Calls that would normally be routed to an attendant at a particular Meridian 1 may be routed to an attendant at a different Meridian 1, perhaps even at a different location, if the local attendant is unavailable.

To allow Network Attendant Service to operate over a trunk route, respond to the NASA prompt in overlay 16.

Trunk routes

A trunk route is a set of trunks that link your Meridian 1 with a specific remote telephone switch. A trunk route carries all calls of a specific type between two switches.

A trunk route can consist of a single trunk, or multiple trunks. A single trunk route can include different types of physical trunk, but all the trunks in a trunk route must be set up the same way in software. Billing and routing information must be the same.

When you provision trunk routes, you are identifying the far end of each trunk available to the Meridian 1. When a call is dialed to a destination outside your Meridian 1, the Meridian 1 identifies the appropriate telephone switch at the destination and uses one of the trunks in the trunk route linking it to that switch.

For example, if your Meridian 1 serves the Head Office and it is linked to another Meridian 1 at the Sales Office by trunk route 21, it will route any call to the Sales Office over one of the trunks in route 21.

Setting up analog trunks

Examples of trunk routes

553-0131T SUTR
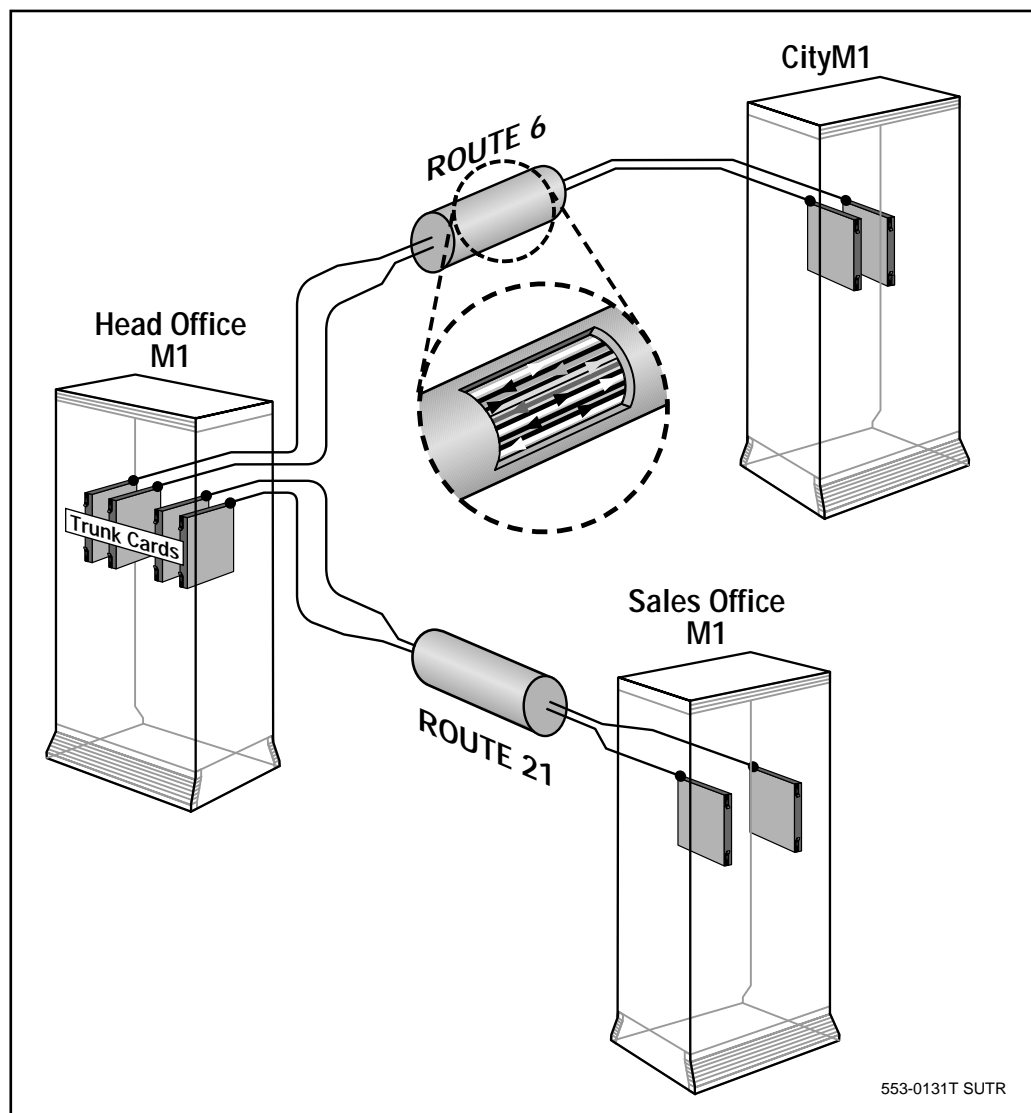
The Meridian 1 has certain maximum limits on the allocation of trunks and trunk routes. For more information about these limits, refer to the *System Overview.*

Setting up analog trunks

Each route on the Meridian 1 belongs to a particular customer. On Meridian 1 systems serving more than one customer, you must allocate routes on a customer by customer basis.

Route numbering

Route numbers uniquely identify a route on the Meridian 1. No two routes can the same number on the same Meridian 1.

A particular route has different route numbers at either end of the route. The route number does not have to be the same at both ends of the route. Route numbers on the Meridian 1 range from 0-511.

Incoming and outgoing trunks

To configure the trunk route for incoming and outgoing trunks, respond to the ICOG prompt in overlay 16. You can set up the route for incoming only, outgoing only, or both incoming and outgoing trunks.

Meridian 911 routes

Meridian 1 supports 911 trunk routes. Respond to the M911_ANI prompt in overlay 16 to enable automatic number identification (ANI) on 911 routes. Specify the 911 ANI trunk type by responding to the M911_TRK_TYPE prompt and the NPID_TLB_NUM prompt.

Private line routes

Private routes can be configured individually by the customer on any available CO trunk route. To configure a private line route, respond to the PRIV prompt in overlay 16.

Radio Paging routes

Radio Paging routes connect the Meridian 1 to radio paging equipment. To configure a route for radio paging, respond to the RPA prompt in overlay 16.

TIE trunk routes

To configure TIE trunk routes, respond to the CNYT, DDMI, and ATDN prompts in overlay 16.

Setting up analog trunks

DID trunk routes and IDC

To configure Incoming DID Digit Conversion for DID trunk routes, respond to the IDC, DCNO, NDNO, DEXT and DNAM prompts in overlay 16.

DOD trunk routes and charging

Configure the method of charging for a DOD trunk route by responding to the CHRG prompt in overlay 16. You can charge by the block or by the line.

Electronic Switched Network

Respond to the ESN prompt to enable ESN pad control. Respond to the INAC and SPN prompts to insert an ESN Access Code to incoming private network calls.

Earth-orbiting satellite routes

The Meridian 1 can accommodate routes over satellite links. Satellite links have special timing needs due to the delays in end-to-end transmission. To configure a trunk route that uses an earth-orbiting satellite, respond to the SAT prompt in overlay 16.

Internal and external routes

The Meridian 1 lets you designate trunks as being internal or external. You can use these designations to control call and intercept treatments and other trunk properties. Trunk routes connecting your Meridian 1 to other nodes within your company are usually designated Internal. Trunk routes to points outside your company are usually designated External.

To designate a trunk route as internal or external, respond to the RCLS prompt in overlay 16.

Far end port types

Analog TIE trunk routes

For analog TIE trunks, enter ATT at the PTYP prompt. When the Meridian 1 has one or more digital satellite trunk routes or DST to any digital satellite telephone switch that includes OPX telephones, respond with AOT.

Setting up analog trunks

If the trunk route uses earth-orbiting satellites, enter AST at the PTYP prompt.

Analog CO trunk routes

For analog CO trunks, enter ACO at the PTYP prompt. For analog toll office trunks, enter ATO.

Auto termination

To enable auto-termination on a trunk route, respond to the AUTO prompt in overlay 16. Other auto-terminate options include Automatic Camp-On and ACD DNIS.

Automatic Camp-on

The Automatic Camp-on option camps calls on to busy auto-terminate lines. To enable to disable this option, respond to the ACMP prompt in overlay 16.

ACD DNIS routes

To identify an ACD DNIS route, respond to the DNIS prompt. To set the number of DNIS digits, respond to the NDGT prompt. Select the first or last DNIS digits by responding to the WDGT prompt.

To include the DNIS number in CDR records, respond to the DCDR prompt.

Automatic Number Identification (ANI) route

To identify an in-band ANI route, respond to the IANI prompt.

Set the ANI identifier number at the ANTK prompt. Together with the ANLD and ANI Listed DN defined in overlay 15, the total number of digits must be no less than 7.

Enable or disable the ANI dial tone at the ANDT prompt.

Setting up analog trunks

Recorded announcement trunk routes

Select a recording device for each RAN trunk by responding to the RTYP prompt in overlay 16. Enter AUD for Audichron or Cook 212 units, CAP for Code-a-Phone units, CK2 for Cook 201 or QAY1 units, CKM for Cook 201 Multichannel units, CON for NT7M Digital Recorders, and DGT for 213300 and 213400 Digital Recorders.

Specify the number of recorded-announcement repetitions by responding to the REP prompt. Set the treatment provided once the recorded announcement ends by responding to the POST prompt. You can disconnect callers or route them to the attendant.

Set up the RAN start arrangement by responding to the STRT prompt. You can connect calls to the recording immediately (which may stop ringback well before the recording starts), or delay the call connection until the beginning of the recording.

YOu can turn Return Answer Supervision on or off at the ASUP prompt. You can also have Return Answer Supervision sent only to CO trunk originators.

CAMA trunk routes

To configure the signaling interface for CAMA trunks, respond to the SIGL prompt in overlay 16.

To configure the format for CAMA trunk signaling, respond to the FORM prompt. Three formats are available: M1A, M2B, and M3C.

Trunk tromboning

To turn trunk tromboning on or off for a trunk route, respond to the TRMB prompt in overlay 16. If tromboning is turned on, incoming calls on the route may be routed directly back out on the same route. If tromboning is turned off, incoming trunk calls on the route may not be routed directly back out on the same route.

Setting up analog trunks

Outgoing trunk member selection

You can control the way that the Meridian 1 selects outgoing trunks by responding to the SRCH prompt. Linear hunting starts with the highest trunk number (used for two-way trunks). Round robin hunting starts with the trunk next lower from the one last seized (used for outgoing trunks).

Alternate trunk routes

Set the alternate trunk route for outgoing trunks by responding to the STEP prompt.

Access codes

Specify the access code for the trunk route at the ACOD prompt. Ensure that the access code fits into the established numbering plan.

Calling party privacy (CPP)

Enable the calling party privacy option by responding to the CPP prompt in overlay 16. When the option is turned on, the CPP feature is recognized on the trunk route.

To turn on the CPP flag for incoming trunk calls tandemed to this trunk route, respond to the TCPP prompt.

Specify a privacy indicator for Digitone trunks by responding to the DTPI prompt. You can specify up to four digits. (Only the first digit can be an asterisk.)

Specify a privacy indicator for dial pulse trunks by responding to the DPPI prompt. You can specify up to four digits.

Trunk Group Access Restriction

To configure Trunk Group Access Restriction (TARG), respond to the TARG prompt in overlay 16 with the TARG range.

ADM

Trunk guard timer

To set the ADM trunk guard timer, respond to the ATGT prompt in overlay 16.

Setting up analog trunks

Step-forward ring cycles

To specify the number of ADM step-forward ring cycles, respond to the ASTP prompt in overlay 16.

Scheduled Access Restriction

Select a Scheduled Access Restriction (SAR) group for a trunk route by responding to the SGRP prompt in overlay 16.

Code restriction

Specify the actual outgoing toll digits to be ignored for code restriction by responding to the OABS prompt. (This option is useful for handling 1+ type calls.)

CAMA trunk routes

Set the CAMA trunk route category digits at the CAT prompt in overlay 16. Set the identification digit for CAMA trunk routes at the ID prompt.

Super Trunk groups

To turn the Super Trunk feature on or off for the trunk route, respond to the STRK prompt in overlay 16. If the feature is turned on, select the length of digit outpulsing at the SPTO prompt. Enter YES to select 3 digit outpulsing on ANI calls, or NO to select 7-10 digit outpulsing.

KP signal suppression

Turn KP signal suppression on or off at the ANKP prompt in overlay 16.

Japan central office trunks

Specify the number of Japan CO digits at the JDGT prompt in overlay 16. This indicates the number of address digits sent from the CO to the Meridian 1. If you do not know the number of digits being sent, set the parameter to (4).

Identification of outgoing calls

To turn identification of outgoing calls on or off, respond to the AIOD prompt in overlay 16.

Setting up analog trunks

Specify the AIOD customer number at the ACNO prompt. Specify the AIOD route number at the ARNO prompt and the AIOD identifier number at the ATTK prompt.

Signaling arrangement

Configure the signaling arrangement at the SIGO prompt in overlay 16. Enter STD for the standard signaling arrangement. For NCOS, TCOS and CCBQ call types enter ESN2. To include network transfer and Satellite Link Control, enter ESN3.

Enter ETN for electronic TIE network signaling.

Call Detail Recording

To turn CDR on for incoming calls, respond to the INC prompt in overlay 16. To turn CDR on for outgoing calls, respond to the OAL prompt. To turn CDR or for outgoing toll calls, respond to the OTL prompt.

Specify the contents of CDR records by responding to the LAST, TTA, ABAN, QREC, CDRX, OPA, CCO, AIA and OPD prompts.

Specify the number of digits to record at the NDP prompt.

North American toll scheme

To select the North American toll scheme, respond to the NATL prompt in overlay 16. Specify toll digits at the TDG prompt.

Special service list number

Enter the Special Service List (SSL) number at the SSL prompt in overlay 16. The SSL number is used to identify special service calls on route. The list must be defined in overlay 18.

Equal access restrictions

To enable or disable equal access restrictions, respond to the EQAR prompt in overlay 16. To control North American toll calls, respond to the NTOL prompt. To control International toll calls, respond to the ITOL prompt.

Setting up analog trunks

Tone detector

To determine the requirement for a tone detector, respond to the TDET prompt in overlay 16. Select a tone table by responding to the TTBL prompt. (Tone tables are defined in overlay 56.)

Malicious Call Trace

Enable or disable the Malicious Call Trace (MCT) signal at the MCTS prompt in overlay 16. Define the call trace request string at the MCCD prompt. Specify the digit string delay time at the MCDT prompt.

Turn the MCT alarm on or off for external calls at the ALRM prompt.

Called Party Control

Turn Called Party Control on or off at the CDPC prompt in overlay 16.

Call Number Identification

Set the number of digits that need to be received before CNI is requested by responding to the NCNI prompt in overlay 16.

To have the Meridian 1 request CNI after an ESN code is dialed, respond to the CNIE prompt.

To turn on Call Number Identification Trace, respond to the CNIT prompt. The system will request CNI digits only if the dialed station has MCTA class of service.

Busy Tone time

You can specify a Busy Tone Time at the BTT prompt in overlay 16. The BTT is the duration of busy or overflow tone to be returned on DID routes.

ANI

For some configurations you can configure a Local Exchange Code (LEC). The LEC is used for ANI messages. Define the LEC at the LEC prompt in overlay 16. Specify any additional digits to be used in ANI sequences at the ADDG prompt.

Setting up analog trunks

You can specify an ANI category for an incoming trunk by responding to the CAC prompt when the CIST package is equipped. CAC is used in ANI messages on outgoing trunks connected to this trunk route. You can also configure an ANI DN at the ANDN prompt. Set the remote DN length used to extract the necessary number of DN digits from caller ID at the RDNL prompt.

Acknowledgement seizure signal

Turn Acknowledgement Seizure Signal on or off at the ACKW prompt in overlay 16.

Periodic Clearing signal

Turn the Periodic Clearing Signal on or off at the PECL prompt in overlay 16.

Trunk disconnection time

You can control the trunk disconnection time by responding to the DCTI prompt in overlay 16. Specify the time, in seconds, that an extension is allowed to ring or be On-Hold or Call Park before the trunk is disconnected. You can also turn trunk disconnection off by entering 0.

Monitoring

You can turn monitoring on or off for the route by responding to the MON prompt.

Setting up analog trunks

Analog trunk examples (Overlay 16 and 14)

1. Creating a Central Office Trunk (COT)

1	**Create a Route Data Block (RDB) for the COT in Overlay 16**	
	>LD 16	
REQ	NEW	
TYPE	RDB	Enter RDB to create a route data block.
CUST	0	Enter 0 as the customer number.
ROUT	1	Enter 1 as the route number to be created.
TKTP	COT	Trunk type will be central office trunk.
PTYP	ACO	Specify the port type as the far end to be analog central office.
ICOG	IAO	COT is incoming and outgoing.
ACOD	9	Enter 9 as the access code for this route.
TARG	0	Enter 0 for the trunk access restriction group.

— continued —

Setting up analog trunks

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	1 continued …	
CNTL	NO	Use the default values for controls and timers.
REQ	****	Enter **** to exit Overlay.
2	**Create a Trunk Data Block for the COT in Overlay 14**	
>LD 14		
REQ	NEW	
TYPE	COT	Enter COT to create a COT trunk data block.
TN	4 0 7 0	Enter the terminal number.
XTRK	XUT	Enter XUT to specify the Extended Universal Trunk card (Rel 19 and later) for this example.
CUST	0	Enter 0 as the customer number.
RTMB	1 1	Enter route number as 1 and member number as 1.
SIGL	GRD	There are two types of COT signaling; ground start (GRD) and loop start (LOP).
CLS	UNR	Enter UNR for unrestricted class of service.
REQ	****	Enter **** to exit Overlay.

Setting up analog trunks

2. Creating a TIE trunk

1	**Create a Route Data Block (RDB) for the TIE**	
REQ	NEW	
TYPE	RDB	Enter RDB to create a route data block.
CUST	0	Enter 0 as the customer number.
ROUT	2	Enter 1 as the route number to be created.
TKTP	TIE	Trunk type will be central office trunk.
PTYP	ACO	Specify the port type as the far end to be analog central office.
ICOG	IAO	COT is incoming and outgoing.
ACOD	8	Enter 8 as the access code for this route.
TARG	0	Enter 0 for the trunk access restriction group.
CNTL	NO	Use the default values for controls and timers.
DLTN	YES	Provide dial tone back to far end.
REQ	****	Enter **** to exit Overlay.
	— continued —	

Setting up analog trunks

2	**Create a Trunk Data Block for the COT**	
REQ	NEW	
TYPE	TIE	Enter COT to create a COT trunk data block.
TN	4 0 7 1	Enter the terminal number.
XTRK	XUT	Enter XUT to specify the Extended Universal Trunk card (Rel 19 and later) for this example.
CUST	0	Enter 0 as the customer number.
RTMB	1 2	Enter route number as 1 and member number as 1.
SIGL	LDR	There are six types of TIE signaling; two wire duplex (DX2), four-wire duplex (DX4), E&M two wire (EAM), E&M four-wire (EM4), loop dial repeating (LDR) and outgoing automatic, incoming dial (OAD).
CLS	UNR	Enter UNR for unrestricted class of service.
REQ	****	Enter **** to exit Overlay.

Setting up analog trunks

Administration tips

A number of courses and administration aids are available from Nortel or your system supplier. Taking advantage of these courses and aids maximizes the effectiveness of your Meridian 1 administration efforts.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Setting up analog trunks

What to have ready

The following checklist summarizes the steps you should take before setting up analog trunks and trunk routes.

Table 21
Checklist

Basic	Optional	Preparation
Đ		Decide what trunk routes are needed.
Đ		Decide what types of trunks and what quantity of trunks are needed on each trunk route.
Đ		Consider trunk options.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure analog trunks and trunk routes.

Setting up analog trunks

```
          ┌─────────────┐         ┌──────────────────────────────┐
          │    Start    │         │  The flowchart summarizes the │
          └──────┬──────┘         │  procedure. Use the instructions in the │
                 │                │  step-action table that follows this │
          ┌──────┴──────┐         │  flowchart to perform the procedure. │
          │  Set PAD    │         └──────────────────────────────┘
          │  Levels.    │
          └──────┬──────┘
                 │
          ┌──────┴──────┐
          │ Create trunk│
          │ routes.     │
          └──────┬──────┘                      ┌─────────────┐
                 │              ┌───────────────┤             │
          ┌──────┴──────┐       │         ┌─────┴──────┐      │
          │  Specify    │       │         │ Create     │      │
          │ countries.  │       │         │ trunks.    │      │
          └──────┬──────┘       │         └─────┬──────┘      │
                 │              │               │             │
          ┌──────┴──────┐       │         ┌─────┴──────┐      │
          │ Set NCOS and│       │         │ Configure  │      │
          │ other trunk │       │         │ trunk      │      │
          │ options.    │       │         │ signaling. │      │
          └──────┬──────┘       │         └─────┬──────┘      │
                 │              │               │             │
          ┌──────┴──────┐       │         ┌─────┴──────┐      │
          │ Configure   │       │         │ Specify    │      │
          │ ATM.        │       │         │ country tones│    │
          └──────┬──────┘       │         │ and CLS.   │      │
                 └──────────────┘         └─────┬──────┘      │
                                                │             │
                                          ┌─────┴──────┐      │
                                          │    End     │      │
                                          └────────────┘      │
```
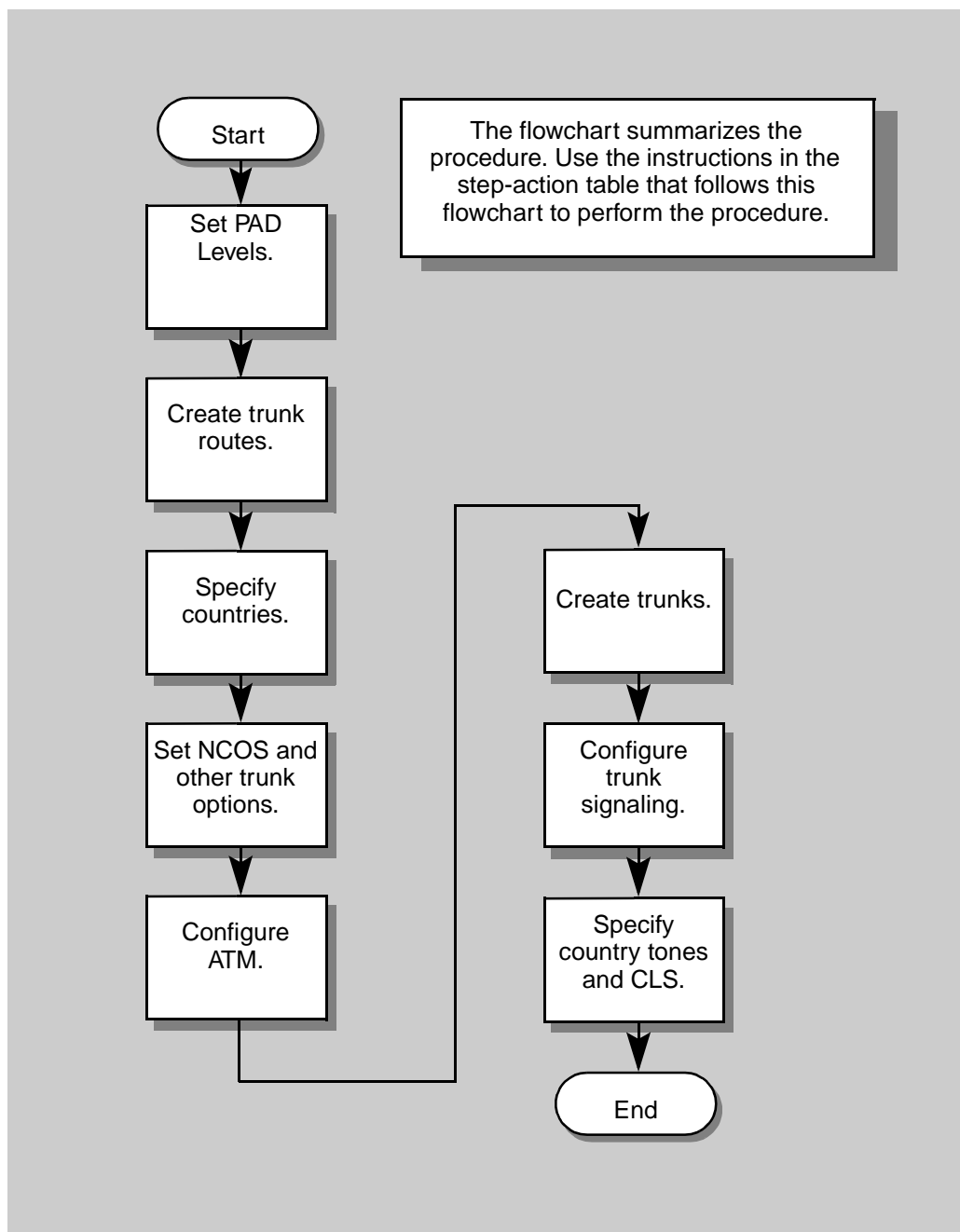
Setting up analog trunks

The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of analog trunks.

STEP	ACTION

1   **Log in.**

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2   **Set PAD levels for analog trunks and lines.**

     >LD 73

REQ	NEW	
TYPE	DDB	
FEAT	PAD	Enter PAD to change PAD values.
PDCA	1–16	Enter the PAD category table number.
DFLT	1–16	Enter the PAD category table number to be used as default.

Respond to the following prompts if they appear. If you see a prompt not listed here, press the carriage return to continue to the next prompt.

ACO	0–15 0–15	Enter the PAD level for analog CO or WATS trunks.
AFX	0–15 0–15	Enter the PAD level for analog FEX trunks.
ADD	0–15 0–15	Enter the PAD level for analog DID trunks.
XUT	0–15 0–15	Enter the PAD level for analog CO trunks.
XEM	0–15 0–15	Enter the PAD level for analog TIE trunks.
REQ	END	Exit the overlay.

— continued —

Setting up analog trunks

STEP	ACTION
3	**Create trunk routes.**

> **>LD 16**

REQ	NEW	
TYPE	RDB	Enter RDB to create trunks.
CUST	0-99	Enter the customer number.
ROUT	0-511	Enter the route number.

— continued —

Setting up analog trunks

STEP	ACTION
4	**Create a trunk.**

TKTP   xxx   Select a trunk type.

To select	**Enter**
add-on data module associated with a data interface card	ADM
automatic incoming outgoing dial trunk	AID
automatic wake-up trunk for recorded announcement or music	AWR
common control switching arrangement and automatic number identification	CAA
central automatic message accounting (CAMA)	CAM
central office trunk	COT
common control switching arrangement access line	CSA
dictation trunk	DIC
direct inward dialing (DID) trunk	DID
foreign exchange (FEX) trunk	FEX
Meridian Communications Unit port	MCU
music trunk	MUS
paging trunk	PAG
recorded announcement trunk	RAN
emergency recorder trunk (for ACD)	RCD
TIE trunk line	TIE
TIE trunk for Sweden	TIE ATL
wide area telephone service trunk	WAT

— continued —

Setting up analog trunks

STEP	ACTION

4 continued …

M911_ANI YES, NO   Enter YES to allow reception of automatic number identification for Meridian 911 routes, or NO to prevent reception.

Respond to the following prompts, if they appear:

M911_TRK_TYPE 911T, 911E
Enter 911T to select an E911 tandem connection, or 911E to select an end-office connection.

NPID_TBL_NUM 0-7   Select a Meridian 911 route table.

PRIV YES, NO   Enter YES if the new route is a private line route.

RPA YES, NO   Enter YES if the new route is a radio paging route.

ESN YES, NO   Enter YES to enable ESN pad control for the NT8D15 card, or NO to disable ESN pad control.

CNYT YES, NO   Enter YES to route to a conventional switch.

DDMI 0-255   Select a basic alternate route or network alternate route. (If you are selecting a basic alternate route, the range is 0-127.)

ATDN 0-xxxx   Enter the attendant DN of the conventional main, ESN main, ESN node, or ETN node.

SAT YES, NO   Enter YES if the new trunk route is carried over an earth orbiting satellite.

RCLS EXT, INT   Enter INT if the route class is marked as Internal.

DTRK YES, NO   Enter NO.

— continued —

Setting up analog trunks

STEP	ACTION

4 continued …

IFC	xxx	Select an interface type for the new route.

To select	**Enter**
Meridian DMS-100	D100
1TR6 for Germany	1TR6
Ericsson AXE-10 for Australia	AXEA
Ericsson AXE-10 for Sweden	AXES
Meridian DMS-250	D250
Japan D70	D70
AT&T ESS4	ESS4
AT&T ESS5	ESS5
EuroISDN	EURO
Numeris for France	NUME
Meridian SL-100	S100
Meridian SL-1	SL1
SYS-12 for Norway	SS12
SwissNet for PRI2	SWIS
Telecom New Zealand	TCNZ
Interface ID for ISO QSIG	ISIG
Interface ID for ETSI QSIG	ESIG

SBN	YES, NO	Enter YES to send billing number, or NO not to send it.

— continued —

Setting up analog trunks

STEP	ACTION

4 continued …

CNTY	xxx	Identify the country.

To select	**Enter**
Austria	AUS
Denmark	DEN
Finland	FIN
Germany	GER
Italy	ITA
Norway	NOR
Portugal	POR
Sweden	SWE
Holland	DUT
Ireland	EIR
Switzerland (BRI only)	SWI
ETS 300 102 basic protocol	ESTI

SIDE	NET, USR	Specify the Meridian 1 node type. Enter NET for Network, or USR for User.
OVLR	YES, NO	Enter YES to allow overlap receiving, or NO to prevent it.
DIDD	0–15	Specify the digits to ignore during overlap receiving on DID calls.
OVLS	YES, NO	Enter YES to allow overlap sending, or no to prevent it.
OVLT	0–8	Set the Inter-INFO timer used during overlap sending.
PGPN	0–15	Specify the protocol set group (which must be pre-defined in overlay 27).

— continued —

Setting up analog trunks

STEP	ACTION

4 continued …

RCAP	xxx	Specify remote capabilities. NCT for Network Call Trace RVQ for Remote Virtual Queuing ND1 for Network Name Display 1 ND2 for Network Name Display 2
TRO	YES, NO	Enter YES to allow trunk optimization, or NO to prevent it.
INAC	YES, NO	Enter YES to insert ESN access codes in incoming private network calls, or NO to leave calls unchanged.
SPN	YES, NO	Enter YES to insert SPN's AC first, to search for a valid UDP number, or NO to prevent insertion.
INC_T306	0–30	Set the incoming T306 timer.
OUT_T306	0–30	Set the outgoing T306 timer.
PTYP	aaa	Specify the far-end port type.
AUTO	YES, NO	Enter YES if the trunk route is to auto-terminate.
ACMP	YES, NO	Enter YES if calls to busy auto-terminate lines are to automatically camp-on, or NO if calls are not to camp-on.
DNIS	YES, NO	Enter YES if this trunk route is ACD DNIS.
NDGT	3, 4	Specify the number of DNIS digits.
WDGT	L, R	Enter L if the last four DNIS digits are to be sent on APL and HSL, or R if the first four digits are to be sent.
DCDR	YES, NO	Enter YES if the DNIS number is to be included in the CDR records, or NO if they are not to be included.
IANI	YES, NO	Enter YES if this route uses in-band Automatic Number Identification, or NO if the route does not.
RTYP	aaa	Specify the recording device for RAN trunks.

— continued —

Setting up analog trunks

STEP	ACTION

4 continued …		
REP	1–15	Set the number of repetitions for recorded announcements.
POST	DIS, ATT	Specify the treatment given to calls that have received recorded announcement.
STRT	IMM, DDL	Specify the trunk route start arrangement.
ASUP	YES, NO, CO	Enter YES if answer supervision is returned to the originator by RAN, or NO if it is not. Enter CO if answer supervision is to be returned only to CO trunks.
SIGL	BEL, NT4, NT5	Specify the signaling interface for CAMA trunks.
FORM	M1A, M2B, M3C	Specify the format for CAMA signaling.
ICOG	IAO	Enter IAO for incoming and outgoing trunks.
RANX	YES, NO	Enter YES if calls diverted to external trunks are to receive RAN, or NO if RAN is not required.
RANR	0–511	Specify the RAN route number for the desired RAN route.
TRMB	YES, NO	Enter YES to allow trunk tromboning, or NO to prevent it.
SRCH	LIN, RRB	Specify the search method for outgoing trunk members.
STEP	0–511	Specify the alternate trunk route for outgoing trunks.
ACOD	IAO, ICT, OGT	Enter IAO for trunk routes that are both incoming and outgoing, ICT for trunk routes that are incoming only, or OGT for trunk routes that are outgoing only.
CPP	YES, NO	Enter YES to enable the Calling Party Privacy Flag, or NO to disable it.

— continued —

Setting up analog trunks

STEP	ACTION		
	4 continued …		
	TCPP	YES, NO	Enter YES to set the CPP flag for incoming trunk calls tandemed to this trunk route, or no to leave the flag unset.
	DTPI	nnnn	Specify the privacy indicator for a Digitone trunk. (The default is *67.)
	DPPI	nnnn	Specify the privacy indicator for a dial-pulse trunk. (The default is 1167.)
	TARG	1–15	Specify the Trunk Access Restriction Group (TARG) number.
	ATGT	0–60	Set the ADM trunk guard timer.
	ASTP	1–15	Set the number of ADM step-forward ring cycles.
	SGRP	0–999	Specify the Scheduled Access Restriction (SAR) Group number.
	OABS	0–9	Specify the actual outgoing toll digits to be ignored for Code Restriction.
	IABS	0–3	Specify the number of incoming digits to be absorbed.
	CAT	00–99	Specify the CAMA trunk route category digits.
	ID	0–9	Specify the identification digit for CAMA trunk routes.
	STRK	YES, NO	Enter YES to enable the Super Trunk group feature, or NO to disable it.
	SPTO	YES, NO	Enter YES to enable the Super Trunk option, or NO to disable it.
	ANKP	YES, NO	Enter YES to suppress the KP signal, or NO to allow the signal.
	INST	0–99999999	Specify the insert.

— continued —

Setting up analog trunks

STEP	ACTION

4 continued …

JDGT	1-4	Specify the Japan central office digits.
IDC	YES, NO	Enter YES to allow incoming DID digit conversion on this route, or NO to prevent it.
DCNO	0-254	Specify the day IDC tree number.
NDNO	0-254	Specify the night IDC tree number.
DEXT	YES, NO	Enter YES to display external dialed digits, or NO to prevent display.
DNAM	YES, NO	Enter YES to display the IDC name, or NO to prevent display.
AIOD	YES, NO	Enter YES to allow identification of outgoing calls, or NO to prevent identification.
ACNO	0-99	Set the AIOD customer number.
ARNO	0-511	Set the AIOD route number.
ATTK	xxxx	Set the AIOD identifier number.
ANTK	xxxx	Set the ANI identifier number.
SIGO	aaa	Specify the signaling arrangement.
MFC	YES, NO	Enter YES to enable Multifrequency Compelled Signaling, or NO to disable it.
MFEI	0-127	Specify the MFE table number for incoming calls.
AUTM	YES, NO	Enter YES to enable MFE automatic mode, or NO to disable it.
DIGS	4-5	Specify the number of digits expected in MFE automatic mode.
SGL	YES, NO	Enter YES to return an MFE Idle signal, or NO to return a normal MFE signal.

— continued —

Setting up analog trunks

STEP	ACTION		

4 continued …

MFEO	0-127	Set the MFE table number for outgoing calls.	
MFEA	YES, NO	Enter YES if access code signals are used in the signaling, or NO if they are not.	
MFED	0-9	Set the first digit of special service calls.	
MFKI	1-127	Set the MFK table number for incoming calls.	
AUTM	YES, NO	Enter YES to enable automatic mode, or NO to disable it.	
DIGS	4-5	Specify the number of digits expected for MFK automatic mode.	
MFKO	0-127	Set the MFK table number for outgoing calls.	
LOCD	6-7	Set the number of digits used in a local call by the far end central office.	
CHRG	BLOK, LINE	Enter BLOK to charge DOD calls by the block, or LINE to charge calls by the line.	
MFCI	1-127	Specify the MFC incoming table number.	
R2MD	YES, NO	Enter YES to enable R2 modification, or NO to prevent it.	
DIG#	1-9	Specify the number of digits involved in R2 modification.	
SGL	YES, NO	Enter YES to return an MFC Idle signal, or NO to return a normal MFC signal and tone.	
BSSU	YES, NO	Enter YES to select backward signal suppression for undefined signals, or NO to prevent suppression.	
MFCO	1-127	Specify the MFC outgoing table number.	
OPP	NORM, ATT	Enter NORM for normal busy or intercept treatments of operator-originated calls, or ATT for routing to an attendant.	
SWP	ATT, NORM	Specify busy and intercept treatment for the subscriber with priority. Enter NORM for normal treatment, or ATT for routing to the attendant.	

— continued —

Setting up analog trunks

STEP	ACTION		
	4 continued …		
	CCNI	YES, NO	Enter YES to enable call number indicator (CNI) on the route, or NO to disable CNI.
	CNTL	YES, NO	Enter YES to make changes to controls and timers.
	TIMR	aaa xxx	Set the trunk timers by enter a timer mnemonic, followed by the timer value (in milliseconds).
	SST	xxx	Set the seizure supervision timer (in seconds).
	DTD	YES, NO	Enter YES to change dial tone detection parameters.
	MDTD	1–31	Set the minimum dial tone detection delay (in seconds).
	DTDF	1–15 1–15	Specify the dial tone detector fail threshold.
	SCDT	YES, NO	Enter YES to use secondary dial tone detection on the route, or NO to discard secondary dial tone detection.
	TABL	1–31	Set the flexible dial tone detection table number.
	XTDT	0–7	Set the extended tone detection table number.
	2 DT	YES, NO	Enter YES to enable secondary dial tone, or NO to disable it.
	NEDC	ORG, ETH	Set near-end disconnect control.
	FEDC	aaa	Set far-end disconnect control.
	CPDC	YES, NO	Enter YES if the Meridian 1 is the only controlling party on incoming calls, or NO if there are other controlling parties.
	SPCT	IMM, DLY	Set up speech path cut through.
	DLTN	YES, NO	Enter YES to enable dial tone on originating calls, or NO to disable it.
	ANDT	YES, NO	Enter YES to enable ANI dial tone, or NO to disable it.
	HOLD	ic dc ht	Set the hold failure threshold.
	— continued —		

Setting up analog trunks

STEP	ACTION		

	4 continued …		
SEIZ	ic dc	Set the seize failure threshold.
RGFL	ic dc	Set the ring failure threshold.
RVSD	ic dc	Set the reversed wired CO trunk threshold.
ILLR	ic dc	Set the illegal ring threshold.
SVFL	ic dc	Set supervision failure.
OPCB	YES, NO	Enter YES to enable operator call back, or NO to disable it.
IMBI	YES, NO	Enter YES to enable immediate breakin for the route, or NO to disable the option.
IMBC	YES, NO	Enter YES to enable immediate call back, or NO to disable it.
TOBO	YES, NO	Enter YES to enable toll operator breakout, or NO to disable it.
BTCG	YES, NO	Enter YES to enable Busy Tone to Calling Party, or NO to disable it.
IHT	2-62	Specify the number of seconds for call back.
OHT	0-62	Set up CGPC call disconnect.
OHTT	0-62	Set Toll Outgoing CGPC call disconnect.
SRT	1-1023	Specify the number of minutes a set is kept on hold to a trunk on an outgoing CDPC call.
CGPC	YES, NO	Enter YES to enable Calling Party Control, or NO to disable it.
CDCT	YES, NO	Enter YES to enable Called Party Control, or NO to disable it.
DDO	YES, NO	Enter YES to enable Delay Digits Outpulsing for DOD and CO trunks, or NO to disable it.
DRNG	YES, NO	Enter YES to enable North American Distinctive Ringing for incoming calls, or NO to disable it.
NDRI	0-4	Specify the Network Distinctive Ringing index.

— continued —

Setting up analog trunks

STEP	ACTION		
	4 continued …		
BTUA	YES, NO	Enter YES to enable Block Transfer of Unanswered Calls, or NO to disable the option.
CDR	YES, NO	Enter YES to enable Call Detail Recording, or NO to disable it.
INC	YES, NO	Enter YES to enable generation of CDR records on incoming calls, or NO to disable it.
LAST	YES, NO	Enter YES to enable printing of CDR content for redirected calls, or NO to disable it.
BILN	YES, NO	Enter YES to enable the Billing Number Required option, or NO to disable it.
BLEN	1-16	Specify the billing number length.
BNUM	0-9999	Specify the billing number.
BDSP	YES, NO	Enter YES to display the billing number, or NO to suppress display.
TTA	YES, NO	Enter YES to output Time To Answer in CDR, or NO to suppress output.
ABAN	YES, NO	Enter YES to output abandoned call records for the route, or NO to suppress output.
QREC	YES, NO	Enter YES to output CDR ACD Q initial connection records, or NO to suppress output.
OAL	YES, NO	Enter YES to enable CDR on outgoing calls, or NO to disable it.
OTL	YES, NO	Enter YES to enable CDR on outgoing toll calls, or NO to disable it.
AIA	YES, NO	Enter YES to enable Answered Call Identification, or NO to disable the option.
OAN	YES, NO	Enter YES to start CDR timing on answer supervision of outgoing calls, or NO to prevent it.
OPD	YES, NO	Enter YES to record outpulsed digits in CDR, or NO to prevent recording.

— continued —

Setting up analog trunks

STEP	ACTION		

4 continued …

CDRX	YES, NO		Enter YES to print CDRX records on multiple call transfer for non-PPM outgoing calls, or NO to prevent printing.
NDP	INC, EXC 0-32		
			Specify the number of digits to be suppressed. Enter INC to suppress the first digits, or EXC to suppress the last digits.
CDRY	YES, NO		Enter YES to generate CDR Public Network Feature Invoke records, or NO to prevent generation.
OPA	YES, NO		Enter YES to generate CDR or CDAS records for PPM pulses, or NO to prevent generation.
CCO	YES, NO		Enter YES to print CDR records for no PPM or AOC count, or NO to prevent printing.
NATL	YES, NO		Enter YES to select North American toll scheme, or NO to use another toll scheme.
TDG	xx...xx		Specify toll digits.
SSL	1-15		Specify Special Service List number.
CFWR	YES, NO		Enter YES to enable Call Forward Restriction, or NO to disable it.
IDOP	YES, NO		Enter YES to enable the Identify Originating Party option, or NO to disable it.
VRAT	YES, NO		Enter YES to answer an attendant-extended call over VNS immediately on the incoming bearer trunk, or NO to prevent answer.
MUS	YES, NO		Enter YES to enable Music On Hold, or NO to disable it.
MRT	0-511		Specify the Music Route number.
MR	RVD, NO		Set Message Registration.
PANS	YES, NO		Enter YES if pseudo-answer can be sent on some types of trunks as soon as end-of-dialing is detected, or NO if it can not.

— continued —

Setting up analog trunks

STEP ACTION		
4 continued …		
RACD	YES, NO	Enter YES to include route traffic information in ACD reports, or NO to exclude information.
RUCS	0-9999	Enter the route unit cost.
RURC	xy	Specify the route unit reference cost.
RUCF	xy	Specify the route unit conversion factor.
RPPM	xxx	Specify the real-time periodic pulse metering polling time (in seconds).
A1MR	YES, NO	Enter YES if Answer is the first meter pulse, or NO if it is not.
MANO	YES, NO	Enter YES if the trunk route is manual outgoing, or NO if it is not.
EQAR	YES, NO	Enter YES to enable Equal Access Restrictions, or NO to disable it.
NTOL	DENY, ALOW	Enter DENY to deny North American toll calls (1+ calls), or ALOW to allow them.
ITOL	DENY, ALOW	Enter DENY to deny International toll calls (011+ calls), or ALOW to allow them.
DTOS	YES, NO	Enter YES to allow dial tone on outgoing seizure, or NO to suppress it.
FRL	0-7 0-254	Specify the facility restriction level.
OHQ	YES, NO	Enter YES to enable Off-hook Queuing, or NO to disable it.
OHQT	0-63	Specify the Off-hook Queuing threshold.
CBQ	YES, NO	Enter YES to enable Call Back Queuing, or NO to disable it.
NDIG	2-7	Set the number of digits.

— continued —

Setting up analog trunks

STEP	ACTION		
4 continued …			
AUTH	YES, NO	Enter YES to enable Authcode, or NO to disable it.
FGNO	0-127	Enter the Feature Group D block number.
TDET	YES, NO	Enter YES if a tone detector is required, or NO if it is not.
TTBL	0-31	Set the Tone Table number.
ACNI	YES, NO	Enter YES to enable Accept Call Number Identification, or NO to disable it.
OHTD	YES, NO	Enter YES to enable Off-hook Timer Delay, or NO to disable it.
PLEY	0-7	Set the priority level.
OPR	YES, NO	Enter YES for an Outpulsing Route, or NO for other routes.
OPDL	0-8064	Specify the outpulsing delay, in milliseconds.
PRDL	YES, NO	Enter YES to allow Partial Dial timing, or NO to prevent it.
EOS	YES, NO	Enter YES to enable the End-of-Selection Signal, or no to deny it.
DNSZ	0-7	Specify the number of digits expected on DID routes.
RCAL	NO, ATT, DRA	Configure Recall.
MCTS	YES, NO	Enter YES to enable Malicious Call Trace Signal, or NO to disable it.
MCCD	0-8	Enter the Malicious Call Trace request string.
MCDT	0-4	Set the Malicious Call Trace delay time (in seconds).

— continued —

Setting up analog trunks

STEP	ACTION

4 continued …		

CDPC	YES, NO	Enter YES to enable Called Party Control, or NO to disable it.
ALRM	YES, NO	Enter YES if Malicious Call Trace Alarm is allowed for external calls, or NO if it is not allowed.
NCNI	0-7	Set the number of digits to be received before CNI is requested.
CNIE	YES, NO	Enter YES to request CNI after the defined number of digits are received.
CNIT	YES, NO	Enter YES to enable Call Number Identification Trace, or NO to disable it.
BTT	2-254	Set the Busy Tone Time.
LEC	0-9999999	Set the Local Exchange Code (used for building ANI messages).
ADDG	0-9	Specify the additional digit to be used in ANI sequences.
CAC	0-9	Specify an ANI category for an incoming trunk.
ANDN	0-9999999	Set the ANI DN.
RDNL	0-7	Specify the route DN length for ANI.
ACKW	YES, NO	Enter YES to enable the Acknowledgement Seizure Signal, or NO to disable it.
PECL	YES, NO	Enter YES to enable the Periodic Clearing Signal, or NO to disable it.
DCTI	0-511	Set the time (in seconds) that an extension is allowed to ring, be on hold, or call parked, before the trunk is disconnected.
MON	YES, NO	Enter YES to enable monitoring for the route, or NO to disable monitoring.

— continued —

Setting up analog trunks

STEP	ACTION		

4 continued …

TIDY	xxxx yyyy	Specify the trunk identity.
FRIN	YES, NO	Enter YES to enable Forward Release Indefinitely, or NO to disable it.
FRRC	0-15	Set the Forward Release Repetition count.
FRRS	YES, NO	Enter YES to enable Forward Release Repetition Seize, or NO to disable it.
FRRD	128-384	Specify the Forward Release Repetition Delay (in milliseconds).
RRBS	YES, NO	Enter YES to enable Repeat Release Before Seize, or NO to disable it.
RLSM	0-15	Set the release mechanism.
CCB	YES, NO	Enter YES to enable Collect Call Blocking, or NO to disable it.
CCB1	512-4992	Set Collect Call Blocking delay timer 1 (in milliseconds).
CCB2	500-2550	Set Collect Call Blocking delay timer 2 (in milliseconds).
CCBA	YES, NO	Enter YES to allow Collect Call Blocking, or NO to deny it.
ATRR	YES, NO	Enter YES to enable AC15 Timed Reminder Recall, or NO to disable it.
TRRL	YES, NO	Enter YES if the recall signal may be received on the route, or NO if it may not be received.

— continued —

Setting up analog trunks

STEP	ACTION

	5	**Set up Automatic Trunk Maintenance.**

REQ	NEW, CHG	
TYPE	ATM	
CUST	0-99	Enter the customer number.
ROUT	0-511	Enter the route number.
T100	n...n	Specify the T100 test line DN.
PADT	0-63	Enter the pad factor for T100 test line, in dB.
STND	YES, NO	Enter YES to select a standard T100 test line.
NMNL	27-90	Set the noise maintenance limit.
NOUT	27-90	Set the noise out-of-service limit.
NTOF	YES, NO	Enter YES to enable near-to-far measurement, or NO to disable it.
REF	n...n	Specify the reference loop-around DN.
TST	n...n	Specify the test loop-around DN.
PADL	0-63	Set the pad factor for loop-around.
EML	0-15	Set the expected measured loss.
LMNL	0-15	Set the loss deviation maintenance limit.
LOUT	0-15	Set the loss-of-service deviation limit.
DSBL	0-100	Set the percentage of trunks to be disabled.
MXTI	0-15	Set the maximum time.

— continued —

Setting up analog trunks

STEP	ACTION

6	**Set up Automatic Trunk Maintenance schedules.**

REQ	NEW, CHG	
TYPE	SCH	
CUST	0-99	Enter the customer number.
HOUR	0-23	Set the hour to start ATM tests.
ROUT	0-511	Enter the route number.
MDMP	YES, NO	Enter YES to enable Modem Data Module Pair, or NO to disable it.
MRAT	5-30	Set the modem ring again timer.
DTYP	aaa	Select the inbound/outbound data port.
ADCP	YES, NO	Enter YES to enable the All-Digital Connection Prefix, or NO to disable it.
OAMP	0-127	Set the Outbound Modem Pool route number.
IAMP	0-127	Set the Inbound Modem Pool route number.
REQ	END	Exit the overlay.

— continued —

Meridian 1 Options 21 through 81C   System Programming Guide   Standard 5.00 June 1999

TASK

20

Setting up analog trunks

STEP	ACTION

7   Create a trunk.

>LD 14

| **REQ** | NEW | Define a new trunk. |
| **TYPE** | xxxx | Enter the trunk type. |

To select   **Enter**

automatic wake-up trunk for recorded announcement or music	AWR
common control switching arrangement and automatic number identification	CAA
central automatic message accounting (CAMA)	CAM
central office trunk	COT
common control switching arrangement access line	CSA
dictation trunk	DIC
direct inward dialing (DID) trunk	DID
foreign exchange (FEX) trunk	FEX
integrated service access call-by-call route	ISA
music trunk	MUS
paging trunk	PAG
recorded announcement trunk	RAN
recorder trunk	RCD
release link main trunk	RLM
release link remote trunk	RLR
TIE trunk line	TIE
wide area telephone service trunk	WAT

— continued —

Setting up analog trunks

STEP	ACTION

7 continued …

TN	L S C U	Enter a Terminal Number for the trunk (Loop, Shelf, Card and Unit).
CDEN	SD, DD, 4D	Select the card density (either single, double or quad density). Press the carriage return to select the default.

Respond to the following prompts if they appear:

XTRK	XUT, XEM, EXUT	
		Specify the extended trunk card type.
FWTM	YES, NO	Enter YES if firmware trunk-hook flash timing is controlled by the trunk card firmware.
SXS	YES, NO	Enter YES if the trunk is a Central Office step-by-step trunk.
SICA	1-16	Enter the signaling category table number.
PDCA	1-16	Enter the Pad category table number.
PCML	MU, A	Enter the PCM loss mode to be used for voice calls on the trunk.
CUST	xx	Enter the customer number for this trunk.
NCOS	xx	Enter the Network Class of Service group.
RTMB	xx yy	Enter the route number and member number.
PRDN	xxxx	Specify a Private Line DN.
CMF	YES, NO	Enter YES to allow call modifications, or no to deny them.
NGRP	0-9	Select a Night Service group number.
RLDN	xxxx	Specify a Release Line Trunk DN.
NITE	xxxx	Specify a Night Service DN.
ATDN	xxxx	Specify an Auto-Terminate DN.
MNDN	xxxx	Specify a Manual DN.

— continued —

Setting up analog trunks

STEP	ACTION

7 continued …

TGAR	0-31	Select a Trunk Group access restriction. (To remove an existing restriction, enter 0.)
SIGL	aaa	Select a trunk signaling method.

To select	Enter
ALS signaling on CO trunks with ground start	ALS
2-wire duplex signaling	DX2
4-wire duplex signaling	DX4
E&M 2-wire signaling	EAM
E&M 4-wire signaling	EM4
ground start signaling	GRD
loop calling with disconnect clear signaling	LDC
loop dial repeating signaling	LDR
loop calling with guarded clear signaling	LGR
loop start signaling	LOP
outgoing automatic and incoming dial signaling	OAD
2280 Hz 4-wire signaling	WR4

XDIC	MUT, NOR	Enter MUT to select mute outpulsing for DIC trunks, or NOR to select normal outpulsing.
EMTY	aaa	Specify the E&M type.

To select	Enter
E&M 4-wire Type 1	EAM
E&M 4-wire Type 2	EM4
E&M 4-wire British Post Office	BPO

CPAD	COUT, CIN	Enter COUT to set the carrier pad out for 4-wire E&M duplex trunks.
LDOP	LOOP, BOP	Enter LOOP to select loop dial outpulsing, or BOP to select battery outpulsing for Loop Dial Repeating signaling.

— continued —

Setting up analog trunks

STEP	ACTION

7 continued …

TIMP	xxx	Select a termination impedance.

To select	**Enter**
impedance for a RAN trunk	1200
impedance for all other trunks	600 or 900

BIMP	xxx	Select a balance impedance.

To select	**Enter**
3-component complex impedance	3COM
600 ohm impedance	600
900 ohm impedance	900

STRI	xxx	Specify an incoming start arrangement.

To select	**Enter**
delayed dial start	DDL
immediate start	IMM
off-hook wink start	OWK
CEPTL1 signaling seize acknowledge start	SACK
CEPTL1 signaling Proceed to Send start	PTSD
wink or fast flash start	WNK
RON/TRON start arrangement sent by near end on incoming seizure	RT

— continued —

Setting up analog trunks

STEP	ACTION

7 continued …

STRO	xxx	Specify an outgoing start arrangement.

To select	**Enter**
delayed dial start	DDL
immediate start	IMM
off-hook wink start	OWK
CEPTL1 signaling seize acknowledge start	SACK
CEPTL1 signaling Proceed to Send start	PTSD
wink or fast flash start	WNK
RON/TRON start arrangement sent by near end on incoming seizure	RT

SUPN	YES, NO	Enter YES if you require disconnect supervision on the trunk.

STYP	aaa	Specify the type of disconnect supervision for the trunk.

To select	**Enter**
incoming and outgoing supervised LOP CO, FEX, or WATS trunk	BST
polarity sensitive pack	PSP
polarity insensitive pack	PIP
Japan CO trunk	JCO
Japan DID trunk	JDID
battery supervised CO trunk	BAT
ARF supervised trunk	ARF
Loop Break Supervision trunk	LBS
Busy Tone supervised trunk	BTS

SEIZ	YES, NO	Enter YES to enable Automatic Guard Detection for an outgoing trunk.

— continued —

Setting up analog trunks

STEP	ACTION

7 continued …

PPID   `0-15`   Select a PPM country identification number.

In	Enter	To select
UK	0	50 Hz
France	1	12 kHz
France	2	50 Hz
Germany	3	16 kHz
Egypt	3	16 kHz
Venezuela	3	16 kHz
Indonesia	3	16 kHz
Finland	3	16 kHz
Turkey	3	16 kHz
Turkey	4	12 kHz
Ireland	4	12 kHz
Switzerland	4	12 kHz
Portugal	4	12 kHz
Italy	4	12 kHz
Spain	4	12 kHz
Lebanon	4	12 kHz
Denmark	5	12 kHz
Norway	6	16 kHz
Belgium	6	16 kHz
Holland	7	50 Hz
Australia	8	12 kHz/50 Hz

— continued —

Setting up analog trunks

STEP	ACTION

7 continued …

BTID   0–15   Select a Busy Tone country identifier.

In	Enter
Germany	3
Ireland	3
Switzerland	4
Denmark	5
Norway	6
Kuwait	6
Chile	6
Venezuela	6
Indonesia	6
Thailand	6
Korea	6

— continued —

Setting up analog trunks

STEP ACTION

7 continued …

In	Enter
Holland	7
Australia	8
Mexico	8 or 10
Ireland	9
Taiwan	10
Brazil	10
Tortola	10
Singapore	11
Argentina	12
Italy	12 or 13
Lebanon	13
Turkey	14

— continued —

Setting up analog trunks

STEP	ACTION

7 continued …

CLS	aaa	Select a Class of Service.

Enter:	UNR for Unrestricted COS
	CTD for Conditionally Toll Denied COS
	CUN for Conditionally Unrestricted COS
	FR1 for Fully Restricted Class 1
	FR2 for Fully Restricted Class 2
	FRE for Fully Restricted
	SRE for Semi-Restricted
	TLD for Toll Denied
	APN for ACD priority not required COS
	APV for ACD priority required COS
	BARD for Barring Denied COS
	BARA for Barring Allowed COS
	CND for Calling Party Denied COS
	CNA for Calling Party Allowed COS
	CORX for CO Ringback not provided COS
	CORP for CO Ringback provided COS
	DIP for Dial Pulse COS
	DTN for Digitone COS
	MFC for R2 Multifrequency Compelled Signaling COS
	MFE for Multifrequency Signaling for Socotel COS
	MFR for Multifrequency Receiver for Feature Group D COS
	DRPD for DTR PAD value denied COS
	DRPA for DTR PAD value allowed COS
	ECD for Echo Cancelling Denied COS
	ECA for Echo Cancelling Allowed COS
	LNT for Loop Start Non-Supervisory Trunk COS
	LPR for Low Priority COS
	HPR for High Priority COS
	MID for Manual Incoming Denied COS
	MIA for Manual Incoming Allowed COS
	MFK for Multifrequency Signaling for KD3
	NTC for Non-Transmission Compensated COS
	TRC for Transmission Compensated COS

REQ	END	Exit the overlay.

— continued —

Setting up analog trunks

STEP	ACTION

8   **Check your programming.**

Review your programming to ensure that no errors were made. Use the scroll feature of your terminal, check your printout, or use overlay 22 to examine the contents of the database. For more information about reviewing your programming, refer to the *About the Meridian 1* section of this guide. If possible, test the trunks to ensure that they are operating.

If	**Do**
the programming is correct	step 9
the programming is not correct	step 1

9   **Arrange for a data dump to be performed.**

If	**Do**
you do not have access to LD 43	contact your system supplier
you have access to LD 43	step 10

10   **Perform a data dump to permanently store the programming you have just completed.**

> ⚠ **CAUTION**
> Check your maintenance agreement before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> **>** `LD 43`

> **.** `EDD <cr>`

— **continued** —

Setting up analog trunks

STEP	ACTION
11	**Verify that the data dump was successful.**

On-screen or printed response:

NO GO BAD DATA
or
DATA DUMP COMPLETE

If	**Do**
data dump fails	contact your system supplier
data dump succeeds	step 12

12	**Terminate this overlay program.**

* * * *

13	**Terminate this programming session.**

Log off.

>LOGO

14	**You have completed the programming required to configure analog trunks.**

END

Setting up digital and ISDN trunks

Purpose

Digital trunks carry signaling and calls in a digital format between telephone switches. Digital trunks provide greater quality than analog trunks and allow the use of advanced signaling and network features.

There are different types of digital trunks. These include:

◆ digital trunk interface (DTI)

◆ Integrated Services Digital Network (ISDN)

The proper configuration of digital trunks is essential to your telephone network access and features. If trunks are not properly provisioned, users may have difficulty placing calls to destinations served by other telephone switches, or may not be able to use the network features available to them.

Setting up digital and ISDN trunks

Digital trunks

Digital trunks can take many physical forms, including twisted pair cable, channels on multiplexed cable, and fibre optic links. The provisioning in software of these different types of physical trunk is the same. Configuration depends on the way a trunk will be used and billed.

Traffic

When planning to configure new trunks, you should consider the traffic load. Consider the impact of extra traffic load on the loop or Superloop to which the trunk is connected. Loops and Superloops perform best when they share equally in the total traffic load offered to the system.

Blockage within the system will be negligible when the traffic load per loop or Superloop is kept within the recommended guidelines. If all your existing loops and Superloops are at their recommended capacity, consider adding more to your system (especially if you will be adding more digitone receivers, telephones, or data terminals in the future).

Trunk types

Japan Digital Multiplex Interfaces

Japan Digital Multiplex Interface (JDMI) trunks provide connectivity between the Meridian 1 and other telephone switches in the Japanese market. JDMI trunks carry both incoming and outgoing calls.

1.5 Mbit/s DTI trunks

1.5 Mbit/s Digital Trunk Interface (DTI) trunks provide digital connectivity between the Meridian 1 and other telephone switches in the North American market. DTI trunks carry both incoming and outgoing calls.

2.0 Mbit/s DTI trunks

2.0 Mbit/s Digital Trunk Interface (DTI) trunks provide digital connectivity between the Meridian 1 and other telephone switches. DTI trunks carry both incoming and outgoing calls.

Setting up digital and ISDN trunks

DTI trunk options

Many trunk options exist. For detailed discussions of DTI trunk options and trunk provisioning, refer to the *X11 Features and Services Guide* and the *Software Guide*.

Signaling Category

Select a Signaling Category table number by responding to the SICA prompt in overlay 14.

Channel order

You can specify the order in which channels are allocated. To specify the channel order, respond to the INC prompt.

Setting up digital and ISDN trunks

ISDN trunks

Basic rate interface

Basic rate interface (BRI) ISDN trunks provide 2 B + D ISDN access to end users. For more information about ISDN BRI configuration, refer to *ISDN Basic Rate Interface Administration.*

553-0289T BRI
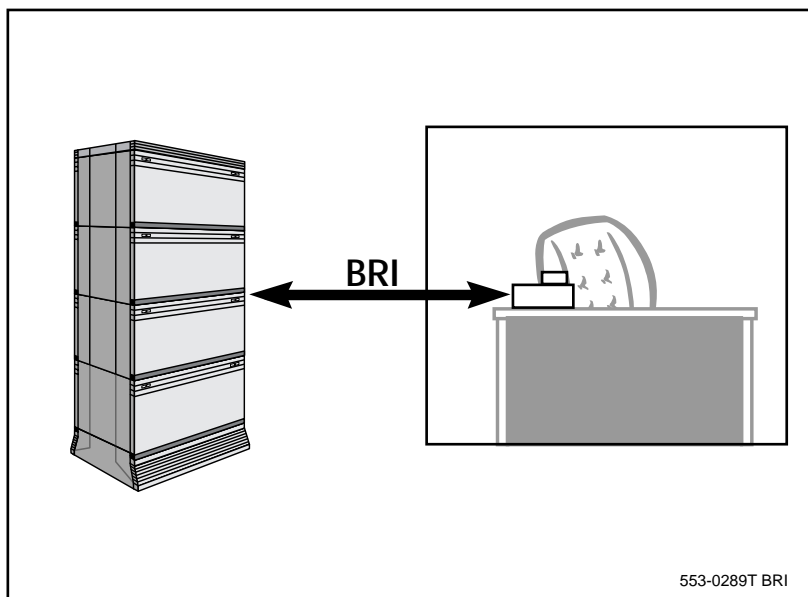
Setting up digital and ISDN trunks

Primary rate interface

Primary rate interface (PRI) ISDN trunks provide either 23 B + D or 30 B + D ISDN access to end users. For more information about ISDN PRI configuration, refer to *ISDN Primary Rate Interface Administration*

553-0288T PRI
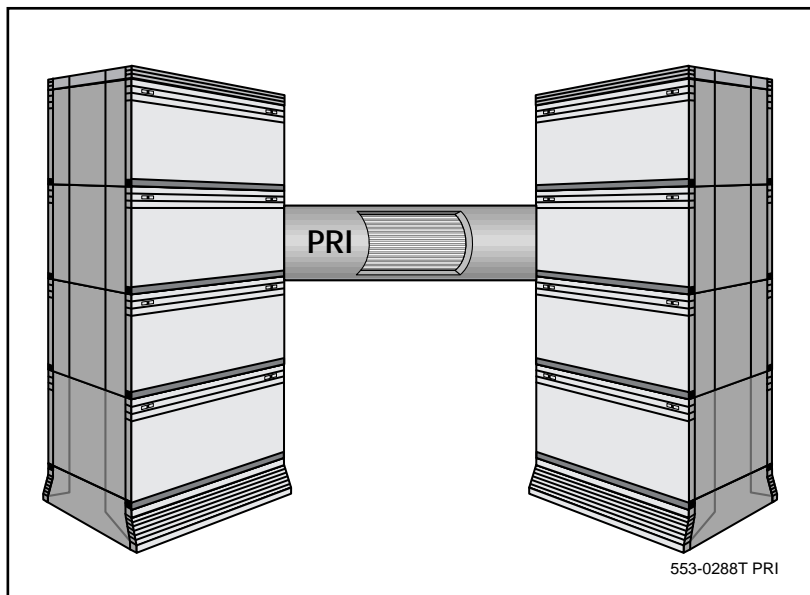
ISDN 23B + D

Primary rate interface (PRI) ISDN 23 B + D trunks provide ISDN digital connectivity between the Meridian 1 and other telephone switches in the North American market. ISDN trunks carry both incoming and outgoing calls.

ISDN 30B + D

Primary rate interface (PRI) ISDN 30 B + D trunks provide ISDN digital connectivity between the Meridian 1 and other telephone switches. ISDN trunks carry both incoming and outgoing calls.

Setting up digital and ISDN trunks

D-channels

An ISDN trunk carries call traffic only. The signaling used to control the trunk is carried over a separate set of links, called D-channels. The D-channels allow two telephone switches to negotiate channels on a trunk and handle call setup and control.

The D-channels between switches can be carried over cable, modem connections, or other data connections. There are two D-channels for each ISDN trunk. The primary D-channel carries all the signaling traffic. The backup D-channel remains idle unless the primary D-channel fails.

The Meridian 1 treats the D-channels as input/output devices. To configure a D-channel for an ISDN trunk, respond to the ADAN and USER prompts in overlay 17.
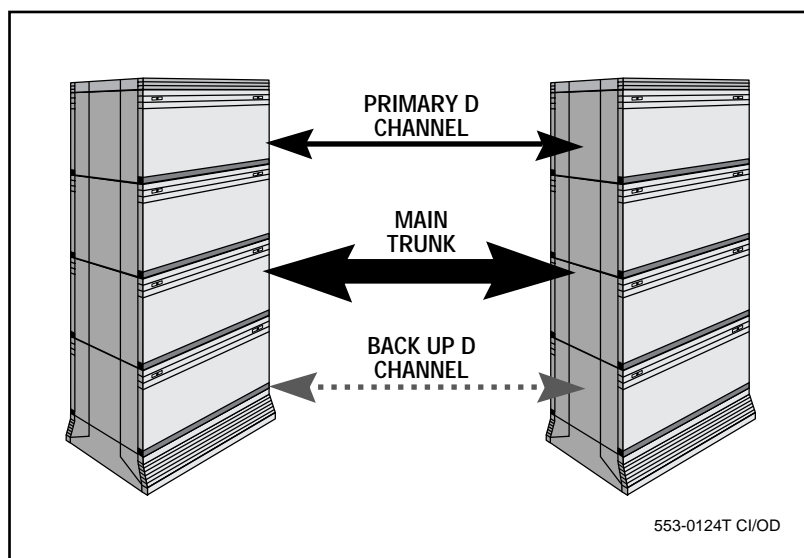
Setting up digital and ISDN trunks

Trunk routes

Digital trunk routes operate in the same way as analog trunk routes. A trunk route carries all calls of a specific type between two switches.

Some digital trunk options are described here. In addition, a number of trunk options described in the previous section apply.

Integrated Service Access Route

To set a route up for Integrated Service Access (ISA), enter YES at the ISAR prompt in overlay 16. You need to specify a route number, facility indicator, and Service Identification at the RTN, FACY and SID prompts.

Set the minimum and maximum numbers of channels at the MIN and MAX prompts.

Specify the Network Class of Service group number and the Class of Service at the PRIM, NCOS and COS prompts.

Select Trunk Group Access Restrictions at the TGAR prompt.

Network Attendant Service

Network Attendant Service is a feature that allows attendants to be shared by Meridian 1 switches across a network. Calls that would normally be routed to an attendant at a particular Meridian 1 may be routed to an attendant at a different Meridian 1, perhaps even at a different location, if the local attendant is unavailable.

To allow Network Attendant Service to operate over a trunk route, respond to the NASA prompt.

Setting up digital and ISDN trunks

Digital trunk route options

Protocol set group

To select a protocol set, respond to the PGPN prompt. (Protocol set groups must already be defined in overlay 27 before you can select them.)

Integrated Services Digital Network (ISDN)

Enter YES at the ISDN prompt to make a trunk route an ISDN route. Specify the mode of operation at the MODE prompt. Specify the DCHI port number at the DCHI prompt. Set the interface at the IFC prompt.

Respond to the TRO prompt to enable or disable trunk optimization.

Priority designation

You can specify a priority designation for DPNSS ISDN trunks. To set the priority, respond to the PRIO prompt in overlay 14.

Malicious Call Trace

Enable or disable the Malicious Call Trace (MCT) signal at the MCTS prompt in overlay 16. Define the call trace request string at the MCCD prompt. Specify the digit string delay time at the MCDT prompt.

Set the MCT request timer at the MCTM prompt. This is the delay in disconnection that occurs when the far-end goes on-hook (for AXE-10 D-channels).

Specify the MCT tandem disconnect delay at the MTND prompt. This is the delay in disconnect operation at the node closest to the CO (for AXE-10 interfaces).

Turn the MCT alarm on or off for external calls at the ALRM prompt.

Line identity options

Set the Line Identities option by responding to the LID prompt in overlay 16. Enter 0 to suppress the sending of ISDN Line Identities, 1 to send identities, or 2 to convert and then send identities. Specify the Line Identities conversion tree number at the LCNO prompt. (The tree number is a DCNO tree defined in overlay 49.)

Setting up digital and ISDN trunks

ISDN Programming Example

Primary Rate Interface (PRI) must be configured before defining the DCH links or Primary Rate Access (PRA) applications. The following example outlines configuring PRI loops, DCHI interface, DCH link and ISDN trunk route and trunks (B-Channel). No feature applications will be programmed other than Basic Call Service. Only the prompts listed require responses.

Hardware Configuration

The Primary Rate Interface hardware requirements for this example include:

◆ The ISDN Primary Rate Interface card (QPC720). This card requires two network card slots and has to be configured for Extended Frame Format (ESF). Cable jack J3 is connected to J2 on the Network card (QPC414) via a NT8D45 cable. Cable jack J4 is connected to J4 of the second Meridian 1 QPC720 card.

◆ D-channel Handler Interface card (QPC757). This card requires one network slot and has to be configured for Data Communication Equipment (DCE) option. The D-channel requires one of the fifteen input/output ports. Cable jack J2 connects to J5 of the QPC720 card via the QCAD328 cable.

◆ Clock Controller circuit card (QPC775). Cable Jack marked PRI J2 connects to J1 Ref 1 on the QPC720 card.

◆ Network Card (QPC414). This card requires one network slot and must be configured for Option B: T-1 facilities (including PRT/DTI) service.

Refer to section on circuit cards for hardware switch settings and to TASK 1 for an example of configuring a circuit card.

Setting up digital and ISDN trunks

Software Configuration

Programmers note: Configuration is almost identical on both switches. However, in Overlay 17, one Meridian 1 must be configured as the master (MAS) and the other as the slave (SLAV). In Overlay 73, the most reliable Meridian 1 provides clocking (PREF) whereas the other system is set to free run (FRUN).

STEP	ACTION	
1	**Log in.**	
	For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.	
2	**Define threshold parameters and Clock synchronization**	
	>LD 73	
	REQ NEW	
	TYPE DDB	Enter DDB to configure the digital data block.
	TRSH 15	Enter a threshold value of 15 for this example.
	REQ ****	Enter **** to terminate Overlay.
3	**Use Overlay 17 to add a PRI loop**	
	>LD 17	
	REQ CHG	Request
	— continued —	

Setting up digital and ISDN trunks

STEP	ACTION

3 continued …

TYPE	CFN	Enter CFN to change the configuration record.
CEQU	YES	Enter YES to make changes to common equipment.
DLOP	9 24 ESF	Where 9 is the PRI digital loop number and 24 is the number of data calls allowed on this PRI and ESF is the frame format used.
MODE	PRI	select Primary Rate Interface mode.
LCMT	B8S	code substitution method **- Must match the far -end** and the facility equipment.
YALM	FDL	Yellow alarm method-- prompted only if the frame format is ESF **-- Must match the far end**.
TRSH	15	The maintenance threshold table to be used for this PRI loop, as configured in overlay 73.
DTIC	12	Enter the starting network loop slot for the PRI card -on non-Network loops (i.e. network expansion shelf or module), enter carriage return and ignore the SCH2035 message. Not prompted on the Option 11 system.
REQ	****	Enter **** to terminate the Overlay.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION		
4	**Add a DCHI card and the D-channel interface.**		
	`>LD 17`		
	REQ	CHG	Enter CHG
	TYPE	CFN	Enter CFN to change configuration record.
	ADAN	NEW DCH 5	Enter NEW DCH 5 to create a D-channel. This port number must match the hardware I/O address on the DCHI card.
	CTYP	DCHI	Enter DCHI to configure the D-channel on a D-channel interface card.
	DNUM	5	Enter 5 as the available device number. That means that the DCHI card address switch settings must match the DNUM response.
	USR	PRA	Enter PRA which means the D-channel is for ISDN PRA only.
	IFC	SL1	Enter SL1 to define the interface type as Meridian 1t o Meridian 1.
	DCHL	9	Enter 6 as the PRI loop number which will be carrying the D-channel as it's 24th channel.
	— continued —		

Setting up digital and ISDN trunks

STEP	ACTION		
	4 continued …		
	SIDE	NET	Enter NET to define one side of the PBX-to-PBX interface as the master. Enter USR at the other Meridian 1.
			Note: the D-channel will not establish itself if the "master" and "slave" are improperly matched (I.E both ends are programmed as masters).
	RLS	xx	Enter the X11 software release of the far-end (i.e. software release 21.0x enter 21.
	REQ	****	Enter **** to terminate Overlay.
5	**Use Overlay 15 to define a PRA customer.**		
	>LD 15		
	REQ	CHG	Enter CHG
	TYPE	CDB	Enter CDB to change customer data block
		NET	Release 21 and later gate opener.
	CUST	0	Enter 0 as the customer number.
	ISDN	YES	Enter YES to equip the customer with ISDN.
	PNI	1	Customer private network identifier.
	— continued —		

Setting up digital and ISDN trunks

STEP	ACTION		
	5 continued …		
	HNPA	NPA	Telephone area code for this Meridian 1.
	REQ	****	Enter **** to terminate Overlay.
6	**Use Overlay 16 to define a PRA customer**		
	>LD 16		
	REQ	NEW	Enter CHG
	TYPE	RDB	Enter RDB to create a route data block.
	CUST	0	Enter 0 as the customer number.
	ROUT	100	Route number for this example.
	TKTP	TIE	TIE trunk only, allowed between Meridian 1's.
	DTRK	YES	Enter YES to specify trunk type as digital.
	DGTP	PRI	Enter digital trunk type for route is Primary Rate Interface.
	ISDN	YES	Enable ISDN option.
	— continued —		

Setting up digital and ISDN trunks

STEP	ACTION

6 continued …		
MODE	PRA	Route is used for PRA only.
IFC	SL1	Interface type: Meridian 1 to Meridian 1.
PNI	1	Customer private network identifier **-must be the same as the CDB PNI at the far end.**
CHTY	BCH	Signalling type -prompted if DTRK is YES.
CTYP	<CR>	Call type.
INAC	YES	Insert Access Code. This prompt only appears on a TIE route and must be set to YES.
ICOG	IAO	Incoming and outgoing trunk route.
ACOD	4	Access code for the trunk route. The access code must not conflict with the numbering plan.
TGAR	0	Trunk access group restriction.
REQ	****	Enter **** to terminate Overlay.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION

7	**Use Overlay 14 to configure the ISDN trunks**	
	>LD 14	
REQ	NEW 24	Enter the multiple create command NEW 24 to create 24 new trunk members.
TYPE	TIE	Tie trunks only allowed between Meridian 1's.
TN	9 1	Enter the digital loop number (DLOP) as specified in step 3 and the starting channel number.
CUST	0	Enter 0 as the customer number.
TGAR	0	Trunk group access restriction. Notice for Release 22 the default is 1 which will automatically block direct access.
CLS	UNR	Enter UNR to specify an unrestricted service.
REQ	****	Enter **** to terminate Overlay.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION		
8	**Use Overlay 73 to configure Clock's reference source**		
	`>LD 73`		
	REQ	CHG	Request.
	TYPE	DDB	Change the digital data block.
	PREF	9	Primary reference source for clock controller. Enter the PRI loop number (DLOP in LD 17) that the QPC720 pack is physically connected.
	SREF	9	Secondary reference source for clock controller --prompted only if primary source is not free-run. Use only if Meridian 1 system is equipped with dual CPU.
	REQ	****	Enter **** to terminate Overlay.
9	**Check D-channel configuration in Overlay 22**		
	`>LD 22`		
	REQ	PRT	Request.
	TYPE	ADAN DCH 5	Print configuration for d-channel 5.
	— continued —		

Setting up digital and ISDN trunks

STEP	ACTION

9 continued …

REQ	****	Enter **** to terminate Overlay.

10 **Check TIE trunks configuration in Overlay 20**

>LD 20

REQ	PRT	Request.
TYPE	TIE	Print all TIE trunks.
REQ	****	Enter **** to terminate Overlay.

11 **Enable digital trunk interface in LD 60**

>LD 60

.ENLL 9		Enable PRI loop 9.
.STAT 9		Verify that the loop and all channels are enabled.
REQ	****	Enter **** to terminate Overlay.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION

12	**Enable the D-channel in Overlay 96**

>**LD 96**

.**ENL DCH 5**   Enable D-channel 5.

.**STAT DCH 5**   Verify that the D-channel created in step 4 is
                         enabled.

REQ   ****   Enter **** to terminate Overlay.

13	**Terminate this programming session.**

Log off.

>LOGO

14	**You have completed the programming required to configure a digital trunk.**

END

Setting up digital and ISDN trunks

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. Taking advantage of these courses and aids maximizes the effectiveness of your Meridian 1 administration efforts.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

What to have ready

The following checklist summarizes the steps you should take before setting up digital trunks and trunk routes.

Table 22
Checklist

Basic	Optional	Preparation
Ð		Decide what digital trunk routes are needed.
Ð		Decide what types of digital trunks and what quantity of trunks are needed on each trunk route.
Ð		Consider the applicable digital trunk options.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure digital trunks and trunk routes.

Setting up digital and ISDN trunks

```
        ┌─────────────┐              ┌───────────────────────────────┐
        │    Start    │              │  The flowchart summarizes the │
        └─────────────┘              │  procedure. Use the instructions in the │
               │                     │  step-action table that follows this │
        ┌─────────────┐              │  flowchart to perform the procedure. │
        │ Set clock   │              └───────────────────────────────┘
        │ parameters. │
        └─────────────┘
               │
        ┌─────────────┐
        │ Add PRI     │
        │ loops.      │
        └─────────────┘
               │
        ┌─────────────┐                        ┌─────────────┐
        │Set D-channel.│                       │ Define      │
        └─────────────┘                        │ trunks.     │
               │                                └─────────────┘
        ┌─────────────┐                                │
        │ Create PRA  │                         ┌─────────────┐
        │ customers   │                         │     End     │
        └─────────────┘                         └─────────────┘
               │
        ┌─────────────┐
        │ Create trunk│
        │ routes..    │
        └─────────────┘
```
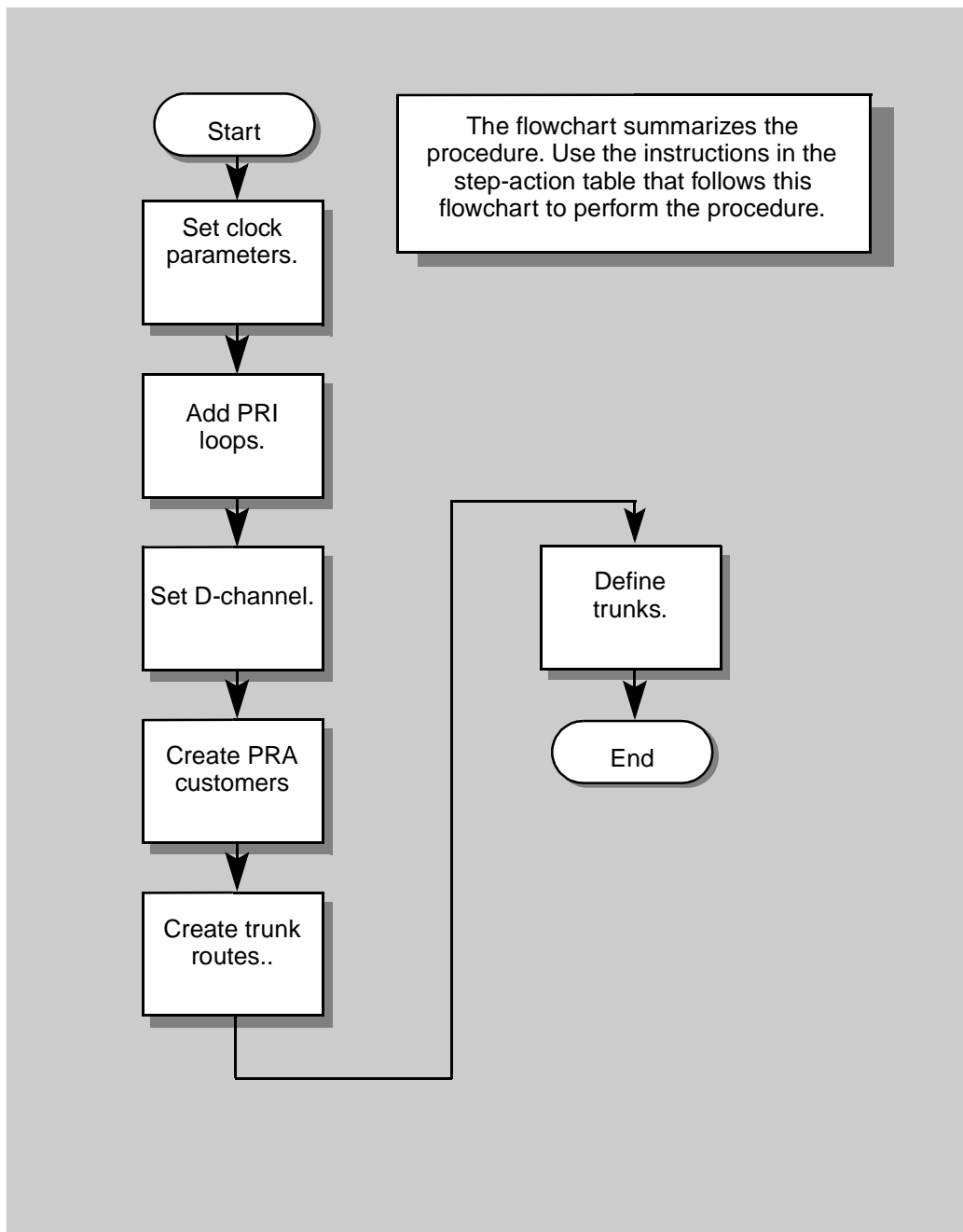
Setting up digital and ISDN trunks

> The preceding material in this module contains essential information.
> You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the implementation
> of trunks.

STEP	ACTION
1	**Log in.**

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2	**Define threshold parameters and Clock synchronization**

>LD 73

REQ	NEW	
TYPE	DDB	Enter DDB to configure the digital data block.
TRSH	0–15	Enter a threshold value of 15 for this example.
REQ	****	Enter **** to terminate the Overlay

3	**Use Overlay 17 to add a PRI loop**

>LD 17

REQ	CHG	Request.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION

3 continued …	

TYPE	CFN	Enter CFN to change the configuration record.
CEQU	YES	Enter YES to make changes to common equipment.
DLOP	xxx dd ff	where xxx is the PRI digital loop number and dd is the number of data calls allowed (0-24) on this PRI (default 24) and ff is the frame format used (D2, D3, D4, ESF) where default is ESF.
MODE	PRI	select Primary Rate Interface mode.
LCMT	(B8S) AMI	code substitution method **- Must match the far -end** and the facility equipment.B8S--B8ZS code substitution and AMI--B7 code substitution rule. This prompt is misleading since both B7 and B8ZS employ AMI (Alternate Mark Inversion) line encoding method. The preferred method is B8ZS to get 64K clear channel as long as the I1 carrier equipment supports it.
YALM	(FDL) DG2	Yellow alarm method-- prompted only if the frame format is ESF **-- Must match the far end**. Use FDL with ESF and use DG2 with non-ESF. If not prompted then DG2 is set automatically.
TRSH	0-15	The maintenance threshold table to be used for this PRI loop, as configured in overlay 73.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION		
	3 continued …		
	DTIC	xxx	Enter the starting network loop slot for the PRI card -on non-Network loops (i.e. network expansion shelf or module), enter carriage return and ignore the SCH2035 message.
	REQ	****	Enter **** to terminate the Overlay.
4	**Add a DCHI card and the D-channel interface.**		
	>LD 17		
	REQ	CHG	Enter CHG
	TYPE	CFN	Enter CFN to change configuration record.
	ADAN	NEW DCH 0-15	Enter NEW DCH 5 to create a D-channel. This port number must match the hardware I/O address on the DCHI card.
	CTYP	DCHI,MSDL	Enter card type to configure the D-channel.
	DNUM	0-15	Enter 5 as the available device number. That means that the DCHI card address switch settings must match the DNUM response.
	— continued —		

Setting up digital and ISDN trunks

STEP	ACTION

4 continued …		
USR	PRA	Enter PRA which means the D-channel is for ISDN PRA only.
	SHA	--D-channel for ISL in "shared" mode, used for both ISDN PRA and ISL
	ISLD	ISL: C-channel for ISL in "dedicated mode".
IFC	(DS100)	Interface type-- Meridian 1 to DMS-100
	ESS4	Meridian 1 to AT&T ESS4
	ESS5	Meridian 1 to AT&T ESS5
	S100	Meridian 1 to SL-100
	D250	Meridian 1 to DMS-250
	SL1	Meridian 1 to Meridian 1
ISLM	1-382	--Number of ISL B-channel (trunks) controlled by the D-channel (no default value).
DCHL	0-159	PRI loop number which will be carrying the D-channel as it's 24th channel.
SIDE		Meridian 1 node type.
	(USR)	Slave to the controller
	NET	Network, the controlling switch
		Prompted only if IFC=SL1, ESIG or ISIG. Opposite sides of the PBX-PBX interface must be set as NET or USR. The call processing software uses these labels to handle call collision.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION		
	4 continued …		
	RLS	xx	Enter the X11 software release of the far-end (i.e. software release 21.0x enter 21.
	REQ	****	Enter **** to terminate Overlay.
5	**Use Overlay 15 to define a PRA customer.**		
	>LD 15		
	REQ	CHG	Enter CHG
	TYPE	CDB	Enter CDB to change customer data block
		NET	Release 21 and later gate opener.
	CUST	0–99	Enter 0 as the customer number.
	LDNO	xxxx	Enter the customers listed directory number.
	ISDN	YES	Enter YES to equip the customer with ISDN.
	— continued —		

Setting up digital and ISDN trunks

STEP	ACTION

5 continued …

PNI	1–32700	Customer private network identifier. This number identifies the entire private network to which this customer belongs. All systems belonging to this network will have the same PNI, unless this is a multi-customer Meridian 1 system (in which case each customer within the PBX must be assigned a unique PNI).
HNPA	NPA	Telephone area code for this Meridian 1. Sent as part of setup message as calling line identification for public type calls outside your Area code.
HNXX	NXX	telephone local exchange code for this Meridian 1. Sent as part of setup message as calling line identification for public type calls.
REQ	****	Enter **** to terminate Overlay.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION
6	**Use Overlay 16 to define digital route data block**

    >LD 16

REQ	NEW	Enter CHG
TYPE	RDB	Enter RDB to create a route data block.
CUST	xx	xx = 0 - 99
		Enter 0 as the customer number.
ROUT	0-127	Route number. This range applies for all machines.
TKTP	TIE	TIE trunk only, allowed between Meridian 1's.
	ISA	Integrated Service Access route or Call-by-Call route type.
DTRK	YES	Enter YES to specify trunk type as digital.
DGTP	PRI	Enter PRI trunk type for route.
ISDN	YES	Enable ISDN option.
MODE	PRA	Route is used for PRA only.
	ISLD	--TIE route used for ISL members.

<center>**— continued —**</center>

Setting up digital and ISDN trunks

STEP	ACTION

6 continued …

IFC	(DS100)	Interface type-- Meridian 1 to DMS-100
	ESS4	Meridian 1 to AT&T ESS4
	ESS5	Meridian 1 to AT&T ESS5
	S100	Meridian 1 to SL-100
	D250	Meridian 1 to DMS-250
	SL1	Meridian 1 to Meridian 1
PNI	1–32700	Customer private network identifier **-must be the same as the CDB PNI at the far end.**
CHTY	BCH	Signalling type -prompted if DTRK is YES.
CTYP	<CR>	Call type.
INAC	YES	Insert Access Code. This prompt only appears on a TIE route and must be set to YES.
ISAR	YES	Stepping to ISA allowed, in other words this is a service route which will be using ISA channels on a call by call basis. Setting this prompt to NO allows this service route to be used with standard dedicated "B" channels. if ISAR is set to YES the following four prompts will appear.
RTN	0–511	Specify the ISA route to be used by this service route.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION		
	6 continued …		

SID	0–511	**Service ID for this route. The service route ID must match the far end.**
MIN	0–254	Minimum number of channels reserved on the ISA route (service dependent). Coordinate with the far end.
MAX	1–254	Maximum number of channels on the ISA route to be used by this service route (service dependent). Coordinate with the far end.
ICOG	IAO	Incoming and outgoing trunk route.
ACOD	x..x	Access code for the trunk route. The access code must not conflict with the numbering plan. Up to 4 digits with Directory Number Expansion (DNXP) package 150.
TGAR	0	Trunk access group restriction.
REQ	****	Enter **** to terminate Overlay.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION
7	**Use Overlay 14 to configure the ISDN trunks**

>**LD 14**

REQ	NEW 24	Enter the multiple create command NEW 24 to create 24 new trunk members.
TYPE	xxx	Trunk type.
	TIE	Tie trunk
	ISA	Integrated Services Access Trunk data block. Also called Call-By-Call service trunk type.
TN	lll ch	Enter the PRI trunk loop (lll) and channel number (ch). ll=0-159, ch=1-24
RTMB	RRR MMM	Enter the Route created in LD 16 (RRR) and the member number (MMM).
CUST	0	Enter 0 as the customer number.
TGAR	0	Trunk group access restriction. Notice for Release 22 the default is 1 which will automatically block direct access.
CLS	UNR	Enter UNR to specify an unrestricted service.
REQ	****	Enter **** to terminate Overlay.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION

8	Use Overlay 73 to configure Clock's reference source

>LD 73

REQ	CHG	Request.

TYPE	DDB	Change the digital data block.

PREF	0-159	Primary reference source for clock controller. Enter the PRI loop number of the QPC720 PRI pack which is physically connected to the clock controller card (QPC775 or QPC471 connector J2) via the QCAD130 cable. This is the PRI T1 which the clock controller will use as it's primary source to synchronize (to track) the system network clock. A carriage return here signifies the system will operate in free-run (non-tracking mode).

SREF	0-159	Primary reference source for clock controller. Enter the PRI loop number of the QPC720 PRI pack which is physically connected to the clock controller card (QPC775 or QPC471 connector J1) via the QCAD130 cable. This is the PRI T1 which the clock controller will use as it's secondary source to synchronize (to track) the system network clock. Only used when unable to track on the primary source (i.e. too many slips). Carriage return if there is no secondary source.

REQ	****	Enter **** to terminate Overlay.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION
	8 continued …

9   Check D-channel configuration in Overlay 22

>**LD 22**

REQ   PRT   Request.

TYPE   ADAN DCH X   X= 0 - 15

                           Print configuration for D-channel.

10   Check trunk configuration in Overlay 20

>**LD 20**

REQ   PRT   Request.

TYPE   xxx   Enter Type of trunk programmed in Overlay 16.

REQ   ****   Enter **** to terminate Overlay.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION

11	**Enable digital trunk interface in LD 60**	
	`>LD 60`	
	`.ENLL lll`	lll = digital loop created in Step 3 (DLOP).
		Enable PRI loop.
	`.STAT lll`	Verify that the loop and all channels are enabled.
	`REQ        ****`	Enter **** to terminate Overlay.

12	**Enable the D-channel in Overlay 96**	
	`>LD 96`	
	`.ENL DCH X`	X = 0 - 15
		Enable D-channel.
	`.STAT DCH X`	X = 0 - 15
		Verify that the D-channel created in step 4 is enabled.
	`REQ        ****`	Enter **** to terminate Overlay.

— continued —

Setting up digital and ISDN trunks

STEP	ACTION

13 **Perform a data dump to permanently store the programming you have just completed.**

> **CAUTION**
> Check your maintenance agreement
> before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

14 **Verify that the data dump was successful.**

On-screen response:

NO GO BAD DATA

or

DATA DUMP COMPLETE

15 **Terminate this overlay program.**

****

— continued —

Setting up digital and ISDN trunks

STEP	ACTION
16	**Terminate this programming session.**
	Log off.
	>LOGO
17	**You have completed the programming required to configure digital trunks.**
	(END)

510 Trunk Route Member Expansion

Purpose

The 510 Trunk Route Member Expansion feature allows a customer to configure a maximum of 510 trunk route members per route (range 1-510). The previous maximum was 254 (range 1-254).

The need for this expansion was particularly evident for a Meridian 1 to DMS Central Office connectivity, where the full potential of a T-1 nB+D configuration (384 B-Channels) was not able to be realized. The DMS supports one D-Channel per route. With a limit of 254 route members per D-Channel, this meant that the maximum offered by nB+D could not be utilized.

With the 510 Trunk Route Member Expansion feature implemented, when connecting a Meridian 1 to another Meridian 1, or a Meridian 1 to a DMS Central Office PBX, users now have greater flexibility when configuring their systems.

For a Meridian 1 to Meridian 1 connectivity, a user is now able to configure, on one trunk route, one D-Channel with 382 B-Channels, a Backup D-Channel, and a second D-Channel with another 128 B-Channels. If desired, another Backup D-Channel may be configured allowing the user to configure the full complement of nB+D, which is one D-Channel with 382 B-Channels, and a Backup D-Channel.

510 Trunk Route Member Expansion

Trunk Mode Configurations

This feature applies to the following trunk mode configurations:

◆ PRI mode

◆ DTI mode

◆ Shared mode

◆ Virtual Network Services (VNS)

◆ ISL mode

◆ Analog mode

The following trunk types are supported:

◆ ISA (Integrated Services Access)

◆ CBCT (NI-2 Call By Call Service Selection)

◆ COT (Central Office)

◆ TIE

◆ DID (Direct Inward Dial)

◆ FEX (Foreign Exchange)

◆ FGDT (Feature Group D)

◆ WATS (Wide Area Telecommunications Service)

Affected Overlays

The overlay programs that are affected are:

◆ LD, 14, the Trunk Data Block

◆ LD, 16 the Route Data Block

510 Trunk Route Member Expansion

Maintenance Routines

Maintenance routines are also affected.

For the Call Trace LD 80, the TRAC c r m (trace calls, customer c, member m) is modified to allow "member" input from 1 to 510.

For the Automatic Trunk Maintenance LD 92, the ATMR c r m (Test customer c, route r, member m) is modified to allow "member" input from 1 to 510.

For traffic measurements, in the Customer Traffic Measurement Output report TFC002, the total number of trunks for the "Trunks Equipped" and "Trunks Working" fields has been increased to a maximum of 510.

In the CDR output format, the Originating Identification (ORIGID) and Terminating Identification (TERID) fields now displays the trunk route member field in the range 1-510.

510 Trunk Route Member Expansion

Configuring tones

Purpose

Tones are used by the Meridian 1 and other telephone equipment for signalling. This equipment includes all 2500-type telephones and trunks that send Digitone Multifrequency (DTMF) tones to the system, and by Multifrequency (MF) trunks that send MF tones to the system. All 2500 sets and some trunks must have class of service (CLS) defined as Digitone (DTN).

Configuring tones is your final task, and should only be completed after 2500-type telephones and trunk requirements have been determined for the complete system. Refer to *System Engineering* for details on calculating tone configuring requirements

Digitone receivers

Digitone receivers (DTR) are cards that are equipped on your Meridian 1 if you are using Digitone-type telephones or if your system connects to trunks that use Digitone signaling. The DTR interprets the Digitone tone signals, converting tones into a digital signal that the Meridian 1 CPU can use.

DTRs are shared among all the Digitone-type telephones and trunks. The number of DTRs needed on your system depends on the number of Digitone-type telephones to be used, the number of Digitone signaling trunks, and the expected level of traffic.

Configuring tones

Tone detectors

Tone detectors (TDET) are used by the Meridian 1 to identify tones being sent to the system across trunks. TDETs are shared among all the trunks equipped on the Meridian 1.

Dial tone detectors

Dial tone detectors (DTD) are used by the Meridian 1 to detect dial tone on outgoing trunks. The number of DTDs needed on your system is determined by the number of trunks that have been equipped, and the level of outgoing traffic.

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. Taking advantage of these courses and aids maximizes the effectiveness of your Meridian 1 administration efforts.

Nortel's support helpline is available to customers who want help setting up their Meridian 1.

Configuring tones

What to have ready

The following checklist summarizes the steps you should take before configuring tones.

Table 23
Checklist

Basic	Optional	Preparation
Đ		Prepare to equip Digitone receivers by determining the number of receivers needed, the TNs, and the card density.
Đ		Prepare to equip tone detectors by determining the number of detectors needed, the types of detector, the TNs, and the card density.
Đ		Prepare to equip multifrequency senders and receivers by determining the number of units needed, the TNs, and the card density.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure tones.

Configuring tones

The flowchart summarizes the procedure. Use the instructions in the step-action table that follows this flowchart to perform the procedure.

Start

Define dial tone detectors.

Define Digitone receivers.

Define multifrequency senders and receivers.

Define tone detectors.

Define extended tone detectors and Digitone receivers.

End
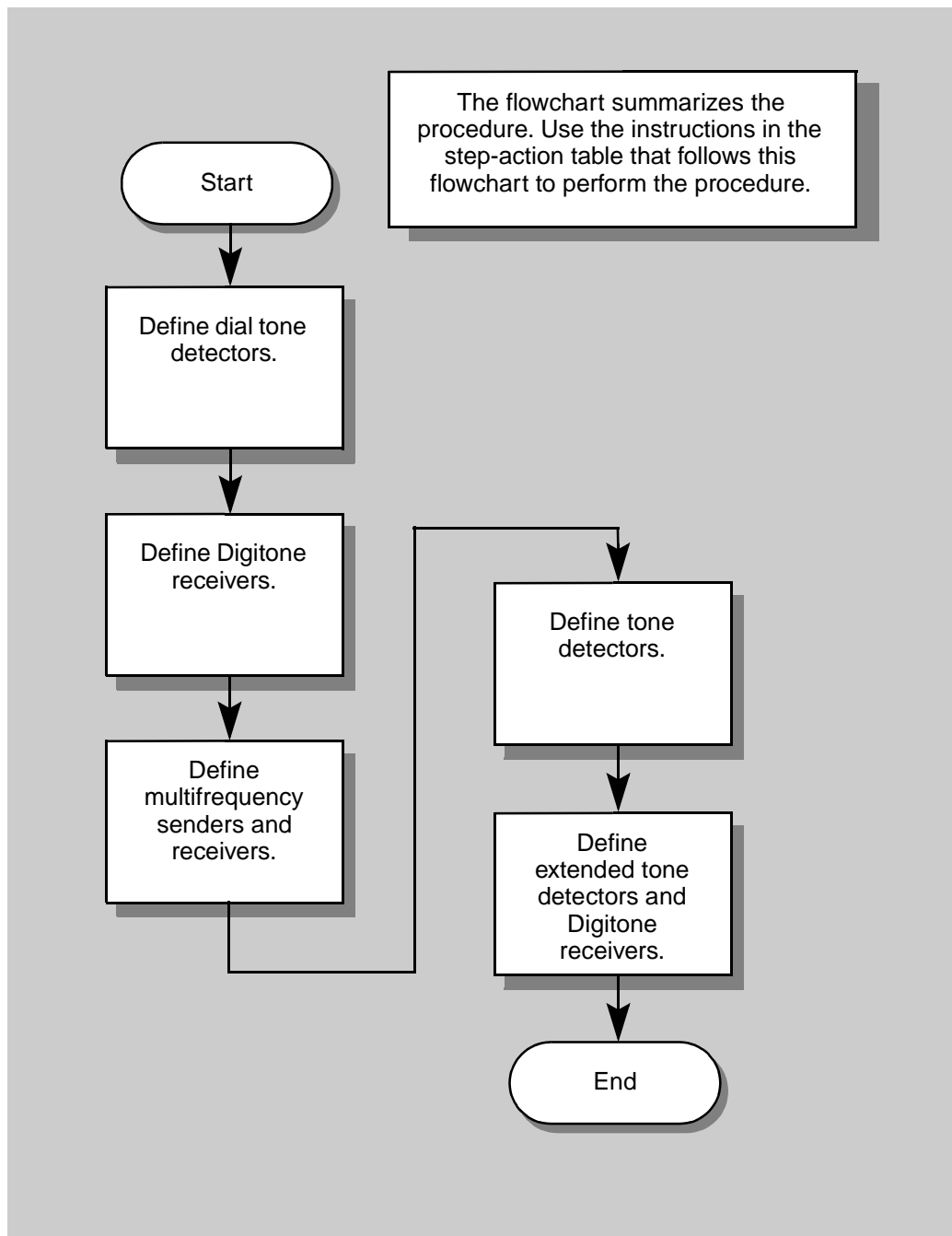
Configuring tones

> The preceding material in this module contains essential information.
> You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the implementation
> of tone hardware.

STEP	ACTION
1	**Log in**
	For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.
2	**Define a new dial tone detector.**
	>LD 13
	REQ NEW Add data to the system.
	TYPE DTD Add a new dial tone detector (DTD).
	TN L S C U Enter the DTD's TN. (**L**oop number, **S**helf number, **C**ard number, **U**nit number).
	POLR NORM, REV Select either normal or reverse LED message polarity.
	CDEN SD, DD, 4D Choose a card density (single, double, or quadruple density).
	— continued —

Configuring tones

STEP	ACTION		
3	**Define a new Digitone receiver.**		
	REQ	NEW	Add data to the system.
	TYPE	DTR	Add a new Digitone receiver (DTR).
	TN	L S C U	Enter the DTR's TN. (**L**oop number, **S**helf number, **C**ard number, **U**nit number).
	CDEN	SD, DD, 4D	Choose a card density (single, double, or quadruple density).
4	**Define a new multifrequency sender/receiver data block.**		
	REQ	NEW	Add data to the system.
	TYPE	MFC	Add a new multifrequency sender/receiver.
	TN	L S C U	Enter the sender/receiver's TN. (**L**oop number, **S**helf number, **C**ard number, **U**nit number).
	CDEN	SD, DD, 4D	Choose a card density (single, double, or quadruple density).
		— continued —	

Configuring tones

STEP	ACTION
5	**Define a new tone detector.**

REQ	NEW	Add data to the system.
TYPE	TDET	Add a new tone detector.
TN	L S C U	Enter the tone detector's TN. (**L**oop number, **S**helf number, **C**ard number, **U**nit number).
CDEN	SD, DD, 4D	Choose a card density (single, double, or quadruple density).

STEP	ACTION
6	**Define a new extended dial tone detector and Digitone receiver.**

REQ	NEW	Add data to the system.
TYPE	XTD	Add a new detector.
TN	L S C U	Enter the tone detector's TN. (**L**oop number, **S**helf number, **C**ard number, **U**nit number).
XTDT	0-7	Enter the extended tone detector table number.
DTO	YES, NO	Enter YES to disable dial tone detection, and NO to leave it enabled.
CDEN	SD, DD, 4D	Choose a card density (single, double, or quadruple density).

— continued —

Configuring tones

STEP	ACTION

7 **Check that your programming is correct.**

Review your programming to ensure that it is correct, either by scrolling up in your terminal window or by reading the terminal's printer output. If you are using a terminal without scroll or printing capabilities, use overlay 22 to print out the data you have entered. For more information about overlay 22, see the beginning of this guide.

If	Do
everything is correct	step 8
something is not correct	step 1

8 **Perform a data dump to permanently store the programming you have just completed.**

> ⚠️ **CAUTION**
> Check your maintenance agreement
> before working in LD 43

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> `LD 43`

. `EDD` <cr>

— **continued** —

Configuring tones

STEP	ACTION
9	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
10	**Terminate this overlay program.**
	* * * *
11	**Terminate this programming session.**
	Log off.
	>LOGO
12	**You have completed the programming required to configure tones.**

END

Configuring tones

Defining flexible feature codes

Purpose

Flexible Feature Codes (FFC) are user-defined numbers of up to seven digits that can be used in place of existing Special Prefix (SPRE) codes. The Flexible Feature Code (FFC) feature allows customers to define dialing codes that provide access to features normally provided on telephone function keys.

Flexible feature codes

Basic FFC operation allows a telephone to access features normally available by dialing SPRE codes.

Dialing FFCs

Users can dial the digits 0 through 9, and the asterisk (*) and octothorpe (#) to activate features. Customers using the octothorpe as part of their dialing plan can use a predefined string of digits for end-of-dialing indicators.

Attendant and Network-Wide Remote Call Forward

If the Outpulsing of Asterisk and Octothorpe (OPAO) package is equipped, the octothorpe (#) is treated as a dialed digit and does not signal the end of dialing. From one to three end-of-entry characters are defined in overlay 15.

Dialing plan

There is no limit to the number of FFCs used for each function, as long as each FFC is unique. FFCs cannot conflict with any Directory Number (DN) already in the dialing plan.

Defining flexible feature codes

Analog telephones

FFCs allow analog (500/2500 type) telephones to override established calls, based on the telephones' programmed Class of Service. Analog (500/2500 type) telephones can also activate and deactivate Call Forward by dialing a single FFC.

The FFC package lets analog telephones activate the following features:

◆ Automatic Wake Up (AWU)

◆ Electronic Lock (ELK)

◆ Override

◆ Remote Call Forward (RCFW).

Customers must define one or more codes for each feature function, at their discretion, in overlay 57.

Meridian Digital Telephones

FFCs are not supported on a Meridian 1 telephone that is attempting a call pickup on a Dial Intercom ringing call.

Controlled Class of Service (CCOS)

If Electronic Lock (ELK) is activated, the CCRS Class of Service is used whether CCOS is active or not. ELK takes precedence over CCOS. If ELK is deactivated, the set is treated as per existing operation.

When FFC ELKA and a password is entered, this set will use the CCRS Class of Service configured in overlay 15. The CCRS Class of Service will always be used whether or not CCOS is currently controlling the set's Class of Service. When FFC ELKD and a password is entered, the set will use the appropriate Class of Service associated with this set. If CCOS is enabled for the set, the associated customer Class of Service is used (for example, CCRS, ECC1, or ECC2). If CCOS is not enabled for this set, the set's own Class of Service is used.

Defining flexible feature codes

When FFC ELK is deactivated, the set reverts back to the Class of Service as it should be without FFC ELK, instead of always reverting back to the set's Class of Service (for example, if CCOS is enabled, it will use the customer's Class of Service; if CCOS is not enabled, it will use the set's Class of Service).

Station Control Password

Set the Station Control Password length for each telephone during the configuration of telephones in overlay programs 10 and 11. Procedures are provided later in this guide.

Automatic Wake Up

Telephones can activate Automatic Wake Up (AWU) features for their own station with Common Controlled Switching Arrangement Class of Service.

Call Forward All Calls

When FFC is configured for a customer, #1 automatically becomes the FFC DN for both Call Forward Activate (CFWA) and Call Forward Deactivate (CFWD). When the same DN is used for both CFWA and CFWD, FFC toggles the Call Forward activated/deactivated state of the telephone. When Call Forward is activated for a telephone, entering #1 automatically deactivates Call Forward, no matter what follows #1. When Call Forward is deactivated for a telephone, the result of entering #1 depends on what follows:

- If the telephone goes on hook immediately, Call Forward is activated for the telephone to its previous call forward number.

- If a valid DN is entered after #1, call forward is activated for the telephone to that valid DN.

- If an invalid DN is entered after #1, call forward remains deactivated for the telephone.

FFC length

With DN Expansion (DNXP) package 150, FFCs can be up to seven digits long. Without package 150, FFCs are limited to four digits.

Defining flexible feature codes

Confirmation tone

Confirmation tone is the same as special dial tone.

Confirmation tone is a tone provided to analog (500/2500 type) telephones and Meridian 1 telephones when certain functions are complete. Confirmation tone is returned following these events:

◆ Automatic Wake Up (any function)

◆ Electronic Lock (any function)

◆ Ring Again (activate or deactivate)

◆ Call Forward (activate)

◆ Call Forward (deactivate)

◆ Permanent Hold (any function)

◆ Store Number (store)

◆ Flexible Feature Code (any verification).

◆ Room Status (any function)

◆ Speed Call (store)

◆ Speed Call Controller (add to Speed Call list), and

◆ Store Number (erase).

Confirmation Tone is provided for Speed Call store after the End-of-Dial string, such as the octothorpe (#), is entered.

To enable confirmation tone, respond to the FFCT prompt in overlay 57.

Outgoing Call Barring

Flexible Feature Codes containing a "*" or an "#" will always be allowed by Outgoing Call Barring (OCB). Therefore, FFCs which can be used to make a call should be entirely numeric if barring of them is required.

Some FFCs are equivalent to Special Prefix functions and these will be subject to barring based on the equivalent Special Prefix codes, even if the FFC is entirely numeric.

Defining flexible feature codes

Performing service change

Overlay 57 allows no more than 100 FFCs to be modified during a single pass through Service Change.

Changes to the Station Control Passwords (SCPW) do not take affect until after a data dump and system load (SYSLOAD).

Configuring the system or enabling the feature changes the Station Control Password Length (SCPL). This change takes effect immediately. When the SCPL is changed, all associated passwords change accordingly at the next data dump and SYSLOAD. For example, changing SCPL from three to five automatically inserts leading zeros before all existing three-character passwords. Changing SCPL from five to three automatically truncates the leading characters of all existing five-character passwords.

Any other change to SCPL in overlay 15 requires a data dump and SYSLOAD before taking effect.

Special prefix codes

Special Prefix (SPRE) dialing operates normally with or without the FFC feature.

The SPRE must be assigned in overlay 15 in order for FFCs to operate for those features that also use SPRE codes. The SPRE feature must exist in order for FFC to operate.

A telephone can access a feature by way of FFCs only if that telephone already has access to the same feature by way of SPRE dialing. Any telephone that does not currently have SPRE access receives intercept treatment when dialing FFCs. Telephone operation is the same for both types of feature access: the FFC code is dialed instead of the SPRE code.

Defining flexible feature codes

Administration tips

A number of courses and administration aids are available from Nortel or your system supplier. Taking advantage of these courses and aids maximizes the effectiveness of your Meridian 1 administration efforts.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Error messages

The following error messages sometimes appear during FFC programming.

SCH3236

þFFC block already exists.

SCH3238

þFFC package unequipped.

SCH3242

þInvalid FFC mnemonic.

SCH3817

þFFC state is being set to zero due to conflict with the new ASEQ.

SCH3818

þFFC conflicts with another FFC's numeric equivalent.

SCH3820

þFFC and/or equivalent conflicts with an already existing DN.

Defining flexible feature codes

What to have ready

The following checklist summarizes the steps you should take before configuring FFCs.

Table 24
Checklist

Basic	Optional	Preparation
Ð		Get a list of functions that you want to make available using feature codes.
Ð		Get a list of the codes you are going to assign to each function.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure FFCs.

Defining flexible feature codes
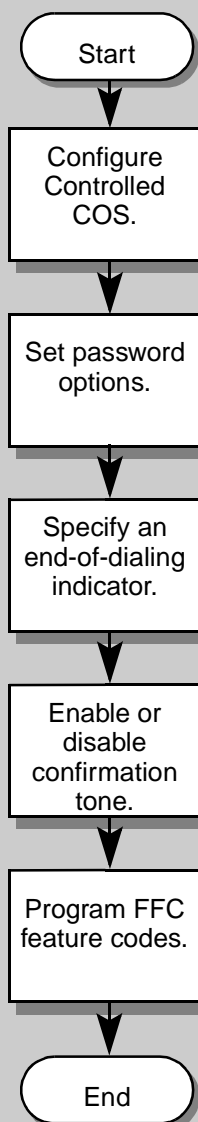
```
┌─────────────┐        ┌──────────────────────────────┐
│    Start    │        │  The flowchart summarizes the │
└─────────────┘        │  procedure. Use the instructions in the│
       │               │  step-action table that follows this│
┌─────────────┐        │  flowchart to perform the procedure.│
│ Configure   │        └──────────────────────────────┘
│ Controlled  │
│ COS.        │
└─────────────┘
       │
┌─────────────┐
│ Set password│
│ options.    │
└─────────────┘
       │
┌─────────────┐
│ Specify an  │
│ end-of-dialing│
│ indicator.  │
└─────────────┘
       │
┌─────────────┐
│ Enable or   │
│ disable     │
│ confirmation│
│ tone.       │
└─────────────┘
       │
┌─────────────┐
│ Program FFC │
│ feature codes.│
└─────────────┘
       │
┌─────────────┐
│    End      │
└─────────────┘
```

Defining flexible feature codes

> The preceding material in this chapter contains essential information. You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the implementation of FFCs.

STEP	ACTION

1   **Log in.**

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2   **Configure Controlled Class of Service.**

    >LD 15

    REQ   CHG

    TYPE   CCS_DATA   Enter CCS DATA to change controlled class of service.

    CUST   0-99   Enter the customer number.

    CCRS   aaa   Enter the Controlled Class of Service.
    For unrestricted COS, enter UNR.
    For toll denied COS, enter TLD.
    For conditionally toll denied COS, enter CTD.
    For conditionally unrestricted COS, enter CUN.
    For semi-restricted COS, enter SRE.
    For fully restricted COS, enter FRE.
    For fully restricted level 1 COS, enter FR1.
    For fully restricted level 2 COS, enter FR2.

— continued —

Defining flexible feature codes

STEP	ACTION

3	**Configure FFC parameters.**		
	TYPE	FFC_DATA	Enter FFC DATA to change FFC parameters.
	CUST	0-99	Enter the customer number.
	CCRS	aaa	Enter the Controlled Class of Service. For unrestricted COS, enter UNR. For toll denied COS, enter TLD. For conditionally toll denied COS, enter CTD. For conditionally unrestricted COS, enter CUN. For semi-restricted COS, enter SRE. For fully restricted COS, enter FRE. For fully restricted level 1 COS, enter FR1. For fully restricted level 2 COS, enter FR2.
	SCPL	0-8	Specify the Station Control Password Length.
	SBUP	YES, NO	Enter YES to enable use of Station Control Passwords for set-based administration user level access, or NO to disable set-based administration.
	PWD2	xxxx	If you responded to SBUP with YES, enter a password (PWD2) for confirmation.
	SCPL	0-8	Specify the Station Control Password Length.
	FFCS	YES, NO	Enter YES to change the FFC end-of-dialing indicator, or NO to leave it unchanged.
	STRL	1-3	If you entered YES to the FFCS prompt, specify the string length for the end-of-dialing indicator.
	STRG	aaa	If you entered YES to the FFCS prompt, specify the character string for the end-of-dialing indicator.
	ADLD	0-20	Enter the autodial delay (in seconds).
	REQ	END	Exit the overlay.
	— continued —		

Defining flexible feature codes

STEP	ACTION
4	**Define codes for FFCs.**

>**LD 57**

REQ	NEW	
TYPE	FFC	Enter FFC to create FFCs.
CUST	0-99	Enter the customer number.
FFCT	YES, NO	Enter YES to enable FFC Confirmation Tone, or NO to disable it.
CEPT	YES, NO	Enter YES to allow Conference Europeen des Postes Tel defaults, or NO to deny the defaults.
REP	n	Enter the single-character replacement for asterisk (*) and octothorpe (#) in CEPT defaults. To create only the default, press the carriage return.
CODE	ALL, aaaa	Enter ALL to make FFCs for all features, or enter the FFC type to change only some FFCs.
ASRC	xxxx	Enter the Automatic Set Relocation code.
ATDA	xxxx	Enter the Autodial Activate code.
ATDD	xxxx	Enter the Autodial Deactivate code.
AUTH	xxxx	Enter the Authorization code.
AWUA	xxxx	Enter the Automatic Wake Up Activate code.

— continued —

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Defining flexible feature codes

STEP	ACTION		
	4 continued …		
	AWUD	xxxx	Enter the Automatic Wake Up Deactivate code.
	AWUV	xxxx	Enter the Automatic Wake Up Verify code.
	BNRA	xxxx	Enter the Busy Number Redial code.
	BNRD	xxxx	Enter the Busy Number Redial Deactivate code.
	CCFA	xxxx	Enter the Customer Call Forward code.
	CCFD	xxxx	Enter the Customer Call Forward Deactivate code.
	CDRC	xxxx	Enter the Call Detail Recording Charge Account code.
	CFHO	xxxx	Enter the Call Forward/Hunt Override code.
	CFWA	xxxx	Enter the Call Forward All Calls Activate code.
	CFWD	xxxx	Enter the Call Forward All Calls Deactivate code.
	CFWV	xxxx	Enter the Call Forward All Calls Verify code.
	COND	xxxx	Enter the Conference Diagnostics code.
	CPAC	xxxx	Enter the Call Park Access code.
	CPP	xxxx	Enter the Calling Party Privacy code.
	CPRK	xxxx	Enter the Call Park code.
	— continued —		

Defining flexible feature codes

STEP	ACTION

4 continued …

CSHF	xxxx	Enter the Centrex Switch-hook Flash code.
CWGA	xxxx	Enter the Call Waiting Activated code.
CWGD	xxxx	Enter the Call Waiting Deactivated code.
C6DS	xxxx	Enter the Six-Party Conference code.
DEAF	xxxx	Enter the Deactivate Feature code.
DPVS	xxxx	Enter the Data Port Verification code.
ELKA	xxxx	Enter the Electronic Lock Activate code.
ELKD	xxxx	Enter the Electronic Lock Deactivate code.
EOVR	xxxx	Enter the Enhanced Override code.
GHTA	xxxx	Enter the Group Hunt Termination Allowed code.
GHTD	xxxx	Enter the Group Hunt Termination Disallowed code.
GRPF	xxxx	Enter the Group Call code.
GRCL	xxxx	Enter the Group Call List Number code.
HIDN	xxxx	Enter the Hospitality Identification (Hospitality Management) code.

— continued —

Defining flexible feature codes

STEP	ACTION		
	4 continued …		
	HOLD	xxxx	Enter the Permanent Hold code.
	ICFA	xxxx	Enter the Internal Call Forward Activate code.
	ICFD	xxxx	Enter the Internal Call Forward Deactivate code.
	ICFY	xxxx	Enter the Internal Call Forward Verify code.
	INST	xxxx	Enter the Set Based Administration Installer code.
	HREL	xxxx	Enter the Hospitality Relocation (Hospitality Management) code.
	ICPA	xxxx	Enter the Intercept Computer Interface Activate code.
	ICPD	xxxx	Enter the Intercept Computer Interface Deactivate code.
	ICPO	xxxx	Enter the Intercept Computer Interface Override code.
	ICPP	xxxx	Enter the Intercept Computer Interface Print code.
	IMS	xxxx	Enter the Integrated Message System Access code.
	ITXX	xxxx	Enter the code for "1xx" Special Services (up to four digits).
	— continued —		

Defining flexible feature codes

STEP	ACTION

4 continued …		
RTXX	xxxx	Enter the central office route number for the "1xx" service identified at the ITXX prompt.
LILO	xxxx	Enter the Log in -Log out code for analog ACD telephones.
LIXX	xxxx	Enter the Login (non-toggle mode) code for analog ACD telephones.
MLIO	xxxx	Enter the Multi-language I/O code.
MNT	xxxx	Enter the Set-based Administration Sequence code.
MNTC	xxxx	Enter the Maintenance Access code.
MSBA	xxxx	Enter the Make Set Busy Activated code.
MSBD	xxxx	Enter the Make Set Busy Deactivated code.
MTRC	xxxx	Enter the Malicious Call Trace code.
MWRA	xxxx	Enter the Repeat Multiple Wake Up Activated code.
MWUA	xxxx	Enter the Multiple Wake Up Activated code.
MWUD	xxxx	Enter the Multiple Wake Up Deactivated code.
NRDV	xxxx	Enter the Not Ready Activation/Deactivation code for analog ACD telephones.

— continued —

Defining flexible feature codes

STEP	ACTION

4 continued …

OCRD	xxxx	Enter the Override and Priority Override code.
OCBA	xxxx	Enter the Outgoing Call Barring code.
OCBD	xxxx	Enter the Outgoing Call Barring Deactivate code.
OCBV	xxxx	Enter the Outgoing Call Barring Verify code.
PGAP	xxxx	Enter the Answer Parallel Paging code.
PGIP	xxxx	Enter the Initiate Parallel Paging code.
PGSP	xxxx	Enter the Initiate Serial Paging code.
PLDN	xxxx	Enter the Pilot DN code.
PUDN	xxxx	Enter the Pick Up DN code.
PUGR	xxxx	Enter the Pick Up Group code.
PURN	xxxx	Enter the Pick Up Ringing Number code.
RCFA	xxxx	Enter the Remote Cal Forward Activate code.
RCFD	xxxx	Enter the Remote Cal Forward Deactivate code.
RCFV	xxxx	Enter the Remote Cal Forward Verify code.
RDLN	xxxx	Enter the Redial Last Number code.

— continued —

Defining flexible feature codes

STEP	ACTION

4 continued …

RDNE	xxxx	Enter the Redial Number Erase code.
RDSN	xxxx	Enter the Redial Saved Number code.
RDST	xxxx	Enter the Redial Store code.
RGAA	xxxx	Enter the Ring Again Activate code.
RGAD	xxxx	Enter the Ring Again Deactivate code.
RGAV	xxxx	Enter the Ring Again Verify code.
RMST	xxxx	Enter the Room Status code.
RPAN	xxxx	Enter the Radio Paging Answer Call code.
RPAX	xxxx	Enter the Radio Paging Access code.
SADS	xxxx	Enter the SAR Disable code.
SAEN	xxxx	Enter the SAR Enable code.
SALK	xxxx	Enter the SAR Lock code.
SAUN	xxxx	Enter the SAR Unlock code.
SCPC	xxxx	Enter the Station Control Password Change code.
SFAC	xxxx	Enter the Secretarial Filtering Access code.

— continued —

Defining flexible feature codes

STEP	ACTION

4 continued …		
SPCC	xxxx	Enter the Speed Call Controller code.
SPCE	xxxx	Enter the Speed Call Erase code.
SPCU	xxxx	Enter the Speed Call User code.
SSPU	xxxx	Enter the System Speed Call User code.
TFAS	xxxx	Enter the Trunk Answer From Any Station code.
TNDN	xxxx	Enter the DN-to-TN Conversion Utility code.
TRMD	xxxx	Enter the Terminal Diagnostics code.
TRVS	xxxx	Enter the Trunk Verification code.
USER	xxxx	Enter the Set-based Administration User code.
USCR	xxxx	Enter the User Selectable Call Redirection code.
USTA	xxxx	Enter the User Status code.

— continued —

Defining flexible feature codes

STEP	ACTION

5   **Check that your programming is correct.**

Review your programming to ensure that it is correct, either by scrolling up in your terminal window or by reading the terminal's printer output. If you are using a terminal without scroll or printing capabilities, use overlay 22 to print out the data you have entered. For more information about overlay 22, see the beginning of this guide.

If	Do
parameters are correct	step 6
parameters are not correct	step 1

6   **Perform a data dump to permanently store the programming you have just completed.**

> **CAUTION**
> Check your maintenance agreement
> before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

```
> LD 43
```

```
. EDD <cr>
```

— continued —

Defining flexible feature codes

STEP	ACTION
7	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
8	**Terminate this overlay program.**
	****
9	**Terminate this programming session.**
	Log off.
	>LOGO
10	**You have completed the programming required to configure flexible features codes.**

<div align="center">END</div>

Setting up speed call

Purpose

Speed Call lets telephone users place calls to preprogrammed numbers by dialing a one-, two-, or three-digit code. Speed Call codes provide easy access to commonly called numbers.

The telephone numbers are stored in Speed Call lists.

553-0045T SpCall
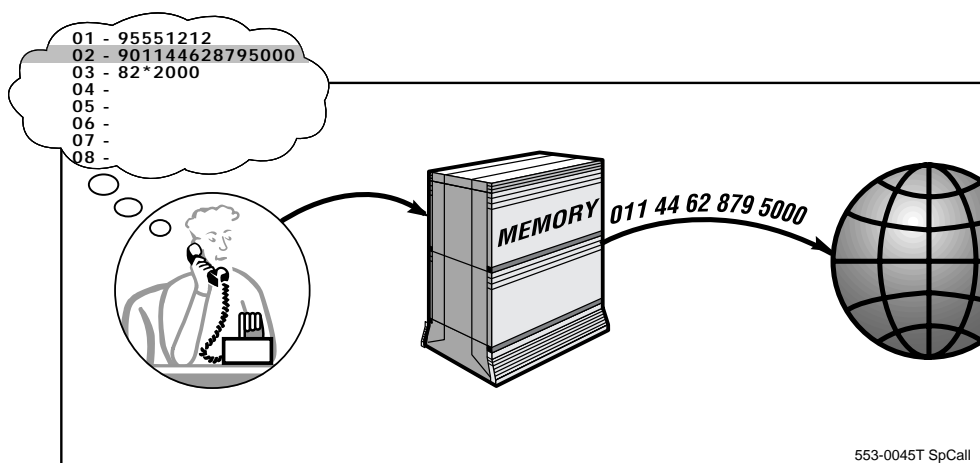
Setting up speed call

Speed Call lists

There are two kinds of Speed Call list. One type of list, the
system-wide Speed Call list, can be accessed from any telephone. The
company can program commonly used numbers into the system-wide
Speed Call list, giving all employees access to commonly used
telephone numbers.

Company Speed Call List

Head Office	11
Sales Office	22
Support	33

553-0286T SP CALL
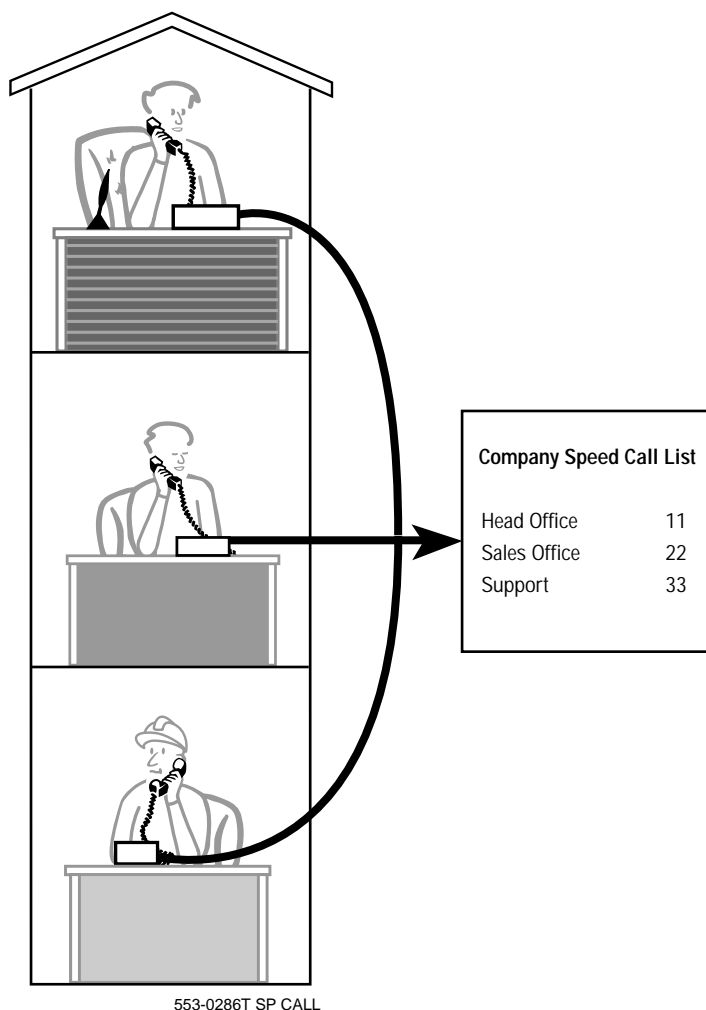
Setting up speed call

The other type of Speed Call list is specific to each Directory Number. Telephone users can program these private Speed Call lists with the numbers they most frequently call.

553-0287T Sp Call
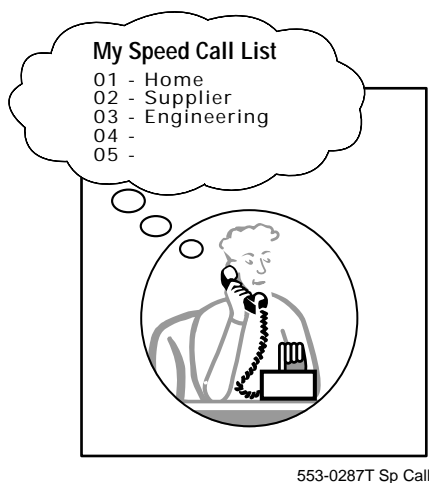
List limits

Each stored number is assigned a Speed Call code from the Speed Call list. Each list can contain up to 1000 telephone numbers (entries). The maximum number of digits of the telephone number that can be stored in each entry is specified by the customer. Speed Call entries can be 4, 8, 12, 16, 20, 24, 28, or 31 digits long.

You can define up to 8191 (0-8190) Speed Call lists per system, as long as enough memory is available. The limit includes all combined Speed Call, System Speed Call (SSC), and Hot Line lists.

You can have as many Speed Call lists as you have available key/lamp pairs on any Meridian 1 proprietary telephone, or attendant console. Any number of users can be assigned to a list. Analog (500/2500 type) telephones can access only one Speed Call list.

Setting up speed call

A maximum of 31 digits for the telephone number is allowed per Speed Call list entry. An asterisk (*), which indicates a pause, and an octothorpe (#), which indicates end-of-dialing, can be programmed as part of the entry.

Speed Call list entries can be defined in LD 18 or by Speed Call Controllers (SCC). SCCs must know the digit length (one, two, or three) required for the Speed Call codes in each list.

Speed call operation

You can use Speed Call for both internal and external calls.

Programming and using lists

SCCs can program numbers into the Speed Call list. Speed Call Users (SCU) can use the Speed Call list. SCCs and SCUs can be analog (500/2500 type) telephones, Meridian 1 proprietary telephones, and attendant consoles.

Telephones designated as a SCUs cannot program numbers into lists.

You can assign more than one SCC to each list, but it is not recommended.

Speed Call dialing

When storing an external number on a Speed Call list, enter the appropriate trunk group access code in front of the digits in the call.

For example, an external number in North America, such as 555-1212 is stored as 95551212.

SL-1, Meridian SL-1 and Meridian 1 systems do not require a pause after a COT (Central Office Trunk) access code such as 9.

If a pause for dial tone is required between digits, use the asterisk (*). The * provides a 3 second pause between digits.

Setting up speed call

If the call is to be routed over to another type of system first, and outpulsed from there, that system might require a pause after the trunk access code, before the other digits in the number are outpulsed. For example, if you want to send calls over a TIE trunk and then outpulse digits from the system at the other end, store the same number as described above as follows. If 82 is the TIE trunk access code for the TIE trunks to another system and it is not an SL-1, Meridian SL-1 or Meridian 1 system, store a number as 82*9*5551212. You might be able to remove the pauses if the other system does not require them. Experiment with the number of pauses you need until you find a sequence of digits and pauses that works every time.

Store an octothorpe (#) at the end of the digits to indicate end of dialing. This speeds up outpulsing of the call.

The Speed Call key cannot be used after a Centrex Switchhook Flash or during an established call to send digits out to the far site. The Speed Call key can be used only during the dialing stage.

Privacy

A telephone user can store a Calling Party Privacy (CPP) code as part of a telephone number in the in the Speed Call list. An outgoing trunk call placed using the Speed Call code will carry the Privacy Indicator. The user cannot dial *67 (or anything else) before accessing a Speed Call list entry.

Authorization codes

If a Speed Call entry is programmed with a valid Authcode for Authcode Last followed by an octothorpe "#", the existing Authcode Last operation will reject the Authcode as an invalid Authcode. If Authcode Last Retry is defined, the caller will be reprompted for the Authcode.

Last Number Redial

A number dialed using Speed Call will become the Last Number Redial number on all telephones except the M2317 and M3000.

Setting up speed call

Pretranslation

A Speed Call List number should be programmed to allow for Pretranslation. For example, if 9 pretranslates to 99 and you want to reach 99 nxx xxxx, you need to program the number in the Speed Call List as 9 nxx xxxx. When the Speed Call List is used, 9 nxx xxxx is pretranslated at call processing time to become 99 nxx xxxx.

Three Wire Analog Trunk - Commonwealth of Independent States (CIS)

Speed Call on an E3W trunk will fail for toll calls. E3W trunks do not wait for the ANI request from the Public Exchange, that is expected to appear after the toll access code is dialed. The Public Exchange will not accept the call due to the failure to receive ANI information.

Administration tips

EFFICIENCY

A number of courses and administration aids are available from Nortel or your system supplier. Taking advantage of these courses and aids maximizes the effectiveness of your Meridian 1 administration efforts.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

Setting up speed call

What to have ready

The following checklist summarizes the steps you should take before configuring Speed Call.

**Table 25
Checklist**

Basic	Optional	Preparation
Ð		Decide what sizes of Speed Call list are required. (Consider both the length of DN, and the number of entries allowed in each list.)
Ð		Define the contents of System Speed Call lists.
	Ð	Define the contents of Speed Call lists.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure Speed Call.

Setting up speed call
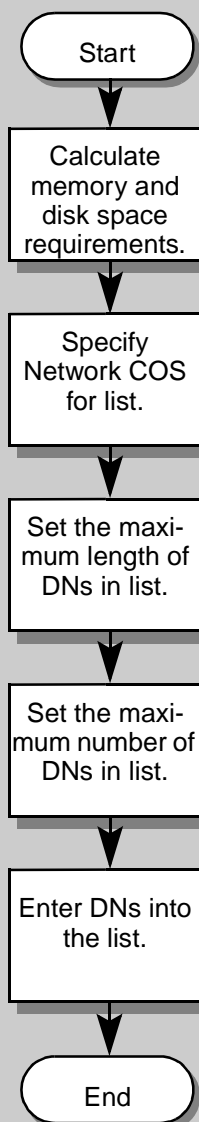
```
        ┌─────────────┐
        │    Start    │
        └──────┬──────┘
               │
               ▼
     ┌───────────────────┐        ┌──────────────────────────────┐
     │ Calculate         │        │ The flowchart summarizes the  │
     │ memory and        │        │ procedure. Use the instructions│
     │ disk space        │        │ in the step-action table that │
     │ requirements.     │        │ follows this flowchart to      │
     └─────────┬─────────┘        │ perform the procedure.         │
               │                  └──────────────────────────────┘
               ▼
     ┌───────────────────┐
     │ Specify           │
     │ Network COS       │
     │ for list.         │
     └─────────┬─────────┘
               │
               ▼
     ┌───────────────────┐
     │ Set the maxi-     │
     │ mum length of     │
     │ DNs in list.      │
     └─────────┬─────────┘
               │
               ▼
     ┌───────────────────┐
     │ Set the maxi-     │
     │ mum number of     │
     │ DNs in list.      │
     └─────────┬─────────┘
               │
               ▼
     ┌───────────────────┐
     │ Enter DNs into    │
     │ the list.         │
     └─────────┬─────────┘
               │
               ▼
        ┌─────────────┐
        │     End     │
        └─────────────┘
```

Setting up speed call

The preceding material in this chapter contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of Speed Call.

STEP	ACTION
1	**Log in.**
	For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.
2	**Calculate the available memory and disk space.**

>LD 18

REQ	COMP	Enter COMP to compute disk and memory requirements for new lists.
TYPE	SCL	Enter SCL to calculate space for Speed Call.
NOLS	1–8191	Enter the number of lists you are considering adding.
DNSZ	4–31	Enter the maximum length of DNs to be allowed in the new lists.
SIZE	1–1000	Enter the maximum number of DNs to be allowed in the new lists.

Compare the values the system returns with the MEM AVAIL and DISK RECS AVAIL values to ensure that your system has sufficient memory and disk space.

— continued —

Meridian 1 Options 21 through 81C   System Programming Guide   Standard 5.00 June 1999

Setting up speed call

STEP	ACTION
3	**Configure Speed Call lists.**

REQ	NEW	Add a new list.
TYPE	SCL, SSC	Enter SCL create a new Speed Call list, or SSC to create a new System Speed Call list.
LSNO	0-8190	Specify a list number.
NCOS	0-99	Specify the Network Class of Service for System Speed Call.
DNSZ	4-31	Enter the maximum allowable length of DNs in the list.
SIZE	1-1000	Enter the maximum number of DNs to be allowed in the list.
WRT	YES, NO	Enter YES to indicate that your data is correct, and to update the data store.
STOR	xxx y...y	Specify an entry number and the digits to be stored in the entry in the list.
WRT	YES, NO	Enter YES to indicate that your data is correct, and to update the data store.
REQ	END	Exit the overlay.

Setting up speed call

STEP	ACTION

4   Check your programming.

Review your programming to ensure that no errors were made. Use the scroll feature of your terminal, check your printout, or use overlay 22 to examine the contents of the database. For more information about reviewing your programming, refer to the About the Meridian 1 section of this book.

If	Do
the programming is correct	step 5
the programming is not correct	step 1

5   Perform a data dump to permanently store the programming you have just completed.

> ⚠ **CAUTION**
> Check your maintenance agreement before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

`> LD 43`

`. EDD <cr>`

— continued —

Setting up speed call

STEP	ACTION
6	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
7	**Terminate this overlay program.**
	* * * *
8	**Terminate this programming session.**
	Log off.
	>LOGO
9	**You have completed the programming required to configure Speed Call.**

END

Setting up speed call

Using Speed Call

Users of Meridian 1 telephones and attendant consoles can press the Speed Call key to place a Speed Call call. Users of analog (500/2500 type) telephones can activate Speed Call by using Special Prefix (SPRE) codes or Flexible Feature Codes (FFC).

For more information about using Speed Call, refer to Task 25, "Setting up telephones".

Setting up speed call

Configuring calling party name display

Purpose

Call Party Name Display (CPND) identifies the calling or called number in addition to the DN. The identifier (that is, the name) is defined in LD 95.

Whenever the calling party's DN appears on the display of the terminating telephone, the calling party's name also appears.

Display of incoming calls

Language

CPND can display the calling party's name on Meridian Digital Telephones in a Roman alphabet (used, for example, for English names), in or Katakana alphabet (the Japanese alphabet).

To select the default CPND language, respond to the CPND_LANG prompt in overlay 95.

Store the names in the Meridian 1 database under each character set (or alphabet). Use the LANG prompts to select the character set, then use the NAME prompts to enter the ASCII string for the name.

Telephone users select the desired language using program keys on the telephone itself.

Configuring calling party name display

CPND string length

Set the maximum number of characters on a customer's Calling Party Name displays by responding to the MXLN prompt in overlay 95. Set the default display length for a customer by responding to the DFLN prompt.

Set the maximum length for names by responding to the XPLN prompt in overlay 95.

Make sure that you make the maximum display lengths and name lengths large enough. Once the maximum lengths are set, they cannot be changed without erasing associated CPND data.

Hotel and motel environments

In hotel and motel environments, turn on static allocation of name storage by responding to the STAL prompt in overlay 95. Static allocation is recommended whenever CPND names are likely to change frequently (for example, when guests check in and out), to maintain the efficient use of memory.

Multiple Appearance DNs

Multiple Appearance directory numbers (DN) are DNs that are connected to more than one telephone. To allow the display of names associated with Multiple Appearance DNs, respond to the DES prompt in overlay 95. This option appears only if the Office Data Administration System (ODAS) package is equipped on your Meridian 1.

Configuring calling party name display

Display of redirected calls

Dialed name display

CPND displays the DN and name of the originally dialed party for redirected calls. You must assign a Class of Service, DNDA/DNDD (Dialed Name Display Allowed or Denied) for each telephone using this option. The terminating telephone must have DNDA to display the name of the originally dialed party.

Display of reasons for redirection

CPND is capable of displaying a code on the telephone display indicating why an incoming call has been redirected to the telephone. To enable this option for a customer, respond to the RESN prompt in overlay 95. Enter codes to be displayed for various causes of redirection at the CFWD, CFNA, HUNT, NITC, PKUP, XFER, and AAA prompts in overlay 95.

Display of outgoing calls

On an internal call, the called party's name appears with the displayed DN on the originator's telephone, as soon as the user has finished dialing a valid DN.

Configuring calling party name display

Names

You can assign names to individual DNs, to Dial Intercom Groups (DIG), and to incoming digit conversion (IDC) tables.

Names for DNs

To assign names to individual DNs, respond to the DN, LANG, NAME and XPLN prompts in overlay 95.

Names for DIGs

To assign names to DIGs, respond to the DIG, LANG, NAME and XPLN prompts in overlay 95.

Names for IDC tables

To assign names to digit conversion tables, respond to the DCNO, IDC, and NAME prompts in overlay 95.

Configurations

There are several possible CPND configurations. CPND can operate in standalone mode, using a local (or inboard) directory system, or using a remote directory system. To identify your configuration, respond to the CNFG prompt in overlay 95.

Configuring calling party name display

What to have ready

The following checklist summarizes the steps you should take before configuring CPND.

Table 26
Checklist

Basic	Optional	Preparation
Ð		Get a list of names to be programmed for each DN, DIG, and IDC table.
Ð		Identify the CPND configuration used on your Meridian 1.
	Ð	Select maximum and default lengths for displays and names.
	Ð	Select codes to use on displays to indicate causes of incoming call redirection.
	Ð	Determine Katakana (or Roman) equivalents of the names to be programmed.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure CPND.

Configuring calling party name display

```
        ┌─────────────┐          ┌──────────────────────────────┐
        │    Start    │          │  The flowchart summarizes the │
        └──────┬──────┘          │  procedure. Use the instructions in the │
               │                 │  step-action table that follows this │
               ▼                 │  flowchart to perform the procedure. │
      ┌─────────────────┐        └──────────────────────────────┘
      │  Identify the   │
      │  CPND           │
      │  configuration. │
      └────────┬────────┘
               │
               ▼
      ┌─────────────────┐
      │  Set CPND       │
      │  display length.│
      └────────┬────────┘
               │                              ┌─────────────────┐
               ▼                              │  Specify names  │
      ┌─────────────────┐                     │  for DIGs.      │
      │  Turn static    │                     └────────┬────────┘
      │  allocation     │                              │
      │  on or off.     │                              ▼
      └────────┬────────┘                     ┌─────────────────┐
               │                              │  Specify names  │
               ▼                              │  for DNs.       │
      ┌─────────────────┐                     └────────┬────────┘
      │  Enable or      │                              │
      │  disable MADN   │                              ▼
      │  display.       │                     ┌─────────────────┐
      └────────┬────────┘                     │  Specify names  │
               │                              │  for IDC tables.│
               ▼                              └────────┬────────┘
      ┌─────────────────┐                              │
      │  Set options for│                              ▼
      │  redirected call│                     ┌─────────────────┐
      │  display.       │                     │      End        │
      └────────┬────────┘                     └─────────────────┘
               └──────────────────────────────┘
```
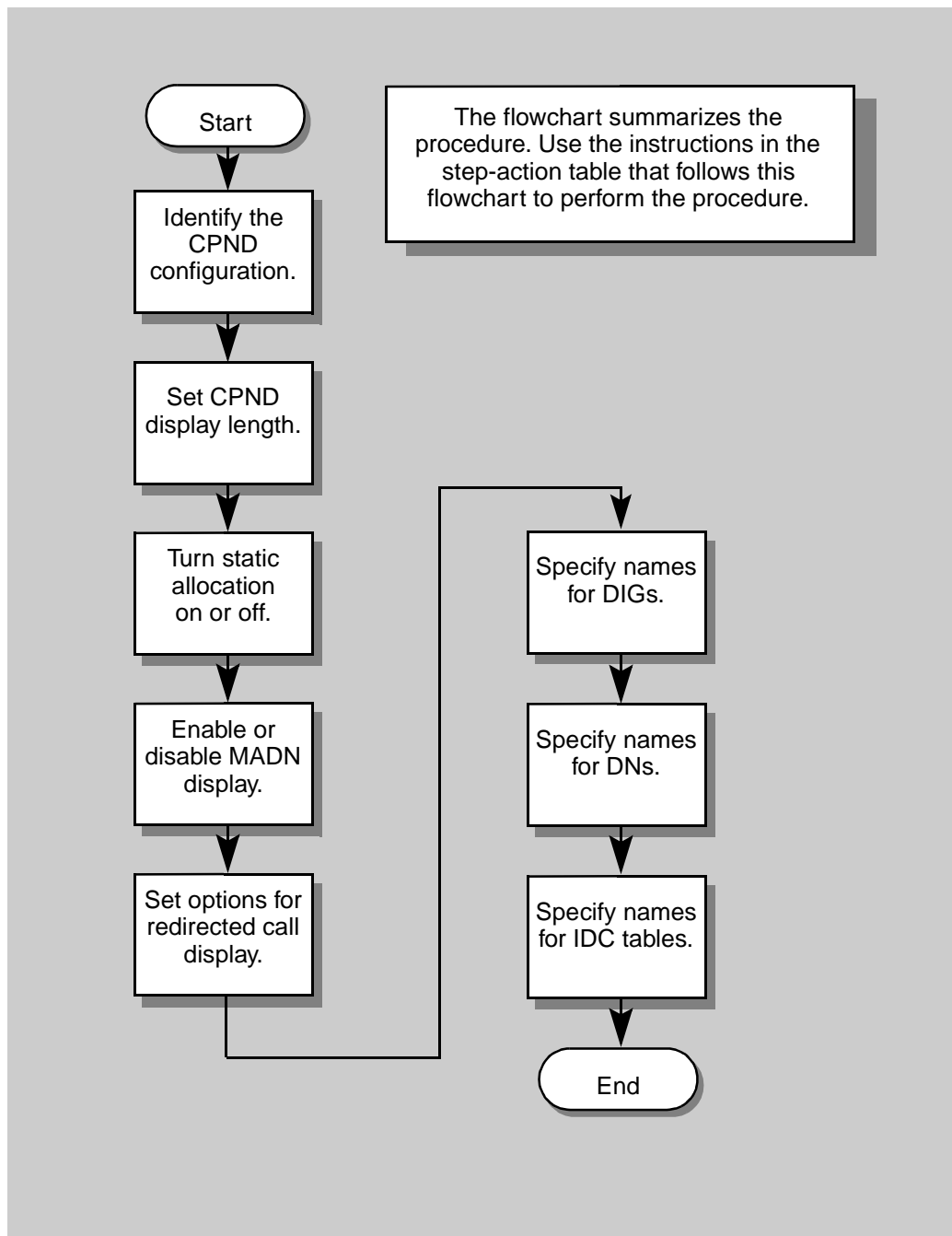
Configuring calling party name display

The preceding material in this chapter contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of calling party name display.

STEP	ACTION

1   Log in.

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2   Set CPND parameters.

>LD 95

REQ   NEW

TYPE   CPN   Enter CPN to set CPND parameters.

CUST   xx   Enter the customer number.

CNFG   ALON, REMO, LOCL
                          Enter ALON for a standalone CPND
                          configuration, REMO for interwork with a
                          remote directory system, or LOCL to interwork
                          with a local (inboard) system.

MXLN   5-27   Specify the maximum allowable CPND length.

STAL   YES, NO   Enter YES to enable static allocation of name
                          storage, or NO to disable it. (Enter YES for
                          hotel or motel installations.)

— continued —

Configuring calling party name display

STEP	ACTION		

2 continued …

DFLN	5-27	Specify the default length of CPND character strings.
DES	YES, NO	Enter YES to allow designators for Multiple Appearance DNs, or NO to deny them.
RESN	YES, NO	Enter YES to allow the display of reasons for redirecting calls, or NO to deny it.
CFWD	aaaa	Enter a mnemonic for the display of Call Forward All Calls redirection.
CFNA	aaaa	Enter the mnemonic for the display of Call Forward No Answer redirection.
HUNT	aaaa	Enter the mnemonic for the display of Call Forward All Calls redirection.
NITC	aaaa	Enter the mnemonic for the display of Call Forward Non Intercom redirection.
PKUP	aaaa	Enter the mnemonic for the display of Call Pickup redirection.
XFER	aaaa	Enter the mnemonic for the display of Call Transfer redirection.
AAA	aaaa	Enter the mnemonic for the display of Attendant Alternative Answering redirection.

— continued —

Configuring calling party name display

STEP	ACTION

3	**Define names.**

REQ	NEW	
TYPE	NAME	Enter NAME to define calling party names.
CUST	xx	Enter the customer number.
CPND_LANG	ROM, KAT	Specify the CPND alphabet. Enter ROM to select a Roman alphabet, or KAT to select a Katakana alphabet.
DIG	0-2045 0-99	Specify an existing Dial Intercom Group (DIG), followed by a member number.
LANG	ROM, KAT, ALL	Specify the language for the DIG. Enter ROM for Roman alphabet displays or KAT for Katakana alphabet displays. Enter ALL to remove all names for the selected DIG.
NAME	a...a	Specify the CPND name (in ASCII characters) for the DIG.
XPLN	x	Set the expected length of display for the DIG.
DISPLAY_FMT	FIRST, LAST	Set the display format. Enter FIRST for first name - last name format. Enter LAST for last name - first name format.
DN	xxxxxxx	Enter a directory number.

— continued —

Configuring calling party name display

STEP	ACTION

3 continued …

LANG	ROM, KAT, ALL	Specify the language for the DN. Enter ROM for Roman alphabet displays or KAT for Katakana alphabet displays. Enter ALL to remove the name for the selected DN.
NAME	a...a	Specify the CPND name for the DN (in ASCII characters).
XPLN	x	Set the expected length of display for the DN.
DCNO	0-254	Enter a digit conversion table number.
IDC	0-254	Enter an incoming DID digit conversion number.
NAME	a...a	Specify the CPND name (in ASCII characters).

4 **Check your programming.**

Review your programming to ensure that no errors were made. Use the scroll feature of your terminal, check your printout, or use overlay 22 to examine the contents of the database. For more information about reviewing your programming, refer to the About the Meridian 1 section of this book.

If	**Do**
the programming is correct	step 5
the programming is not correct	step 1

— continued —

Configuring calling party name display

STEP	ACTION

5   **Perform a data dump to permanently store the programming you have just completed.**

<table>
<tr>
<td>⚠️</td>
<td>CAUTION
Check your maintenance agreement
before working in LD 43.</td>
</tr>
</table>

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

6   **Verify that the data dump was successful.**

On-screen or printed response:

NO GO BAD DATA

or

DATA DUMP COMPLETE

— continued —

TASK

26

Configuring calling party name display

STEP	ACTION
7	**Terminate this overlay program.**
	****
8	**Terminate this programming session.**
	Log off.
	>LOGO
9	**You have completed the programming required to configure CPND.**

<div align="center">

END

</div>

Setting up telephones

Purpose

You must program a directory number, class of service, and a set of features for each telephone connected to the Meridian 1. Use overlay 10 to program 500/2500-type and analog telephones, and overlay 11 to program SL-1, and Meridian Digital Telephones.

To turn on each telephone extension connected to the Meridian 1, set the telephone extension up in the Meridian 1 software. The procedures for configuring each type of telephone vary. Information about the requirements for different telephones appear below. Detailed procedures appear later in this section.

Basic configuration

Setup of a telephone involves the following steps:

1. Unpacking the telephone.

2. Installing the cabling for the telephone.

3. Configuring the telephone in the Meridian 1 software.

4. Testing the telephone.
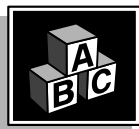
This section tells you:

◆ what you need before setting up a telephone

◆ how to set up a telephone in software

For information about unpacking the telephone, refer to the documentation provided with the telephone.

Setting up telephones

To use the procedures in this document, you should have prior experience with Meridian 1 administration.

Telephone types

The Meridian 1 supports a number of different types of telephone. It is important for you to identify the different telephone types correctly before configuring them in software.

Nortel telephones have an identifying sticker attached to the base.

The model number of any Meridian telephone is identified here

NTZK16BA35 M2616 W/DISPLAY

NT2K16XC35 01A7SR   04/08/94

Listed

UL
®

48KG

Telephone Equipment

CSA
®

LR 57943

RE-MANUFACTURED BY NTI/NROC
(800)251-1758

PASS
15
553-0008T ModelNum
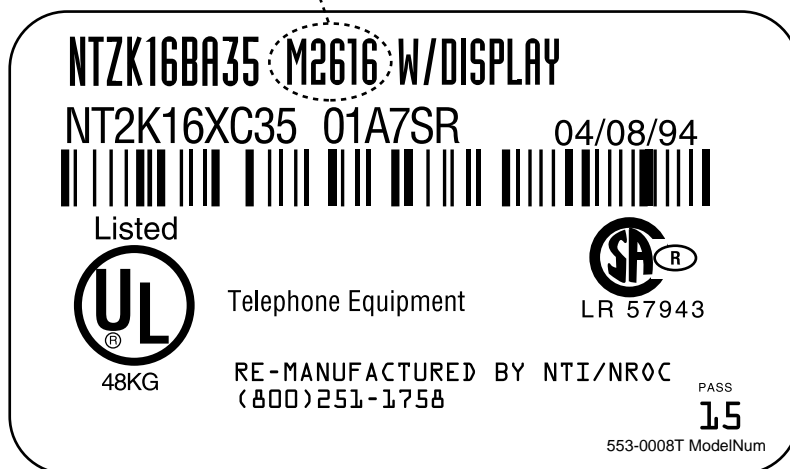
Setting up telephones

This guide provides information about configuring the following telephones:

◆ 500-type

◆ 2500-type

◆ M2317

◆ M2006

◆ M2008

◆ M2616

◆ M2216ACD

These telephones are the most popular for new Meridian 1 installations. If you need to configure other models of Nortel telephone, refer to the *Basic Telecom Management Guide*.

For more information about telephone features, functions and characteristics, refer to *Meridian 1 telephones*.

Analog (500/2500 type) telephones

The analog (500/2500 type) telephones are basic telephones. The 500-type is a rotary dial unit, limited to pulse dialing. The 2500-type is a simple tone dial unit.

553-0135T SET TEL
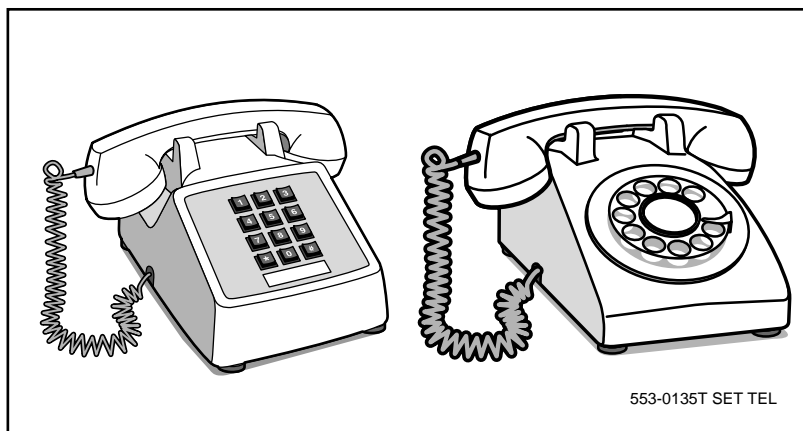
Setting up telephones

Meridian Digital Telephones

Meridian Digital Telephones are designed specifically for use with the Meridian 1, and offer features not found on other, more generic telephones. M2000- and M3000-series telephones are full featured digital telephones designed to work with the Meridian 1.

To identify a particular model of telephone, refer to the illustrations provided in this section.

M2317 telephone

553-0136T M2317-2
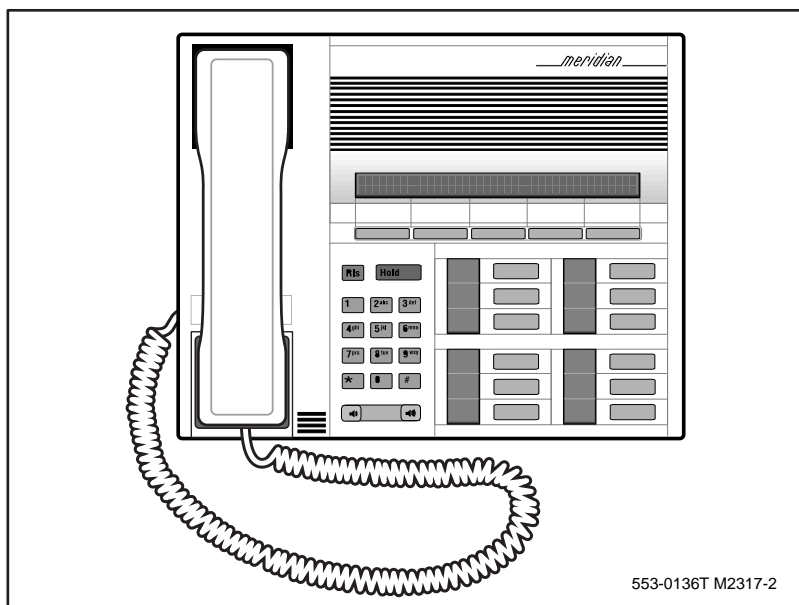
Setting up telephones

M2006 telephones

553-0137T M2006-2
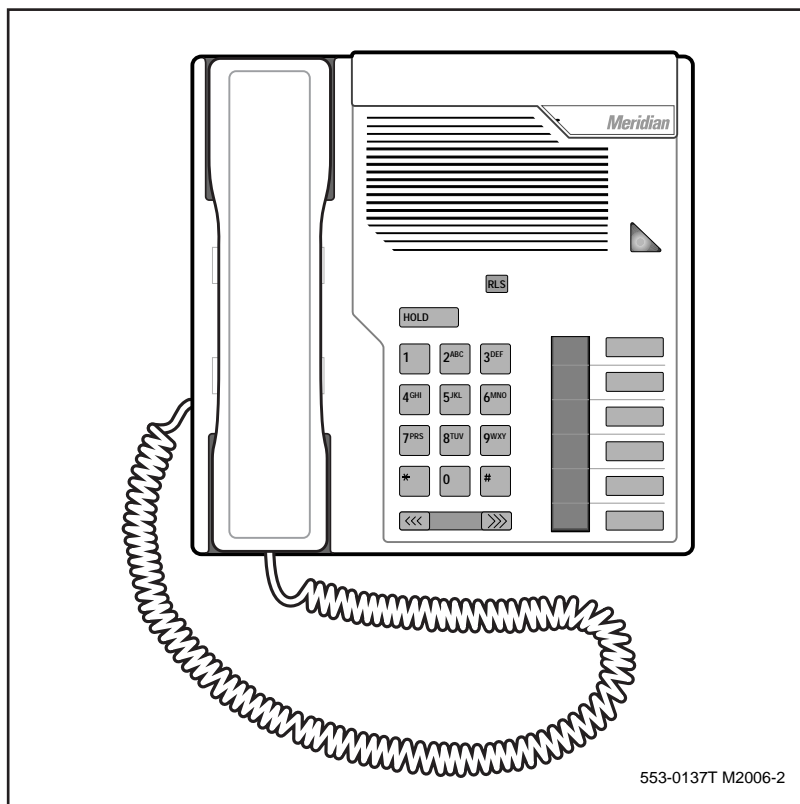
Setting up telephones

M2008 telephones

553-0138T M2008-2
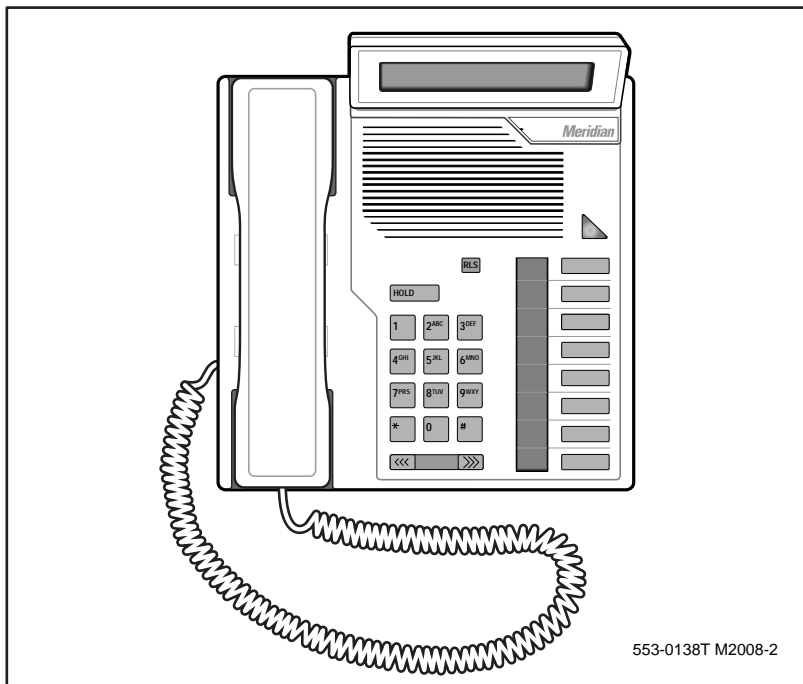
Setting up telephones

M2616 telephones

553-0139T M2616-2
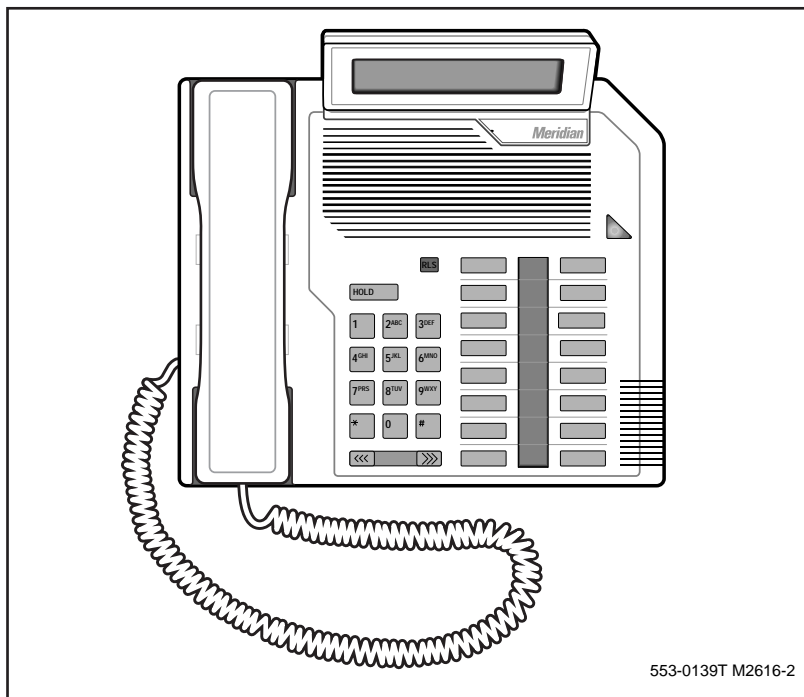
Setting up telephones

M2216ACD telephones

553-0140T M2216-2
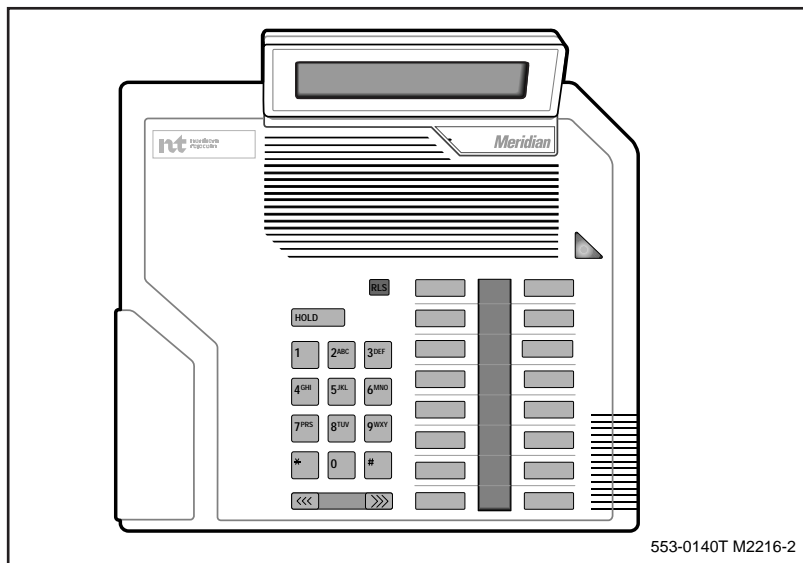
The M2216ACD telephone is designed to accommodate Automatic Call Distribution (ACD) operation, but it can also be used as a normal telephone.

Setting up telephones

Planning for telephone configuration

When planning your telephone configuration, look at the following:

◆ Directory Numbers (DN)

◆ Terminal Numbers (TN)

◆ expected traffic levels

◆ line card density

◆ designators (six-character labels for TNs in the Meridian 1 database)

◆ telephone features, including:

– Special Prefix (SPRE) codes

– Flexible Feature Codes (FFC)

Directory Numbers

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the telephone numbers users dial to call each other.

DNs can be one to seven digits in length.

Single Appearance or Multiple Appearance DNs

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

Single Appearance DNs appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time.

Multiple Appearance DNs appear on more than one telephone, or more than one key on a telephone such as a digital telephone.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

Single Call DN

The DN can handle one call at a time.

Setting up telephones

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.

Unless programmed otherwise, a Single Call configuration is the default configuration of a DN when it is programmed on a Digitone telephone.

If the same Single Call DN is shared between a Digitone telephone and an SL-1-type or digital telephone, there is no way to prevent a user from breaking in on an active call in progress on the shared DN.

If privacy is important, choose one of the following two options:

◆ do not assign the same Single Call DN to a Digitone telephone and an SL-1-type or digital telephone

◆ replace the Digitone telephone with an SL-1-type or digital telephone. There is privacy on shared Single Call DNs on these types of telephones

Multiple Call DN
The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

A Multiple Call DN is not treated as busy until there are calls on all the programmed appearances of the DN. There can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching the maximum numbers. Consult with your system supplier before you implement Multiple Appearance DNs.

Multiple Call Class of Service
When you want to make a DN on a Digitone telephone a Multiple Call DN, you activate this in the Class of Service.

Setting up telephones

This Class of Service is used in conjunction with the use of Meridian COMPANION™ wireless telephones on your system.

Consistent configuration

Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.

The step-action table at the end of this module explains how to assign a DN on a new Digitone telephone.

Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

◆ prevent conflicts between numbers used for different purposes

◆ organize the use of numbers to help simplify the administration of the system

◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

You should keep a summary of the Numbering Plan on site. For more information on the Numbering Plan see the *Basic Telecom Management Guide*.

Setting up telephones

Terminal Number (TN)

You must use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Your system can use either loops or Superloops. Loops and Superloops belong in the Network Equipment part of the system.

If you are not sure what types of Network Equipment you are using, ask your system supplier. They can also tell you about your shelf and card equipment. Ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

Traffic

Loops and Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each loop or Superloop is kept within the recommended guidelines. If all of your existing loops and Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

Card density

Telephones are connected to interface cards in the system called line cards. There are three types of line cards for Digitone telephones: single-, double-, or quadruple-density.

Single-density line cards connect to a maximum of four telephones. Double- density line cards connect to a maximum of eight telephones. Quadruple (quad) density line cards connect to a maximum of sixteen telephones.

Setting up telephones

Systems using Superloops can use intelligent line cards. They are called intelligent because they possess microprocessors. Double-density intelligent line cards are available for off-premises extensions. They connect to a maximum of eight telephones.

On-site Digitone telephones can be connected to quadruple-density intelligent line cards which connect to a maximum of 16 telephones.

Designator (DES)

When you want printouts of the data associated with telephones you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

◆ location in the building, for instance the floor number or room number

◆ cable pair

◆ telephone user's department, to be used for billing or inventory purposes

◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

Setting up telephones

For example:

◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.

◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.

◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If no policy is in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you must enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

Class of Service (CLS)

When you are programming telephones using LD 10, you must enter a Class of Service for each telephone.

Telephone features and services

Consider the following features when setting up telephones.

Special Prefix codes (SPRE)

Regular telephone users can use the Special Prefix (SPRE) code to access most features. The SPRE code is a code, defined for the entire customer group, that lets the Meridian 1 know that you are about to use a feature. The control digit or digits that you dial after the SPRE code tell the system what feature you want.

Setting up telephones

The control digits are not changeable. They are pre-programmed in the system database when the system is delivered to you.

For example, if the customer group to which a user belongs has a defined SPRE code 11, and all systems are shipped with a Night Service feature code 4, then to use the Night Service feature to answer calls ringing a night bell, the user lifts the handset and dials 114.

Flexible Feature Codes

Flexible Feature Codes (FFC) are codes users can dial to access calling features that would normally require a programmed key on a Meridian Digital telephone. FFCs can be used at any telephone. If the telephone you are programming does not have enough keys to accommodate the required features, consider using FFCs to provide access to those features. You program an FFC of your choice for any of the features on your system.

FFCs are available on your Meridian 1 only if you have software package 139 installed. For more information about configuring FFCs, refer to the *Software Guide.*

Telephone function keys

Many telephones have keys that you can program with features and DNs. You can add keys to some telephones by connecting extra modules. Each type of telephone has a limit to the number of keys it can provide.

To program function keys on telephones, respond to the KEY prompt in overlay 11.

Refer to the *Software Feature Guide* that was delivered with your system for more information on features that are not in this guide.

Setting up telephones

Administration tips

If users experience problems like delayed dial tone, it is important for you to consider the types of telephones being used. If the telephones are dial type, you do not need to investigate anything to do with DTRs. This can help to resolve the problem sooner.

Copying telephones

When configuring a number of telephones with similar options and restrictions, you can use the Meridian 1's copy function. Respond to the CFTN prompt in overlay program 10 and 11 to copy the configuration of an existing telephone, then make changes to the copied configuration as required. For more information on copying configurations and using the CFTN prompt, refer to the *Software Guide*.

SPRE code users

Regular telephone users sometimes complain that the SPRE code method is too difficult for them. You can do a number things to assist them:

◆ limit the number of feature codes the users are required to remember

◆ train them frequently and allow them to practice

◆ supply them with training aids that they keep handy near the telephone for quick reference

◆ upgrade the telephones to Digitone-type, with buttons to store the codes

◆ upgrade the telephones to SL-1-type or digital to allow use of programmed keys for features

◆ implement Flexible Feature Codes (FFC) that are easier to remember than some of the SPRE codes.

Setting up telephones

Improving performance
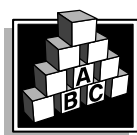
The following options can make use of the telephones much more efficient.

Distinctive Ringing

There are four different Distinctive Ringing (DRG) options for the digital telephones. When you program the Class of Service of each telephone you choose one of the four options to set the ring tone and ring cadence. The choices are: DRG1, DRG2, DRG3, or DRG4.

You can make each telephone in one department ring a different way so that when a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringing.

Distinctive Ringing can be very useful with the Call Pickup feature. When telephones are ringing in the Pickup group, the users can tell which telephone is ringing and whether they are to answer. If a user does answer, the caller can be greeted appropriately.

Data option

When a Meridian Programmable Data Adapter (MPDA) or Meridian Communications Adapter (MCA) is installed inside the telephone and an RS-232C cable is used, you can set up a computer on the user's desk using the same pair of wires that the telephone uses. If you do this, then key 5 on the telephone must be used as a Program key to control various data parameter settings. There is a Quick Reference Card for the MPDA or MCA that explains these settings and how to use the Program key.

Setting up telephones

What to have ready

The following checklist summarizes the steps you should take before setting up telephones.

Table 27
Checklist

Basic	Optional	Preparation
Ð		Decide how many telephones you need, and where.
Ð		Choose a DN for each telephone.
Ð		Decide what options you want to provide each telephone extension user.
Ð		Decide what keys you want to install on each M2000 or M3000 series telephone.
Ð		Unpack and install the telephones, so that they can be tested once configured.
	Ð	Choose a DN for the attendant overflow position.
	Ð	Create any speed call lists to be used on the telephone.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to implement a telephone.

Setting up telephones

```
                                    ┌─────────────────────────────┐
                                    │ The flowchart summarizes the│
                    ╭────────╮      │ procedure. Use the          │
                   │  Start   │     │ instructions in the         │
                    ╰────────╯      │ step-action table that      │
                        │           │ follows this flowchart to   │
                        ▼           │ perform the procedure.      │
                    ◇─────────◇     └─────────────────────────────┘
                   ╱ Are you   ╲
                  ╱ configuring a╲
                  ╲   500/2500   ╱
                   ╲    set?    ╱
                    ◇─────────◇
         ┌──────────┘         └──────────┐
      ╭─────╮                          ╭─────╮
      │ Yes │                          │ No  │
      ╰─────╯                          ╰─────╯
         │                                │
         ▼                                ▼
  ┌──────────────┐               ┌──────────────┐
  │ Specify the  │               │ Specify the  │
  │ card density.│               │ card density.│
  └──────────────┘               └──────────────┘
         │                                │
         ▼                                ▼
  ┌──────────────┐               ┌──────────────┐
  │ Enter a      │               │ Enter a      │
  │ designator.  │               │ designator.  │
  └──────────────┘               └──────────────┘
         │                                │
         ▼                                ▼
  ┌──────────────┐               ┌──────────────┐
  │ Enter a      │               │ Define keys. │
  │ telephone    │               └──────────────┘
  │ number.      │                        │
  └──────────────┘                        ▼
         │                       ┌──────────────┐
         ▼                       │ Enter a      │
  ┌──────────────┐               │ telephone    │
  │ Set Class of │               │ number.      │
  │ Service.     │               └──────────────┘
  └──────────────┘                        │
         │                                ▼
         │                       ┌──────────────┐
         │        ╭─────╮        │ Set Class of │
         └───────▶│ End │◀───────│ Service.     │
                  ╰─────╯        └──────────────┘
```
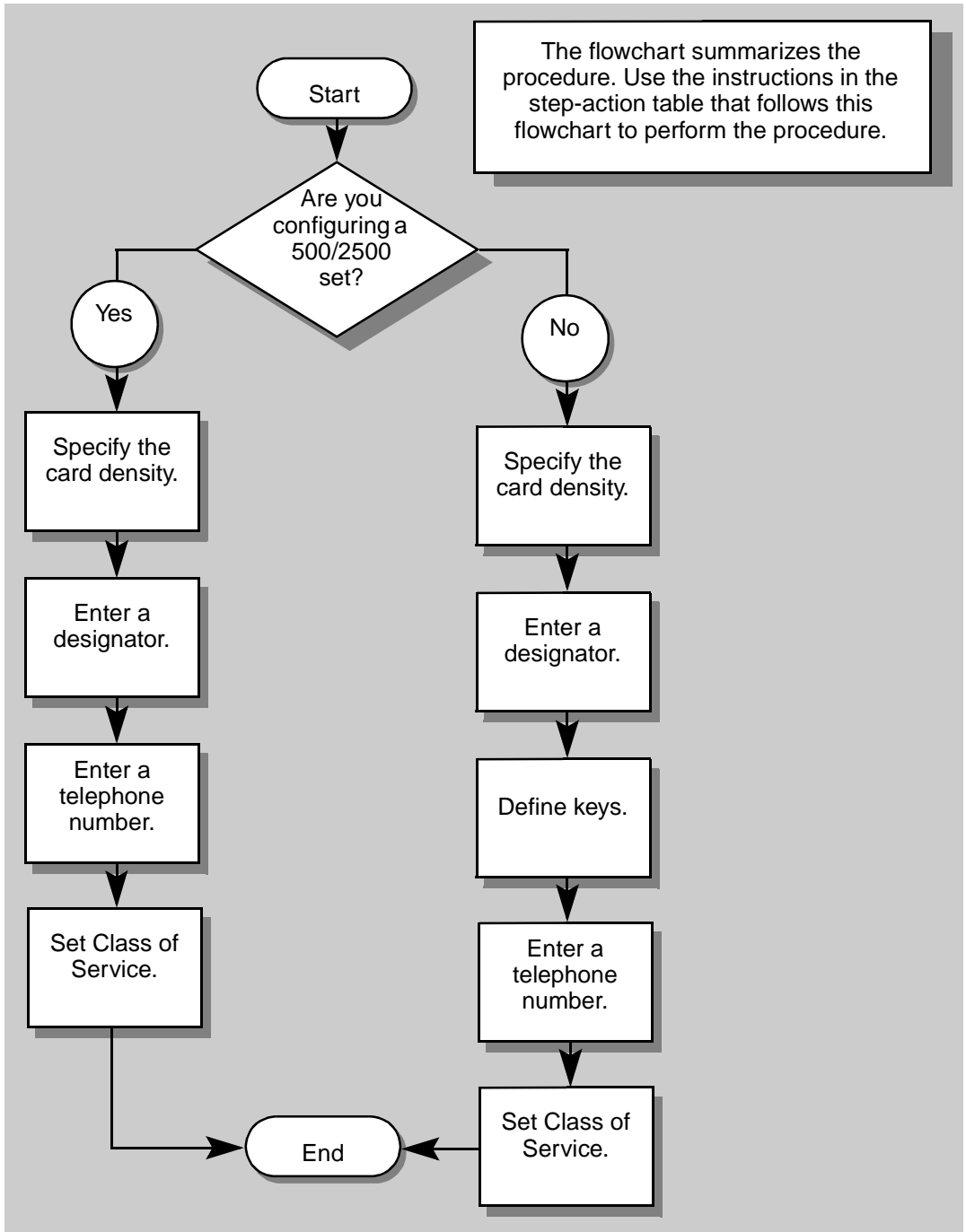
Setting up telephones

> The preceding material in this module contains essential information.
> You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the implementation
> of telephones.

STEP	ACTION
1	**Log in.**
	For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.
2	**Choose the starting point in this procedure.**

If	Do
you want to add a 500- or 2500-type telephone	step 3
you want to add an SL-1, M2000, or M3000-series telephone	step 4

— continued —

Setting up telephones

STEP	ACTION

3	**Add a 500/2500-type telephone.**	

>LD 10

REQ	NEW	Define a new telephone.
TYPE	500	Dial or Digitone telephone.
TN	L S C U	Enter a Terminal Number for the telephone (Loop, Shelf, Card and Unit).
CDEN	SD, DD, 4D	Select the card density (either single, double or quad density).
DES	xxxxxx	Enter a telephone designator (up to six characters long).
CUST	0-99	Enter the customer group number.
DN	xxxxxxx	Enter a telephone number (directory number) for the telephone. The DN can be up to 4 digits, up to 7 digits with Directory Number Expansion (DNXP) package 150.
SCPW	xxxxxxx	Enter a Station Control Password. (You set the length of the password earlier using the SCPL prompt in overlay 15.)
CLS	CCSA	Enter CCSA to enable CCOS for Electronic Lock (ELK) and Remote Call Forward (RCFW).
CLS	DIP, DTN	Specify the outpulsing type (dial or Digitone) for the telephone.
CLS	xxxx	Specify the Distinctive Ringing tone and cadence by entering DRG1, DRG2, DRG3, or DRG4.

— continued —

Setting up telephones

STEP	ACTION

| **4** | **Add a Meridian Digital Telephone.** |

>LD 11

| **REQ** | NEW | Define a new telephone. |
| **TYPE** | xxxx | Enter the telephone type: |

To create an	**Enter**
M2006 telephone	2006
M2008 telephone	2008
M2317 telephone	2317
M2216ACD telephone	2216
M2616 telephone	2616
SL-1 telephone	SL1

TN	L S C U	Enter a Terminal Number for the telephone.
CDEN	SD, DD, 4D	Select the card density (either single, double or quad density). Press the carriage return to select the default.
DES	xxxxxx	Enter a telephone designator (up to six characters long).
CUST	0-99	Enter the customer group number.
SCPW	xxxxxxx	Enter a Station Control Password. (You set the length of the password earlier using the SCPL prompt in overlay 15.)
CLS	CCSA	Enter CCSA to enable CCOS for Electronic Lock (ELK) and Remote Call Forward (RCFW).
CLS	xxxx	Enter DRG1, DRG2, DRG3, or DRG4 to select Distinctive Ringing cadences.
KEY	0 SCR x...x	Program an SCR single call ringing DN, if required.
KEY	0 SCN x...x	Program an SCR single call non-ringing DN, if required.

— continued —

Setting up telephones

STEP	ACTION

5   **Check that the telephone which you have just programmed is working.**

Try the telephone and any installed keys to ensure that they are operating properly.

If	**Do**
everything works	step 6
something does not work	step 1

6   **Perform a data dump to permanently store the programming you have just completed.**

> ⚠ **CAUTION**
> Check your maintenance agreement
> before working in LD 43

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD **<cr>**

— continued —

Setting up telephones

STEP	ACTION
7	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
8	**Terminate this overlay program.**
	****
9	**Terminate this programming session.**
	Log off.
	>LOGO
10	**You have completed the programming required to add a telephone.**

END

Setting up telephones

Using telephones

From most telephones connected to a Meridian 1 you can place and receive calls, forward calls, place calls on hold, and control a number of special calling features. The functionality and features available at a specific telephone depends on the type of telephone and how it has been configured in the Meridian 1 software.

A number of tasks you can perform using telephones connected to the Meridian 1 are described below. Brief instructions are provided. For more information about these tasks, or about other tasks not described here, refer to the *Basic Telecom Management Guide*.

Placing a call

To place a call, lift the handset and dial a valid DN. Hang up the handset to end the call.

Using switch-hook flash

When you have a call in progress on a 500- or 2500-type telephone and you want to transfer the call or place the call on hold, press and release the button under the handset of the telephone. The button is called the switch-hook and pressing and releasing it is called sending a switch-hook flash.

You can also send a switch-hook flash to call forward your telephone or to place a call using Speed Call.

If you press the switch-hook for the correct amount of time, the system responds with a confirmation tone, three short bursts of tone followed by steady dial tone. Once you hear the confirmation tone, you can use the telephone keypad to send a command to the Meridian 1.

For information about how to use features, see the descriptions in this chapter.

Setting up telephones

Using the Link button

If your telephone has a Link button, you can press it instead of sending a switch-hook flash. The Link button performs a perfect switch-hook flash every time it is pressed.

Transferring a call

To transfer a call in progress on your 500- or 2500-type telephone, send a switch-hook flash. Once you hear the confirmation dial tone, dial the digits of the DN to which you are transferring the call. When you hear ringback tone, hang up the telephone.

To transfer a call in progress on your Meridian Modular Telephone, press the Transfer key. Once you hear the confirmation dial tone, dial the digits of the DN to which you are transferring the call. When you hear ringback tone, press the Transfer key again and hang up the telephone.
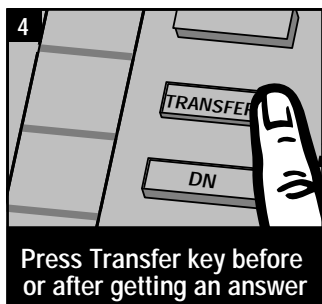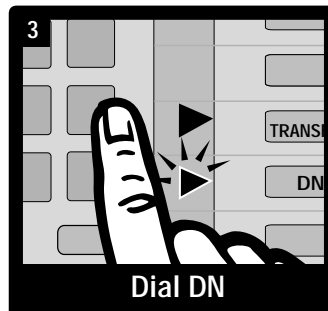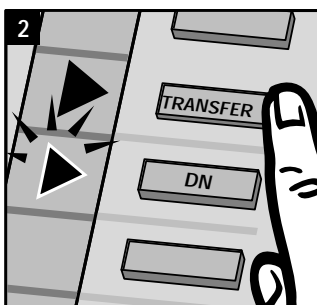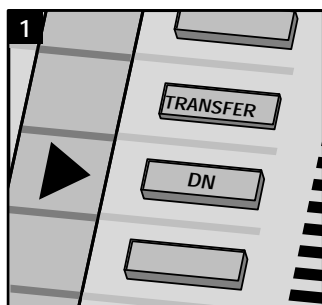
553-0041T CTrans

Setting up telephones

Call forward

To call forward a 500- or 2500-type telephone to another DN, lift the handset and send a switch-hook flash. When you hear the confirmation dial tone, press or dial 1.
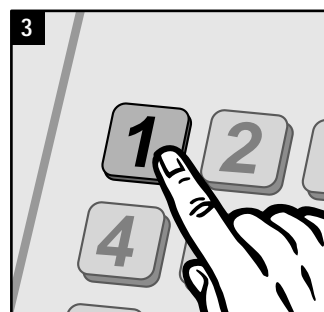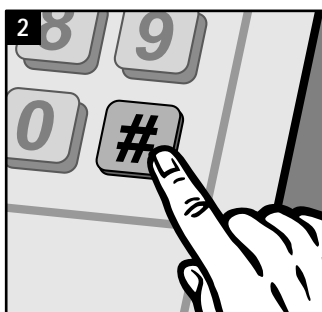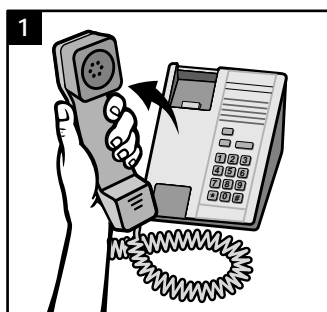
553-0051T CFAC
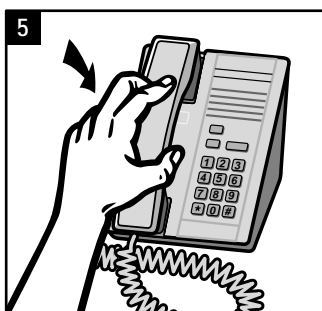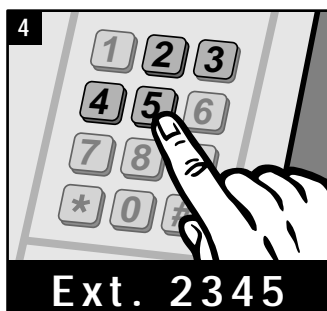
Setting up telephones

To call forward a Meridian Digital telephone, lift the handset and press the C.FWRD key. Dial the DN to which you are forwarding, and then press the C.FRWD key again. Hang up the handset.

553-0052T CFAC

Ext. 2345
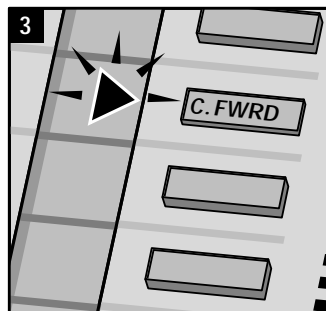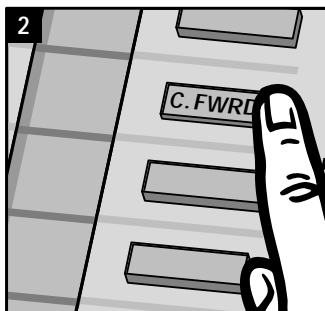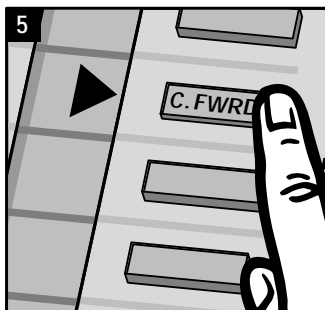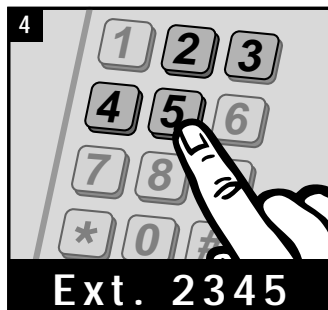
Setting up telephones

Conference

To create a conference on your 500- or 2500-type telephone, place a call to one of the parties you want to conference. Once you are connected, send a switch-hook flash. When you hear the confirmation dial tone, dial the second party. Once you are connected with the second party, send another switch-hook flash. You will now be connected with both parties.

To create a conference on a Meridian Digital telephone, place a call to one of the parties you want to conference. Once you are connected, press the CONF key on your telephone, or use a n FFC to activate conferencing. When you hear dial tone, dial the second party. Once you are connected with the second party, press the CONF key again. You will now be connected with both parties.

1	2	3
CONF DN	CONF DN Active call on hold	CONF DN Dial DN and wait for answer

553-0044T Conf

4	5
CONF DN Connect three parties	Speak to two other parties
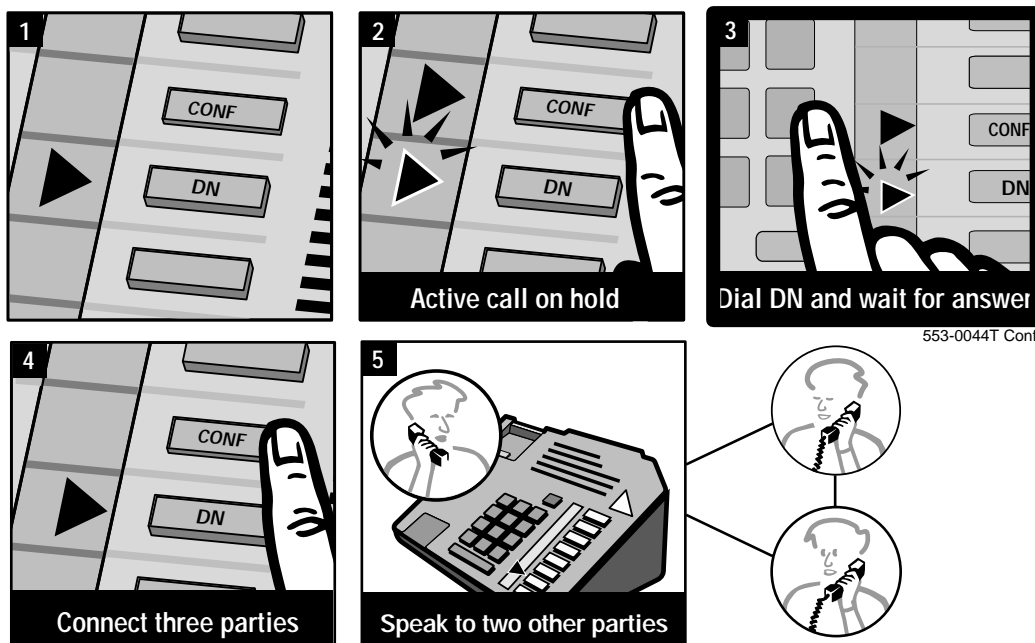
Setting up telephones

Hold

For example, when a user wants to put a call on hold at a Digitone™ telephone, they switch-hook flash and then dial #4 and hang-up.

To place an active call on permanent hold using your 500- or 2500-type telephone, send a switch-hook flash. When you hear the confirmation dial tone, press 4.

Speed Call

Controlling Speed Call

To choose your Speed Call list using a 500- or 2500-type telephone, lift the handset and send a switch-hook flash. When you hear the confirmation dial tone, press 2.

Using Speed Call

To place a call using Speed Call from your 500- or 2500-type telephone, lift the handset and send a switch-hook flash. When you hear the confirmation dial tone, press 3, followed by the Speed Call number.

Setting up telephones

To place a call using Speed Call from your Meridian Digital telephone, lift the handset and press the Speed Call key. Enter the Speed Call number.

553-0047T SpCall

Call is processed

Dial 1, 2 or 3 digit code
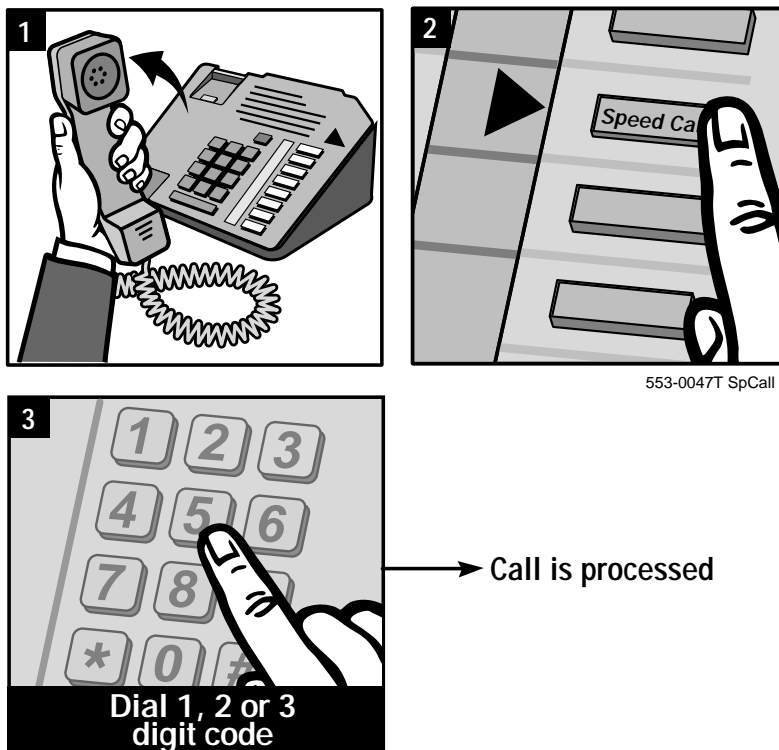
Setting up telephones

SPRE codes

To use a feature on a telephone that lacks the feature key, lift the handset or press an idle DN key and type in the SPRE code defined in overlay 15. Press a number key to select a feature.
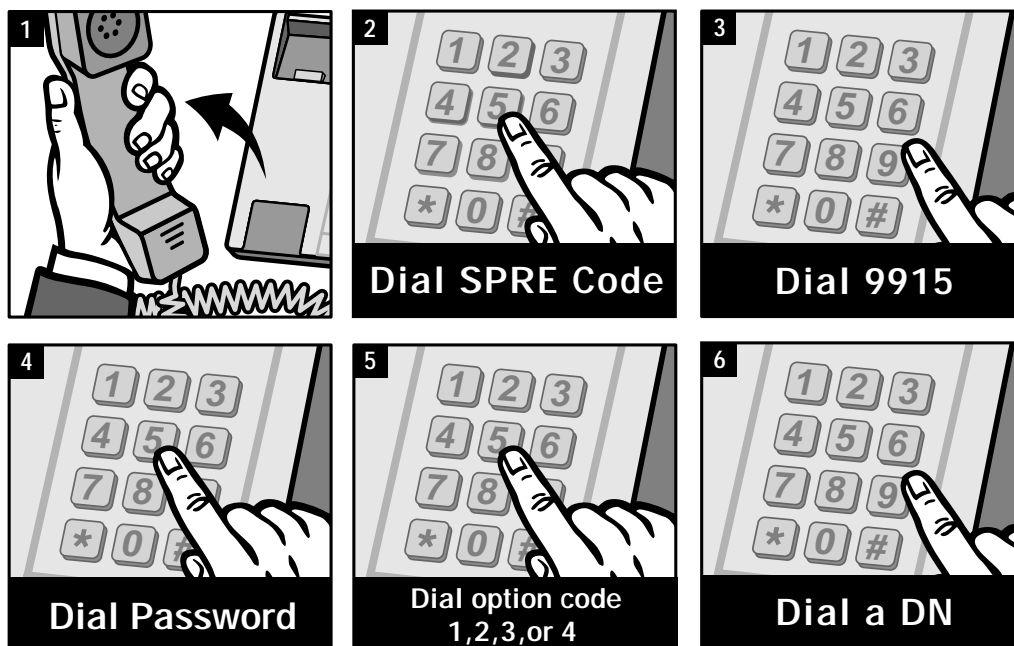
553-0101T USCR

Common problems associated with telephones

1. Keys may be mislabelled.

2. The user may not be able to place or receive calls.

3. The user may have problems hearing or being heard.

4. The handset, headset or display may not operate properly.

Setting up telephones

Suggested solutions

Hardware problems are the most common cause of telephone problems. When you need to identify a hardware problem, refer to the *Fault Clearing Guide*. Some problems are described below, with a list of common causes.

Keys are incorrectly labelled

The best way to avoid the problem of mislabelled keys is to:

◆ use standardized installation forms, if you don't already do so

◆ always test each key on each telephone once installation and configuration is complete

User is not able to place or receive calls

A number of problems can prevent the user from placing or receiving calls on a newly configured telephone. When this happens, check for system messages.

An OVD message tells you that the cause of the problem is hardware. Possible hardware problems include:

◆ a defective peripheral equipment card

◆ a defective telephone

◆ defective wiring between the telephone and the Meridian 1

◆ a defective backplane

User is having trouble hearing or being heard

A number of hardware problems can cause audio problems on the telephone. If the user is having problems hearing or being heard, check the following possible causes:

◆ a defective handset or headset

◆ a defective telephone

◆ a defective peripheral or intelligent peripheral equipment (PE or IPE) card

◆ defective wiring between the telephone and the Meridian 1

Setting up telephones

The handset or headset does not work properly

Several problems can lead to the failure of a telephone headset or handset. These include:

◆ a failed signalling test between the Meridian 1 and the telephone

◆ a telephone fault

◆ a fault on the peripheral equipment card

The digit display does not work properly

The digit display on a telephone can fail to operate because of hardware or administration problems, including:

◆ a disconnected or defective power supply

◆ a disabled terminal number (TN)

◆ failure to assign the feature in overlay 15

◆ a defective telephone

Setting up attendant consoles

Purpose

Attendant Consoles assist in placing and extending calls into and out of the Meridian 1 system. The operator of an Attendant Console is known as the attendant. The consoles provide the attendant with many unique features that increase the speed and ease of call processing.

This TASK section provides an overview of the Attendant Consoles and a description of the basic software capabilities and associated service changes. Additional information regarding attendant-related software features may be found in the *Software Feature Guides*.

Basic configuration

Setup of an attendant console involves the following steps:

1. Unpacking the attendant console.

2. Installing the cabling for the attendant console.

3. Configuring the attendant console in the Meridian 1 software.

Unpacking the attendant console

Use proper care while unpacking any attendant console. Check for damaged containers so that appropriate claims can be made to the transport company for items damaged in transit.

If an attendant console must be returned to the factory, pack it in the appropriate container to avoid damage during transit. Remember to include all loose parts (cords, handset, power unit, labels, and lenses) in the shipment.

Setting up attendant consocles

Installing the cabling for the attendant console

The steps below list the information required to cable the M1250 or M2250 attendant consoles. For added information about installing cabling for older model attendant consoles, refer to *Telephone and Attendant Console Installation*.

1   Ensure that a 16-pair or 25-pair cable equipped with a 25-pair Amphenol connector is installed at the attendant console's location.

2   Unpack and inspect the attendant console for damage. If the console is damaged, notify your supplier.

3   Connect the Amphenol plug on the attendant console to the Amphenol jack coming from the Main Distribution Frame (MDF).

   — Fasten the Amphenol connectors together and secure the captive screws on the cable.

   — Ensure that the connectors are secured in a connector mounting, if provided, or to the wall. Do not leave connectors unprotected on the floor.

4   Add a line circuit for the attendant console, if not already done. Refer to *Circuit card installation and testing* (553-3001-211).

5   See the cross-connecting attendant consoles section below.

Cross-connecting attendant consoles

Terminations are located on the vertical side of the distributing frame when frame-mounted blocks are used and in the blue field when wall-mounted blocks are used.

Setting up attendant consoles

Line circuit card (TN) terminations are located on the horizontal side of the distributing frame when frame-mounted blocks are used and in the white field when wall-mounted blocks are used.

Procedure 1
Cross-connecting attendant consoles

1 Locate the attendant console terminations at the cross-connect terminal.

2 Connect Z-type cross-connecting wire to the leads of the attendant console.

3 Locate the line circuit card (TN) terminations.

4 Run and connect the other end of the cross-connecting wire to the assigned TN terminal block.

Setting up attendant consoles

QCW and M1250 attendant console cross-connections

Console connector   Cable to console

553-1861

See notes on next page
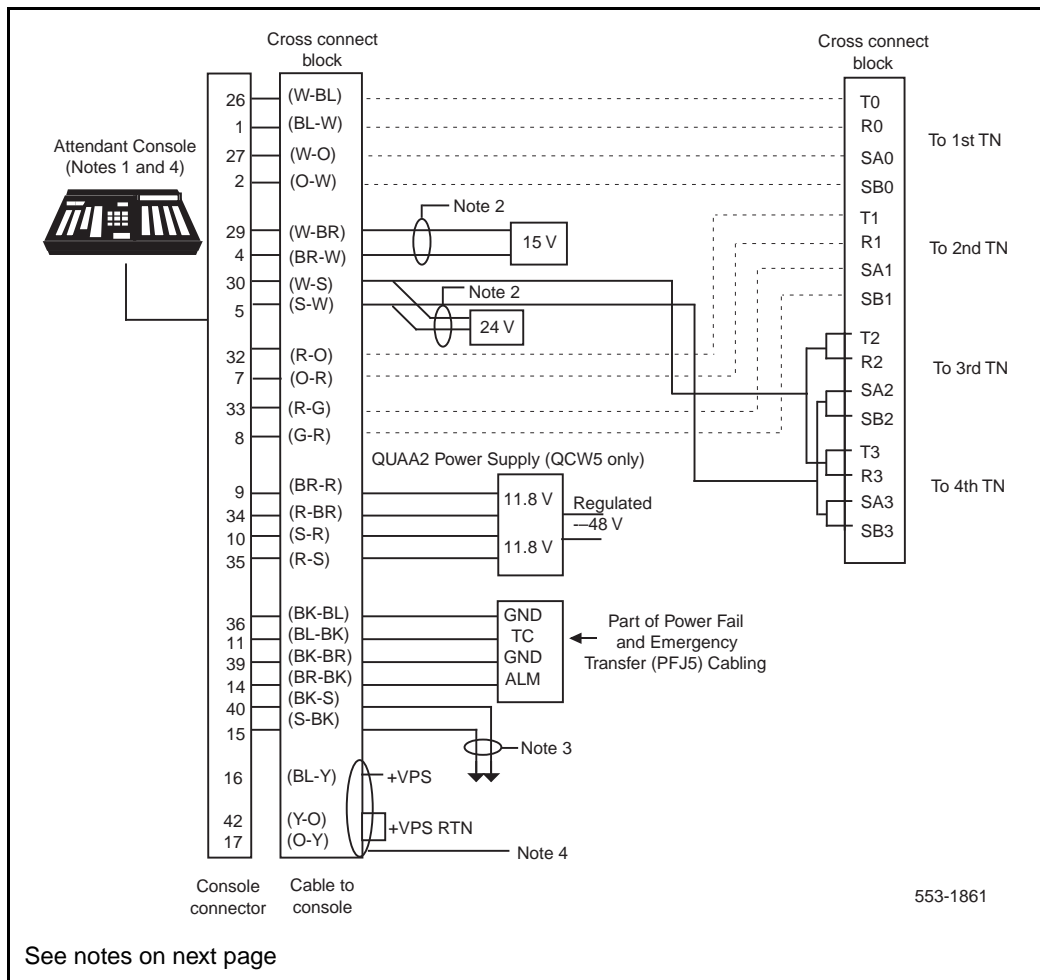
Setting up attendant consoles

The following notes refer to Figure , which illustrates QCW and M1250 attendant console cross-connections.

Note 1: Attendant consoles require 24 V of power. Attendant consoles equipped with the QMT3 module require 15 V of power in addition to the 24 V power supply.

Note 2: You can obtain 24 V of power from the following:

— 24 V transformers located within 25 ft (7.7 m) of the console. A separate transformer is required for each attendant console.

— QUT1 or QUAA1 centralized power supply. A separate fuse is required for each attendant console.

— Two circuits with a maximum loop resistance of 300 ¾. This cross-connection must not be used if the power is obtained from a source other than the Meridian 1 line circuit.

Note 3: (M1250) Connect to a solid ground (not the Meridian 1 system ground). The maximum distance between the ground source and the attendant console must be less than 200 ft (61 m). Run the ground directly to the console cable connector if the connection through the cross-connector exceeds 200 ft (61 m).

Note 4: When the BLF/CGM option is used on the M1250, an additional 16 V dc power supply must be cabled through the +VPS (pin 16) and the +VPS RTN (pins 42 and 17) wires. The maximum loop limit from the attendant console to the connector is 120 ft (36 m) at 24 AWG.

Setting up attendant consoles

M2250 attendant console cross-connections
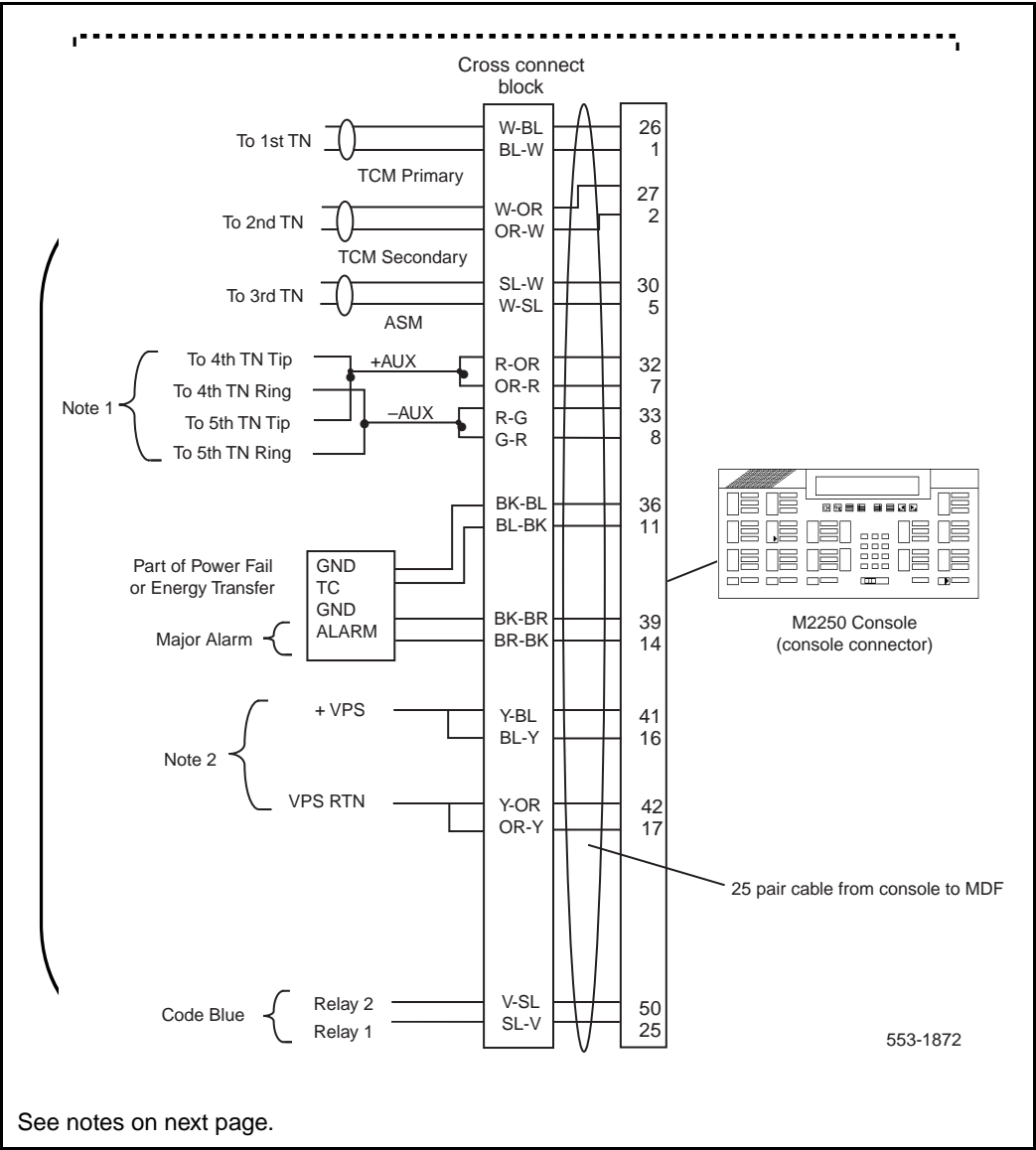
M2250 Console
(console connector)

25 pair cable from console to MDF

553-1872

See notes on next page.

Setting up attendant consoles

The following notes refer to Figure , which illustrates the M2250 attendant console cross-connections.

> *Note 1:* The M2250 is powered by means of the line circuits. In addition to the primary TN, secondary TN, and ASM TN, two TNs are cabled to the M2250 using the +AUX and –AUX leads. The maximum loop length is 3000 ft of 24 AWG wire.

> *Note 2:* When additional options are used (BLF or display backlight option), an additional 16 V dc power supply is required. The 16 V dc source is cabled using +VPS and VPS RTN leads. The maximum distance from the console to the power source is 120 feet of 24 AWG wire. Please note if both options are installed, only one 16 V dc power supply is required.

> *Note 3:* It is recommended that five consecutive TNs on the line circuit be allocated for each console.

> *Note 4:* When used with the ISDLC, the M2250 requires QPC578 vintage D or later.

Attendant console features

The attendant console, in its standard configuration, allows you to perform basic operator tasks. Options are available to enhance or customize the attendant console, tailoring it to meet customer specific needs. Refer to the *Software Feature Guides* for programming attendant console features.

Setting up attendant consoles

Administration tips

EFFICIENCY

Do not assign attendant consoles to high priority card slots. The high number of priority messages generated by attendant consoles can result in delays, both in messages output to the attendant consoles themselves, and to messages output to telephones and trunks.

Always assign attendant consoles to card slots 2 - 10. Avoid assigning a large number of attendant consoles to the same network loop.

Setting up attendant consoles

What to have ready

The following checklist summarizes the steps you should take before setting up an attendant console.

Table 28
Checklist

Basic	Optional	Preparation
Ð		Decide how many attendant consoles you need.
Ð		Choose a DN for each attendant console.
Ð		Unpack and install the attendant console, so that it can be tested once configured.

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to implement an attendant console.

Setting up attendant consoles

```
            ┌─────────┐          ┌──────────────────────────────┐
            │  Start  │          │  The flowchart summarizes the │
            └────┬────┘          │  procedure. Use the instructions in the │
                 │               │  step-action table that follows this │
                 ▼               │  flowchart to perform the procedure. │
         ┌───────────────┐       └──────────────────────────────┘
         │ Choose        │
         │ features,     │
         │ options, keys.│
         └───────┬───────┘
                 │
                 ▼
         ┌───────────────┐
         │ Turn features │
         │ on.           │
         └───────┬───────┘
                 │
                 ▼
         ┌───────────────┐
         │ Define the new│
         │ console in    │
         │ LD12.         │
         └───────┬───────┘
                 │
                 ▼
         ┌───────────────┐
         │ Assign keys.  │
         └───────┬───────┘
                 │
                 ▼
         ┌───────────────┐
         │ Assign autodial│
         │ numbers.      │
         └───────┬───────┘
                 │
                 ▼
         ┌───────────────┐
         │ Define power  │
         │ TNs.          │
         └───────┬───────┘
                 │
                 ▼
            ┌─────────┐
            │   End   │
            └─────────┘
```
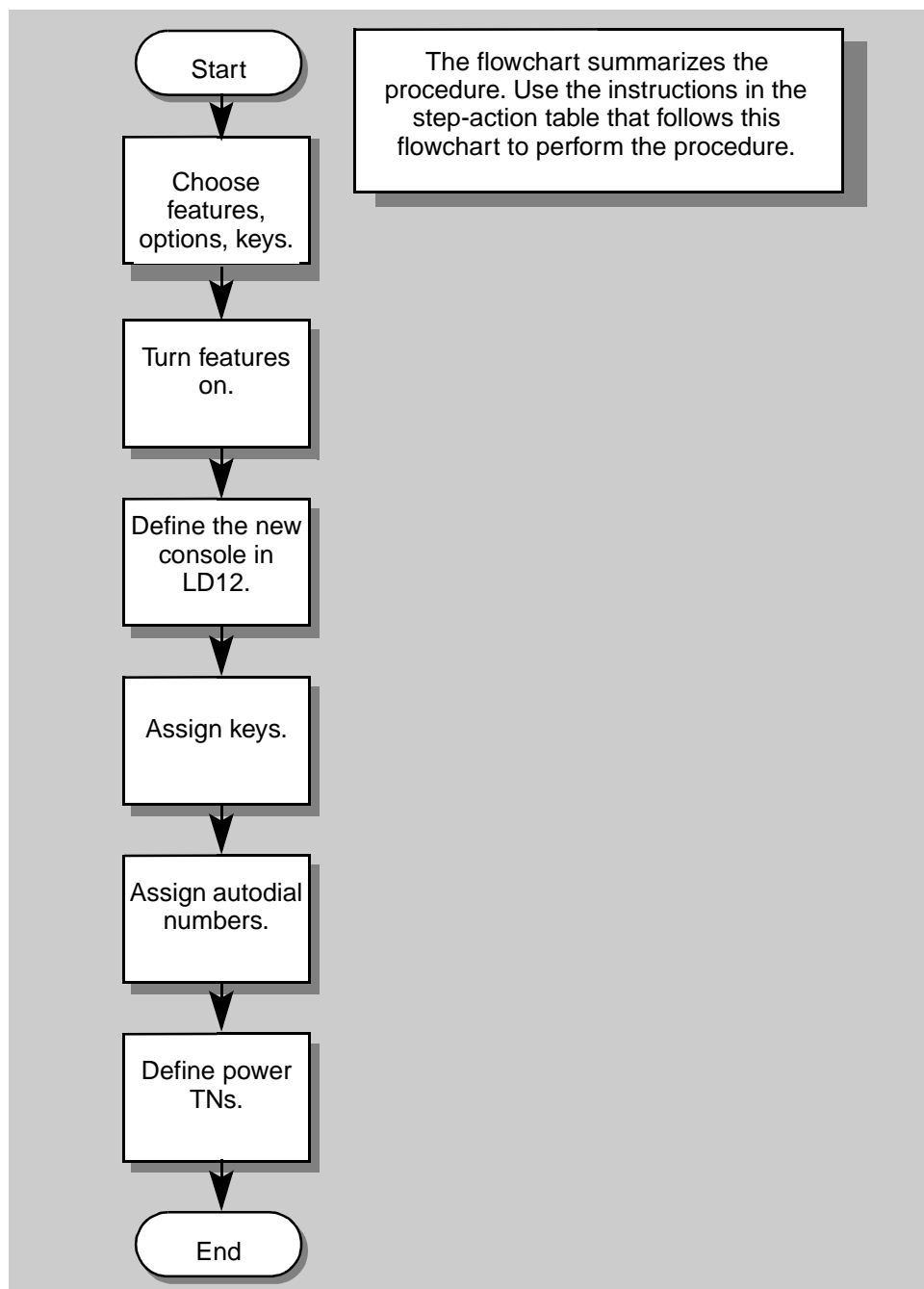
Setting up attendant consoles

The preceding material in this module contains essential information.
You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation
of attendant consoles.

STEP	ACTION

1   Log in.

For information on proper login procedures, see *Basic Programming
Instructions* in *Basic Telecom Management*.

2   Enable basic options you plan to install on the attendant console.

>LD 15		
REQ	CHG	
TYPE	CDB	Change the customer data block.
	ATT	Release 21 and later gate opener.
CUST	0-99	Enter the customer number.
ATDN	(0)-xxxx	Attendant Directory Number.
		Up to 4 digits, up to 7 digits with Directory Number Expansion (DNXP) package 150.
NCOS	(0)-99	Set the attendant network class of service for all consoles in this customer group.
		(0) -3 CDP
		(0) -3 BARS or NFCR
		(0) -15 NARS
		(0) -99 Release 13 and later
		Prompted with Network class of service (NCOS) package 32.
SPVC	0-63	Enter an attendant number for the supervisor console. (If there is no supervisor console required, enter 0.)

— continued —

Setting up attendant consoles

STEP	ACTION		
	2 continued …		
	REQ	****	Terminate the Overlay by entering ****.
3	**Program a new attendant console.**		
	>LD 12		
	REQ	NEW	Create a new attendant console.
	TYPE	a..a	Type of data block. TYPE = 1250, 2250 or ATT (QWC3 or QWC4).
	TN	L S C U	Enter the attendant console's TN (**L**oop number, **S**helf number, **C**ard number, **U**nit number).
	SETN	L S C U	Input the second TN to be assigned to the new attendant console (**L**oop number, **S**helf number, **C**ard number, **U**nit number).
	CUST	0-99	Enter the customer number.
	ANUM	1-63	Enter the attendant number.
	REQ	****	Terminate the Overlay by entering ****.
4	**Assign power terminal numbers to analog consoles.**		
	>LD 12		
	REQ	NEW	
	TYPE	PWR	Add a power TN.
	TN	L S C U	Enter the TN to supply power to an attendant console (**L**oop number, **S**helf number, **C**ard number, **U**nit number).
	— continued —		

Setting up attendant consoles

STEP	ACTION

5   **Check that the attendant console which you have just programmed is working.**

     >LD 20

REQ	PRT	Enter PRT to verify attendant console.
TYPE	a..a	Type of data block. TYPE = 1250, 2250 or ATT (QWC3 or QWC4) or PWR.
REQ	****	Terminate the Overlay by entering ****.

Verify that the attendant console does exist in software.

Verify that the display is functioning on the attendant console.

6   **Perform a data dump to permanently store the programming you have just completed.**

CAUTION
Check your maintenance agreement
before working in LD 43.

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on
LD 43.

> LD 43

. EDD <cr>

— continued —

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Setting up attendant consoles

STEP	ACTION
7	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
8	**Terminate this overlay program.**
	.****
9	**Terminate this programming session.**
	Log off.
	>LOGO
10	**You have completed the programming required to add an attendant console.**

END

Setting up message filters (Release 21

Purpose

The Meridian 1 generates a large number of messages during normal operations. You may want to filter these messages, allowing only messages of interest to print out.

The information you enter during this stage of basic configuration is described in detail below. Procedures for entering this information are provided later in this chapter.

System messages

The Meridian 1 reports system status and system events by printing out or displaying system messages. A number of different classes of message provide information about different types and severity of event.

A large number of messages are provided for information only, and in most situations at most installations do not require intervention or action.

For more information about system messages, refer to the *Input/Output Guide* and the *Fault Clearing Guide*.

Setting up message filters (Release 21 and earlier)

Message filters

The Meridian 1 can filter alarms and messages for you, alerting you to only those system events of interest to you. The Alarm Filter package 243 must be installed on your system to provide alarm and message filtering.

To turn alarm and message filtering on or off, respond to the AF_STATUS prompt.

Triggers

You can set up a trigger to raise an alarm if certain messages or types of messages are generated. This lets you highlight specific messages of concern and assign priorities to these messages.

You can also set filters that will ignore specific messages or ranges of messages. This lets you filter out nuisance messages or recurring messages that have no impact on your operation.

You can define up to 50 triggers and filters.

Selecting messages

To identify messages of interest, add or change an alarm filter and enter a string that matches part or all of the messages at the TRIGGER prompt. You can use wildcards in a trigger string to capture a range of messages.

For example, if you want to get an alarm when a BUG1234 message is generated, enter BUG1234 as the trigger string at the TRIGGER prompt. If you want to get an alarm when any BUG message is generated, enter BUG++++ at the TRIGGER prompt. (The + sign indicates a wildcard character, meaning that the Meridian 1 will alarm any message beginning with BUG, regardless of the numbers that follow.)

The following mnemonics can be entered at the TRIGGER prompt: ACD, ADD, AMH, AMLM, ATM, AUD, AUTH, BERR, BIC, BSD, BUG, CCED, CCR, CDM, CED, CIOD, CMON, CNF, CNI, CSA,

Setting up message filters (Release 21 and earlier)

CSC, DBMT, DCH, DLO, DSET, DTA, DTC, DTI, DTRK, EDD,
ERR, ESDA, ESDI, HWI, IOD, ISR, LNK, MFR, MFS, MISP,
MSDL, MWL, NPR, NWS, OSM, OVD, OVL, PCH, PMS, PRI,
PWR, RPD, RPL, RPT, SCSI, SDL, TDS, TEMU, TFN, TRK, TSM,
TTY, VAS, XCT, and XMI. For information about these message
types, refer to the *Input/Output Guide*.

Excluding messages

To identify messages you are not interested in, add or change an
exception filter and enter a string that matches part or all of the
messages at the TRIGGER prompt. You can use wildcards in a trigger
string to ignore a range of messages.

For example, if you want to ignore BUG4321, enter BUG4321 as the
trigger string at the TRIGGER prompt. If you want to ignore all ERR
messages, enter ERR++++ at the TRIGGER prompt. (The + sign
indicates a wildcard character, meaning that the Meridian 1 will
ignore any message beginning with ERR, regardless of the numbers
that follow.)

Alarm severity

Alarm filters lets you assign different levels of severity to different
messages. There are four levels of alarm severity:

◆ NONE, an alarm without a severity rating

◆ MINOR, an alarm normally indicating an error condition that does
not affect system operation

◆ MAJOR, an alarm normally indicating a serious condition that is
not preventing the system from operating

◆ CRITICAL, an alarm normally indicating a serious condition that
is jeopardizing system operation

To specify the severity of an alarm associated with a particular trigger,
respond to the SEVERITY prompt.

Suppressing recurring alarms

The Meridian 1 can suppress the output of recurring alarms. To set the
number of times an alarm can appear before the system stops
reporting it, respond to the SUPPRESS prompt.

Setting up message filters (Release 21 and earlier)

Escalating recurring alarms

The Meridian 1 can report a major alarm as critical if it is a recurring alarm. To set the number of times a major alarm recurs before being reported as a critical alarm, respond to the ESCALATE prompt.

Message formatting

You can turn the formatting of messages on or off. Formatting makes it easier to identify and read messages onscreen.

To turn formatting on or off, respond to the FMT_OUTPUT prompt.

Administration tips

A number of courses and administration aids are available from Nortel or your system supplier. Taking advantage of these courses and aids maximizes the effectiveness of your Meridian 1 administration efforts.

Nortel's support helpline is available to customers who want help setting up their Meridian 1. For more information, call your system supplier.

TASK

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System Programming Guide

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Setting up message filters (Release 21 and earlier)

What to have ready

The following checklist summarizes the steps you should take before configuring alarm filters.

Table 29
Checklist

Basic	Optional	Preparation
Ð		Identify the messages that are to generate critical alarms.
Ð		Identify the messages that are to generate major alarms.
Ð		Identify the messages that are to generate minor alarms.
Ð		Identify the messages that are to generate unrated alarms.
Ð		Identify the messages that are to be ignored.
	Ð	Decide which alarms will be suppressed if they recur.
	Ð	Decide which major alarms will require escalation if they recur.
	Ð	Decide on the formatting of message output (on or off).

What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. The table explains the programming steps necessary to configure alarm filters.

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Setting up message filters (Release 21 and earlier)

```
            Start

    Turn message
    formatting on
       or off.

    Turn message          The flowchart summarizes the
    filtering on          procedure. Use the instructions in the
       or off.            step-action table that follows this
                          flowchart to perform the procedure.

     Define new                          Define new
    alarm filters.                       exception
                                          filters.

    Define filter                         Define
      triggers.                         suppression
                                         triggers.

    Set filter alarm                   Route alarms to
       severity.                         a terminal
                                         or printer.

                                            End
```

Setting up message filters (Release 21 and earlier)

> The preceding material in this chapter contains essential information. You should be aware of this information before you proceed.
>
> This step-action table covers the prompts related to the implementation of alarm and message filters.

STEP	ACTION
1	**Log in.**

For information on proper login procedures, see *Basic Programming Instructions* in *Basic Telecom Management*.

2	**Turn message filtering on or off.**

>**LD 17**

REQ	CHG	
TYPE	CFN	Enter CFN to change configuration record.
ALARM	YES	Enter YES to change alarm filter configuration data.

The system will print out the present configuration of alarm and exception filters.

FMT_OUTPUT	(OFF) ON	Enter ON to turn on formatting of message output, or OFF to turn off formatting.
AF_STATUS	(OFF) ON	Enter ON to turn on alarm and exception filtering, or OFF to turn off filtering.

— continued —

Setting up message filters (Release 21 and earlier)

STEP	ACTION
3	**Define the message alarm filters.**

A_FILTER aaa   aaa = NEW, CHG, OUT

Enter NEW to add an alarm filter, CHG to modify an existing alarm filter, or OUT to remove an existing alarm filter.

If you are adding or changing a filter, respond to the following prompts:

TRIGGER xxx...xxx   Enter a trigger string for alarms. The trigger string can be up to 10 alphanumeric characters. At least one character must be alphabetic. To use a wildcard, enter a + sign.

Possible entries include ACD, ADD, AMH, AMLM, ATM, AUD, AUTH, BERR, BIC, BSD, BUG, CCED, CCR, CDM, CED, CIOD, CMON, CNF,CNI, CSA, CSC, DBMT, DCH, DLO, DSET, DTA, DTC, DTI, DTRK, EDD, ERR, ESDA, ESDI, HWI, IOD, ISR, LNK, MFR, MFS, MISP, MSDL, MWL, NPR, NWS, OSM, OVD, OVL, PCH, PMS, PRI, PWR, RPD, RPL, PRT, SCSI, SDL, TDS, TEMU, TFN, TRK, TSM, TTY, VAS, XCT, XMI.

For example, BUG++++ includes all BUG system messages. The mnemonics supported for this prompt are listed above. A value must be entered; <CR> is not accepted.

SEVERITY xxxx   Specify the severity of alarms and messages matching this trigger.

— continued —

Setting up message filters (Release 21 and earlier)

STEP	ACTION

3 continued …	
If these messages mean	**Enter**
nothing	NONE
system operation is in jeopardy	CRITICAL
the system is operating, but the condition is serious	MAJOR
system operation is not affected, but an error was detected	MINOR

SUPPRESS 0-(5)-127	Specify the number of times an alarm occurs before the system stops outputting it. Enter 0 if all recurring alarms are to be output.
ESCALATE 0-(2)-127	Specify the number of times a major alarm occurs before the system shows it as critical. Enter 0 if no recurring major alarms are to be escalated.

4	**Specify exception filters.**
	E_FILTER aaa aaa = NEW, CHG, OUT
	Enter NEW to add an exception filter, CHG to modify an existing exception filter, or OUT to remove an existing exception filter.
	If you are adding or changing a filter, respond to the following prompt:

— continued —

Setting up message filters (Release 21 and earlier)

STEP	ACTION
	4 continued …

TRIGGER	xxx...xxx	Enter a trigger string for exceptions. The trigger string can be up to 10 alphanumeric characters. At least one character must be alphabetic. To use a wildcard, enter a + sign.
		Possible entries include ACD, ADD, AMH, AMLM, ATM, AUD, AUTH, BERR, BIC, BSD, BUG, CCED, CCR, CDM, CED, CIOD, CMON, CNF,CNI, CSA, CSC, DBMT, DCH, DLO, DSET, DTA, DTC, DTI, DTRK, EDD, ERR, ESDA, ESDI, HWI, IOD, ISR, LNK, MFR, MFS, MISP, MSDL, MWL, NPR, NWS, OSM, OVD, OVL, PCH, PMS, PRI, PWR, RPD, RPL, PRT, SCSI, SDL, TDS, TEMU, TFN, TRK, TSM, TTY, VAS, XCT, XMI.
		For example, BUG++++ includes all BUG system messages. The mnemonics supported for this prompt are listed above. A value must be entered; <CR> is not accepted.

5	**Route alarms to a terminal or printer.**	
	From the TASK section on Configuring Terminals, choose a terminal that will display the alarms as they occur. Respond to the FIL prompt as shown below.	
ADAN	TTY 0-15, PRT 0-15	
		To send alarms to a terminal, enter TTY followed by the terminal number. To send alarms to a printer, enter PRT followed by the printer number.
USER	FIL	Enter FIL to assign the user type for the port. Only alarm filtered messages will appear from the port. (When filtering is turned off, no messages appear.)
	— continued —	

Setting up message filters (Release 21 and earlier)

STEP	ACTION
6	**Check your programming.**

If possible, try to trigger various alarms to ensure that your programming is in effect. If you cannot check alarms at this time, review your programming to ensure that no errors were made. Use the scroll feature of your terminal, check your printout, or use overlay 22 to examine the contents of the database. For more information about reviewing your programming, refer to the About the Meridian 1 section of this book.

If	**Do**
the programming is correct	step 7
the programming is not correct	step 1

7	**Perform a data dump to permanently store the programming you have just completed.**

CAUTION
Check your maintenance agreement
before working in LD 43

Refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD **<cr>**

— continued —

Setting up message filters (Release 21 and earlier)

STEP	ACTION
8	**Verify that the data dump was successful.**
	On-screen or printed response:
	NO GO BAD DATA
	or
	DATA DUMP COMPLETE
9	**Terminate this overlay program.**
	* * * *
10	**Terminate this programming session.**
	Log off.
	>LOGO
11	**You have completed the programming required to set up alarm filters.**

END

Completing programming

Purpose

Once you have performed basic programming, you must perform some testing and optimization to complete your installation. These tasks include:

◆ performing traffic studies to optimize buffer configurations

◆ ensuring that overnight and daily routines are running properly

◆ verifying that trunks, telephones and attendant consoles are operating properly

Traffic studies and buffers

Once you have completed the basic programming required to allow the Meridian 1 to function, you should consider adjusting parameters to maximize efficiency.

The size of the various buffers are the most important parameters to examine. To find the best values for buffers, you must run traffic studies using a range of values and select sizes that provide the best traffic performance.

Traffic studies can take some time. You will have to start traffic studies and return later to examine results and take corrective action.

Completing programming

How to use traffic commands

The Traffic Control program is used to set traffic options, system ID, date and time. The conventions used to describe the traffic commands are:

◆ data entered by the user is shown in upper case, data output by the system is shown in lower case

◆ a period (.) prompt indicates that the system is ready to receive a new command

◆ a double dash (--) indicates that the system is ready to receive data

◆ a <cr> indicates that the return key should be pressed

Note: The message TFC000 output on your switch indicates that the traffic program is running.

Setting traffic report schedules

To print current customer report schedule, use the following command:

TSHC C sd sm ed em sh eh so d d ...

To print current system report schedule, use the following command:

TSHS sd sm ed em sh eh so d d ...

To set customer report schedule, use the following command:

SSHC C sd sm ed em -- SD SM ED EM sh eh so -- SH EH SO d d ... -- D D ...<cr>

To set system report schedule, use the following command:

SSHS sd sm ed em -- SD SM ED EM sh eh so -- SH EH SO d d ... -- D D ...<cr>

Completing programming

Where:

◆ C is the customer number and D is the day of the week:
  1 = Sunday
  2 = Monday
  3 = Tuesday
  4 = Wednesday
  5 = Thursday
  6 = Friday
  7 = Saturday

◆ ED is the end day (1-31)

◆ EH is the end hour (0-23)

◆ EM is the end month (1-12)

◆ SD is the start day (1-31)

◆ SH is the start hour (0-23)

◆ SM is the start month (1-12)

◆ SO is the schedule option:
  0 = no traffic scheduled
  1 = hourly on the hour
  2 = hourly on the half-hour
  3 = every half-hour

Reports

To print the current report types, issue the following command:

TOPN C r r ...

To set one or more report types, issue the following command:

SOPN C r r ... -- R R ....<cr>

Completing programming

To clear one or more report types, issue the following command:

COPN C r r ... -- R R ....<cr>

Where:

◆ C is the customer number

◆ R is traffic report type:
1 = route list measurements
2 = network class of service measurements
3 = incoming trunk group measurements

Note: To use the print command enter a space (not a carriage return) after the customer number.

To print current customer being measured, issue the following command:

TCFT c

To set the customer to be measured, issue the following command:

SCFT c -- C

Where C is the customer number. Only one customer can have feature measurement set at a time.

Completing programming

Trunks

Use trunk diagnostic equipment to verify the operation of the different trunks connected to your Meridian 1.

Verify that all trunk routes are operating properly by placing calls over those trunk routes. (Remember that one successful call over a trunk route does not guarantee that all trunks in that trunk route are operating properly. Place a number of concurrent calls over the same trunk route to ensure that all trunks are operating.)

Telephones and attendant consoles

You should test at least one telephone in each group of similarly programmed telephones before leaving the Meridian 1 site. You should also test every attendant console.

When testing, exercise every common telephone operation as well as any specially equipped keys or features. Remember to place calls to destinations both within the customer and outside the customer.

Common problems associated with telephones and consoles

1. Keys may be mislabelled.

2. The user may not be able to place or receive calls.

3. The user may have problems hearing or being heard.

4. The handset, headset or display may not operate properly.

Suggested solutions

Hardware problems are the most common cause of telephone and attendant console problems. When you need to identify a hardware problem, refer to the *Fault Clearing Guide*. Some problems are described below, with a list of common causes.

Completing programming

Keys are incorrectly labelled

The best way to avoid the problem of mislabelled keys is to:

◆ use standardized installation forms, if you don't already do so

◆ always test each key on each telephone and attendant console once installation and configuration is complete

User is not able to place or receive calls

A number of problems can prevent the user from placing or receiving calls on a newly configured telephone or attendant console. When this happens, check for system messages.

An OVD message tells you that the cause of the problem is hardware. Possible hardware problems include:

◆ a defective peripheral equipment card

◆ a defective console

◆ defective wiring between the telephone or console and the Meridian 1

◆ a defective backplane

If no system message appears, the problem is likely to be one of the following:

◆ no power to the telephone or console

◆ a defective telephone or console

◆ a telephone or console connected to the wrong terminal numbers (TN)

◆ disabled TNs

◆ defective wiring

Completing programming

User is having trouble hearing or being heard

A number of hardware problems can cause audio problems on the telephone or attendant console. If the user is having problems hearing or being heard, check the following possible causes:

◆ a defective handset or headset

◆ a defective telephone or console

◆ a defective peripheral or intelligent peripheral equipment (PE or IPE) card

◆ defective wiring between the telephone or console and the Meridian 1

The handset or headset does not work properly

Several problems can lead to the failure of a headset or handset. These include:

◆ a failed signaling test between the Meridian 1 and the telephone or console

◆ a telephone or console fault

◆ a fault on the peripheral equipment card

The digit display does not work properly

The digit display on a telephone or attendant console can fail to operate because of hardware or administration problems, including:

◆ a disconnected or defective power supply

◆ a disabled terminal number (TN)

◆ failure to assign the feature in overlay 15

◆ a defective telephone or console

For more information about resolving telephone and attendant console problems, refer to *Telephone and Attendant Console Installation*.

Completing programming

SYSLOAD

You must perform a SYSLOAD before testing Meridian Digital Telephones. The sidetone (SOLR) and other parameters are downloaded to the telephones during SYSLOAD.

Date and time adjustment

The time of day can be adjusted during the midnight routines to compensate for a fast or slow system clock.

To print the current adjustment: TDTA X y

To set the adjustment: SDTA X y -- X Y

Legend x = 0 for negative increment

 = 1 for positive increment

y = 0-60 second adjustment in increments of 100 ms Set system ID

Daily routines

The best way to verify that the daily routines you programming are running properly is to return to the site a day after the initial programming was completed. This gives you the chance to directly verify that the routines are running at the correct time and performing the intended tasks.

Administration tips

EFFICIENCY

Train your personnel to use the attendant console and telephones properly. Knowing how to use the tools provided by the attendant console and telephones will lead to fewer problems and greater efficiency.

Completing programming

Your business will benefit greatly and you will spend less time managing problems if you stress good user habits in training sessions.

Training tips

◆ Avoid the problems often associated with telephones and attendant consoles by doing proper training on an ongoing basis. Provide refresher training on an ongoing basis. Dial telephone users must remember a number of different feature access codes. They may need reminders after the initial training in order to effectively use all the features they need. This helps them get the most out of the system and in turn the system provides them with the expected benefits.

◆ When new features or options are added to telephones or attendant consoles, train the users in the use of those options. Some options radically change the way in which a telephone or attendant console handles calls.

◆ Provide attendant console training in context. Training is more effective if you provide it at the location where the user will actually perform attendant functions, using real telephone procedures.

◆ Short, customized lists of feature instructions and access codes for each user are worthwhile. Make them small enough to be placed underneath the telephone where they are readily accessible.

◆ If Flexible Feature Codes are in use on your system, keep the codes as simple as possible. Users will be confused and aggravated if you implement codes which are difficult to use. It is not a good idea to implement several codes for each feature unless you have users who are each accustomed to a different code and they are difficult to retrain.

Completing programming

What to have ready

The following checklist summarizes the steps you should take before performing verification and acceptance testing.

Table 30
Checklist

Basic	Optional	Preparation
Ð		Complete the programming required to allow proper testing. (If you are testing telephone features, ensure that the trunks and features you need are configured.)
Ð		Determine whether the Meridian Digital Telephone sidetone (SOLR) value was changed from default (requiring a SYSLOAD).
	Ð	Gather any worksheets or forms your company uses during testing.

What's next?

A flowchart follows which summarizes the verification decisions and procedures.

A step-action table follows the flowchart. The table explains the steps necessary to perform verification and acceptance testing.

Completing programming

```
            ┌─────────┐        ┌──────────────────────────────────┐
            │  Start  │        │   The flowchart summarizes the   │
            └────┬────┘        │ procedure. Use the instructions in the │
                 │             │   step-action table that follows this  │
                 ▼             │   flowchart to perform the procedure.  │
         ┌───────────────┐     └──────────────────────────────────┘
         │ Verify buffers.│
         └───────┬───────┘
                 │
                 ▼
         ┌───────────────┐
         │   Perform a    │
         │   SYSLOAD.     │
         └───────┬───────┘
                 │
                 ▼
         ┌───────────────┐
         │ Test attendant │
         │   consoles.    │
         └───────┬───────┘
                 │
                 ▼
         ┌───────────────┐
         │     Test       │
         │  telephones.   │
         └───────┬───────┘
                 │
                 ▼
         ┌───────────────┐
         │ Test trunks and│
         │  trunk routes. │
         └───────┬───────┘
                 │
                 ▼
            ┌─────────┐
            │   End   │
            └─────────┘
```
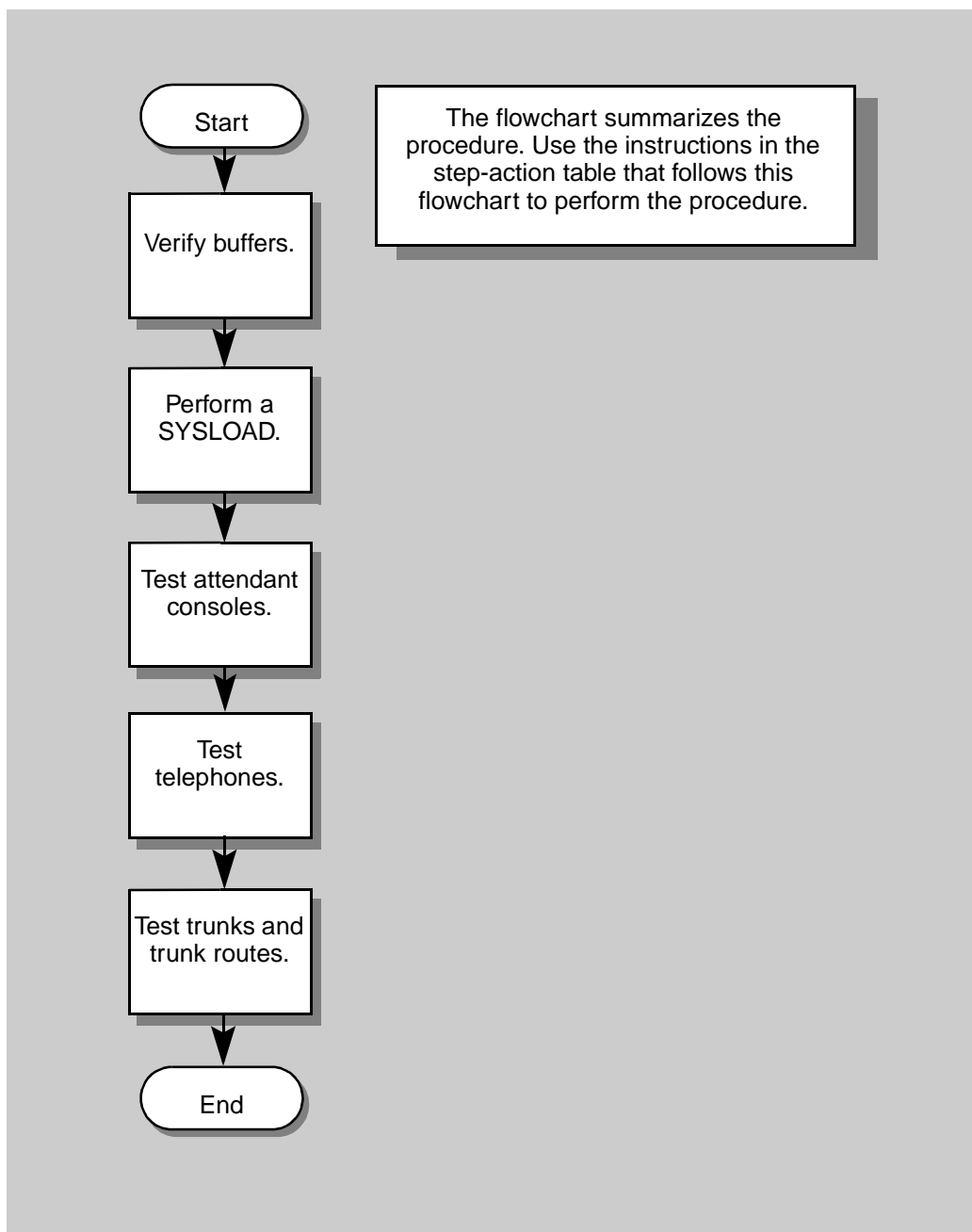
Completing programming

STEP	ACTION
1	**Verify your implementation of buffers.**
	Perform traffic studies to determine the efficiency of the initial buffer sizes.
2	**Perform a SYSLOAD.**
	Perform a SYSLOAD to download parameters to digital telephones. For more information about SYSLOADs, refer to the *Input/Output Guide.*
3	**Test attendant consoles.**
	Test attendant consoles by placing calls and exercising all features and keys.
4	**Test telephones.**
	Test at least one telephone from each group of similarly programmed telephones. Place calls, receive calls, and exercise all features and keys.
	— continued —

Completing programming

STEP	ACTION
5	**Test trunks and trunk routes.**
	Test trunk routes by placing calls to destinations outside your Meridian 1. Ensure that you test all types of trunk route to all destinations.
	Test individual trunks using trunk diagnostic equipment.
6	**Perform traffic studies to optimize buffers.**
	Optimize the system's buffers by performing traffic studies and adjusting buffer settings.
	For more information about traffic studies, refer to *Capacity Engineering*.
7	**Confirm that the system is operating properly.**

If	Do
the system is operating	step 8
something is wrong	task 1

STEP	ACTION
8	**You have completed the steps required to complete programming.**

Completing programming

Circuit Cards

In this chapter

Circuit Cards

Circuit Card Precautions

To avoid personal injury and equipment damage, review the following guidelines before handling Meridian 1 equipment.

WARNING

Module covers are not hinged; do not let go of the covers. Lift covers away from the module and set them out of your work area.

WARNING

Circuit cards may contain a lithium battery. There is a danger of explosion if the battery is incorrectly replaced. Do not replace components on any circuit card; you must replace the entire card.

Dispose of circuit cards according to the manufacturer's instructions.

To avoid damage to circuit cards from static discharge, wear a properly connected antistatic wrist strap when you work on Meridian 1 equipment. If a wrist strap is not available, regularly touch one of the bare metal strips in a module to discharge static.

Handle circuit cards as follows:

— Unpack or handle cards away from electric motors, transformers, or similar machinery.

— Handle cards by the edges only. Do not touch the contacts or components.

— Set cards on a protective antistatic bag. If an antistatic bag is not available, hand-hold the card, or set it in a card cage unseated from the connectors to set option settings.

— Keep cards installed in the system as much as possible to avoid dirty contacts and unnecessary wear.

Circuit card switch settings

NT6D11and NT5K35 D-Channel Interface Card

The next three tables list option settings for the NT6D11 (vintages AA, AB, and AC) and NT5K35 DCHI Card.

NT6D11AA, AB, AC, and NT5K35 jumper settings and group selection

Jumper settings				Address selection			
Option	**Port**	**Socket number**		**Group number**	**Switch**		
					1	**2**	**3**
DTE (terminal)	0 1	U11 U5	U9 U3	0 1	off off	off off	off on
DCE (modem)	0 1	U12 U6	U10 U4	2 3	off off	on on	off on
RS-232-C interface	0 1	U31 U25	U29 U23	4 5	on on	off off	off on
High-speed interface	0 1	U30 U24	U28 U22	6 7	on on	on on	off on

Note: Group and port numbers combine to define a complete port address. (The following two tables define port numbers.) There are 8 groups and 16 port numbers, for a total of 128 possible ports. Group 0 is the only group supported by Generic X11 Supplementary Features Group F (Phase 6). Therefore, when using Group F software set switches 1, 2, and 3 to OFF.

Circuit Cards

NT6D11AA, AB, and AC port address settings for single port operation

Port number SDI/DCHI (J1/J2)	Switch						
	4	**5**	**6**	**7**	**8**	**9**	**0**
0	off	off	off	off	on	*	off
1	off	off	off	on	on	*	off
2	off	off	on	off	on	*	off
3	off	off	on	on	on	*	off
4	off	on	off	off	on	*	off
5	off	on	off	on	on	*	off
6	off	on	on	off	on	*	off
7	off	on	no	on	on	*	off
8	on	off	off	off	on	*	off
9	on	off	off	on	on	*	off
10	on	off	on	off	on	*	off
11	on	off	on	on	on	*	off
12	on	on	off	off	on	*	off
13	on	on	off	on	on	*	off
14	on	on	on	off	on	*	off
15	on	on	on	on	on	*	off

* Set switch 9 to ON (1) to enable the SDI port and disable the DCHI port. Set switch 9 to OFF (0) to disable the SDI port and enable the DCHI port.

NT6D11AA, AB, and AC port settings for dual port operation

Port number		Switch						
SDI (J1)	**DCHI (J2)**	**4**	**5**	**6**	**7**	**8**	**9**	**0**
0	1	off	off	off	*	off	*	off
2	3	off	off	on	*	off	*	off
4	5	off	on	off	*	off	*	off
6	7	off	on	on	*	off	*	off
8	9	on	off	off	*	off	*	off
10	11	on	off	on	*	off	*	off
12	13	on	on	off	*	off	*	off
14	15	on	on	on	*	off	*	off

* Switches 7 and 9 do not affect dual port operation; they may be set to ON or OFF.

Circuit Cards

NT6D80 Multi-purpose Serial Data Link Card

	Port 0—SW4	**Port 0—SW8**
RS-232-D DTE or DCE*	all off	all off
RS-422-A DTE (terminal)	all off	all on
RS-422-A DCE (modem)	all on	all off
	Port 1—SW3	**Port 1—SW7**
RS-232-D DTE or DCE*	all off	all off
RS-422-A DTE	all off	all on
RS-422-A DCE	all on	all off
	Port 2—SW2	**Port 2—SW6**
RS-232-D DTE or DCE*	all off	all off
RS-422-A DTE	all off	all on
RS-422-A DCE	all on	all off
	Port 3—SW1	**Port 3—SW5**
RS-232-D DTE or DCE*	all off	all off
RS-422-A DTE	all off	all on
RS-422-A DCE	all on	all off

* RS-232-D DTE and DCE modes are software configured. RS-422-A DTE and DEC modes are switch configured.

Note: The device number for the MSDL card is configured in LD17 at the prompt DNUM. You must also set the device number, using switches S9 and S10, on the MSDL card. S9 designates ones and S10 designates tens. To set the device number as 14, for example, set S10 to 1 and S9 to 4.

Circuit Cards

NT8D41 Dual Port Serial Data Interface Paddle Board

The next three tables list option settings for the NT8D41 SDI Paddle Board.

NT8D41 port addresses

Device number		SW4			
Port 1	Port 2	1	2	3	4
0	1	off	on	on	on
2	3	off	on	on	off
4	5	off	on	off	on
6	7	off	on	off	off
8	9	off	off	on	on
10	11	off	off	on	off
12	13	off	off	off	on
14	15	off	off	off	off

NT8D41 baud rate

Baud rate	Port 1–SW2				Port 2–SW3			
	1	2	3	4	1	2	3	4
150	off	off	on	on	off	off	on	on
300	off	on	off	on	off	on	off	on
600	off	off	off	on	off	off	off	on
1200	off	on	on	off	off	on	on	off
2400	off	off	on	off	off	off	on	off
4800	off	on	off	off	off	on	off	off
9600	off	off	off	off	off	off	off	off

Circuit Cards

NT8D41 DTE or DCE selection

Mode	Port 1—SW5						Port 1—SW6					
	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**
DTE (terminal)	on	on	on	on	on	on	off	off	off	off	off	off
DCE (modem)	off	off	off	off	off	off	on	off	on	on	on	on
NT1P61 (Fibre)	on	on	on	on	off	off	off	off	on	on	on	on
	Port 2—SW7						Port 2—SW8					
DTE	on	on	on	on	on	on	off	off	off	off	off	off
DCE	off	off	off	off	off	off	on	off	on	on	on	on

Circuit Cards

NTND02 Misc/SDI/Peripheral Signaling Card

The next four tables list option settings for the NTND02 MSPS Card.

NTND02 port addresses

Device number		Even port SW8				Odd port SW9					
		1	2	3	4	1	2	3	4	5	6
0	1	*	off	off	off	off	off	off	on	on	on
2	3	*	off	off	off	off	off	off	on	on	off
4	5	*	off	off	off	off	off	off	on	off	on
6	7	*	off	off	off	off	off	off	on	off	off
8	9	*	off	off	off	off	off	off	off	on	on
10	11	*	off	off	off	off	off	off	off	on	off
12	13	*	off	off	off	off	off	off	off	off	on
14	15	*	off	off	off	off	off	off	off	off	off
* Switch does not affect operation; it may be set to ON or OFF.											

NTND02 baud rates—switch settings

Baud rate	Even port—SW10				Odd port—SW11			
	1	2	3	4	1	2	3	4
150	*	off	on	on	*	off	on	on
300	*	on	off	on	*	on	off	on
600	*	off	off	on	*	off	off	on
1200	*	on	on	off	*	on	on	off
2400	*	off	on	off	*	off	on	off
4800	*	on	off	off	*	on	off	off
9600	*	off	off	off	*	off	off	off
* Switch does not affect operation; it may be set to ON or OFF.								

Circuit Cards

NTND02 DTE or DCE selection

Mode	Even port—SW4						Even port—SW5					
	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**
DTE (terminal)	off	off	off	off	off	off	on	on	on	on	on	on
DCE (modem)	on	on	on	on	on	on	off	off	off	off	off	off
NT1P61 (Fibre)	off	off	on	on	on	on	on	on	on	on	off	off
	Odd port—SW2						**Odd port—SW3**					
DTE	off	off	off	off	off	off	on	on	on	on	on	on
DCE	on	on	on	on	on	on	off	off	off	off	off	off

NTND02 data format selection

Format	Even port—SW6				Odd port—SW7			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**
7 bits/character		off	on			off	on	
8 bits/character		off	off			off	off	
Odd parity	on			on	on			on
Even parity	on			off	on			off
No parity	off			*	off			*
* Switch does not affect operation; it may be set to ON or OFF.								

Circuit Cards

QPC139 Serial Data Interface Card

The next two tables list option settings for the QPC139 SDI Card.

QPC139 address and output device selection

Address selection					Output device		
Device number	**F7 switch**					**Port 1 plug location**	**Port 2 plug location**
	1	**2**	**3**	**4**			
0–1	off	on	on	on	Modem	A13	A25
2–3	off	on	on	off			
4–5	off	on	off	on	RS-232 data terminal	A16	A22
6–7	off	on	off	off			
8–9	off	off	on	on			
10–11	off	off	on	off			
12–13	off	off	off	on			
14–15	off	off	off	off			

Note 1: Switches at D22 and D31 are not used and set to OFF.

Note 2: When connecting to NT1P61 Fibre Superloop Network Card, install DIP switches as follows: location A13=off off on off on on, A16= on on on on on off off, A22=on on on on on off off, A25=off off on on off on on

QPC139 baud rate selection

Baud rate	**Port 1 C34 switch**				**Port 2 C22 switch**			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**
110	off	on	on	on	off	on	on	on
150	off	off	on	on	off	off	on	on
300	off	on	off	on	off	on	off	on
600	off	off	off	on	off	off	off	on
1200	off	on	on	off	off	on	on	off
2400	off	off	on	off	off	off	on	off
4800	off	on	off	off	off	on	off	off
9600	off	off	off	off	off	off	off	off

Note: Switches at D22 and D31 are not used and set to OFF.

Circuit Cards

QPC414 Network Card

Application	Pin connection J3/S2 and J4/S1
Option A: In-house remote peripheral equipment (RPE), microwave, fiber optics	connect pins 2 and 3 (pin 1 is next to the white dot)
Option B: T-1 facilities (including PRI/DTI),* channel service unit	connect pins 1 and 2 (pin 1 is next to the white dot)

*   To connect 1.5M RPE to T-1 through channel service unit, select option B. For 2M RPE, jumper plugs are not used.

Note 1: Possible jumper locations for vintage B (for different styles/series):
        J3—E11 or H11
        J4—H17 or E7
        S1 and S2—E33

Note 2: Possible jumper locations for vintage A (for different styles/series). These cards do not have the option selection and can only be used in the option A setting:
        J3—H5 or E11
        J4—H17 or E7
        S1 and S2—E33

Note 3: Connectors and loop relations:
        Even loop: J1 faceplate connector, jumper at J4 or S1
        Odd loop: J2 faceplate connector, jumper at J3 or S2

Circuit Cards

QPC513 Enhanced Serial Data Interface Card

Program socket selection			Switch S2—Address selection								
Option	Port	Socket number		Device number	Style A				Style B			
					1	2	3	4	1	2	3	4
DTE (terminal)	1	UA10	UA12	0–1	off	off	off	*	off	off	off	*
	2	UA17	UA19	2–3	on	off	off	*	off	off	on	*
DCE (modem)	1	UA9	UA11	4–5	off	on	off	*	off	on	off	*
	2	UA16	UA18	6–7	on	on	off	*	off	on	on	*
RS-232-C interface	1	UB9	UB11	8–9	off	off	on	*	on	off	off	*
	2	UB16	UB18	10–11	on	off	on	*	on	off	on	*
High-speed interface	1	UB10	UB12	12–13	off	on	on	*	on	on	off	*
	2	UB17	UB19	14–15	on	on	on	*	on	on	on	*

*   ON = synchronous mode; OFF = asynchronous mode. (Asynchronous mode is not supported. However, in releases prior to X11 release 18, asynchronous mode may work in some applications. With Release 18 and later, asynchronous mode will not work.)

Circuit Cards

QPC687 CPU Card

Address selection B1 switch					Speed selection B1 switch*							Output device		
Device number	1	2	3	4	Baud rate	5	6	7	8	9	10			
0	on	on	on	on	300	off	off	on	off	on	off	QPC687A Port	Plug location	
1	off	on	on	on	600	off	on	off	on	on	off			
2	on	off	on	on	1200	on	off	on	on	on	off	Modem	A7	
3	off	off	on	on	1800	off	on	on	on	on	off	EIA data terminal	A5	
4	on	on	off	on	2400	off	off	on	off	off	on			
5	off	on	off	on	4800	off	on	off	on	off	on	QPC687B Port	Switch location	
6	on	off	off	on	9600	on	off	on	on	off	on			
7	off	off	off	on									A23	B23
8	on	on	on	off									S1	S2
9	off	on	on	off								Modem	All on	All off
10	on	off	on	off								EIA data terminal	All off	All on
11	off	off	on	off										
12	on	on	off	off										
13	off	on	off	off										
14	on	off	off	off										
15	off	off	off	off										

* On vintage B, the option plug has been replaced with two switches (S1 and S2) in locations A23 and B23.

Circuit Cards

QPC720 Primary Rate Interface Card

Switch S2 settings	To repeatered facility	To cross-connect point
5 on	0–45 m (0–150 ft)	0–30 m (0–100 ft)
2, 4, 6 on	46–135 m (151–450 ft)	31–100 m (101–355 ft)
1, 3, 7 on	136–225 m (451–750 ft)	101–200 m (356–655 ft)

Switch 3 option for DTI with ESF
SW3-1   on   = extended superframe format (ESF)   off   = superframe format (SF)
Note 1: All positions on S2 (location B22) are OFF except as shown under the column labeled "Switch S2 settings."
Note 2: The switch 3 option for DTI with ESF applies to only X11 releases 16, 17, and 18. All other positions on the 8-pole SW3 (location E37) should be OFF.
Note 3: Before X11 release 19 (releases 16, 17, and 18), you must set the framing format as ESF with the DLOP prompt in LD17 before you set SW3-1 on the card for the DTI with ESF option.
Note 4: Beginning with X11 release 19, framing format, line encoding, and method of yellow alarm are selectable for both DTI and PRI in LD17 with the DLOP, LCMT, and YALM prompts. All SW3 switch positions should be OFF.
Note 5: QPC720E is a standard product since July, 1993 backwards compatible to X11 release 13 software.

Circuit Cards

QPC757 D-Channel Interface Card

Vintage A socket selection				Address selection				
Option	Port	Socket number		Device number	S2 switch			
					1	2	3	4
Data terminal equipment (DTE)	0	UA10	UA12	0–1	off	off	off	off
	1	UA17	UA19	2–3	off	off	on	off
Data communication equipment (DCE)	0	UA9	UA11	4–5	off	on	off	off
	1	UA16	UA18	6–7	off	on	on	off
RS-232-C interface	0	UB9	UB11	8–9	on	off	off	off
	1	UB16	UB18	10–11	on	off	on	off
High-speed interface	0	UB10	UB12	12–13	on	on	off	off
	1	UB17	UB19	14–15	on	on	on	off
Vintage C socket selection				Address selection				
DTE	0	U11	U9	0–1	off	off	off	off
	1	U5	U3	2–3	off	off	on	off
DCE	0	U12	U10	4–5	off	on	off	off
	1	U6	U4	6–7	off	on	on	off
RS-232-C interface	0	U31	U29	8–9	on	off	off	off
	1	U25	U23	10–11	on	off	on	off
High-speed interface	0	U30	U28	12–13	on	on	off	off
	1	U24	U22	14–15	on	on	on	on

QPC757 vintage G is a standard product starting 11/93 and it is backwards compatible with X11 release 14 and higher software. It has the same socket and address selection as vintage C.

Circuit Cards

QPC841 4-Port Serial Data Interface Card

The next four tables list option settings for the QPC841 4-Port SDI Card.

QPC841 port 1 and 2 address selection

Device number		SW14							
Port 1	Port 2	1	2	3	4	5	6	7	8
0	1	off	off	off	off	off	on	on	on
2	3	off	off	off	off	off	on	on	off
4	5	off	off	off	off	off	on	off	on
6	7	off	off	off	off	off	on	off	off
8	9	off	off	off	off	off	off	on	on
10	11	off	off	off	off	off	off	on	off
12	13	off	off	off	off	off	off	off	on
14	15	off	off	off	off	off	off	off	off

Note 1: On SW16, positions 1, 2, 3, and 4 must be OFF.

Note 2: To avoid address conflicts, SW14 and SW15 can never have identical setting.

Note 3: To disable ports 1 and 2, set SW14 position 1 to ON.

Circuit Cards

QPC841 port 3 and 4 address selection

Device number		SW15							
Port 3	**Port 4**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0	1	off	off	off	off	off	on	on	on
2	3	off	off	off	off	off	on	on	off
4	5	off	off	off	off	off	on	off	on
6	7	off	off	off	off	off	on	off	off
8	9	off	off	off	off	off	off	on	on
10	11	off	off	off	off	off	off	on	off
12	13	off	off	off	off	off	off	off	on
14	15	off	off	off	off	off	off	off	off
Note 1: On SW16, positions 1, 2, 3, and 4 must be OFF.									
Note 2: To avoid address conflicts, SW14 and SW15 can never have identical setting.									
Note 3: To disable ports 3 and 4, set SW15 position 1 to ON									

Circuit Cards

QPC841 baud rate

Baud rate	Port 1 SW10				Port 2 SW11				Port 3 SW12				Port 4 SW13			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
150	off	off	on	on	off	off	on	on	off	off	on	on	off	off	on	on
300	off	on	off	on	off	on	off	on	off	on	off	on	off	on	off	on
600	off	off	off	on	off	off	off	on	off	off	off	on	off	off	off	on
1200	off	on	on	off	off	on	on	off	off	on	on	off	off	on	on	off
2400	off	off	on	off	off	off	on	off	off	off	on	off	off	off	on	off
4800	off	on	off	off	off	on	off	off	off	on	off	off	off	on	off	off
9600	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off

QPC841 DTE or DCE selection

Mode	Port 1—SW8						Port 1—SW9					
	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**
DTE (terminal)	on	on	on	on	on	on	off	off	off	off	off	off
DCE (modem)	off	off	off	off	off	off	on	on	on	on	on	on
NT1P61 (Fibre)	on	off	off	on	off	off	on	off	off	off	on	on

Circuit Cards

QPC841 DTE or DCE selection

Mode	Port 1—SW8						Port 1—SW9					
	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**
	Port 2—SW6						Port 2—SW7					
DTE	on	on	on	on	on	on	off	off	off	off	off	off
DCE	off	off	off	off	off	off	on	on	on	on	on	on
NT1P61 (Fibre)	on	off	off	on	off	off	on	off	off	off	on	on
	Port 3—SW4						Port 3—SW5					
DTE	on	on	on	on	on	on	off	off	off	off	off	off
DCE	off	off	off	off	off	off	on	on	on	on	on	on
	Port 4—SW2						Port 4—SW3					
DTE	on	on	on	on	on	on	off	off	off	off	off	off
DCE	off	off	off	off	off	off	on	on	on	on	on	on

Circuit Cards

Terms and abbreviations

2500 set

A Digitone ™ telephone. It is an analog telephone that has buttons, on a key-pad, on the front. When each button is pressed, the telephone transmits a unique tone which represents the digit corresponding to the button pressed. Calls are made by pressing these buttons for the digits in the phone number to be called.

500 set

Dial telephone, sometimes called a rotary telephone. It has a rotary device on the front, used for the purpose of dialing digits to make calls. Each time a person turns the dial with a finger in one of the holes, the dial returns to its rest position. In doing so, the circuit connecting the telephone to the system is broken and reconnected the number of times marked beside the hole in the dial.

A-law companding

Except for North America, companding is accomplished using a logarithmic law called, A-law. See companding.

Access Restriction

Sometimes called the Class of Service of a telephone. It is only one component of the Class of Service. The access-restriction type controls the types of calls which can be made from a telephone. For example, if the access-restriction type is programmed as Toll Denied, the telephone cannot be used to make any calls where the digit 1 or 0 is the first or second digit following the access code digits.

There are many different access restriction types that have different levels of control of the types of calls that can be made from the telephone.

Terms and abbreviations

ACD (Automatic Call Distribution)

Application software that puts incoming calls in a queue to one or more telephones referred to as agent telephones. The longest-waiting call is sent to the agent telephone that has been idle for the longest time. Incoming calls can be given a priority and answered at a prioritized telephone as an option. There are enhancements which can be added to basic ACD functionality to help with management and reporting tasks and also to customize and enhance the treatment incoming calls are given. ACD software packages A, B, C, D, and Custom Controlled Routing offer enhancements to management tools and reports, in order to add to the functionality of basic ACD.

analog (500/2500 type) telephone

A name that replaces PBX set. The name describes a standard telephone set that works on many telephone systems. Examples of these systems are the Meridian 1, DMS or other vendors systems. Analog (500/2500 type) telephone describes the North American 500 set, United Kingdom analogue rotary dial, North American 2500 set, United Kingdom MF 4 and Unity telephones.

application processor

A special purpose computer that attaches to the Meridian 1 system to decrease the load on the system processor. The application processor provides value-added and special services. Application processors are used with voice mail, interactive voice response, and automatic call distribution.

Aries telephones

Digital telephones called the M2006, M2008, M2216ACD, M2616 telephones. They are also known as Meridian Modular Digital telephones.

Attendant

The main answering position on a system. From the attendant position, incoming calls are transferred to internal telephones. The terminal used at the attendant position is called a console. There can be one or more attendants on a system, although some systems do not have any attendants. Attendants can answer incoming calls for the

Terms and abbreviations

main listed number, recalls which have not been answered, calls from users who are dialing incorrectly, and calls from users who are attempting to place restricted calls.

Automatic Call Distribution (ACD)

Application software that puts incoming calls in a queue to one or more telephones referred to as agent telephones. The longest-waiting call is sent to the agent telephone that has been idle for the longest time. Incoming calls can be given a priority and answered at a prioritized telephone as an option. There are enhancements which can be added to basic ACD functionality to help with management and reporting tasks and also to customize and enhance the treatment incoming calls are given. ACD software packages A, B, C, D, and Custom Controlled Routing offer enhancements to management tools and reports, in order to add to the functionality of basic ACD.

Backup answering

Otherwise known as Call Redirection, backup answering refers to the answering of calls done at a telephone or voice messaging port when the originally dialed caller is busy, not answering, or does not wish to be disturbed, and features like Call Forward are active.

Basic Rate Interface (BRI)

An international standard for connecting terminals to a system. One BRI connection is composed of 2 B-channels at 64 kbit/s each, and 1 D-channel at 16 kbit/s.

BCS set (Business Communication Set)

Northern Telecom term for analog telephones called SL-1 telephones and M1009, M1109, and M1309 telephones.

BRI (Basic Rate Interface)

An international standard for connecting terminals to a system. One BRI connection is composed of two B-channels at 64 kbit/s each, and one D-channel at 16 kbit/s.

Terms and abbreviations

Business Communication Set (BCS set)

Northern Telecom term for analog telephones called SL-1 telephones and M1009, M1109, and M1309 telephones.

Call Center

Another term for a queue of incoming calls being answered by one or more telephones.

Call Detail Recording (CDR)

Printouts made when calls are dialed, giving information about the number dialed, the telephones involved, and the duration of the call. Additional information can be printed when CDR enhancements are installed on a system.

Call Pickup

Also called pickup, ringing number pickup. The feature that allows one user to answer an incoming call ringing at another telephone.

call processing

The action of the processor executing the workschedule routine to complete tasks controlled by telephone users. Call processing involves connecting telephone users to other telephones or facilities.

Call Redirection

Also known as backup answering, call redirection refers to the answering of calls done at a telephone or voice messaging port when the originally dialed caller is busy, not answering, or does not wish to be disturbed, and features like Call Forward are active.

call register

Call registers are located in a part of transient data memory. Call registers store temporary information about trunks and telephone sets in the process of establishing calls. Each telephone or trunk in use has a separate call register containing approximately 40 words of information. An example of the 40 words are Class of Service, features, and time slots in use. This information is known as transient data as it is held in a call register only for the duration of the call. Part

Terms and abbreviations

of the call register information is transferred to the network or superloop cards. Once the information is transferred, the network or superloop cards set up and control the call. When the call is finished, the transient data is erased from the call register.

Camp-On

This feature allows an attendant to extend a call to a busy telephone. The user of the telephone hears a tone indicating a call is Camped-On. When the user hangs up, the Camped-On call rings the telephone. If the user does not hang up within a programmed amount of time after hearing the tone, the Camped-On call recalls to the attendant.

carriage return

An instruction directing you to press the key on the keyboard marked ENTER, or RETURN. You press key tells the system you have finished that line of input. In this book the symbol <cr> is used for carriage return.

CCSA (Common Control Switching Arrangement)

A service offered by AT&T for private networks that allows any telephone in the network to call another using a seven-digit number.

CDR (Call Detail Recording)

CDR records are printed when calls are dialed. CDR records show information about the number dialed, the telephones involved, and the duration of the call. Additional information can be printed when CDR enhancements are installed on a system.

CE (Common Equipment)

A term for the part of the system that controls the operation of other system components. Common equipment is composed of CPU, memory, input/output ports, and disk storage.

Central Office (CO)

A large telephone switching system that provides service to subscribers located over a large geographic area, usually as part of a public or military switched telephone network.

Terms and abbreviations

Central Office trunk (COT)

Physical carrier of voice and data traffic to and from a local Central Office. Can be copper wire, cable, or optical fibre.

Central processing unit (CPU)

The card that controls the functions of the other system components, following instructions it gets from the system memory. Some systems have one CPU and others have two.

Centrex

A type of telephone system that usually resides in the central office and can serve telephones distributed over a wide area. The Nortel system that provides this functionality is called the DMS. It provides services and features that are similar to those of a PBX and some that are different.

channel

A transmission path capable of carrying voice or data.

Class of Service

There are many different capabilities and features which can be activated or deactivated for each telephone or trunk. A programming term is used to refer to these capabilities and features collectively. It is Class of Service. For example, the Last Number Redial feature is activated in the Class of Service.

Some people use the term Class of Service when they are referring to one particular feature called Access Restriction. When you program Trunks, Meridian Mail channels, Authorization Codes, and Direct Inward System Access ports, you assign a class of service which is in fact the access-restriction type.

CO (Central Office)

In North America a central office is the facility containing the switching equipment that provides telephone service to subscribers in the immediate geographical area.

Terms and abbreviations

CODEC (coder-decoder)

A device that codes analog signals into digital signals. It also decodes digital signals into analog signals.

Common Equipment (CE)

A term for the part of the system that controls the operation of other system components. Common equipment is composed of CPU, memory, input/output ports, and disk storage.

companding

Companding is derived from the words "compressing" and "expanding". Companding is the process of compressing the amplitude range of a signal for transmission and then expanding the signal back to its original form at the receiving end.

The transmitted signal (speech) is normally a digital signal. An analog to digital conversion of speech is done in three steps. Sampling the analog signal, Quantizing the sample, and Encoding the quantized sample.

The process of sampling, quantizing, and encoding is known as Pulse Code Modulation (PCM). Eight bit PCM is an industry standard.

COMPANION™

Meridian COMPANION ™ systems offer digital wireless telephone capabilities to Meridian 1 systems that use software later than Release 15. Wireless telephone users can travel around their coverage area while answering, initiating, continuing, or transferring telephone calls using low-powered, pocket-size telephones.

CONF (Conference Card)

The interface card in the system that is responsible for adding additional timeslots to an existing call so that more than two people can be bridged together for one call.

Terms and abbreviations

configuration record

A programmable data block that describes the location and function of the CE hardware in the system. The configuration record is programmed in overlay program (load) 17.

confirmation tone

A form of special dial tone that indicates to a telephone user that a feature has been activated.

Core

The processing and data storage portion of the Option 51C, 61C, 81and 81C systems. The Core equates to the Common Equipment in Meridian 1 systems.

Core number

The Option 61C, 81 and 81C systems has two redundant Core systems. The two Core systems are identified by the Core numbers 0 and 1.

COT (Central Office trunk)

A central office trunk is a circuit between a public exchange network switch and a Meridian 1 system.

CPU (central processing unit)

The card that controls the functions of the other system components, following instructions it gets from the system memory. Some systems have one CPU and others have two.

cross-connect panel

Sometimes called the jumper panel or main distribution frame (MDF). The panel where wires from telephones and trunks are interconnected with corresponding wires from the system's line and trunks cards.

CSA trunk

Common Control Switching Arrangement trunk. See CCSA.

Terms and abbreviations

Customer group

A group of users with their own trunk groups, attendants, features and Numbering Plan. A system can be used by one or more unique customer groups.

Data dump

Storing information from memory onto disks.

DCE (Data Circuit Terminating Equipment)

The formal name for a modem. Modem is an acronym for modulator-demodulator. The interfacing equipment that is sometimes required to convert digital signals from data terminal equipment (DTE) into quasi-analog signals. This conversion is needed for transmission over analog telephone communication circuits and vice versa.

DDI (Direct Dialing In)

External callers dialing internal telephones directly, without the intervention of an attendant or interactive voice response system.

Default

The response which is preprogrammed in the system software for a prompt which must have a response. If the programmer does not enter any value for this particular element or prompt, then the default value is retained in the database. These default responses, along with the changed data, are shown when a printout is made. They are also explained in the programming sections of this book and the other programming guides available from Nortel.

delay dial

A trunk signal used to control the transfer of dialed digits. Upon seizure, the originating switch will not outpulse digits until the terminating switch does the following steps:

1. sends an off-hook to the originating switch

2. finds and attaches its digit collection equipment

3. sends an on-hook to the originating switch

Terms and abbreviations

The on-hook indicates the terminating switch can now accept digits. The time between on-hook and off-hook varies with equipment types.

Density

A term that refers to the number of terminals that can be connected to a card. Early vintages of cards such as line cards and trunk cards had capacities for fewer terminals than the cards that are made today. Early cards are referred to as single density. Later cards are called double density to indicate that the capacity had doubled. Still later, cards were introduced that are called quadruple (quad) density and octal density.

Designator (DES)

An alphanumeric code that a programmer associates with a telephone, if the system is equipped with Office Data Administration Software package 20 (ODAS). The code can be up to six characters in length. It can be used to identify the telephone in some way that helps the programmer, usually for record keeping purposes. The programmer decides what the codes will be, and what they will mean. Printouts can be made of telephones with specified DES codes to sort the telephone database according to DES code parameters. For example, the DES system could be set up to identify what department the telephone is in and the floor and building where it is installed. A telephone that is in the accounting department, and on floor 2 of building 1 could have a DES code which is ACF2B1. The programmer could request a printout of all telephones with DES codes that begin with the letters AC to find out what telephones belong to the accounting department.

Dial tone

The tone produced by the system after a user lifts the telephone handset to initiate a call. This tone is heard through the handset or on the handsfree speaker, if the user is doing on-hook dialing. The user can dial a call when this tone is heard.

DID (Direct Inward Dialing)

External callers dialing internal telephones directly, without the intervention of an attendant or interactive voice response system.

Terms and abbreviations

DID trunk

A trunking feature that allows telephone callers connected to the
public exchange network to dial directly to a telephone connected to
the Meridian 1 system. DID happens without the intervention of an
attendant or interactive voice system.

digital subscriber loop

Any one of eight physical Basic Rate Interface (BRI) ports on a BRI
line card. Each port has two B-channels and one D-channel.

digital telephones

A telephone which uses digital signaling. An analog voice is
converted into a digital signal within the telephone. A Macintosh,
IBM-PC or other data terminal can be connected to the telephone. The
data to and from that terminal is multiplexed on the same set of wires
used by the telephone for voice calls.

Digitone

Tones used for signaling the digits 0 through 9, # and *. The tones are
a combination of two voice frequencies, a high tone and a low tone.

Digitone-type telephone

An analog telephone that has buttons, on a key-pad, on the front.
When each button is pressed, the telephone transmits a unique tone
which represents the digit corresponding to the button pressed. Calls
are made by pressing these buttons for the digits in the phone number
to be called.

DIP

A signaling system that uses electrical pulses to transmit digits.

Direct Inward Dialing (DID)

External callers dialing internal telephones directly, without the
intervention of an attendant or interactive voice response system.

Terms and abbreviations

Direct Inward System Access (DISA)

A port configured to allow external callers to use the system as if they were internal users.

Directory Number (DN)

A telephone number. This is the number internal callers dial to ring a telephone.

Disks

Magnetic data storage media.

Distinctive Ringing

There are three features that you can program that cause a telephone to ring differently from the way it rings normally.

You can use the feature called Distinctive Ringing to allow a user to recognize when a call from a particular trunk group is ringing a telephone. If this feature is activated on all trunk groups, then the telephone rings distinctively whenever an external call comes in.

You can program digital telephones to ring in one of four different ringing styles called Distinctive Ringing Groups. This allows a user to differentiate the various telephones when they ring.

You can program a telephone to ring distinctively when a call from a Dial Intercom Group member comes into the telephone. The user can then differentiate a call to a DN as opposed to an incoming call from the intercom group.

DLC (Digital Line Card)

An intelligent digital line card used on systems with Superloops. It can accommodate up to 16 digital telephones and 16 associated data terminals.

DN (Directory Number)

A telephone number. This is the number callers dial to ring a telephone.

download

To receive data from another device.

Terms and abbreviations

DTE (Data Terminal Equipment)

Equipment consisting of digital end devices that convert user information into data signals for transmission, and reconvert the received data signals into user information.

DTMF

Dual Tone Multi Frequency. See Digitone.

DTN (Digitone)

A signaling system that uses audio tones to transmit information. Digitone signaling allows the transmission of digits 0-9, and on specially configured telephones, A-D.

DTR (Digitone receiver)

A card with Digitone receiver units on it. The DTR units translate analog Digitone signals into a digital format.

Enhanced network

A card accommodating two loops. Each loop has 32 timeslots.

exchange network

The global network made up of telephone switches operated for the public by telephone utility companies and governments.

extender or extender pair

A term used to describe a 3 Port Extender (3PE) card, Segmented Bus Extender (SBE) card, and the cable that connects them. These components extend the processor's control to the network shelves. The SBE is located on the common equipment shelf, with the processor. The 3PE is located on the network shelf.

far end

The remote PBX at the distant end where your Tie trunk or Private circuit terminates.

Terms and abbreviations

Fast busy tone

A tone that sounds like busy tone, but turns on and off at a faster rate. Typically, fast busy tone is used to indicate that a call is not progressing or cannot be completed. It may also be called overflow or reorder tone.

Features

Capabilities assigned to the terminals which allow the users to do more than make and receive basic calls. Features range from basic Call Transfer to something as complex as Network-wide Message Waiting. Features are provided by system software which is sometimes basic to every system or packaged as separate options which are either chargeable or non-chargeable. In programming a regular telephone there is an element of programming referred to as the "feature prompt". This element of programming controls certain capabilities which can be activated for that telephone. Some capabilities are activated in the Class of Service.

FEX (Foreign Exchange Trunk)

A trunk that provides telephone service to and from a public exchange switch that is outside the subscriber's exchange area. A user in one city can dial the access code for his FEX trunk and receive dial tone from the foreign public exchange switch. The user can also receive calls dialed from the foreign exchange switch.

firmware

Software, data, and programming instructions stored permanently in Read Only Memory hardware. (It is neither soft nor hard, therefore it must be firm.) Firmware provides the basic function needed by the Meridian 1 system during start-up, software loading, and other periods when software may not be available in memory. Firmware does not require regular update.

Terms and abbreviations

Flexible Features Codes

User-defined numbers of up to four digits that can be used in place of the preprogrammed Special Prefix (SPRE) feature access codes. Flexible Feature Codes allow users to define different feature access codes for different features.

Floppy disks

Magnetic data storage media.

Foreign exchange trunk (FEX)

The physical carrier of voice and data communications to and from a remote or foreign central office (exchange office).

Generic

A family of software releases that are designed to apply to a certain market or application. For example, the Generic called X11 was designed to be used in the North American business market. There are other generics that have existed through the years that were designed for the European market and for the hospitality market. In the future there will be one generic of software for all markets.

group

A pair of interconnected network modules or shelves. A single network module or shelf is known as a half-group.

Group Call

The name of a feature that allows one user to press a key on a proprietary telephone and automatically call several telephones. When users answer these telephones they are automatically bridged into a conference connection with other users on the same Group Call.

Handset

The receiver of a telephone.

Terms and abbreviations

Handsfree

Using a telephone without requiring a handset or headset. During handsfree operation, a properly equipped telephone picks up the user's voice through a microphone built into the telephone, and broadcasts the far end user's voice through a built-in speaker.

high-speed link

A communications channel that uses EIA RS422 or RS423 to connect the Meridian 1 to an applications processor. For example a high speed link connects the Meridian 1 to the Meridian MAX.

immediate start

A signal used on trunks to control the transfer of dialed digits. After a trunk seizure, the originating switch may start outpulsing digits to the terminating switch after a minimum delay of 70 ms.

Initialization

During initialization, transient (unprotected) data is cleared from memory until the initialization is complete. During this time, established calls can remain connected. Calls cannot be originated or disconnected during this time. It generally lasts for a few seconds.

Input/output (I/O) ports

The connection points through which the system outputs data and through which the system receives data input.

intercept treatments

Invalid or denied actions coming from a telephone, TIE trunk, attendant, or CCSA/DID trunk are given a treatment called an intercept treatment. These treatments are defined customer wide. For example, if a user who is Toll Denied tries to dial a toll call, then the intercept treatment for that situation determines what will happen to that user. The user can hear overflow tone, or be routed to the attendant or can hear a recorded announcement.

Terms and abbreviations

IPE (Intelligent Peripheral Equipment)

The part of the system composed of interface cards that connect to terminals such as telephones and trunks, and the shelves on which thesecardsreside.Theinterfacecardsareequippedwithmicroprocessors.

ISDLC (Integrated Services Digital Line Card)

Peripheral Equipment line cards that are used to support digital telephones. They can accommodate up to eight digital telephones and eight associated data terminals.

ISDN (Integrated Services Digital Network)

A digital telephony network that allows the transmission of voice and data using internationally approved protocols.

Issue

During development of a new release of software several versions, called issues, of the release are developed in sequence. Each issue fixes problems that have been identified from the previous issue.

Jumper panel

Sometimes called the cross-connect panel or main distribution frame (MDF). The panel where wires from telephones and trunks are interconnected with corresponding wires from the system's line and trunks cards.

junctor

A passive device providing the interconnection for calls between network groups on multi-group Meridian 1 systems.

Key system

A type of telephone system where the exchange lines can be directly accessed using keys or buttons on the telephones.

Terms and abbreviations

Key

The term used to describe a button on a proprietary telephone that you can assign as a feature or DN function. You assign these keys using overlay program 11. The programming for these keys is stored in the system memory.

LD (Load)

An abbreviation for the term load; otherwise known as overlay program.

link

1. Another name for a communications channel or circuit.

2. A button on certain types of telephones that users can press when they want to perform a switch-hook flash, instead of pressing the switch-hook under the handset.

3. A connection to another system, as in the Meridian Link application.

Loop

A transmission path within the system. Line cards and trunk cards share the transmission path using 32 timeslots.

low-speed link

A communications channel, using EIA RS232 to connect the Meridian 1 to a terminal.

Main Distribution Frame (MDF)

Sometimes called the cross-connect panel or jumper panel. The panel where wires from telephones and trunks are interconnected with corresponding wires from the system's line and trunk cards.

MARP (Multiple Appearance Directory Number Redirection Prime)

The telephone designated as the controlling one on a shared DN for features like Hunting, Call Forward No Answer, and Call Forward All Calls.

Terms and abbreviations

MCA (Meridian Communications Adapter)

A device that provides an interface between an IBM-PC, Macintosh, or data terminal, and an Aries telephone.

MCU (Meridian Communications Unit)

A device that provides an interface between an IBM-PC, Macintosh, or data terminal, and the Meridian 1 system.

MDF (main distribution frame)

Sometimes called the cross-connect panel or jumper panel. The panel where wires from telephones and trunks are interconnected with corresponding wires from the system's line and trunks cards.

MEM (memory)

The hardware in the system that is used to store the information the system needs in order to operate.

memory (MEM)

The hardware in the system that is used to store the information the system needs in order to operate.

Meridian 1 telephone

A term replacing BCS set, describing a telephone set designed to operate exclusively with the Meridian 1 PBX. For example, the SL-1, M1009, M1109, M1309, M2009, M2018, M2112, M2006, M2008, M2317, M2616ACD, M2016S, M2216, and M3000 telephones.

Meridian Mail

The voice mail system manufactured by Nortel to be compatible with the Meridian 1. Meridian Mail is provided using an external application processor.

Terms and abbreviations

Meridian Proprietary Telephone

A term replacing BCS set, which is used to describe the SL-1 telephone, the M1000, M1109, M1309, M2009, M2018, M2018S, M2112, M2317, M2006, M2008, M2616, M2216, and M3000. These telephones are designed to operate exclusively on SL-1, Meridian SL-1, and Meridian 1 switches.

Message Center

A configuration where telephones are programmed to redirect calls to either a specific telephone, the attendant, or voice mail when calls are not answered or the telephone was busy.

mnemonic

Acodeusedasamemoryaid.Mnemoniccodesarealsousedinprogramming.

module

1. Another name for a memory card.

2. A stylish aluminum box that holds a card cage. It is also called a Universal Equipment Module or UEM.

MPU (Multi Processing Unit)

A processor that performs some of the tasks that would otherwise be performed by the CPU. For example, the IPE analog line card contains an MPU that interprets a series of on-hook, off-hook rotary dial pulses as a DN. The MPU then passes the DN on to the CPU, saves CPU resources. Without the MPU, the CPU would have to set and control timers to ensure the incoming pulses are not hook-switch flashes, hits on the line, or that the caller has abandoned the call. See time stamp 2.

Mu-law companding

Companding is the process of compressing the amplitude range of a signal for transmission. At the receiving end the compressed signal is expanded back to its original form. Companding is a contraction of compressing and expanding. In North America, companding is accomplished using a logarithmic law called, "255 Law Companded PulseCodeModulationDigitalCodingStandard"or μ-law. See companding.

Terms and abbreviations

Multiple Appearance Directory Number Redirection Prime (MARP)

The telephone designated as the controlling one on a shared DN for features like Hunting, Call Forward No Answer, and Call Forward All Calls.

Multiple Appearance DN

A DN that is programmed to appear on more than one telephone or more than one key on one telephone.

Multiple Call DN

A DN that appears on more than one telephone or more than one key on one telephone. It is capable of handling as many calls as there are appearances.

NANP (North American Numbering Plan)

The North American Public Exchange Network has been divided into geographical areas with three digit codes which precede the seven digit local telephone number of the subscriber. Previous to 1995, the three digit area codes assigned to each geographical area were in the format where the first digit was any digit between 2-9 and the last digit was any digit between 0-9. The middle digit was either 0 or 1. As of January 1, 1995, the middle digit can be any digit between 0-9. This increases the capacity of three digit codes available.

NE (Network Equipment)

The part of the Meridian 1 that serves to interconnect terminal equipment. Network Equipment also provides services such as conferencing and tones.

near end

The local Meridian 1 system where your Tie trunk or Private circuit terminates.

NET (Network Controller - Superloop)

The circuit pack on which the Superloop resides.

Network Class of Service

A class of service that determines network access.

Terms and abbreviations

Network Equipment (NE)

The part of the Meridian 1 that serves to interconnect terminal equipment. Network Equipment also provides services such as conferencing and tones.

NPA (Numbering Plan Area Code)

The North American Public Exchange Network has been divided into geographical areas with three digit codes which precede the seven digit local telephone number of the subscriber. It is used when dialing a long distance call. For example, when someone in a city in the 205 area code wants to direct dial someone located in the 613 area code, they dial 1613 followed by the person's seven digit telephone number.

NTP (Northern Telecom Publication)

The manuals that are published by Northern Telecom that describe how to install, program and maintain all the features, services and components of a Meridian 1 system. Many of these manuals are shipped with every system. Some of the manuals are optional.

Numbering Plan

The leading digits which are assigned to Directory Numbers, trunk route access codes, and the Special Prefix (SPRE) code for feature activation within one customer group database. The same digits cannot be assigned to two different numbers or codes. This is called the "leftwise unique rule".

For example, it is permissible to have access code 11 for SPRE and access code 130 for paging trunks but it is not permissible to assign access code 55 to a TIE trunk route and access code 552 to a dictation trunk route.

A typical Numbering Plan:

- 0   Attendant

- 11   Special Prefix Code (SPRE)

- 2XXXDirectory numbers (DNs)

- 3XXXDID Directory numbers

Terms and abbreviations

- – 4   Unassigned (for future use)

- – 5   Unassigned (for future use)

- – 6   Unassigned (for future use)

- – 7X   Access codes for TIE trunks, paging trunks, dictation trunks

- – 8   Access code to Automatic Route Selection calls

- – 9   Access code to COT trunks or local calls

NXX (Public Network Exchange code)

The first three digits of a seven digit telephone number assigned to each subscriber in North America. These digits identify the Central Office to which the subscriber is connected.

Off-hook

The status of a telephone when the handset is lifted from the switch-hook. The telephone is described as being in an off-hook condition.

office data

A term used to describe the data programmed on a Meridian 1 using the Administration overlay loads. The administration loads are as follows:

- ◆ LD 10 to LD 29
- ◆ LD 49 to LD 52
- ◆ LD 56 to LD 58
- ◆ LD 73 to LD74
- ◆ LD79
- ◆ LD 81 to LD 88
- ◆ LD 90
- ◆ LD 93 to LD 95
- ◆ LD 97

Terms and abbreviations

On-hook

The status of a telephone when the handset is resting on the switch-hook.Thetelephoneisdescribedasbeinginanon-hookcondition.

Outpulse

To transmit digits on external trunks to other systems. Also, telephones can outpulse digits to the system to which they are connected. The user causes either one of these types of outpulsing to occur by dialing digits on a telephone.

output buffer

A storage area in transient data memory used to keep output information to be sent to a telephone or trunk from the processor. The information, called a messout, will control relays on trunk cards, LEDs or LCDs on telephones, and so on. There are two types of output buffers, SL-1 and 500.

Overflow Tone

A tone that sounds like busy tone, but turns on and off at a faster rate. Typically, fast busy tone is used to indicate that a call is not progressing or cannot be completed. It may also be called fast busy or reorder tone.

Overlay programs

The programs which must be used for entering the data required to customize a system for the particular site and users connected to it. It includes data for such things as features, telephones, trunk groups, hardware, data devices, Automatic Route Selection to name a few.

Terms and abbreviations

P data

The protected data store memory segment for Meridian SL-1NT, XT, Option 61, and 71 (or page 1, for previous systems), holds data blocks that have been entered on a DTE. Pdata describes the make up and provisioning or programmable data of the system. Some of the data blocks are as follows:

◆ configuration records (LD 17)

◆ customer data blocks (LD 15)

◆ route and trunk data blocks (LD 16, LD 14)

◆ telephone set data blocks (LD 10, LD 11)

parameters

A range or limits set for entries in the software.

PBX (Private Branch Exchange)

A telephone switch that serves trunks and telephones.

PBX set

A term replaced by Analog (500/2500 type) telephone. A PBX set is a standard telephone set that works on many telephone systems. Examplesofthesesystemsarethe Meridian 1, DMS orothervendorssystems.

PCM

Pulse Code Modulation. See companding.

PE (Peripheral Equipment)

The part of the system composed of interface cards that connect to terminals such as telephones and trunks, and the shelves on which these cards reside.

Terms and abbreviations

PFTU

Power Fail Transfer Unit. A term used for QUA4, QUA5, QUA6 and NT8D39 (DEES) transfer units. The term implies that an emergency transfer will only result from a loss of power. All transfer units can be connected to perform the emergency transfer function when the CPU cannot process calls, due to a system reload or CPU failure.

Phantom DN

A DN which appears on a secondary key of a telephone. It is not published.

Phantom TN

A TN defined in software that does not exist in hardware.

Pickup

Also called call pickup, ringing number pickup. The feature that allows one user to answer an incoming call ringing at another telephone.

Pickup groups

A group of telephones provided to users who have to be able to answer incoming calls for each other.

port

A port is:

1. the connection point for a terminal

2. another term for a Terminal Number

3. the connection point for an input/output (IO) device

Primary Rate Interface (PRI)

An international standard for connecting telephone switches. A PRI connection is composed of 23 B-channels at 64 kbit/s each, and one D-channel at 16 kbit/s. A PRI2 connection is composed of 31 B-channels at 64 kbit/s each, and one D-channel at 16 kbit/s.

Prime DN

The DN programmed on key 0 of a telephone.

Terms and abbreviations

Private line service

Also known as leased-line service or point-to-point service.

Private network

Trunk connections between PBXs and Centrex systems that carry calls between users who reside on different systems that belong to one organization or company. The private network trunks can be used for calls that end up on the public network, if that is allowed in the area where the systems are installed.

prompt

A mnemonic presented by the system when you are programming or issuing commands to the system.

Proprietary telephone

A term replacing BCS set, which is used to describe the SL-1 telephone, the M1000, M1109, M1309, M2009, M2018, M2018S, M2112, M2317, M2006, M2008, M2616, M2216, and M3000. These telephones are designed to operate exclusively on SL-1, Meridian SL-1, and Meridian 1 switches.

protected data (P data)

The protected data store memory segment for Meridian SL-1NT, XT, Option 61, and 71 (or page 1, for previous systems), holds data blocks that have been entered on a DTE. Pdata describes the make up and provisioning or programmable data of the system. Some of the data blocks are as follows:

- ◆ configuration records (LD 17)
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- ◆ route and trunk data blocks (LD 16, LD 14)
- ◆ telephone set data blocks (LD 10, LD 11)

Terms and abbreviations

PSTN (Public Switched Telephone Network)

Otherwise known as the public network. The global network made up of telephone switches operated for the public by telephone utility companies and governments.

Public (Exchange) network

Refer to Exchange network.

Queuing

The organizing of calls so that the longest waiting or highest priority call is the first to be processed.

RAN

Mnemonic for Recorded Announcement.

Redirection

Otherwise known as backup answering, redirection refers to the answering of calls done at a telephone or voice messaging port when the originally dialed caller is busy, not answering, or does not wish to be disturbed, and features like Call Forward are active.

redundant

A Meridian 1 with two processors is a redundant system. One processor controls the system while the other is in a standby mode. A redundant system is necessary to allow a software upgrade without interrupting service.

Regular telephone

An analog telephone which can operate on any system. These telephones work when connected to a central office, key system or PrivateBranchExchange(PBX).Theyhaverotarydialordigitonekeypads.

Terms and abbreviations

Release

A version of software that contains certain features and capabilities (for example, Release 21). Not all releases can be used on all machine types. Each new release has greater functionality than its predecessor. Nortel introduces at least one new release of software each year.

Reorder Tone

A tone that sounds like busy tone, but turns on and off at a faster rate. Typically, fast busy tone is used to indicate that a call is not progressing or cannot be completed. It may also be called overflow or fast busy tone.

response

A mnemonic you type in answer to a prompt when you are programming.

response time-out

A memory or I/O device does not respond to a read or write signal from the processor within 8 ms. A response time-out causes an initialize or a system reload.

Restriction

Preventing telephone users from making certain types of calls or accessing certain features.

Return key

The key on the keyboard marked ENTER, or RETURN. Pressing the key tells the system you have finished that line of input. In this book the symbol <cr> is used for carriage return.

Ring Again

A feature that allows a telephone user to queue for a busy telephone or trunk group.

Ringback tone

The tone the caller hears when the called telephone is ringing.

Terms and abbreviations

Ringing number pickup

Also called pickup, ringing number pickup. The feature that allows one user to answer an incoming call ringing at another telephone.

SDI (Serial Data Interface)

Input/output port.

Secondary DN

A DN programmed on a key other than key 0 of a telephone.

service change

A term used when you program in administration overlay programs.

service loop

Another name for Tone & Digit Switch and Conference loops. Service loops provide services such as dial tone and multi-party calls.

set

Another term for telephone.

Single Appearance DN

A DN that is programmed to appear on only one telephone and one key of one telephone.

Single Call DN

A DN that appears on one telephone or more than one telephone. It is capable of handling one call at a time.

SL-1 telephone

A telephone designed to work with an SL-1 PBX. It can be configured to have one or more than one Directory Number upon which to make and receive calls. It has buttons called keys which are programmable in the system database for such things as features and Directory Numbers.

SL-1-type telephone

An M1009, M1109, or M1309 telephone.

Terms and abbreviations

slot number

A numbered designator indicating where cards are located within the card cage of the modules.

software package

A component of software that, if equipped, provides certain features and capabilities. Software packages are listed by a mnemonic or a number or both.

special dial tone

A dial tone that sounds different from normal dial tone and indicates to a telephone user the operation of a feature, that a message is waiting, or that a response is required.

Special prefix code (SPRE)

A code defined customer-wide that users of 500- or 2500-type sets dial to access features. The code can also be used on Meridian Digital and SL-1 telephones to access certain features that have not been assigned to keys.

Standard Network

A card that accommodates one loop. Each loop has 32 timeslots. Timeslots are used in matching pairs.

starting arrangement

The protocol used between Meridian 1 PBX and a Central Office to control digit collection. See immediate start, delay dial and wink start.

Station

Another term for telephone.

Station Control Password

A password that is assigned to a telephone in overlay program 10 or 11 that the user of the telephone must dial in order to activate features such as Electronic Lock and Remote Call Forward.

Terms and abbreviations

Superloop

A transmission path within the system. Intelligent line and trunk cards share the transmission path using 128 timeslots.

Switch-hook flash

The term used for pressing the button under the handset of a telephone for a specific amount of time. This is done to access certain features.

Switch-hook

The term used to describe the button that sits under the handset of a telephone.The switch-hook is used to disconnect calls, initiate calls and perform features. The user does these things by depressing the switch-hook, lifting the receiver off the switch-hook, and flashing the switch-hook respectively. (Refer to switch-hook flash).

SYSLOAD

The reset and startup of a telephone switch. During SYSLOAD, data is loaded into the system from storage media, and no call processing can take place.

system monitor

A component found in the lower rear of Meridian 1 equipment columns. The system monitor reports the status of power related hardware for its column to the processor. The processor subsequently sends the system monitor's message to the SDI data terminals.

TDS (Tone and Digit Switch)

A card that the system uses to provide many different tones to users.

Terminal Number (TN)

A physical or hardware location address, consisting of a network loop number, PE shelf number, PE card number, and unit number.

TN (Terminal Number)

A physical or hardware location address, consisting of a network loop number, PE shelf number, PE card number, and unit number.

Terms and abbreviations

TIE trunk

A dedicated circuit that connects two Meridian 1 systems or a Meridian 1 system and any other kind of PBX.

time slot

An interval of time during which you occupy a shared transmission path during an active call.

time stamp

There are two types of time stamp as follows:

1. 1. A time stamp is output within five minutes of the processor detecting an problem to warn service personnel. For example, TIM061 09:00 9/3/1994 CPU0. The time stamp is normally accompanied by a message.

2. 2. When a call register is established for a telephone or trunk, the processor marks the start time and each interval action time with a time stamp in milliseconds. The time stamps are used to start, stop and control timers. For example, a rotary dial telephone sends dialed digits as a series of precisely timed on/off-hooks. If the on-hook to off-hook time interval is short, the processor interprets this as a switch hook flash rather than a dialed digit. If an off-hook to on-hook transition lasts too long, the processor interprets this as a call which is finished or abandoned and tears down the connection.

Traffic

A measurement of the level of activity of a specific resource.

transient data

The same as U data. See unprotected data store.

Trunk group

A defined set of trunks that can be used interchangeably by the system to reach a specific destination.

Terms and abbreviations

Trunk

One or more pairs of wires that connect one system to another. There are many types of trunks, distinguished by the types of calls they are designed to carry and the types of systems they inter-connect. Trunks are grouped together by type into trunk groups. Some examples of trunk types are TIE trunks, central office trunks, and Foreign Exchange trunks.

TTY

A data terminal used to transmit and receive commands and responses when you are programming. Generically a TTY refer to any dumb terminal or DTE used to pass ASCII data. A DTE used for communicating alphanumeric information with the Meridian 1 system.

U data (unprotected data)

The unprotected data store memory segment holds data blocks used by the processor to update information about the progression of calls. When the calls are finished the processor tears down the calls or erases the information in the unprotected data store segment. The data blocks can be varied in number to accommodate the variety of lines or trunks installed, amount of traffic, and so on. They contain:

◆ high and low priority input buffers for MESSIN

◆ SL-1 and 500 output buffers for MESSOUT

◆ call registers - one call register of some 40 plus words is needed for each call and holds information such as;

– calling TN

– called TN

– time slots in use

– dialed digits

– timed status

– call progress markers

– network paths in use

Terms and abbreviations

UEM (Universal Equipment Module)

A stylish aluminum box holding a card cage.

Unity telephone

A family of telephones manufactured by Nortel. They belong in the 500/2500-type telephone family.

unprotected data (U data)

The unprotected data store memory segment holds data blocks used by the processor to update information about the progression of calls. When the calls are finished the processor tears down the calls or erases the information in the unprotected data store segment. The data blocks can be varied in number to accommodate the variety of lines or trunks installed, amount of traffic, and so on. They contain:

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– calling TN

– called TN

– time slots in use

– dialed digits

– timed status

– call progress markers

– network paths in use

WATS (Wide Area Telephone Service) trunk

In North America, a circuit between a public exchange network switch and a Meridian 1 system. WATS telephone calls are billed at a reduced rate.

Terms and abbreviations

wink start

A signal used on trunks to control the transfer of dialed digits. The terminating switch finds and attaches its digit collection equipment, then sends a 140 ms off-hook, on-hook pulse to the originating switch that requests the digits to be sent.

X08

An early edition of the software package for International Business applications. X08 was replaced by X11 with Supplementary Features. With the release 20 software, X11 denotes global applications software.

X11

A software package for North American Business applications. With the release 20 software, X11 denotes global applications software.

XNET

A mnemonic for a superloop network card.

XPE0

The first module (PE shelf) cabled to a superloop.

XPE1

The second module (PE shelf) cabled to a superloop.

XPEC

A mnemonic for System Monitor.

XSM

A mnemonic for System Monitor. A component found in the lower rear of Meridian 1 equipment columns. The system monitor reports the status of power related hardware for its column to the processor. The processor subsequently sends the system monitor's message to the SDI data terminals.

Terms and abbreviations

μ-law companding

In North America, companding is accomplished using a logarithmic law called, "255 Law Companded Pulse Code Modulation Digital Coding Standard" or μ-law. See companding.

Terms and abbreviations

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Meridian 1 Options 21 through 81C
System Programming Guide
System Programming Guide

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