



Nortel CallPilot

T1/SMDI and CallPilot Server Configuration

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Contents

Chapter 1 How to get help	9
Chapter 2 CallPilot and T1/SMDI connectivity overview	11
Introduction	11
Reference Documents	11
Installation and configuration checklist	13
CallPilot and T1/SMDI switch or system sample network diagrams	15
CallPilot T1 and SMDI components	16
SL-100/DMS-100 call routing	18
Chapter 3 Connecting the CallPilot server to the SL-100 or DMS-100 switch	23
Introduction	23
CallPilot interface hardware reference for the SL-100/DMS-100 switch	24
Overview of installing SL-100/DMS-100 SMDI links	26
Installing the SL-100/DMS-100 SMDI link -- direct cable connection	26
Installing the SL-100/DMS-100 SMDI link -- modem connection	28
Installing the SL-100/DMS-100 T1 links and EMC cable requirements	33
Chapter 4 Configuring the SL-100/DMS-100 switch	37
Switch hardware and software requirements	38
Dialing Plan Requirements	38
Overview of SL-100/DMS-100 switch programming	39
Login and Logout code restrictions	40
Checking the amount of memory available	40
Assigning terminal devices for the NT1X89 card or IOM (NTFX30AA)	41
Defining datalink characteristics	43
Datafilling table OFRT	44
Datafilling table DIGCOL	45
Assigning a primary DN to a UCD group	49
Defining line location	50
Adding agents to a UCD group	51
Creating a line DN	52
Moving an agent from one UCD group to another	55
Entering feature activation codes	56

Checking OFCVAR values	58
Call routing options and features for user telephone sets	58
Starting up the link	61
Adjusting the volume level	64
Chapter 5 Configuring the CallPilot server software	67
Overview	67
Logging on to Windows 2003 on the CallPilot server	69
Running the Setup Wizard	69
Logging on to the CallPilot server with CallPilot Manager	70
Running the Configuration Wizard	74
Changing pcAnywhere caller passwords	77
Setting Remote Desktop Policy on a Server	79
Configuring CallPilot to operate in a Windows 2000 or 2003 domain	81
Chapter 6 Testing the CallPilot installation	89
Checking that CallPilot is ready to accept calls	89
Testing the connection to the Nortel server subnet	92
Verifying that CallPilot can receive calls	92
Testing the CallPilot software and channels	93
Appendix A CallPilot T1/SMDI interfaces	105
CallPilot T1 interface and EMC cable requirements	105
CallPilot SMDI interface	117
Index	130

Chapter 1

How to get help

This section explains how to get help for Nortel products and services.

Getting help from the Nortel Web site

The best way to get technical support for Nortel products is from the Nortel Technical Support Web site:

www.nortel.com/support

This site provides quick access to software, documentation, bulletins, and tools to address issues with Nortel products. More specifically, the site enables you to:

- download software, documentation, and product bulletins
- search the Technical Support Web site and the Nortel Knowledge Base for answers to technical issues
- sign up for automatic notification of new software and documentation for Nortel equipment
- open and manage technical support cases

Getting help over the phone from a Nortel Solutions Center

If you don't find the information you require on the Nortel Technical Support Web site, and have a Nortel support contract, you can also get help over the phone from a Nortel Solutions Center.

In North America, call 1-800-4NORTEL (1-800-466-7835).

Outside North America, go to the following Web site to obtain the phone number for your region:

www.nortel.com/callus

Getting help from a specialist by using an Express Routing Code

To access some Nortel Technical Solutions Centers, you can use an Express Routing Code (ERC) to quickly route your call to a specialist in your Nortel product or service. To locate the ERC for your product or service, go to:

www.nortel.com/erc

Getting help through a Nortel distributor or reseller

If you purchased a service contract for your Nortel product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller.

Chapter 2

CallPilot and T1/SMDI connectivity overview

In this chapter

"Introduction" (page 11)

"Installation and configuration checklist" (page 13)

"CallPilot and T1/SMDI switch or system sample network diagrams" (page 15)

"CallPilot T1 and SMDI components" (page 16)

"SL-100/DMS-100 call routing" (page 18)

Introduction

This guide describes the steps in setting up a T1/SMDI switch or system and configuring a CallPilot* server for the CallPilot installation:

- connecting the CallPilot system to the T1/SMDI switch or system and the Nortel server subnet)
- configuring the T1/SMDI switch or system for correct operation with CallPilot
- configuring the CallPilot server

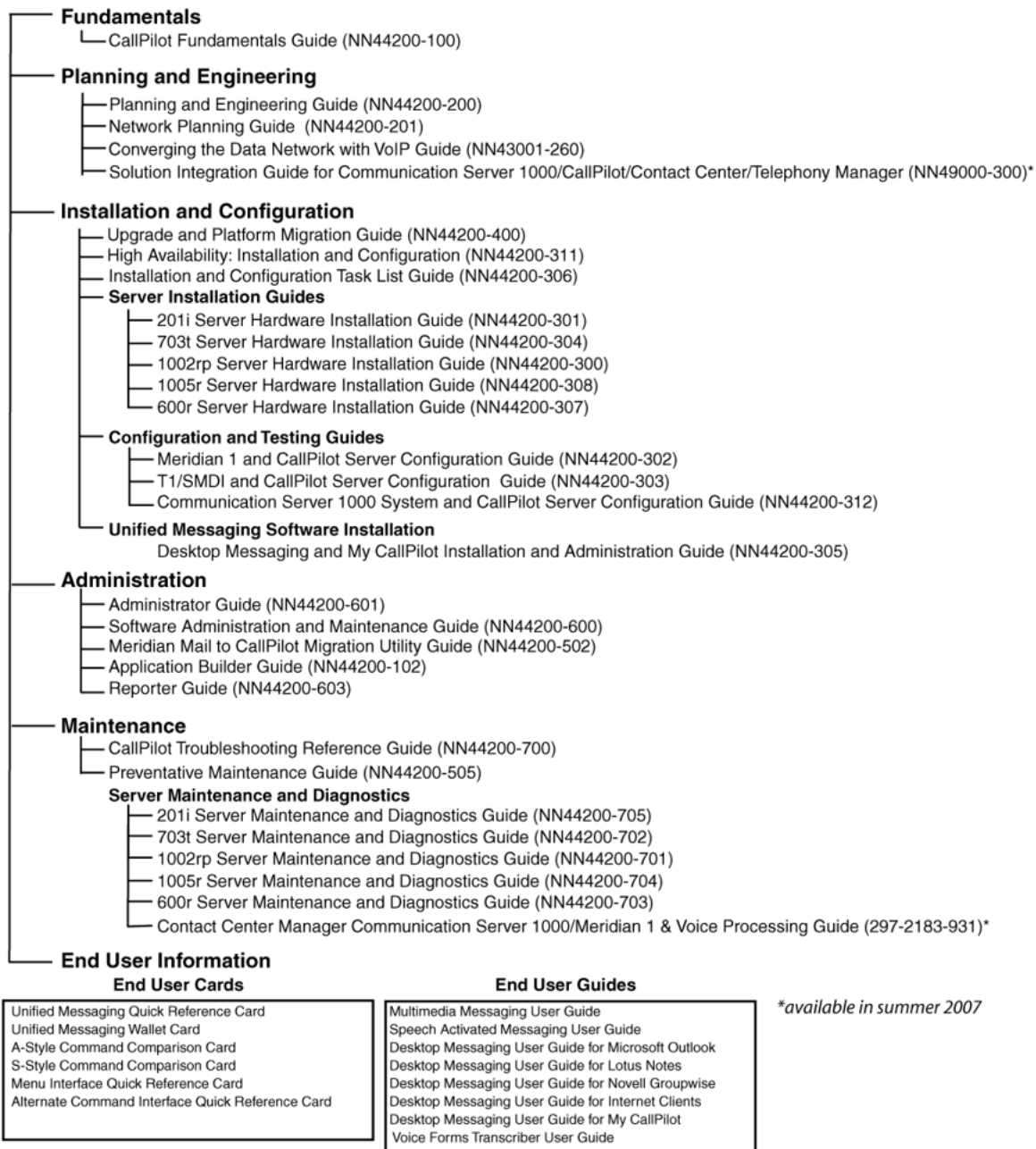
For a high-level overview of CallPilot and switch or system connectivity, read the remainder of this chapter.

Reference Documents

For a list of all CallPilot documents, see the following CallPilot Customer Documentation Map.



CallPilot Customer Documentation Map



Before you begin

Before you proceed with configuring the T1/SMDI switch or system and CallPilot server:

- review the "Installing CallPilot" section in the *CallPilot Installation and Configuration Task List*
- complete the "Installation and configuration checklist" (page 13).

Installation and configuration checklist

Complete the steps in each chapter before you continue to the next chapter.

Step	Description	Check
Stage 1: Install the hardware to connect the CallPilot server to the switch or system.		
1	Connect the CallPilot server to the T1/SMDI switch or system.	r
	• For instructions, depending on the type of switch or system you have, see Chapter 3 "Connecting the CallPilot server to the SL-100 or DMS-100 switch" (page 23) , or Chapter 3 "Connecting the CallPilot server to the SL-100 or DMS-100 switch" (page 23) (which includes information on the Terminal Server and AudioCodes gateway).	
Stage 2: Configure the switch or system and CallPilot server.		
2	Configure the T1/SMDI switch or system.	r
	Note: Use the "Switch or system configuration worksheet" that you completed in the <i>CallPilot Installation and Configuration Task List</i>. • For configuration instructions, see Chapter 4 "Configuring the SL-100/DMS-100 switch" (page 37) , or Chapter 5 "Configuring the CallPilot server software" (page 67).	
3	Log onto the CallPilot Server. The Setup Wizard launches automatically and guides you through installing Service Updates (SUs) and Performance Enhancements Packages (PEPs), if updates are required.	r

Step	Description	Check
4	Run the Configuration Wizard to configure the CallPilot server. Use the "Configuration Wizard worksheet" that you completed in the <i>CallPilot Installation and Configuration Task List</i> . For configuration instructions, see Chapter 5 "Configuring the CallPilot server software" (page 67).	r
5	Change pcAnywhere password or set Remote Desktop Policy. - If you are using pcAnywhere, continue to "Changing pcAnywhere caller passwords" (page 77). - If you are using Remote Desktop Connection, continue to "Setting Remote Desktop Policy on a Server" (page 79).	r

Stage 3: Test CallPilot connectivity.

Note: For instructions, see [Chapter 6 "Testing the CallPilot installation"](#) (page 89).

6	Check CallPilot system-ready indicators to see if CallPilot is ready to accept calls.	r
7	Test the connection to the Nortel server subnet.	r
8	Verify that CallPilot answers when you dial the Voice Messaging DN.	r

Stage 4: Test the CallPilot services and channels.

Note: For instructions, see [Chapter 6 "Testing the CallPilot installation"](#) (page 89).

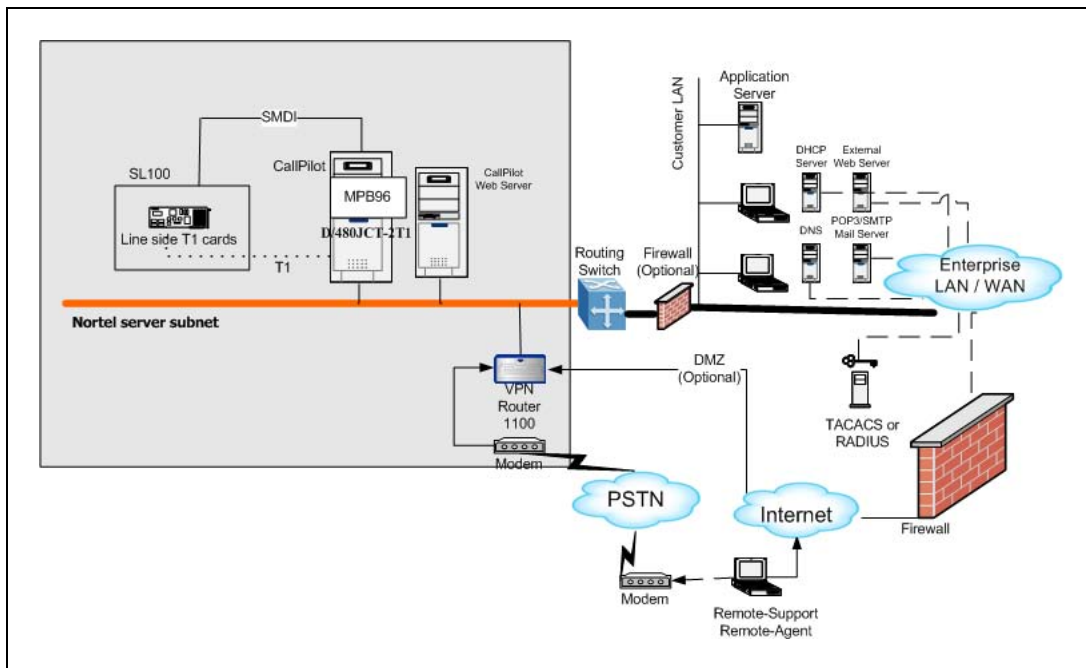
9	Check the system-ready indicators.	r
10	Verify network connectivity to the CallPilot server over the Nortel server subnet.	r
11	Verify that CallPilot can receive calls.	r
12	Verify that you can leave a message.	r
13	Verify that you can retrieve a message.	r
14	Verify that each call channel and multimedia channel is functioning correctly.	r

Step	Description	Check
Stage 5: Install CallPilot Manager on a stand-alone web server (optional).		
15	Perform this step only if you want to set up a separate web server for CallPilot administration. This is necessary if the customer wants to use the Reporter application, or if high administration traffic is expected.	r
For instructions, see the <i>CallPilot Software Administration Guide</i> .		

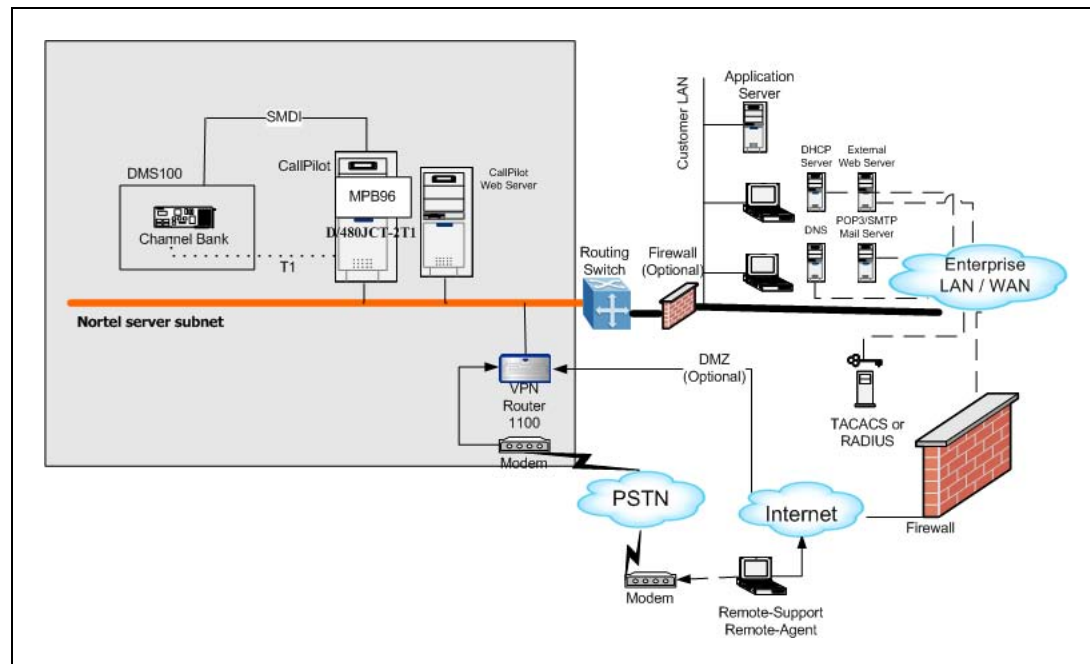
CallPilot and T1/SMDI switch or system sample network diagrams

The following diagrams show examples of a CallPilot 1002rp rackmount server integrated with a T1/SMDI switch or system.

CallPilot and SL100 switch connectivity



CallPilot and DMS100 switch connectivity



CallPilot T1 and SMDI components

For more information on T1 and SMDI components, see [Chapter 3 "Connecting the CallPilot server to the SL-100 or DMS-100 switch"](#) (page 23)

- [Chapter 3 "Connecting the CallPilot server to the SL-100 or DMS-100 switch"](#) (page 23)

Components for connecting to the switch or system

The switch or system uses T1 channels and an SMDI link to exchange data with the CallPilot server.

T1 components

Line Side T1 cards	The SL-100 switch uses Line Side T1 cards to send the voice and data signals to the CallPilot server.
Channel bank	The DMS-100 switch requires an external channel bank to send the voice and data signals to the CallPilot server.

The SL-100 can also use a channel bank for call lines.

SMDI components

IOC shelf or IOM	The SL-100 and DMS-100 switches use either an IOC shelf with an NT1X89 card or an IOM (NTFX30) to provide SMDI connectivity to the CallPilot server.
------------------	--

The CallPilot server

The CallPilot server (rackmount model) connects to the switch or system, the administrative PC, and, where Desktop Messaging is enabled, the Nortel server subnet.

Dialogic D/480JCT-2T1 board

All T1 ports connect to the CallPilot server at the Dialogic D/480JCT-2T1 board. One or more D/480JCT-2T1 boards reside in the CallPilot server. Each D/480JCT-2T1 board supports up to two T1 links to the switch. Each T1 link supports up to 24 channels. Calls from the switch arrive at the D/480JCT-2T1 board and are passed on to the MPB boards for call processing.

MPB board

DSPs are provided on the MPB96 board in the form of 12 integrated MPCs. The MPCs process the voice and data signals that pass through the D/480JCT-2T1 boards. Each CallPilot server ships with at least one MPB96 board.

CTbus

The CTbus connects the D/480JCT-2T1 board to the MPB96 board.

Administrative PC

CallPilot client software is installed on a PC that runs Windows 98, Windows NT Workstation, Windows 2000 Professional, Windows XP Professional, or Windows 2003. The administrative PC provides:

- administrative ability for the switch, server, and CallPilot software
- access to CallPilot operational measurement reports
- the ability to develop multimedia applications with both voice and fax functionality

You can connect an administrative PC directly to the server, remotely through a modem, or by means of a connection to the Nortel server subnet.

Modem

The server connects to a modem to allow remote access by a support PC for installation, maintenance, and diagnostics.

Desktop client PCs

You can install desktop client messaging software on client PCs to enable mailbox users to receive phone, fax, and voice mail on their PCs. For more information, see the *Desktop Messaging Installation and Configuration Guide* (NN44200-305).

Any PC that has network access to the CallPilot server and has a web browser installed can be used to administer CallPilot. The CallPilot administration is web-based.

SL-100/DMS-100 call routing

Uniform call distribution

Uniform Call Distribution (UCD) is a feature on the SL-100/DMS-100 switch that enables a number of telephones connected to the switch, known as agents, to share equally in answering incoming calls.

UCD agent

Agents are programmed as phones on the switch and serve a particular UCD group.

UCD groups

UCD groups are queues that contain agents. CallPilot requires a UCD group for each media type on CallPilot. A UCD group handles calls for a particular media type. For example, the UCD group set up for Voice Messaging is associated with the Voice Messaging service in CallPilot. All calls handled by the Voice Messaging UCD group are routed to voice channels in CallPilot. In the CallPilot administration software, the service directory number (SDN) Table is used to associate the UCD DN with CallPilot services.

Call queuing

Call queuing is supported for UCD groups. If a call arrives when all the ports in that UCD group are busy, the call waits in the queue until resources are available. When the call is queued, the switch provides ringback to the caller. The first caller in the queue is handled first.

Line DNs used as Service DNs

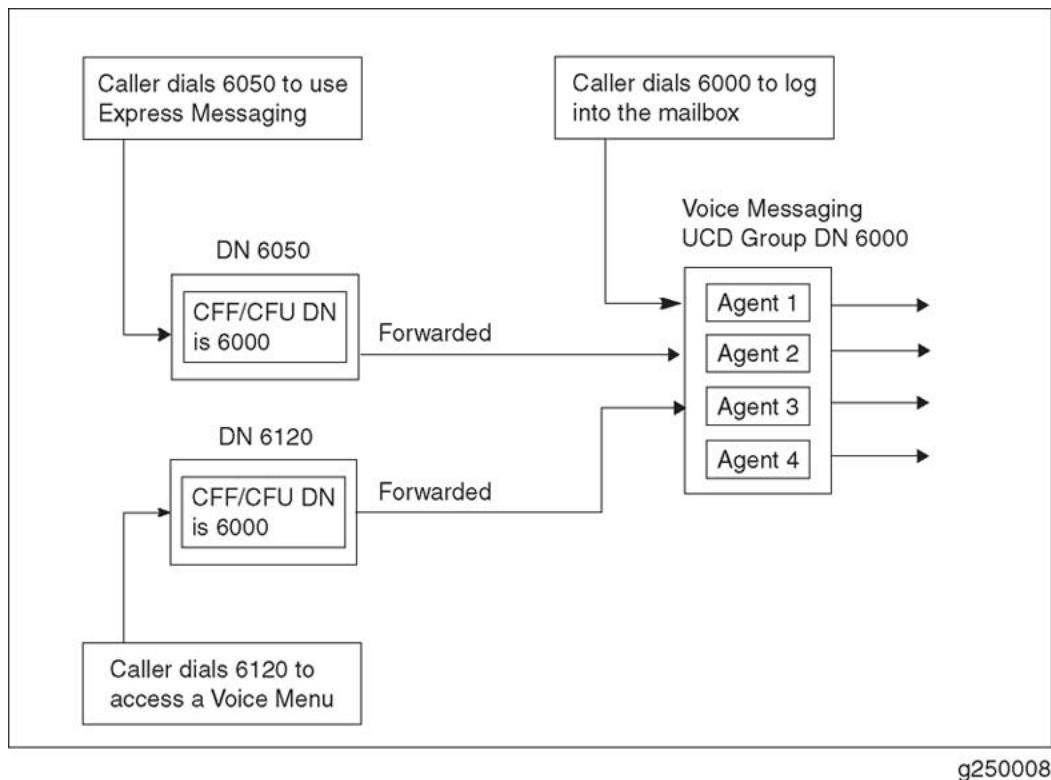
Line DNs can also accept calls. They do not directly route calls to services. Instead, they forward calls to a UCD group for call handling. However, the dialed DN is passed along to CallPilot and is used to determine which service is requested. A Call Forward Fixed (CFF) DN or a Call Forward Universal (CFU) DN must be defined for all line DNs. The CFF DN or CFU DN is set to the primary DN of the UCD group to which the line DN forwards calls for call handling.

Why use line DNs?

Many CallPilot services that you configure must be directly accessible. That is, you want callers to dial a number to access the service. Each directly dialable service needs a unique number, or DN, so that when a caller dials the DN, the correct service starts and the appropriate prompts play.

Example use of line DNs and UCD groups

Two line DNs are set up. One DN (6050) is for express messaging; the other DN (6122) is for a Voice Menu. Both DNs forward to UCD DN 6000 (the Voice Messaging UCD group).



Dedicating one or more ports to a particular service

In the scenarios described previously, several services share ports on the switch (and the matching ports on the CallPilot server) on a first-come, first-served basis. You can dedicate a port to a particular service, so the port is always available to the service when the system wants a port. However, Nortel advises that you do not dedicate ports unless deemed absolutely necessary, since overall efficiency is decreased in handling calls.

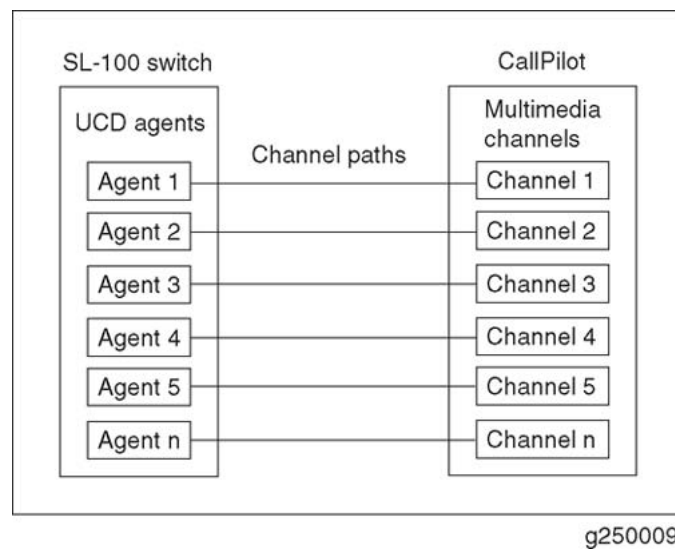
To dedicate a port to a particular service, create a UCD group and assign as many UCD agents to this UCD group as you want dedicated to this service. In the SDN Table, associate the service with the dedicated UCD group. Do not associate other services with this UCD group. Users who dial this UCD group DN receive that service.

How SL-100/DMS-100 calls are routed

Each agent in a UCD group on the SL-100/DMS-100 is associated with a specific T1 channel in CallPilot.

Example

This simplified diagram shows how agents on the switch connect to channels in CallPilot.



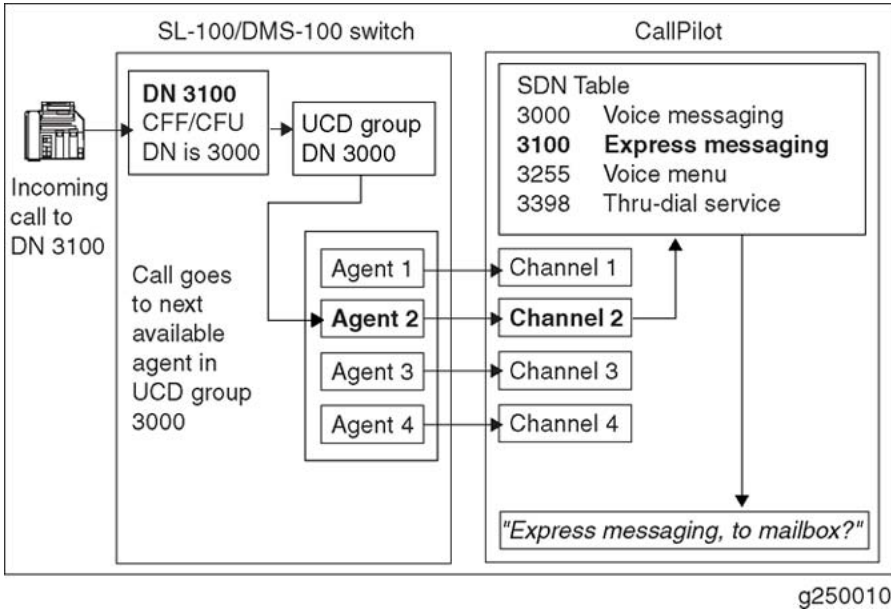
Directing calls to services

CallPilot uses UCD to perform its call handling functions. However, instead of being directed to agents or telephone sets, incoming calls are directed to CallPilot services.

Call routing example

An incoming call to DN 3100 is forwarded to UCD group 3000 and is directed to the first available agent. The call is then connected to a CallPilot channel of the proper media type and routed to the SDN Table.

In the SDN Table, CallPilot looks up the dialed DN to identify the requested service. CallPilot then starts the service and plays the appropriate prompts.



Chapter 3

Connecting the CallPilot server to the SL-100 or DMS-100 switch

In this chapter

"Introduction" (page 23)

"CallPilot interface hardware reference for the SL-100/DMS-100 switch" (page 24)

"Overview of installing SL-100/DMS-100 SMDI links" (page 26)

"Installing the SL-100/DMS-100 SMDI link -- direct cable connection" (page 26)

"Installing the SL-100/DMS-100 SMDI link -- modem connection" (page 28)

"Installing the SL-100/DMS-100 T1 links and EMC cable requirements" (page 33)

Introduction

The chapter describes:

- hardware that connects the CallPilot server to the SL-100/DMS-100 switch
- installing the hardware connections
- configuring the SL-100/DMS-100 switch to work with CallPilot

For information on installing the CallPilot server, see the *CallPilot 1002rp Server Hardware Installation*.

For more information on the CallPilot SMDI and T1 interfaces, see Appendix A, [Appendix "CallPilot T1/SMDI interfaces" \(page 105\)](#).

CallPilot interface hardware reference for the SL-100/DMS-100 switch

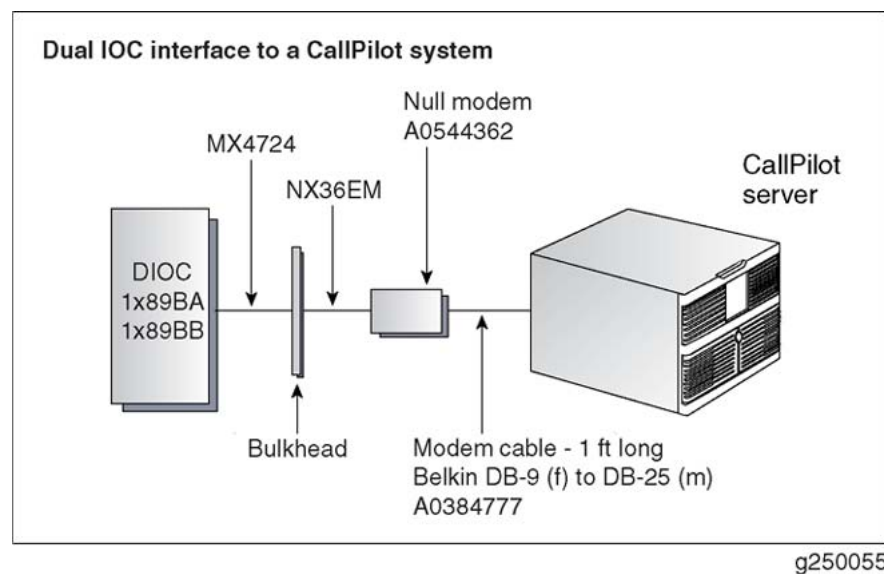
CallPilot SMDI interface hardware

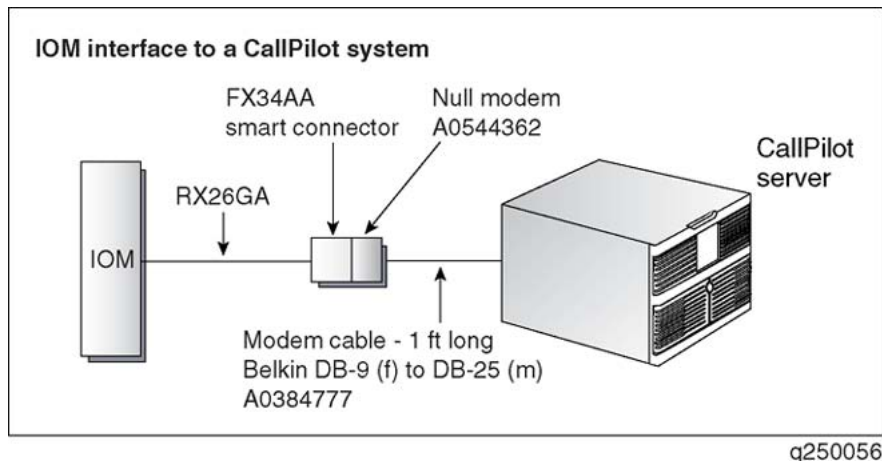
IOC shelf versus an IOM (NTFX30AA) -- criteria for a direct cable connection

The criteria for direct cable connection depends on whether the switch has an IOC shelf or an Input Output Module (IOM).

With an IOC shelf, the CallPilot server must be installed within 15.25 m (50 ft) of the switch for a direct cable connection. For longer distances, a modem connection is required.

With an IOM, the CallPilot server must be installed within 230 m (750 ft) of the switch for a direct cable connection. For longer distances, a modem connection is required.





CallPilot T1 interface hardware

Line Side T1 cards (SL-100 only)

The Line Side T1 card provides T1 connectivity for SL-100 CallPilot installations. The card multiplexes 24 channels into a T1 signal. The card installs in the Intelligent Peripheral Equipment (IPE) shelf of an SL100 and appears to the switch as 24 analog line cards. The Line Side T1 Interface (LT1) card (NT5D11) is installed in the IPE module (NT8D37).

LT1 parameters must match those of the T1 Intel board. For proper operation of the system, ensure that the switch settings match.

Note: The SL-100 switch can use Line Side T1 cards or an external channel bank for call lines. The DMS-100 switch does not use Line Side T1 cards and requires an external channel bank for call lines.

If using line cards, you must have a sufficient number of Line Side T1 cards for the number of channels purchased. See *Line Side T-1 Interface (LT1) for IPE Services Guide* for instructions on installing Line Side T1 cards.

ATTENTION

The Line Side T1 cards (and Channel Banks) must be configured for ground start. Loop start is not supported by CallPilot.



CAUTION

Risk of problems with Remote Notification feature

To avoid problems with outbound calls when using a channel bank, the total gain of the voice path (CallPilot, channel bank, and the switch) must be as close to 0 dB as possible. A variation of 3dB is acceptable. Adjust the Rx gain and Tx gain to approach 0 dB (to minimize the signal attenuation received and generated by CallPilot).

Channel banks (DMS-100, or SL-100 not using Line Side T1 cards)

Channel Banks multiplex incoming signals into a higher rate output digital signal. For CallPilot, the Channel Banks convert 24 analog lines to 1 T1 link.

CallPilot supports the following tested channel banks for SL-100 and DMS-100:

- DE-4E Smart
- Newbridge Mainstreet 3624
- Subscriber Carrier Module 2 integrated channel bank
- Adit 600 Customer Service Terminal

Note: For information on installing channel banks, see the instructions provided by the manufacturer of the device.

DSX-1 cross-connect

A DSX-1 is a digital cross-connect that enables technicians to jumper together T1 cables from different pieces of equipment.

Overview of installing SL-100/DMS-100 SMDI links

SL-100/DMS-100 SMDI links

The SMDI link is a data link between the COM 2 port on the CallPilot server and the MPC port on the switch. The SMDI link transports incoming call information and MWI control messages.

If the CallPilot server is close to the switch (the criteria are listed in this section), the SMDI link can be a direct cable connection between the server and the switch. For longer distances, a modem connection is used.

What is next?

For a direct cable connection, see ["Installing the SL-100/DMS-100 SMDI link -- direct cable connection" \(page 26\)](#).

For a modem connection, see ["Installing the SL-100/DMS-100 SMDI link -- modem connection" \(page 28\)](#).

Installing the SL-100/DMS-100 SMDI link -- direct cable connection

If the switch has an IOC shelf

The parts to install

- IOC cable (for a newer IOC shelf model, use NT0X96HJ; for an older IOC shelf model, use NT0X96EH)
- DB-9 (female) to DB-25 (female) modem cable (customer supplied). Ensure the connectors are of the proper gender, or use a gender

changer. The DB-9 end connects to the COM 2 port on CallPilot, and the DB-25 end connects to the IOC cable.

To install the cabling

Step	Action
1	Create the DB-9 to DB-25 modem cable and obtain the proper IOC cables for the IOC shelf model on your switch.
2	Connect the modem cable to the COM 2 port on CallPilot and to the IOC cable.
3	Connect the other end of the IOC cable to the MPC port on the IOC shelf.

—End—

If the switch has an IOM (NTFX30AA)

The parts to install

- IOM cable (NT0X96LU)
- Smart Connector (NTFX34AA), which is an adapter and line driver that connects to the IOM cable
- DB-9 (female) to DB-25 (female) modem cable (customer supplied). Ensure the connectors are of the proper gender, or use a gender changer. The DB-9 end connects to the COM 2 port on CallPilot, and the DB-25 end connects to the Smart Connector.
- Null Modem A0544362

To install the cabling

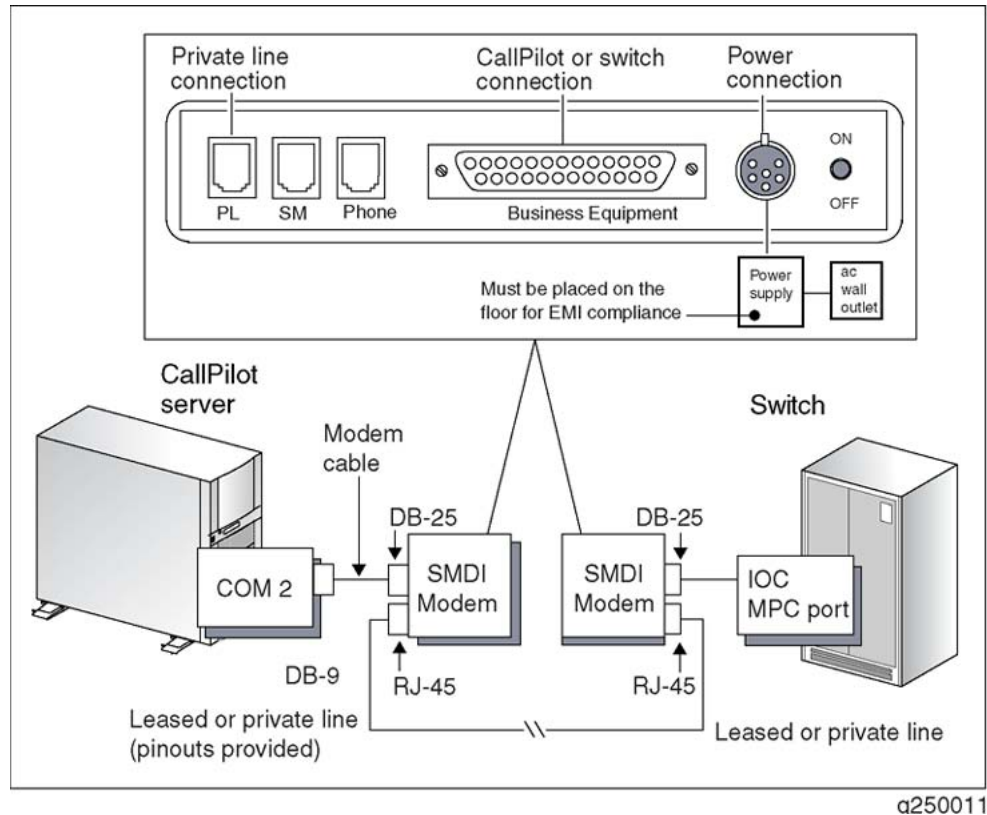
Step	Action
1	Create the DB-9 to DB-25 modem cable and obtain the other parts to install.
2	Connect the modem cable to the COM 2 port on CallPilot and to the Smart Connector.
3	Connect the IOM cable to the Smart Connector and to the MPC port on the IOM.

—End—

Installing the SL-100/DMS-100 SMDI link -- modem connection

SMDI link -- modem connection

Note: If the switch has an IOM, then an IOM cable and a Smart Connector are used for the connection from the switch to the modem.



The parts to install

If the switch has an IOC shelf

- two long-haul modems
- a leased or private-line connection between the two modems (This is a customer-supplied cable; pinouts are provided in this section.)
- one modem cable (for connection between CallPilot COM 2 port and one modem)
- IOC cable (for a newer IOC shelf model, use NT0X96HJ; for an older IOC shelf model, use NT0X96EH)

If the switch has an IOM (NTFX30AA)

- two long-haul modems
- a leased or private-line connection between the two modems (This is a customer-supplied cable; pinouts are provided in this section.)

- one modem cable (for connection between CallPilot COM 2 port and one modem)
- IOM cable (NT0X96LU)
- Smart Connector (NTFX34AA), which is an adapter and line driver that connects to the IOM cable

Cable pinouts for leased or private line

Pin Number	Lead designation
1	Transmit/Receive ring
2	Transmit/Receive tip
3	no connection
4	no connection
5	no connection
6	no connection
7	no connection
8	no connection

To install the SMDI link

Step Action

In this procedure, the modem that is local to the CallPilot server is referred to as the CallPilot modem. The modem that is local to the SL-100/DMS-100 is referred to as the SL-100/DMS-100 modem.

- 1 Create the leased or private line using the pin information in this section. Ensure you have all other cables listed in "[The parts to install](#)" (page 28).
- 2 Program the modems using the instructions in this section.
Note: Nortel recommends that you program the modems before connecting the SMDI link to give you the convenience of programming the modems side-by-side at one time.
- 3 Connect a modem cable to the COM 2 port on the CallPilot server and to the CallPilot modem.
- 4 Connect the leased or private line to the PL jack (RJ-45 jack) on the CallPilot modem.
- 5 Complete the cabling of the leased or private line from the CallPilot modem to the PL jack on the SL-100/DMS-100 modem.

- 6 If the switch has an IOC shelf, then connect the IOC cable to the SL-100/ DMS-100 modem and to the MPC port on the IOC shelf.
- Note:** If the switch has an IOM, then connect the Smart Connector to the modem, connect the IOM cable to the Smart Connector and to the MPC port on the IOM.
- 7 Plug in the power cords for the modems and wait for the handshaking to complete.

Result: When the modem handshaking has completed, the displays on both modems show the following information:

```
VF R9600 S9600
PL 2W DTE 9600
```

Note: To program the modem, see the modem documentation.

Network Options (subgroup title)

Prompt	Response
Network Select	PL 2W
Sn Tx Level	Permissive
PL Tx Level	-11 dBm
AutoDial Rest	Disable
PL Look Back	10 Minutes
PL Down Time	1 Minute

Terminal Options (subgroup title)

Prompt	Response
Dte Speed	9600
Cpm Resp Speed	AutoBaud Speed
Char Length	10 7D Par
Parity	Auto
OverSpeed	Nominal
Dte Flow Ctl	Rts/Cts
Terminal Echo	Enable
Dcd Control	On After Link
Cts Control	Cmd On/Rts
Dtr Trans Ctl	On/Off Idle
Dsr Control	Normal
Dsr In Analoop	Off

Prompt	Response
Transmit Clock	Select Internal for one modem, and select External for the other modem. It does not matter which modem has each value. The response for this prompt does not have to correspond in any way with the response for the Answer Org Mode prompt that appeared earlier.
Rts/Cts Delay	0 MSec

Modem Options (subgroup title)

Prompt	Response
Rings To Answer	1
Fall Fwd Bckwd	Disable
Trellis	Enable
Prompt Response	
Retrain Options	Forever
Long Space Disc	Enable
Speaker Control	Off in Data
Speaker Volume	Medium
Make Busy	Disable
Power Up As	User Profile 0
Rdl Options	Disable
Test Timer	Disable
Dte Test Ctl	Enable
Dcd Loss To Disc	01400 MSec
Delay Dtr	00005 Sec
Cd Resp Time	00600 MSec
Remote Config	Enable

Dialer Options (subgroup title)

Prompt	Response
Command Format	AT
Alpha Numeric	Alpha
Call Progress	Extd Full Cpm
Response Mode	Enable
Dtr Dial	Disable

Prompt	Response
Dial Type	DTMF
Pause Time, <	2 Sec
Wait DialTone	2 Sec

Protocol Options (subgroup title)

Prompt	Response
Async Protocol	Auto Rel Mode
Compression	Enable
Break Handling	Tmd Non Exp-Dst
Modem Flow Ctl	Disable
Ec Data In Hsk	FB w/FB Chr
Sync Protocol	Normal Sync
V13 Mode	BiDirectional
Conn & Link Msgs	Conn After Link

Modem Info (subgroup title)

Prompt	Response
Protocol Select	Auto Rel Mode
PL Card	Domestic
Dte Card	EIA232E
Modem Firmware	(press right-arrow button to accept the default)
Symbol Rate	(press right-arrow button to accept the default)
Receive Level	(press right-arrow button to accept the default)
EqLr Quality	(press right-arrow button to accept the default)
Save Config	User Profile 0

- 8** Press Enter at the Save Config: User Profile 0 prompt. Then press Esc.

Result: The display on one modem shows

```
TRAINING
ANS PL 2W
```


The display on the other modem shows

TRAINING
ORG PL 2W

- 9 Repeat this procedure to program the second modem.
- 10 Continue with the remaining steps in "To install the SMDI link" (page 29).

—End—

Installing the SL-100/DMS-100 T1 links and EMC cable requirements

Introduction

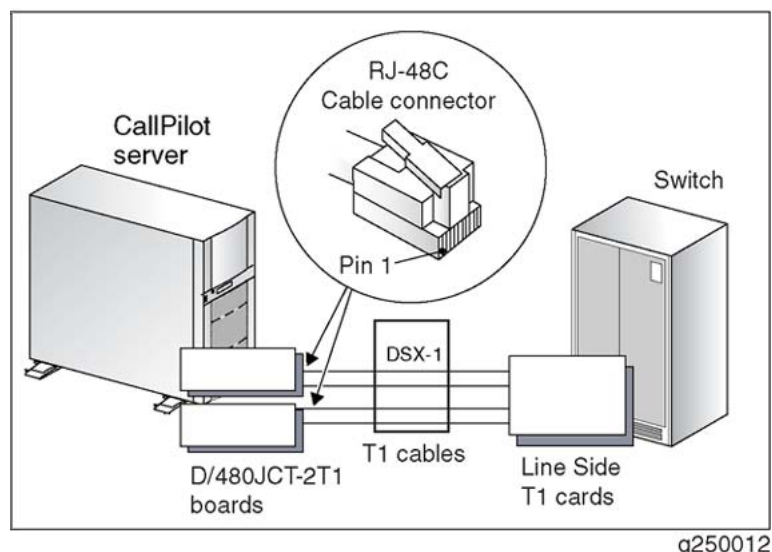
Each T1 link carries 24 channels. Each D/480JCT-2T1 board in the CallPilot server supports two T1 links (48 T1 channels). CallPilot supports a maximum of 192 channels or eight T1 links (four T1 cards).

SL-100 versus DMS-100 setup

The SL-100 switch uses Line Side T1 cards or an external channel bank. The DMS-100 switch requires an external channel bank. For channel bank installation, see the documentation that comes with the channel bank.

T1 link connection

Note: Each Line Side T1 card supports one T1 link. Each D/480JCT-2T1 board supports up to two T1 links. For DMS-100 switches, an external channel bank is required instead of Line Side T1 cards.



The parts to install and EMC cable requirements

The cable must be a non-loaded, staggered-twist, paired cable with a characteristic impedance of 100 ohms at 772 kHz.

ATTENTION

In order to comply with the FCC Part 15, CISPR 22 and EN 55022 EMC emissions requirements, the T1 cable must be shielded, and must have a ferrite bead (Manufacturer: Fair-Rite Products Corporation, Part Number: 0443164251) placed on the cable, one inch from the connector.

- T1 cables (A0788107)
- cabling from the DSX-1 cross-connect to the switch (customer-supplied; T1 cable pinouts are provided in this section.)

Note: All terminators and connectors in the circuit must also meet the impedance requirement.

T1 cable pinouts

Pin Number	Lead designation
1	Receive ring
2	Receive tip
3	No connect
4	Transmit ring
5	Transmit tip
6	No connect
7	No connect
8	No connect
RJ-45 Metallic Shield	To cable shield drain wire

Note: The cable shield drain wire at the switch end is not connected.

To install the T1 links

Step	Action
1	Connect the T1 cables (A0788107) from the RJ-48C connectors on the D/480JCT-2T1 boards to the DSX-1 cross-connect in the following order: • first T1 cable to the Span 1 RJ-48C connector on the first D/480JCT-2T1 board

Note: See the slot assignment tables in the *CallPilot 1002rp Server Hardware Installation* to identify the first D/480JCT-2T1 board.

- second T1 cable to the Span 2 RJ-48C connector on the first D/480JCT-2T1 board.
- follow the same order to connect T1 cables to any additional D/480JCT-2T1 boards.

- 2 Complete the cabling from the DSX-1 cross-connect to the Line Side T1 card in the switch.

Note: The cabling from the DSX-1 cross-connect to the switch must be supplied by the customer. Also, for DMS-100 switches, an external channel bank is required instead of Line Side T1 cards.

—End—

What is next?

Continue with [Chapter 4 "Configuring the SL-100/DMS-100 switch"](#) (page 37).

Chapter 4

Configuring the SL-100/DMS-100 switch

In this chapter

- "Switch hardware and software requirements" (page 38)
- "Overview of SL-100/DMS-100 switch programming" (page 39)
- "Login and Logout code restrictions" (page 40)
- "Checking the amount of memory available" (page 40)
- "Assigning terminal devices for the NT1X89 card or IOM (NTFX30AA)" (page 41)
- "Defining datalink characteristics" (page 43)
- "Datafilling table OFRT" (page 44)
- "Datafilling table DIGCOL" (page 45)
- "Defining the UCD group" (page 46)
- "Assigning a primary DN to a UCD group" (page 49)
- "Defining line location" (page 50)
- "Adding agents to a UCD group" (page 51)
- "Creating a line DN" (page 52)
- "Moving an agent from one UCD group to another" (page 55)
- "Entering feature activation codes" (page 56)

"Checking OFCVAR values" (page 58)

"Call routing options and features for user telephone sets" (page 58)

"Starting up the link" (page 61)

"Adjusting the volume level" (page 64)

Switch hardware and software requirements

Hardware components

The hardware components required depends on the switch type in your installation. For more information on hardware components and the T1/SMDI interface, see:

- Chapter 3 "Connecting the CallPilot server to the SL-100 or DMS-100 switch" (page 23) for CallPilot SMDI and T1 hardware components
- Appendix A, Appendix "CallPilot T1/SMDI interfaces" (page 105) for the CallPilot T1/SMDI interface

I/O port

The switch must have either an IOC shelf with an NT1X89 card or an IOM (NTFX30AA) to support the SMDI link to CallPilot.

Switch software version required for CallPilot

The SL-100 switch requires SL10 or higher.

The DMS-100 switch requires NA08 or higher.

Required Patches

If patches are required, this information is provided in the *CallPilot Distributor Technical Reference* (DTR) available at www.nortel.com/pic (the web site URL can vary by region). You require a username and password to access this site.

Dialing Plan Requirements

ATTENTION

DNs presented over the SMDI must be ten digits in length.

This is important if you have migrated your data from a Meridian Mail system. Unlike Meridian Mail, CallPilot does not support the left pad feature which allows for shorter DN lengths. The following items must be set to ten digits:

- The SMDI digit length
- The UCD Group DN

- The UCD agent DN
- Line DNs (configured as SDNs in the CallPilot server)
- The Mailbox user's MWI DN (configured on the CallPilot server)
- The Mailbox user's extension DN (configured on the CallPilot server)

You can set the user's mailbox number (configured on the CallPilot server) to less than 10 digits as long as the extension DN is a 10 digit number.

Overview of SL-100/DMS-100 switch programming

Introduction

You must be familiar with PBX or Centrex switch terminology, programming, and installation to perform the configuration procedures. The procedures described are for SL-100/DMS-100 installations.

Note: All input is done at the maintenance administration position (MAP*) terminal.

Carry out the following procedures in the sequence indicated. Where input values are in uppercase text, enter the values indicated. Where input values are in lowercase text, substitute the values specified in your DMS* Data Form.

Documentation references for switch data filling

SL-100 switch

- *Commercial Systems Service Order Reference Manual*
- *Simplified Message Desk Interface Description and Implementation*
- *Commercial Systems Office Parameters Reference Manual*
- *Customer Data Schema Reference Manual*

DMS-100 switch

- *Simplified Message Desk Interface Setup and Operation* (297-2051-104)
- *Customer Data Schema Reference Manual* (297-8001-351)

Datafill and servord programming sequence

The following tables are listed in the order in which they are datafilled:

Table/Step	Action
CUSTENG	Customer group identification
CUSTHEAD	Customer group parameters
IBNLINES	UCD line information (a result of SERVORD data input)

Table/Step	Action
IBNFEAT	UCD line features (a result of SERVORD data input)
OFCENG	Checks the amount of memory available.
MPC	Assigns the MPC card.
MPCLINK	Installs the MPC link.
SLLNKDEV	Defines the data link characteristics.
OFRT	Defines the office route to the CallPilot Voice Messaging/Call Answering DN.
DIGCOL	Defines the basic digit collection plan for the customer group and any alternate digit collection plans.
UCDGRP	Defines the UCD group or groups.
DNROUTE	Assigns the primary directory number to a UCD group.
LNINV	Defines the line location.
Use servord to add agents.	Add agents to the UCD groups.
Use servord to create line DNs.	Create line DNs for directly dialable services. These line DNs are forwarded to the appropriate UCD group for the service media type.
Use servord to move agents if necessary.	Move agents from UCD group to another if traffic analysis indicates this is necessary. Make corresponding changes on the CallPilot system.
IBNXLA	Enters the feature activation codes.

Login and Logout code restrictions

The UCD Agent Login (UCDA) and Logout (UCDD) codes are limited to a digit string from 0 to 9 only. The characters * and # are not supported.

You must expand the current translation datafill to support feature access from a rotary phone. Each customer group within the SL-100/DMS-100 must identify a unique digit sequence (for example, 11), and modify the pretranslation/translation datafill such that the unique digit sequence points to the same translators as the * (or #) key. With this configuration, dialing 11xx translates into the same feature access as *xx. This approach is very similar to the use of 11 in the residential market to support feature access from rotary phones.

Checking the amount of memory available

Table OFCENG and the DYNAMIC_MEMORY_SIZE parameter

See *Commercial Systems Office Parameters Reference Manual* for details on using the DYNAMIC_MEMORY_SIZE parameter to provision the amount of memory available. This parameter is part of table OFCENG.

Assigning terminal devices for the NT1X89 card or IOM (NTFX30AA)

Introduction

Datafill tables MPC and MPCLINK.

To datafill table MPC

Step	Action
1	Type table mpc and press Enter.
2	Type add and press Enter.
3	Enter values as shown in the following table:

Field	Subfield	Entry	Explanation and action
MPCNO		0-255	Enter the MPC number used for SMDI.
MPCIOC		0-12	MPC input/output controller shelf. Enter the number associated with the MPC (SMDI) card.
IOCCCT		0, 4, 8, 12, 16, 20, 24, 28, 32	IOC circuit number for the MPC (SMDI) card. Enter the slot position on the IOC shelf multiplied by four, from 0--32.
EQ		1X89zz or FX30zz	Enter the NT product engineering code for the MPC card, where zz are the two letters at the end of the product code.
DLDFILE		MPCAxxyy	Enter the name of the eight-character download file for SMDI and MPCA.

—End—

To datafill table MPCLINK

Step	Action
1	Type table mpclink and press Enter.
2	Type add and press Enter.

3 Respond as shown in the following table:

Field	Subfield	Entry	Explanation and action
LINKKEY		See the explanation.	This key field is composed of subfields MPCNO and LINKNO.
	MPCNO	0-255	Enter the MPC number used for SMDI (the same number entered in table MPC).
	LINKNO	2, 3	Enter the MPC link number for SMDI application with ASYNC protocol.
LINKALM		Y or N	Enter Y to activate the MPCLINK alarm for system busy (SYSB) MPC links. Enter N if you do not want to activate the MPCLINK alarm for system busy (SYSB) MPC links.

Note: If you enter N, the system does not generate MPC908 (MPC link state transition) logs.

PROTOCOL		ASYNC	Enter the Link protocol. ASYNC is the proper entry for CallPilot.
LINKNABL		0-32 765	For a link that is not fully active, this is the time-out in minutes before the system goes to system busy (SBSY) and then returns to service. Enter the number of minutes for this time-out (must be a multiple of five).
PARM		APLDEFN	Enter APLDEFN to specify the application definition.
ADEFN		SMDI	Application definition.
PARM		BAUDRATE	Enter BAUDRATE to specify the baud rate.
RATE		B9600	Baud rate. Must be B9600.
PARM		PARITY	Enter PARITY to specify the parity.
PRTY		EVEN	Parity. Must be EVEN.

Field	Subfield	Entry	Explanation and action
PARM		See the explanation	The following are among the optional parameters: L1IDLY, L2IDLY, LNKDOWN. If you enter a parameter, you are then prompted to enter the parameter value. L1IDLY and L2IDLY timers can be used in offices with heavy SMDI/VMS traffic to shorten the amount of time the MPC can delay sending an MWI to the switch. (The default is 3 seconds.) The LNKDOWN timer adjusts the length of time the switch takes to recognize LINK failure and sets the LINK to SYSB. (The default is 2 seconds.)
CHARBITS		BIT7	
—End—			

Defining datalink characteristics

Introduction

Use the table SLLNKDEV to specify characteristics of datalinks used by the command interpreter LNKUTIL.

Note: Based on your switch software load, some fields can differ.

To datafill table SLLNKDEV

Step	Action
1	Type table slnkdev and press Enter.
2	Type add and press Enter.

3 Respond as shown in the following table:

Field	Subfield	Entry	Explanation and action
DEVNAME		up to 16 characters	Enter a unique device name.
DEVICE		1X89	Device type used. Enter 1X89 if using an IOC shelf or an IOM.
MPCNO		0-255	The MPC number. Use the same value specified in table MPC.
LINKNO		2, 3	The MPC link number. Use the same value specified in table MPCLINK.
XLATION		NONE	No translation is used for outgoing and incoming datalinks.
PROTOCOL		NONE	No protocol is used by the datalink and the PBX/DMS for connecting and starting messages.
DIRECTION		INOUTLK	Direction that the data travels through the datalink.
XFER		SMDIDATA	The report type currently allowed on the data link. SMDIDATA is for SMDI I/O communication.
OPTION		NUMOFDIGS	
NUMDIGS		10	The number of digits sent by the switch to CallPilot through the SMDI link.
Note: Match the entry value with the dialing plan configured on the SL-100 switch.			
OPTION		CGNADDRDN	
OPTION		\$	

—End—

Datafilling table OFRT

Introduction

Table OFRT associates the customer route number of the SMDI link with its UCD DN.

Use table OFRT to set up a treatment for unanswered calls (calls that are unanswered because of overflow or because they have exceeded the maximum wait time in the queue). The route is later used in table UCDGRP. Either this table or table IBNRTE is used with table UCDGRP, based on how the customer wants unanswered calls to be routed. It can be more helpful to route the call to a treatment. The following example shows unanswered calls routing back to voice mail.

Only those fields in table OFRT that apply to the switch are described in the following table. See the Customer Data Schema Reference Manual for your switch type, for a description of other fields.

To datafill table OFRT

The following table describes the relevant fields in table OFRT:

Field	Subfield	Entry	Explanation and action
RTE		1--1023, or blank	Route reference index. If the record is the first in the route list, enter the route reference number assigned to the route list. Otherwise, leave blank.
RTESEL			Route selector.
SNPA			Serving NPA (area code) of the DN.
TYPCALL		DD, NP, or OA	Type of call.
ORIGSCRE		LCL or NLCL	LCL (Local) or NLCL (non-local).
REPLDIGS		up to 11 digits	Replace digits.
CANCNORC		Y/N	Cancel normal change.
BILLCODE		numeric or N	Billing code. If no billing number exists, enter N.

Datafilling table DIGCOL

Introduction

Only those fields in table DIGCOL that apply to the switch are described in the following table. See the Customer Data Schema Reference Manual for your switch type, for a description of the other fields.

Table DIGCOL contains data explaining the action that the line module must take in accordance with the first digit dialed. Digit collection tables are assigned to the access codes for direct outward dial calls, electronic switching network (ESN) calls, outward wide-area telephone service calls, private network calls, and route and tandem tie trunk route calls.

To datafill table DIGCOL

The following table describes the relevant fields in table DIGCOL:

Field	Subfield	Entry	Explanation and action
DGKEY			Digit collection key. This field consists of subfields DATNAME and DIGIT.
	DATNAME	1--8 alphanumeric characters	Name of digit collection table. Enter the character assigned to the block of data in table DIGCOL.
	DIGIT	0--9, STAR, or OCT	Digit. Enter a numeric value from 0--9, STAR (star), or OCT (octothorpe) to specify the digit that is applicable to the record.
DGDATA			Digit collection data. This field consists of subfield DGCOLSEL and field COLDATA.
	DGCOLSEL	COL	Digit collection selector. This subfield specifies the selector for regular digit translation. Enter COL for the collection of more digits.
COLDATA			Collect data. This field consists of subfields TMODE and NUMDIGS
	TMODE	S	Timing mode. Enter S for short timing mode or L for long timing mode. S is required for CallPilot.
	NUMDIGS	1--7	Number of digits. If TMODE is S, specify the number of digits for which short timing is required after the receipt of each digit. The number of digits specified, which does not include the initial digit, must be no greater than three for short timing.

Defining the UCD group**Introduction**

Create a UCD group for each media type purchased for CallPilot. The possible media types are:

- Voice Messaging, if this feature has been purchased
- Multimedia Messaging, if fax channels have been purchased
- Speech Recognition, if this feature has been purchased

Dedicating channels to specific services

If you are dedicating channels to specific services, you must create an additional UCD group for each service for which you plan to have dedicated channels. Nortel recommends that you do not dedicate channels because the overall efficiency of CallPilot is reduced.

To datafill table UCDGRP

Step	Action
1	Type table ucdgroup and press Enter.
2	Type add and press Enter.
3	Respond as shown in the following table:

ATTENTION Each UCD group must have a unique primary DN.

Field	Subfield	Entry	Explanation and action
UCDNAME			This is the name of the UCD group. It can be up to 16 characters in length. The first eight characters must be unique.
ACD		N	Automatic call distribution is not supported.
CUSTGRP			Name of the customer group to which the UCD group belongs.
UCDRNGTH			Ringing threshold, in one-second intervals, after which an unanswered call to a UCD agent is forwarded to the route specified in the THROUT field. Range is 0--63.
TABNAME		OFRT	Table to which translations are routed. Table UCDGRP repeats the TABNAME and INDEX field prompts as shown here.
INDEX			Number assigned to the route list in table OFRT (1--1023).
TABNAME		OFRT	Table to which translations are routed.

Note: If CRR (Call Request Retrieval) is used, all requests are made to the UCD group with SMDI_DSK_NO = 63.

Field	Subfield	Entry	Explanation and action
INDEX			Number assigned to the route list in table OFRT (1--1023).
PRIOPRO			Maximum time, in seconds, a call can wait in a UCD group (0--255).
MAXPOS			Maximum number of UCD agent positions that can be active at one time. This number corresponds to the number of channels allocated to the group on the CallPilot system (0--96).
DBG			Delayed billing. Set to Y if billing starts when the call is answered by a UCD agent. Set to N if billing starts when the caller receives a recorded announcement.
DEFPRIO		0	Default priority number applicable to local calls terminating on the primary UCD DN (0--3).
RLSCNT		0	Maximum number of calls that terminate on a UCD station but are not answered (0--31).
MAXWAIT			Maximum time, in seconds, that a call waits in the incoming call queue before being answered (0--1800).
MAXCQSIZ			Maximum number of calls that can be in the incoming queue waiting for an idle channel (0--511).
OPTION		UCD_SMDI	
SMDI_LINK			The terminal designation defined in table SLLNKDEV.
SMDI_DES K_NO			Message desk number (1--63). If you have more than one UCD group, one of them must be set to 63. For simplicity, Nortel recommends that the first UCD group on a data link be set to 63. The second is set to 62, and descending through 61, 60, ...2, 1.

Note: If CRR (Call Request Retrieval) is used, all requests are made to the UCD group with SMDI_DSK_NO = 63.

—End—

Assigning a primary DN to a UCD group

ATTENTION

Each UCD group must have a unique primary DN.

To datafill table DNROUTE

Step	Action
1	Type table dnroute and press Enter.
2	Type add and press Enter.
3	Respond as shown in the table.
4	Repeat this procedure for each UCD group.

Field	Subfield	Entry	Explanation and action
DNNM		See the explanation.	Consists of AREACODE, OFCCODE, and STNCODE subfields. This is the DN for the UCD group specified as the UCDGRP. Note: Ensure that the UCD DN is a dialable number from an agent on the SL-100/DMS-100. This ensures that dialing plans and translation tables do not conflict.
	AREACODE		See DNNM explanation.
	OFCCODE		See DNNM explanation.
	STNCODE		See DNNM explanation.
DN_SEL		FEAT	DN selector FEAT
FEATURE		UCD	
UCDGRP			UCDNAME defined in table UCDGROUP.

Field	Subfield	Entry	Explanation and action
DNTYPE		PRIM	PRIM indicates the DN is the primary UCD DN for the UCD group.
TOLLPRI		0	Priority of toll calls terminating on the Primary UCD DN. Zero is the highest priority.

—End—

Defining line location

Introduction

The Line Circuit Inventory table (table LNINV below) contains the assignment for each card slot on the line or remote line module.

To datafill table LNINV

Step	Action
1	Type table lnlv and press Enter.
2	Type add and press Enter.
3	Respond as shown in the following table:

Field	Subfield	Entry	Explanation and action
LEN			Line equipment number of the card slot.
CARDCODE		5d11ae	Product engineering code for the line card. Enter 5d11ae for the Line Side T1 card.
PADGRP			Name of the appropriate pad group in the PADDATA table.
STATUS		WORKING	Line inventory availability status should be working.
GND		Y	Enter Y for Line Side T1 card.
BNV		NL	Balanced network value is non-loaded.
MNO		Y	Manual override is set to YES, so that onhook balance network tests do not update this field.
CARDTYPE		NIL	

—End—

Adding agents to a UCD group

Introduction

Once you have created a UCD group, you can add agents to it.

Before you begin

Create a list of the agent DNs you want to add to the UCD group.

If you have multiple UCD groups, identify the UCD group that each agent is to service. CallPilot requires a separate UCD group for each media type (voice, fax, and speech recognition).

If the customer dedicates some channels to a particular service, then there must be an additional UCD group for each service with dedicated channels.

Modifying the MAXPOS value

If you add additional agents to an existing UCD group, you might have to modify the MAXPOS value for the UCD group to which you are adding agents. The MAXPOS value determines the maximum number of agents that can be active at one time. If, by adding new agents, you exceed this value, you cannot add the additional agents unless you change the MAXPOS value.

The MAXPOS value is defined in table UCDGRP.

To add agents

Type servord and press Enter. Then respond to the prompts in the following table:

Prompt	Input	Description
SO:	NEW	
SONUMBER:	press	Enter to invoke service. Press Enter for the current date and time.
DN:		Directory Number of the line. Use ten-digit DNs.
LCC_ACC:	IBN	Line class code of service
GROUP:		Name of the IBN customer group to which the line belongs. For example, covm.
SUBGRP:		Subgroup number. For example, 0.
NCOS:		Network class of service. For example, 1.
SNPA:		Serving NPA (area code) of the DN

Prompt	Input	Description
LEN_OR_LT D:		Line equipment number of the line. For example, 4 0 1 0 (separated by spaces).
OPTION:	COD	Cut-off on disconnect
OPTION:	UCD	Uniform call distribution
OPTION:	DGT	Digitone
OPTION:	3WC	Three-way calling
OPTION:	CXR	Call Transfer
CXFERTYP	CTALL	Call Transfer Type. CTALL = transfer all calls.
CXRRCL	N	Call Transfer Recall
METHOD	STD	Method of Call Transfer: Std = Std Call Transfer method.
OPTION:	SMDI	Simplified message desk interface
LINENO:		The UCD terminal number. This is the line number associated with the SMDI channel. This parameter must be unique for each agent in the associated UCDGRP. It must also coincide with the MessageDesk and TerminalNumber configured on the CallPilot server.
UCDGRP:		The UCDNAME from the UCDGRP table. This is the UCD group to which you are adding the agent.
AUTO_LOG:	Y	Autologon capability required.
OPTION:	\$	The data you have entered appears.
	Y	Enter Y to confirm the data.

Creating a line DN

Introduction

A line DN does not have agents. Instead, a line DN forwards to a UCD group. If the line DN is for a voice service, then the line DN forwards to the voice UCD group. If the line DN is for a fax service, then the line DN forwards to the fax UCD group. If the line DN is for a speech recognition service, then the line DN forwards to the speech recognition UCD group.

When to use

Add a line DN for each CallPilot service that you want to make directly dialable by users and callers.

Examples

You want to provide users with Express Messaging capability. You create a line DN for Express Messaging so that Express Messaging has a unique DN that can be dialed.

You want to create six Voice Menus that you must make available to callers. You create six line DNs so that each Voice Menu has a unique number that can be dialed.

CFF versus CFU

In the following procedure, choose either CFU (Call Forward Universal) or CFF (Call Forward Fixed) as the forwarding option. Note that CFU requires extra configuration.

To create a line DN

Type servord and press Enter. Then respond to the prompts in the following table:

Prompt	Input	Description
SO:	NEW	
SONUMBER:	press Enter	When to invoke service. Press Enter for the current date and time.
DN:		Directory number of the line. Ten digits in length. Enter this DN in the SDN table.
LCC:	IBN	Line class code of service
GROUP:		Name of the IBN customer group to which the line belongs.
SUBGRP:		Subgroup number
NCOS:		Network class of service
SNPA:		Serving NPA (area code) of the DN
LEN		Line equipment number of the line. For example, 4 0 1 0.

Note: The following three entries are optional.

OPTION:	cfb	Call Forward Busy
CFBCNTL:	N	Normal assignment for CFB
CFBDN:		Primary UCD DN

Note: Configure CFF or CFU (not both).

OPTION:	CFF	Call Forward Fixed
CFFDN:		The Primary UCD DN
OPTION:	CFU	Call Forward Universal
OVRDACR	N	Override Automatic Callback
OPTION:	\$	The data you entered appears.
	Y	Enter Y to confirm the data.

To finish configuring CFU

If you selected the CFU option in the previous procedure, follow either method to finish configuring the CFU. Nortel recommends method 1 for the following reasons:

- Method 1 (at a telephone) provides a confirmation tone to the administrator to confirm that the proper programming was performed.
- Method 2 (at the MAP terminal) provides no confirmation feedback and can potentially overwrite other data in the same entry.

Method 1 -- To configure CFU at a telephone (recommended method)**Step Action**

- 1 Connect a phone to the line.
- 2 Go off-hook.
- 3 Dial the call forward activation code followed by the UCD DN.

Example: *80 2326050

Note: If you do not know this code, look it up in table IBNXLA. It is the CFWP entry.

- 4 Listen for the confirmation tone. The confirmation tone indicates that the line is forwarded.

Note: If the switch is restarted, you must repeat steps 1 to 4 for each line DN that CFUs to the UCD group.

—End—

Method 2 -- To configure CFU at the MAP terminal**Step Action**

- 1 Type table cfx and press Enter.
- 2 Respond as shown in the table below:

Field	Subfield	Entry	Explanation and action
		pos x x x x 0	xxxx is the line equipment number (LEN) you defined for the Line DN. Enter a 0 at the end of the LEN.
		cha	Indicates you want to change the CFU DN.

Field	Subfield	Entry	Explanation and action
CFUIF			Enter the primary DN of the UCD group to which you want to forward the line DN.
CSTATE		A	CFU is active.
—End—			

Moving an agent from one UCD group to another

Introduction

You might need to move an agent from one UCD group to another to reorganize the allocation of channels or increase system efficiency. Channels can be dedicated to a particular service, but traffic studies show that you need more channels. Or, you can reduce the number of channels dedicated to a service and move them to a UCD group where they can be shared among more services.

ATTENTION

Any changes made to the UCD groups must correspond to changes in CallPilot. The number of UCD agents that service a media type must match the number of those media channels in CallPilot, for example, five UCD agents in the fax UCD group and five fax channels in CallPilot.

To move an agent from one UCD group to another

Step Action

- 1 Determine if moving agents to a new UCD group will cause the MAXPOS value of that UCD group to be exceeded.
If yes, modify the MAXPOS value for the UCD group to which you are moving agents. This is done in table UCDGRP.
- 2 Use the servord command DEO to delete those agents that are being moved. See ["To delete an agent from a UCD group" \(page 56\)](#).
Note: If you do not delete extra agents that are no longer mapped to a CallPilot channel, these agents can cause endless ringing on the CallPilot system.
- 3 Use servord command ADO to move (add) the agents to the new UCD group. See ["To move an agent to another UCD group" \(page 56\)](#).

—End—

To delete an agent from a UCD group

Enter servord, and press Enter. Then respond to the prompts in the following table:

Prompt	Input	Description
SO:	DEO	
SONUMBER:	press Enter	When to invoke service. Press Enter for the current date and time.
DN_OR_LEN:		DN or Line Equipment number of the UCD agent.
OPTION:	SMDI	
OPTION:	\$	The data you entered appears.
	Y	Enter Y to confirm the data.

To move an agent to another UCD group

Enter servord, then respond to the prompts in the following table:

Prompt	Input	Description
SO:	ADO	
SONUMBER:	press Enter	When to invoke service. Press Enter for the current date and time.
DN_OR_LEN:		DN or Line Equipment number of the UCD agent.
OPTION:	SMDI	
LINENO:		Line number position in the UCD SMDI group.
UCDGRP:		Name of the new UCD group to which you want to move the agent (the UCDNAME from table UCDGROUP).
AUTO_LOG:	Y	Autologon capability is required.
OPTION:	\$	The data you entered appears.
	Y	Enter Y to confirm the data.

Entering feature activation codes**Introduction**

The feature activation codes required to set up and access Message Waiting are entered in table IBNXLA.

To datafill table IBNXLA**Step Action**

- 1 Type table ibnxla and press Enter.

2 Type add and press Enter.

3 Respond as shown in the following table:

Field	Subfield	Entry	Explanation and action
KEY			Consists of subfields XLANAME and DGLIDX
	XLANAME		Name of the translator, 1--8 characters, for the feature
	DGLIDX		Access code for the feature
RESULT			Consists of subfields TRSEL, ACR, SMDR, and FEATURE
	TRSEL	FEAT	Feature translation selector
	ACR	N	Account codes not required
	SMDR	N	Station Message Detail Recording off

Note: Not all the features below are required.

	FEATURE	CRA	Call request activate
		CRR	Call request retrieve
		CRDS	Call request delete specific
		CRDA	Call request delete all
		UCDD	Universal Call Distribution Deactivate

Note: Only digits 0 to 9 are supported. The characters * or # are not supported. See ["Login and Logout code restrictions"](#) (page 40).

		UCDA	Universal Call Distribution Activate
--	--	------	--------------------------------------

Note: Only digits 0 to 9 are supported. The characters * or # are not supported. See ["Login and Logout code restrictions"](#) (page 40).

		CFWP	Call Forward Program
		CFWC	Call Forward Clear

—End—

Checking OFCVAR values

Introduction

Ensure that the cutoff-on-disconnect (COD) time in table OFCVAR is set to one second (100).

To check OFCVAR values

Step	Action
------	--------

- | | |
|---|--|
| 1 | Type table ofcvar and press Enter. |
| 2 | Respond as shown in the following table: |

Field	Subfield	Entry	Explanation and action
		pos CUTOFF_ON_DISC_TIME	Check that the value is 100 (one second). If not, change the value to 100.
		cha	Enter cha to change the value.
PARMVAL		100	Specifies COD time for lines assigned the COD option.

—End—

Call routing options and features for user telephone sets

Introduction

The following call routing options and features are available:

- Three-way Calling
- Digitone
- Call Forward Don't Answer -- Specify the Voice Messaging DN as the forwarded DN. Call Answer is activated for the user when the user is not available to answer the call.
- Call Forward Busy -- Specify the Voice Messaging DN as the forwarded DN. Call Answer is activated for the user when the user is on the phone.
- Call Forward Universal -- If Call Forward Universal is activated (this is controlled by the user at the telephone set), the call can be rerouted to the Voice Messaging DN.

- Message Waiting -- A user is notified of a new message by a lit message waiting lamp or an audible indication (interrupted dial tone).

Note: The Key-Short-Hunt (KSH) option is not compatible with CallPilot.

To set call routing options for single line telephone sets

Type servord and press Enter. Then respond to the prompts in the following table. Repeat this procedure for each user.

Prompt	Input	Comments
SO	NEW	If the DN already exists, use the ADO command to add options to the existing line.
SONUMBER	Press Enter	When to invoke service. Press Enter for the current date and time.
DN		User's DN
LCC_ACC	IBN	Line class code of service
GROUP		Name of the IBN customer group to which the line belongs
SUBGRP		Subgroup number
NCOS		Network class of service
SNPA		Serving NPA of the DN
LEN_OR_LT D		Line equipment number of the line. For example, 4 0 1 0 (separated by spaces).
OPTION	DGT	Digitone
OPTION	CFU or CFI	Call Forward Universal (CFU) or Call Forward Intergroup (CFI)

Note: If you select CFU, the prompt OVRDACR appears.

OVRDACR	N	Override Automatic Callback
OPTION	CFB	Call Forward Busy
CFBCNTL	N	Normal assignment for CFB
CFBDN		Enter the Primary DN for the Voice Messaging UCD group.
OPTION	CFD	Call Forward Don't Answer
CFDCNTL	N	Normal assignment for CFD
CFDDN		Enter the primary DN for the Voice Messaging UCD group.
OPTION	MWT	Message Waiting
NOTICE	CMWI, MWL, PRN, STD, MWL_STD	Message waiting indication

Prompt	Input	Comments
CAR	N No call request feature	
CRX	N	Not call request exempt
OPTION	\$	

To set call routing options for multi-line telephone sets

Type servord and press Enter. Then respond to the prompts in the following table. Repeat this procedure for each user:

Prompt	Input	Comments
CI:		
>	SERVORD	Request service order utility
SO	NEW or ADO	User's DN
SONUMBER	press Enter	When to invoke service. Press Enter for the current date and time.
DN		User's directory number
LCC_ACC		Type of telephone set
GROUP		Name of the customer group to which a user belongs.
SUBGRP	0	N/A (normally used when stations are assigned to attendant consoles)
NCOS	0	N/A (normally used to restrict dialing out)
SNPA		Serving NPA of the DN
KEY	1	Primary key (1)
RINGING	Y	Y = yes, key 1 is ringing line
LEN_OR_LT D		Line equipment number of the line, for example, 4 0 1 0 (separated by spaces).
OPTKEY		Key number for assigning forwarding options to use with CallPilot.
OPTION	CFI or CFU	Allow Call Forward Intragroup (CFI) or Call Forward Universal (CFU).

Note: If you select CFU, the prompt OVRDACR appears.

OVRDACR	N	Override Automatic Callback.
---------	---	------------------------------

Prompt	Input	Comments
KEYLIST		DNs to which Call Forward will apply
Note: If SO=NEW, you can define CF for Key 1 only at this time.		
OPTKEY		Key number for assigning forwarding options to use with CallPilot. Same key as CFI.
OPTION	CFB	Allow Call Forward Busy
CFBCNTL	N	N = No
CFBDN		Enter the primary DN for the Voice Messaging UCD group.
OPTKEY		Key number for assigning forwarding options to use with CallPilot. Same key as CFI/CFB.
OPTION	CFD	Allow Call Forward Don't Answer
CFDCNTL	N	N = No
CFDDN		Enter the primary DN for the Voice Messaging UCD group.
OPTKEY		Key number for message waiting option
OPTION	MWT	Allow message waiting
CAR	N	N=No
CRX	N	N=No
OPTKEY	\$	End of input

Starting up the link

Introduction

When you finish filling in the switch data tables, you can start up the link. Below are the procedures for a switch that has a 1X89 card in an IOC followed by the procedures for a switch that has an IOM (NTFX30xx).

To start up the link (for a 1X89 card)

Step	Action
1	Put the IOC card into service by entering the following commands: - MAPCI - MTC - IOD - IOC c (where c is the circuit number, for example, 0) - CARD n (where n is the card number, for example, 5)

- f. RTS
- 2 Put the link into transferring state by entering the following commands:
 - a. MAPCI
 - b. MTC
 - c. IOD
 - d. IOC c (where c is the circuit number, for example, 0)
 - e. CARD n (where n is the card number, for example, 5)
 - f. RTS LINK p (where p is the link number)
- 3 Once the data link has been set up, the UCD lines (agents) must be put into service. Enter the following commands for each agent:
 - a. MAPCI
 - b. MTC
 - c. LNS
 - d. LTP
 - e. 2D dn (where dn is the UCD agent's DN)
 - f. RTS

—End—

To disable message transfer on the link (for 1X89 cards only)

Step	Action
------	--------

To shut down message transfer on the link, enter the following commands:

- | | |
|---|---|
| 1 | MAPCI |
| 2 | MTC |
| 3 | IOD |
| 4 | IOC c (where c is the circuit number, for example, 0) |
| 5 | CARD n (where n is the card number, for example, 5) |
| 6 | BSY n [FORCE] (where n is the card number, for example, 5; and FORCE is an optional parameter that you can use if the link is currently in use and you must immediately shut down the link) |

—End—

To start up the link (for the 1X89 MPC port option on the IOM)

Step	Action
1	Put the port into service by entering the following commands: - MAPCI - MTC - IOD - IOC c (where c is the circuit number, for example, 0) - PORT n (where n is the port number, for example, 5) - RTS
2	Put the link into transferring state by entering the following commands: - MAPCI - MTC - IOD - IOC c (where c is the circuit number, for example, 0) - PORT n (where n is the port number, for example, 5) - RTS LINK p (where p is the link number; this is always 3)
3	Once the data link has been set up, the UCD lines (agents) must be put into service. Enter the following commands for each agent: - MAPCI - MTC - LNS - LTP 2D dn (where dn is the UCD agent's DN) - RTS

—End—

To disable message transfer on the link (for the 1X89 MPC port option on the IOM)**Step Action**

To shut down message transfer on the link, enter the following commands:

- | | |
|---|---|
| 1 | MAPCI |
| 2 | MTC |
| 3 | IOD |
| 4 | IOC c (where c is the circuit number, for example, 0) |
| 5 | PORT n (where n is the port number, for example, 5) |
| 6 | BSY n [FORCE] (where n is the card number, for example, 5; and FORCE is an optional parameter that you can use if the link is currently in use and you must immediately shut down the link) |

—End—

Adjusting the volume level

Introduction

If the volume of recorded messages on the lines proves to be unacceptable, make modifications to the SL-100/DMS-100 Gain/Loss settings. Use the PADDATA program to make these changes. The following settings are affected:

- Gain/Loss from the line card to CallPilot
- Gain/Loss from CallPilot to the line card

The values given to these Gain/Loss settings depend on your specific operating requirements. These settings have the following appearance:

- STD LN customer_name x y

where customer_name is the customer name you define for your system in the Line Inventory table (LNINV)

For a loss, append L to the number. For example, 10L means a loss factor of 10.

Recommended settings

For more information on the PADDDATA program, see one of the following NTPs:

- For an SL-100 switch, see the *Customer Data Schema Reference Manual*.
- For a DMS-100 switch, see the *Customer Data Schema Reference Manual*.

What is next?

Continue with [Chapter 5 "Configuring the CallPilot server software" \(page 67\)](#).

Chapter 5

Configuring the CallPilot server software

In this chapter

"Overview" (page 67)

"Logging on to Windows 2003 on the CallPilot server" (page 69)

"Running the Setup Wizard" (page 69)

"Logging on to the CallPilot server with CallPilot Manager" (page 70)

"Running the Configuration Wizard" (page 74)

"Changing pcAnywhere caller passwords" (page 77)

"Setting Remote Desktop Policy on a Server" (page 79)

"Configuring CallPilot to operate in a Windows 2000 or 2003 domain" (page 81)

Overview

Introduction

The Setup Wizard automatically launches when you log on to Windows 2003, on a system that has not been configured. The Setup Wizard prompts you to add any PEPs or SUs that you require, executes a number of system checks, and asks you if you are restoring a backup. Since you are not performing a system upgrade, you do not have any data to restore. When the Setup Wizard finishes, the CallPilot login screen appears and you are prompted to log on and run the Configuration Wizard.

The Configuration Wizard enables you to configure the CallPilot server software. You can rerun the Configuration Wizard to update or review the server configuration.

The Configuration Wizard is accessible from CallPilot Manager (a web-based user interface). This chapter describes how to:

- log on to Windows 2003 on the CallPilot server
- run the Setup Wizard
- log on to the CallPilot server with CallPilot Manager
- run the Configuration Wizard
- change the pcAnywhere caller passwords or set the Remote Desktop Policy
- configure CallPilot to operate in a Windows 2000 or 2003 domain

**CAUTION****Risk of improper configuration**

You must use the Configuration Wizard to change the computer name. If you use the Windows 2003 method to change the computer name, it is not properly updated in the CallPilot software.

Plan your responses to the Configuration Wizard

Ensure you have planned your responses to the Configuration Wizard by completing the "Configuration Wizard worksheet" in the *CallPilot Installation and Configuration Task List*.

In order for CallPilot to function properly, it is essential that digit lengths are configured correctly. The following table describes the required digit lengths, and where they are configured.

Online Help for the Configuration Wizard

Each screen in the Configuration Wizard contains a Help button and provides detailed instructions regarding the selection or data entry required. Click Help at any time to get additional instructions.

Running the Configuration Wizard to detect replacement boards

When you replace boards, you must rerun the Configuration Wizard to detect and initialize the hardware. You do not need to change any data in the Configuration Wizard to perform this operation, but you do need to apply the configuration changes as instructed on the last screen of the Configuration Wizard.

Note: Multiple reboots can be required in order for the system to detect the cards.

Logging on to Windows 2003 on the CallPilot server

Introduction

If you want to access CallPilot Manager from the web browser embedded on the CallPilot server, you must first log on to Windows 2003 on the CallPilot server. Alternatively, you can access CallPilot Manager from any PC that has network access to the CallPilot server.

ATTENTION

When the system starts up, a mini-setup process launches which consists of a number of restarts. When this process is completed, the Windows Logon screen appears.

ATTENTION

When logging on, ensure that the Caps Lock key is not on. The password is case-sensitive.

To log on to Windows 2003 on the CallPilot server

Step	Action						
1	Ensure that the CallPilot server has started and the operating system logon dialog appears.						
2	Enter the user ID and password.						
	<table border="1"> <tbody> <tr> <td>User ID</td> <td>Administrator</td> <td>You can choose to log on with a different user ID that has local administrative privileges.</td> </tr> <tr> <td>Password (default)</td> <td>Bvw250(or current Administrator password if it has been changed)</td> <td>Change passwords for operating system accounts from default values to strong values known only to the customer. CallPilot security is ultimately only as secure as the passwords used.</td> </tr> </tbody> </table>	User ID	Administrator	You can choose to log on with a different user ID that has local administrative privileges.	Password (default)	Bvw250 (or current Administrator password if it has been changed)	Change passwords for operating system accounts from default values to strong values known only to the customer. CallPilot security is ultimately only as secure as the passwords used.
User ID	Administrator	You can choose to log on with a different user ID that has local administrative privileges.					
Password (default)	Bvw250 (or current Administrator password if it has been changed)	Change passwords for operating system accounts from default values to strong values known only to the customer. CallPilot security is ultimately only as secure as the passwords used.					
3	Click OK .						
4	Continue with " Running the Setup Wizard " (page 69).						

—End—

Running the Setup Wizard

After you enter the user ID and password, the CallPilot Setup Wizard welcome screen appears.

Note: For more information on the Setup Wizard, please see the *Upgrade and Platform Migration Guide* (NN44200-400).

To run the Setup Wizard

Step	Action
1	Read the information displayed on the screen and click Next. Result: The Need SU/PEP Installation? screen appears.
2	If there are Service Updates (SUs) or PEPs available, you can choose to install them now. Select Yes or No and click Next. <i>If you choose Yes, install SU/PEPs:</i> Result: The Installing SU/PEP screen appears. a. Install all the required SUs and PEPs. Note: Restart your computer (if required) after all SUs and PEPs are installed. b. Click Next to continue if no restart is required. Otherwise, restart the Wizard. <i>If you choose No, do not install SU/PEPs now.</i> Result: The Platform Validity Check screen appears.
3	View the items on the validity check and click Next.
4	When the system asks you if you have data to restore, select No.
5	Click Next to complete the Setup Wizard. Result: The Finished screen appears.
6	Read the information displayed on the Finished screen and click Finish.
7	Continue with " Logging on to the CallPilot server with CallPilot Manager " (page 70).

—End—

Logging on to the CallPilot server with CallPilot Manager**Introduction**

The Setup Wizard automatically launches your web browser. The CallPilot log on screen appears.

The logon process is completed in two stages:

1. The web browser on the CallPilot server is configured to automatically connect to the CallPilot Manager web server. If you launch the web browser on a PC, you must specify the URL for the CallPilot Manager web server.

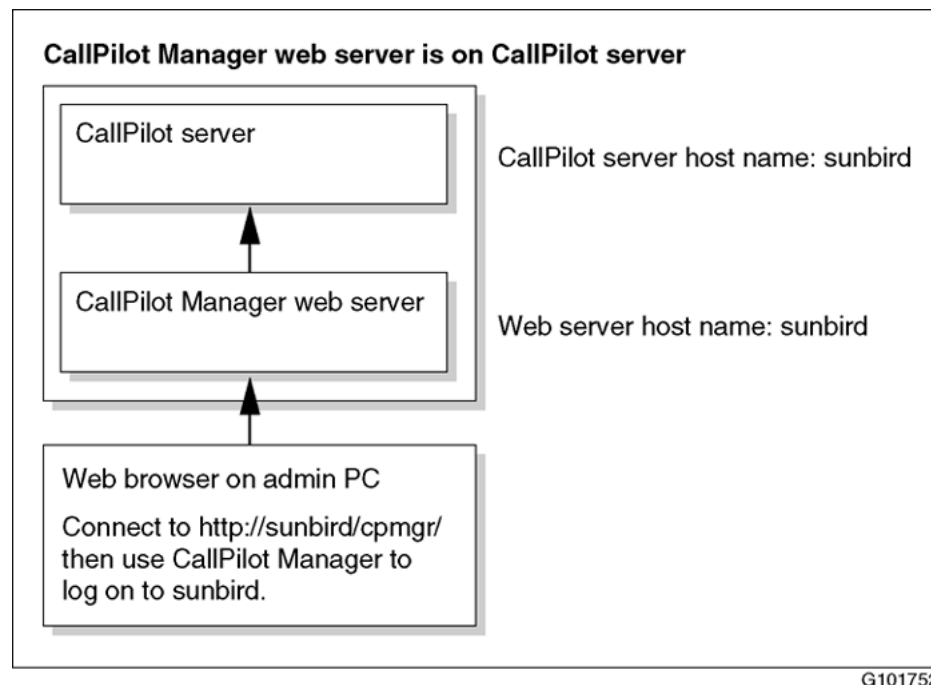
The URL syntax is `http://<web server host name or IP address>/cpmgr/`.

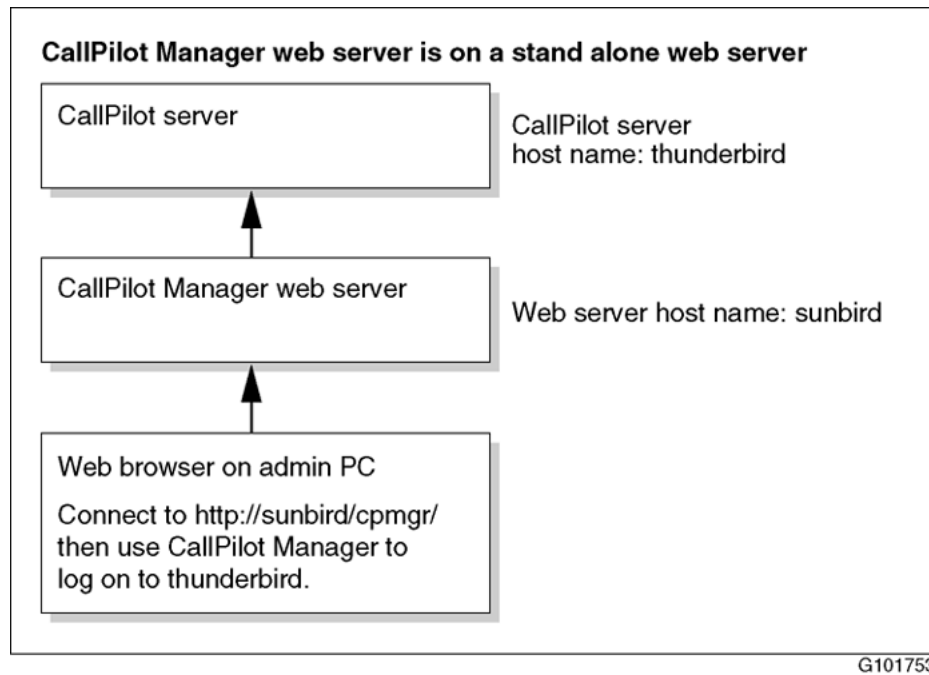
2. Log on to the CallPilot server with an administrator's mailbox number and password.

Relationship of the CallPilot Manager web server to the CallPilot server

The CallPilot Manager web server software can be installed on the CallPilot server, or on a stand-alone server. If the CallPilot Manager web server software is installed on a stand-alone server, you must know the host name or IP address of the CallPilot Manager server, as well as the host name or IP address of the CallPilot server.

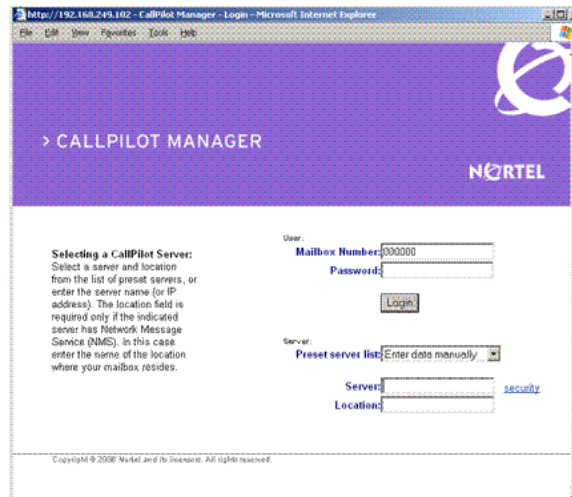
See the following diagrams:





To log on to the CallPilot server

Step	Action						
1	The Setup Wizard automatically launches the browser. <table border="1"> <thead> <tr> <th>IF the browser is launched on</th> <th>THEN</th> </tr> </thead> <tbody> <tr> <td>the CallPilot server</td> <td>the CallPilot Manager login screen appears automatically. Continue with step 2.</td> </tr> <tr> <td>your PC</td> <td>type the CallPilot Manager web server URL in the Address or Location box of your web browser, and then press Enter.</td> </tr> </tbody> </table> Example: <code>http://sunbird/cpmgr/</code> When the connection is established, the CallPilot Manager - Login screen appears. Continue with step 2.	IF the browser is launched on	THEN	the CallPilot server	the CallPilot Manager login screen appears automatically. Continue with step 2.	your PC	type the CallPilot Manager web server URL in the Address or Location box of your web browser, and then press Enter.
IF the browser is launched on	THEN						
the CallPilot server	the CallPilot Manager login screen appears automatically. Continue with step 2.						
your PC	type the CallPilot Manager web server URL in the Address or Location box of your web browser, and then press Enter.						



- 2 Type the administrator mailbox number and password.

The administrator mailbox number is **000000**. The default password is **124578**.

- 3 Perform one of the following:

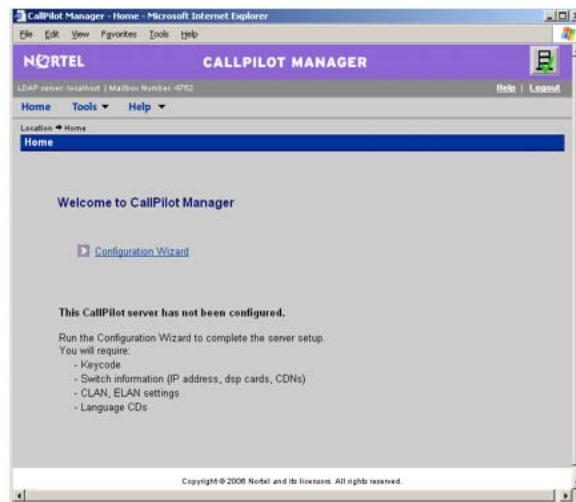
- Choose a server or location from the list of preconfigured servers or locations in the Preset server list box. Or, choose the Last Server Accessed item.
- Type the CallPilot server host name or IP address in the Server box.

Note: If you are logging on to the CallPilot server from a PC, type the actual CallPilot server name or IP address in the Server box. If you type local host instead of the CallPilot server name or IP address, you cannot establish an Application Builder connection to the CallPilot server from CallPilot Manager or make calls to the telephone set to play or record greetings.

- If the CallPilot server that you are connecting to has Network Message Service (NMS) installed, type the CallPilot server host name or IP address in the Server box, and then type the name of the switch location on which the administration mailbox resides in the Location box.

- 4 Click **Login**.

Result: The main CallPilot Manager screen appears.



Note: The system launches the web browser and prompts you to log in to CallPilot Manager and configure your CallPilot system.

- 5 Continue with "Running the Configuration Wizard" (page 74).

—End—

Running the Configuration Wizard

Introduction

This section describes how to access and run the Configuration Wizard.

Requirements

- CallPilot language CD, if you are installing, adding, or upgrading languages
- Completed "Configuration Wizard worksheet" from the *CallPilot Installation and Configuration Task List*
- CallPilot keycode and serial number

To run the Configuration Wizard

Step	Action
------	--------

ATTENTION

For each screen in the Configuration Wizard, follow the instructions on the screen. Use the information you recorded in the "Configuration Wizard worksheet" in the *CallPilot Installation and Configuration Task List*. If you need additional instructions, click Help.

If you are rerunning the Configuration Wizard, some screens can be prefilled. Some screens also contain default values. If the prefilled information does not match the information planned for this server, then update any prefilled values as required.

- 1 Log on to CallPilot Manager. See "[Logging on to the CallPilot server with CallPilot Manager](#)" (page 70).
- 2 Click the **Configuration Wizard** shortcut on the main CallPilot Manager screen, or select **Tools** → **Configuration Wizard**.
Result: The Welcome screen of the Configuration Wizard appears.
- 3 Click **Next** to go to the next screen.
- 4 Read the instructions carefully on each screen. Click **Help** on the Configuration Wizard screen if you need additional instructions. When you are finished with a screen, click **Next** to continue.
- 5 When you reach the **Switch Information** page, click the link to be configured.

The Channel Detail screen appears.

Number of channels in the range: 1

Agent DN: 3395101

Group DN: 6134247200, Multimedia Messaging

Message Desk Number: 63

Message Terminal Number: 1

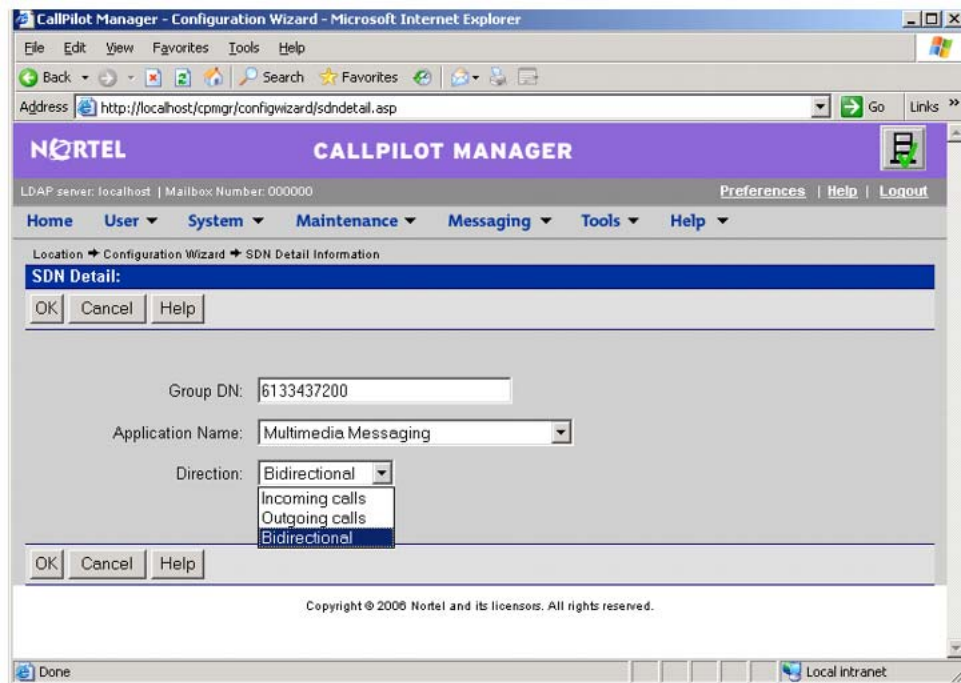
Login Code: 12186

Logout Code: 13187

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Local intranet

- 6 In the **Number of channels in the range** list box, select the number of channels you are configuring.
 - 7 In the **Agent DN** box, type the directory number of the first agent belonging to the Group DN.
 - 8 Click **New**
- The SDN Detail Information screen appears.



- 9 In the **Group DN** box, type the Group Directory Number.
 - 10 Select the name of the application associated with the Group DN.
 - 11 Select the channel direction from the list box.
- Note:** Large volumes of outgoing calls such as Delivery To Fax (DTF), Remote Notification (RN), and Delivery To Telephone (DTT) can result in channel contention with incoming calls. This channel contention results in a *Ring No Answer* (RNA) situation. To avoid this problem, configure some channels as **Multimedia Messaging** and **Outgoing calls**. See the *CallPilot Planning and Engineering Guide* (NN44200-200) for more details.
- 12 Click **OK**
- The Channel Detail screen reappears.

- 13 If you are configuring more than one channel for the Group DN, click **Fill**. Otherwise, click **OK**.
- 14 Repeat this procedure for each Group DN you are configuring.
- 15 When you have finished the switch configuration, click **Next**.
- 16 Continue to follow the Configuration Wizard instructions.
- 17 When you reach the end of the Configuration Wizard, click **Finish** to save the Configuration Wizard changes, or click **Cancel** to discard any changes. No changes are implemented unless you click Finish.

Result: The Configuration Wizard requires up to an hour to apply changes, depending on the number of languages you are installing or updating, and the size of the system. When CallPilot completes the configuration changes, you are prompted to restart the server.

- 18 Restart the server.

Note: Ensure you use the restart procedure documented in the *CallPilot Installation and Configuration Task List*.

Result: The server restarts and the configuration changes are in effect.

—End—

Note: If you run the Configuration Wizard after your CallPilot server is added to a domain, two procedures do not work until you remove the server from the domain. The two procedures are: changing the computer name, and changing the local administrator account. For more information, see "[Configuring CallPilot to operate in a Windows 2000 or 2003 domain](#)" (page 81).

What is next?

Your next step will depend on your choice of a remote support tool.

- If you are using pcAnywhere, continue to "[Changing pcAnywhere caller passwords](#)" (page 77).
- If you are using Remote Desktop Connection, continue to "[Setting Remote Desktop Policy on a Server](#)" (page 79).

Changing pcAnywhere caller passwords

Introduction

With pcAnywhere, you can perform advanced administrative tasks on the server from a remote PC. You can control the server as though you were directly connected to the server.

pcAnywhere is installed and configured on the server at the factory. One licensed copy of pcAnywhere is provided for the server on the CallPilot Application CD-ROM.

To install pcAnywhere on another PC, you must purchase a separate license. For instructions on how to install and configure pcAnywhere on another PC, see the *Administrator's Guide*.

To change pcAnywhere caller passwords

Step	Action
1	Stop the pcAnywhere session, if one is running.
2	Click Start → Programs → Symantec pcAnywhere . Result: The pcAnywhere Manager opens.
3	Right-click the CallPilot Support host , and then select Properties from the pop-up menu. Result: The pcAnywhere Host Properties: CallPilot Support dialog box appears.
4	Click the Callers tab. Note: If you would like to change the CallPilot Administrator account password while the CallPilot server is in a domain, follow the below steps: - Log on with one of the CallPilot local accounts. - Right-click on My Computer and select Properties. - Select Computer Name. - Click Change and select Workgroup. - Enter WORKGROUP as the workgroup name. - Restart and log on with the CallPilot local Administrator account. - Run the Configuration Wizard to change the CallPilot passwords or the CallPilot server host name.
5	Right-click the CallPilotDist icon, and then select Properties from the pop-up menu.
6	In the Password box, type a new CallPilotDist password.
7	In the Confirm Password box, type the CallPilotDist password again.
8	Click Apply .
9	Click OK .

- 10 Click **OK** to return to the main pcAnywhere Manager screen.
- 11 Double-click the **CallPilot** icon to restart the pcAnywhere session.

—End—

What is next?

Continue with "Configuring CallPilot to operate in a Windows 2000 or 2003 domain" (page 81).

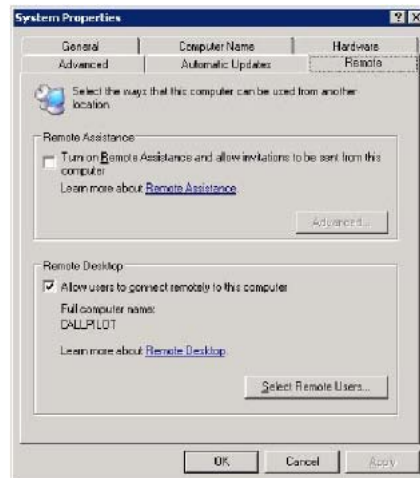
Setting Remote Desktop Policy on a Server

CallPilot server comes with the Remote Desktop server enabled and configured for use by default. If necessary, remote desktop access can be enabled or disabled as follows:

To set remote desktop policy on a server

- | Step | Action |
|------|---|
| 1 | From the CallPilot server desktop, right-click My Computer , then choose Properties , and click on the Remote tab. |

Result: The System Properties screen appears.

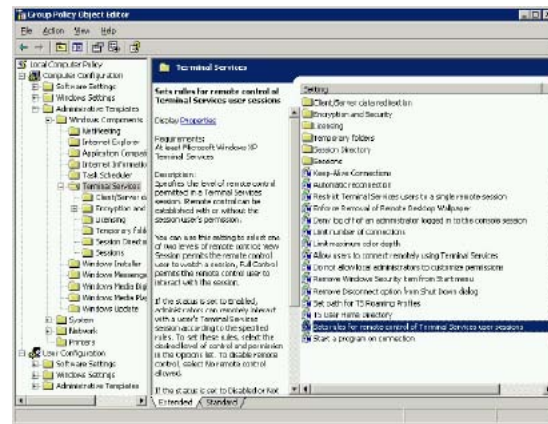


- 2 Ensure the Allow users to connect remotely to this computer option is selected. Click **OK** to close the window.
- 3 Open the Group Policy Snap-in to choose from the five options available for remote control settings. Open a command prompt window by clicking **Start > Run**.

Result: The Open window appears.

- 4 Type `gpedit.msc` and click **OK** or press **Enter**.

Result: The Group Policy Object Editor window appears.



- 5 On the left side of the window, expand **Computer Configuration**, **Administrative Templates**, **Windows Components**, and then select **Terminal Services**.
- 6 On the right side of the window, double-click **Sets Rules for Remote Control Terminal Services User Sessions**.
- 7 The **Sets Rules for Remote Control Terminal Services User Sessions** window appears.
- 8 Select **Enabled** to load options into the box.
- 9 The default and recommended setting for CallPilot is **Enabled with Full Control without User's Permission** selected. This setting allows for RDC sessions without requiring interaction or consent from a local console user.
- Adjust the settings as required, and click **OK** to close the screen.
- 10 Click **File > Close** to close the Group Policy Object Editor.

Note: For instructions on installing and configuring Remote Desktop Connection (RDC), see the *CallPilot Troubleshooting Reference Guide* (NN44200-700).

—End—

What is next?

Continue with "Configuring CallPilot to operate in a Windows 2000 or 2003 domain" (page 81).

Configuring CallPilot to operate in a Windows 2000 or 2003 domain

Introduction

Nortel supports CallPilot as a member in a Windows 2000 or 2003 domain. Customers can add their server machine to a Windows 2000 or 2003 domain for added security and manageability. Whether you are upgrading to CallPilot 5.0 or installing a new CallPilot 5.0 system, you can move your server from a Windows workgroup to a Windows 2000 or 2003 domain.

Note: You do not need to add CallPilot to a domain. This procedure is optional. Nortel will continue to support CallPilot 5.0 in a workgroup. If you do not want to add your server to a domain, continue with [Chapter 6 "Testing the CallPilot installation" \(page 89\)](#).

To add your CallPilot server to a domain, you require network administrator privileges. To perform this procedure, you can either work with your network administrator, or ask your network administrator to create a user account with network administrator privileges.

When you add your CallPilot server to a domain, Nortel recommends that you see the latest Distributor Technical Reference (DTR), available on the PIC web site www.nortel.com/pic.

This section describes how to:

- set domain group policy
- add your CallPilot server to the domain
- stop and disable Win32 Time Service on the CallPilot server
- set up user accounts for remote access
- run Configuration Wizard in a domain

To set domain group policy

When you install Release 5.0 of CallPilot, the installation creates a local Administrator account that contains a default strong password of six characters. As a result, your local domain group policy can conflict with these default settings. . See ["Running the Configuration Wizard" \(page 74\)](#), for information on how to change these user accounts.

If you identify conflicts, you can adjust your group policies for CallPilot, or you can exclude the CallPilot server machine from a specific group policy.

When you add your CallPilot server to a domain, you must also consider that the Windows 2003 Domain Controller determines the security policy that applies to the server.

Note: Nortel strongly recommends that you add the server to a domain *after* running the Configuration Wizard.

To add CallPilot server to a domain

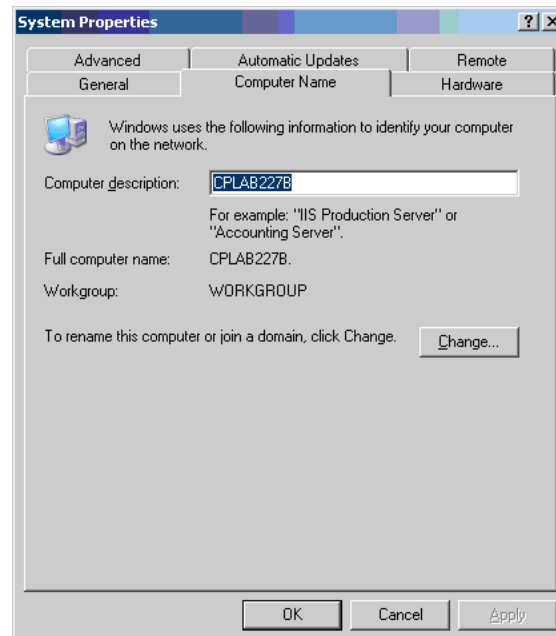
After you install and configure your CallPilot server, and you confirm that your network administrator has set up a Domain Controller and a DNS server on the network, you can add your server as a member of an existing domain.

To add the server as a member of an existing domain

Step	Action
------	--------

- | | |
|---|---|
| 1 | On the CallPilot server, courtesy stop all CallPilot channels. See the <i>Installation and Configuration Task List Guide</i> , NTP (NN44200-306), for more information. |
| 2 | Exit the pcAnywhere session if it is running. |
| 3 | On the CallPilot server Windows desktop, right-click on My Computer , and then select Properties . |
| 4 | In the System Properties window, click the Computer Name tab. |

Result: The following System Properties window appears.



- 5 Click **Change**.

Result: The Computer Name Changes window appears.



- 6 To add the server to an existing domain, click the **Domain** option button in the **Member of** pane, and then type the name of the domain.

- 7 Click **OK**.

Result: The Domain Username And Password window appears.



- 8 Enter the username and password from the user account on the Domain Controller that has remote access privileges.

Note: You need a domain administrator username and password.

- 9 Click **OK**.

Result: When the system processes your change successfully, the following dialog box appears, notifying you that the server now belongs to the specified domain.



- 10 Click **OK**.
- 11 Click **Yes** to restart your computer.

—End—

Setting up user accounts for remote access domain

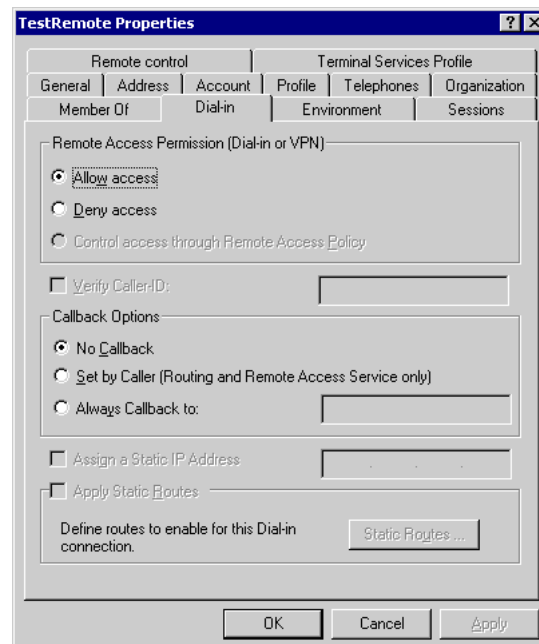
To set up user accounts for remote access domain

In a Windows Server 2003 domain environment, you must create a dial-up user as a Domain user on the Domain Controller and assign dial-in access permissions to this user. When dialing in to the RAS configuration CallPilot Release 5.0 server, the Domain controller authenticates the username and password.

Note: Local dial-in access is no longer available for the Administrator account. You can obtain remote dial-in access to the CallPilot system by setting up a domain account with dial-in permissions.

After you set up a domain user account and assign dial-in access permission, you have two options to log on to the local CallPilot system using dial-in access permission.

See below an example of a Domain user account with dial-in access:



Option 1: Use the local Administrator account for remote login.

To perform Option 1, follow the steps below:

Step	Action
1	Ask the network administrator for a user account allowing dial-in access permission. Note: Ask the network administrator for a username and password that is different from the username and password for your local CallPilot Administrator account. Record the username and password carefully as it will be required for remote support of the CallPilot server.
2	When you dial in to the server, you are prompted for a dial-in Domain user account and password. Enter the username and password that you received in Step 1.
3	Initiate a pcAnywhere or a Remote Desktop Client (RDC) session.
4	Enter the local CallPilot administrator account to log on to the CallPilot server. Note: Since there is no local record for the Domain user account, two user accounts must be maintained: the Domain user account, and the local account.

—End—

Option 2: Use the Domain user account for remote logon

To perform Option 2, follow the steps below:

Step	Action
1	Ask the network administrator for a user account allowing dial-in access permission. Note: Ask the network administrator for a username and password that is different from the username and password for your local CallPilot Administrator accounts. Record the username and password carefully as it will be required for remote support of the CallPilot server. The dial-in account must be added to the CallPilot local Administrator group to grant administrator privileges to support personnel.
2	Initiate a pcAnywhere or a RDC session.
3	When you dial in to the server, the system prompts you for a dial-in domain user account and password. Enter the username and password that you received in Step 1.

Note: This option manages the user account in one location, for both dial-in access through pcAnywhere or RDC.

—End—

To run Configuration Wizard in a domain

After you add the CallPilot server to a domain, the domain account that is used to log on to the CallPilot server does not have network administrator privileges. As a result, if you run the Configuration Wizard after you add your CallPilot server to the domain, two procedures do not work until you remove the server from the domain. The two procedures are: changing the computer name, and changing the local administrator account. To perform these two procedures when your server is in a domain, you must remove the server from the domain, perform the procedure, and then add the server to the domain again.

To change the computer name

Step	Action
------	--------

To change the computer name when you run Configuration Wizard and CallPilot is a member of a domain, perform the following steps:

- | | |
|---|---|
| 1 | Ask your network administrator to remove the CallPilot server from the domain and add the server to a workgroup. You can also perform this step on your own, if you acquire network administrator privileges from your network administrator. |
| 2 | Shut down and restart the CallPilot system. |
| 3 | Run the Configuration Wizard and select the option to change the computer name. |
| 4 | Shutdown and restart the CallPilot system. |
| 5 | Ask your network administrator to add the CallPilot server to the domain. You can also perform this step on your own, if you acquire network administrator privileges from your network administrator. |
| 6 | Shutdown and restart the CallPilot system. |

—End—

To change the local account passwords

Step Action

To change the local account passwords when you run Configuration Wizard and CallPilot is a member of a domain, perform the following steps:

- 1** Ask your network administrator to remove the CallPilot server from the domain and add the server to a workgroup. You can also perform this step on your own, if you acquire network administrator privileges from your network administrator.
- 2** Shut down and restart the CallPilot system.
- 3** Run the Configuration Wizard and select the option to change the account passwords.
- 4** Shutdown and restart the CallPilot system.
- 5** Ask your network administrator to add the CallPilot server to the domain. You can also perform this step on your own, if you acquire network administrator privileges from your network administrator.
- 6** Shutdown and restart the CallPilot system.

—End—

Continue with [Chapter 6 "Testing the CallPilot installation" \(page 89\)](#).

Chapter 6

Testing the CallPilot installation

In this chapter

"Checking that CallPilot is ready to accept calls" (page 89)

"Testing the connection to the CLAN" (page 92)

"Verifying that CallPilot can receive calls" (page 92)

"Testing the CallPilot software and channels" (page 93)

Checking that CallPilot is ready to accept calls

ATTENTION

CallPilot is not ready to accept calls until the CallPilot services are fully operational. CallPilot services require approximately ten minutes after starting up the CallPilot server to become fully operational.

Introduction

CallPilot uses various system-ready indicators to indicate when it is ready to accept calls, including:

- displaying messages in dialog boxes on the CallPilot server monitor after logon, as well as displaying a status icon in the top-right corner of the CallPilot Manager window
- generating events that can be viewed in the Event Browser or Alarm Monitor in CallPilot Manager

The system-ready indicators described in this section appear when you restart the server, and when a change in system readiness status occurs while CallPilot is running.

The system-ready indicators appear only if the Configuration Wizard has previously been run on the server. The CallPilot server is not ready to accept calls if the Configuration Wizard has not been run.

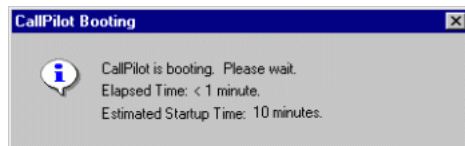
Note: The Configuration Wizard may have been run at the factory or distributor's site prior to shipment to the customer site. If so, then system-ready indicators are visible the first time you start up CallPilot at the customer site.

Checking system readiness by observing the dialog box messages

A system-ready indicator dialog box appears on the screen any time there is a change in system readiness status. You can close these dialog boxes at any time. If the status changes, a dialog box appears again.

At all times, a system-ready indicator icon appears in the task bar in the bottom-right corner of the screen. To view the system-ready indicator dialog box after you close it, double-click the system-ready indicator icon. To view the current status (boot, pass, warn, or fail), place the mouse pointer over the system-ready indicator icon. Help text (roll-over text) appears after a few seconds that states the current status.

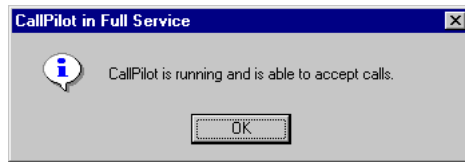
Immediately after you log on to the server, the following dialog box appears on the screen, if CallPilot services are not yet fully operational. The dialog box can take approximately 1 minute after logon to appear:



The Elapsed Time indicates how much time has passed since the CallPilot application began its boot sequence.

Note: This dialog box may not appear if enough time has passed between starting up the CallPilot server and logging on for CallPilot services to become fully operational. CallPilot services take approximately ten minutes after starting up the CallPilot server to become fully operational.

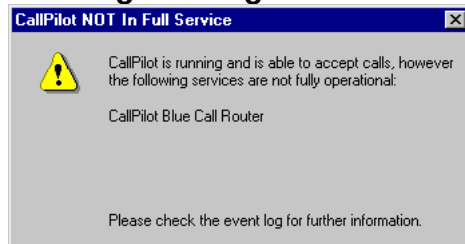
If the CallPilot start sequence is passed successfully (that is, CallPilot services are fully operational), the following dialog box appears:



Click OK to close the dialog box.

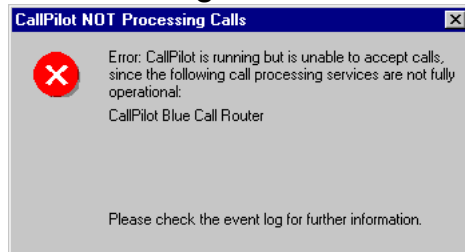
If there are errors, one of the following two dialog boxes appears (depending on the severity of the problem):

Warning message



Close the dialog box by clicking the X in the upper-right corner. Check the Event Browser or Alarm Monitor in CallPilot Manager for more details. For instructions, see the online Help in CallPilot Manager.

Error message



Close the dialog box by clicking the X in the upper-right corner. Check the Event Browser or Alarm Monitor in CallPilot Manager for more details. For instructions, see the online Help in CallPilot Manager.

Alternative methods for verifying that CallPilot is ready to accept calls View events in CallPilot Manager or in the Windows 2003 Event Viewer on the server

The Pass, Warning, and Error system-ready indicator messages appear as events in the Event Browser and Alarm Monitor in CallPilot Manager, and in the Windows 2003 Event Viewer on the server.

The Event Browser and Alarm Monitor show only the latest 100 events by default (this default can be adjusted), so the system-ready indicator events can be removed from the Event Browser and Alarm Monitor windows.

For detailed instructions on viewing events, see the online Help in CallPilot Manager.

Testing the connection to the Nortel server subnet

Introduction

This procedure tests the network connection between the server and the Nortel server subnet. This applies only if CallPilot is connected to the Nortel server subnet.

To test the connection to the Nortel server subnet

Step	Action
1	Click Start → Programs → Accessories → Command Prompt. Result: The Command Prompt window appears.
2	Type ping followed by the Nortel server subnet IP address of another PC on the Nortel server subnet, and then press Enter. Example: ping 255.255.255.255 Result: The display indicates a successful ping.
3	Type exit , and then press Enter to close the Command Prompt window.

—End—

Verifying that CallPilot can receive calls

Introduction

The following procedure is a basic test to verify that CallPilot can receive calls from the switch and answer those calls. A more thorough test that requires the use of CallPilot Manager is described in "[Testing the CallPilot software and channels](#)" (page 93).

To verify that CallPilot can receive calls

Step	Action
1	Ensure that CallPilot services are fully operational before you begin. See " Checking that CallPilot is ready to accept calls " (page 89).

- 2 Dial the main Voice Messaging DN that you defined in the Configuration Wizard.
- 3 Listen for a response from CallPilot (for example, "CallPilot from Nortel ..."), and then hang up.
If you do not get a response, then perform the following:
 - a. Check the cabling between the server and the switch.
 - b. Verify that the switch is processing calls to other extensions.
 - c. See the CallPilot 1002rp Server Maintenance and Diagnostics guide for troubleshooting instructions.

—End—

What is next?

Continue with ["Testing the CallPilot software and channels" \(page 93\)](#).

Testing the CallPilot software and channels

Introduction

This section includes a series of tests of the CallPilot installation including verifying that:

- you can leave a message.
- you can retrieve a message.
- each call channel and multimedia (DSP) channel is functioning properly.

Before you begin

- Ensure that you have configured the switch and CallPilot server, as described in this guide.
- Obtain the UCD group DNs (primary DNs).
- Identify a telephone set DN existing on the switch that you can use for testing.
- Have a pencil and paper ready to record the results of the tests.

To verify that you can leave a message

Complete the following procedures to perform this test:

- ["To add a user for testing purposes" \(page 94\)](#).
- ["To configure the Voice Messaging DN" \(page 94\)](#).
- ["To leave a message" \(page 95\)](#).

To add a user for testing purposes

Step	Action
------	--------

- | | |
|---|---|
| 1 | Log on to Windows 2003 on the CallPilot server. See " Logging on to Windows 2003 on the CallPilot server " (page 69). |
|---|---|

Note: Although you can access CallPilot Manager from any PC with network access to the CallPilot server, later tests require that you be logged on to the CallPilot server.

- | | |
|---|---|
| 2 | Log on to CallPilot Manager. See " Logging on to the CallPilot server with CallPilot Manager " (page 70). |
|---|---|

- | | |
|---|---------------------------------------|
| 3 | Click User → Add User . |
|---|---------------------------------------|

Result: The Express User Add window appears.

- | | |
|---|--|
| 4 | Type the required information. Each required field is marked with an asterisk (*). Accept the default values for other fields. |
|---|--|

For example, create a user named TEST USER.

ATTENTION

The tests in this section use the mailbox number 8050 as an example. Ensure that you specify a DN that is defined on the switch.

- | | |
|---|--------------------------|
| 5 | Click Advanced User Add. |
|---|--------------------------|

Result: The Advanced User Add window appears, and the information you have already entered appears.

- | | |
|---|--|
| 6 | Scroll down to the Security section of the window and specify a mailbox password. Write down the password. Leave all other fields at their default values. |
|---|--|

- | | |
|---|-------------------------|
| 7 | Click Express User Add. |
|---|-------------------------|

Result: The Express User Add window appears.

- | | |
|---|------------|
| 8 | Click Add. |
|---|------------|

Result: CallPilot Manager displays a summary of the user just added.

—End—

To configure the Voice Messaging DN

Note: If you have already configured a Voice Messaging CDN in the Configuration Wizard, then you can skip this procedure. If you are not

sure, continue with this procedure to verify that a Voice Messaging CDN is present, or to configure one if necessary.

Step	Action
1	Click System → Service Directory Number. Result: The Service Directory Number window appears.
2	Click New. Result: The SDN Detail window appears.
3	In the Service DN box, type the primary Voice Messaging DN for CallPilot. Note: If there are no voice channels installed on CallPilot, then use the fax or speech recognition primary DN as the Voice Messaging DN for these tests. You can still use the Voice Messaging application as described in this procedure.
4	In the Application Name box, select Voice Messaging.
5	In the Media Type box, select Voice. Note: If there are no voice channels installed on CallPilot, then select Fax or Speech Recognition based on the DN that you specified in step 3.
6	Click Save.
—End—	

To leave a message

Step	Action
1	From any active telephone set connected to the switch, dial the Voice Messaging Service DN that you have created. Result: CallPilot plays the following prompt: "CallPilot from Nortel Networks. Mailbox?" Note: If CallPilot does not answer the call or you do not hear a prompt, then check that the call channels and multimedia channels are in Idle state, as described in "Verifying that each call channel and multimedia channel is functioning properly" (page 98).

- 2 Enter the mailbox number followed by number sign (#), for example, 8050#.
Result: CallPilot plays the following prompt: *Password?*
- 3 Enter the mailbox password **128050#**.
Result: CallPilot plays the following prompt: *The temporary password assigned by your administrator must be changed. To access your mailbox, please press 84 and change your password.*
- 4 Press **84**.
Result: CallPilot plays the following prompt: *Password change. To authorize the change, please enter your old password followed by number sign.*
- 5 Enter **128050#**.
Result: CallPilot plays the following prompt: *Please enter your new password followed by number sign.*
- 6 Enter a new mailbox password followed by number sign (#), for example, 805011#.
Result: CallPilot plays the following prompt: *Please enter your new password again followed by number sign.*
- 7 Enter the new mailbox password again to confirm, for example, 805011#.
Result: CallPilot plays the following prompt: *Your password has been changed. Your mailbox is empty.*
- 8 Press **75** to compose a message.
Result: CallPilot plays the following prompt: *Compose...*
- 9 Enter the mailbox number, followed by number sign (#) twice, for example, 8050##.
Result: CallPilot plays the following prompt: *To begin recording, Press 5. To end recording, press number sign.*
- 10 Press **5** to record a message. Record a message, and then press number sign (#) to stop.
Result: CallPilot plays the following prompt: *Recording Stopped.* There is a brief pause, followed by the prompt: *To review the message, press 2, to send it, press 79...*
- 11 Press **79** to send the message.
Result: CallPilot plays the following prompt: *Message sent.*

- 12 Press **83**, and then hang up the phone.
- 13 Verify that the Message Waiting Indicator (MWI) is on.

—End—

To verify that you can retrieve a message

Step	Action
1	Lift the telephone handset and dial the same Voice Messaging Service DN again.
2	When prompted, enter the mailbox number where the message was left, for example, 8050#.
	Result: CallPilot plays the following prompt: <i>Password?</i>
3	Enter the mailbox password, for example, 805011#.
	Result: CallPilot plays the following prompt: <i>You have one new message. Message one. New. From... .</i>
ATTENTION If you do not hear the exact message, <i>You have one new message...</i>, the wrong prompts are installed or CallPilot did not install properly. If you do not hear the correct message, contact your Nortel customer support representative.	
4	Press 2 to play the message, and then listen to it.
5	Press 76 to delete the message.
	Result: CallPilot plays the following prompt: <i>Message 1 deleted.</i>
ATTENTION If you do not hear the exact message, <i>Message 1 deleted</i>, the wrong prompts are installed or CallPilot did not install properly. If you do not hear the correct message, contact your Nortel customer support representative.	
6	Press 83 and then hang up the phone.

—End—

Verifying that each call channel and multimedia channel is functioning properly

Tests that verify the CallPilot channels confirm that the call channels and multimedia (DSP) channels are functioning properly.

The call channel is the channel that carries the call signal from the switch to CallPilot. The multimedia channel is the channel in CallPilot that processes the call and provides voice, fax, or speech recognition capability.

Tests that verify the CallPilot channels consist of the following procedures:

- ["To test call channels and voice channels" \(page 98\)](#) (Skip this procedure if you do not have voice channels installed.)
- ["To test call channels and fax channels" \(page 100\)](#) (Skip this procedure if you do not have fax channels installed.)
- ["To test call channels and speech recognition channels" \(page 102\)](#) (Skip this procedure if you do not have speech recognition channels installed.)
- ["To restore the SDN Table and put all channels back in service" \(page 103\)](#).

Note: These tests require that you access the Channel Monitor, Multimedia Monitor, and Service Directory Number applications in CallPilot Manager. If you need additional instructions for these programs, see the online Help in CallPilot Manager, or the *CallPilot Administrator's Guide* (NN44200-601). You also are required to access the System Monitor utility. The System Monitor utility is described in the chapter "Using CallPilot system utilities" in the *CallPilot 1002rp Server Maintenance and Diagnostics*.

To test call channels and voice channels

Note: If CallPilot has no voice channels, go to ["To test call channels and fax channels" \(page 100\)](#). If CallPilot also has no fax channels, go to ["To test call channels and speech recognition channels" \(page 102\)](#).

Step	Action
1	In CallPilot Manager, click System → Service Directory Number . Result: The Service Directory Number window appears.
2	In the earlier tests, you created a Voice Messaging Service DN. Ensure that the Voice Messaging Service DN is set to the Primary DN for the Voice UCD group. Note: If the Voice Messaging Service DN is not set properly, select the defined Service DN and click File → Properties . Make the required changes, and then click Save .

- 3 In the Application Name box, ensure that Voice Messaging is selected.
- 4 In the Media Type box, ensure that Voice is selected.
- 5 Click **Maintenance** → **Multimedia Monitor**.
Result: The Multimedia Monitor appears.
- 6 Select and start a maximum of 8 voice channels for testing.
Note: Nortel recommends that you test a maximum of 8 voice channels at one time. For example, if you have a 96-channel system, start only 8 voice channels. When those 8 voice channels are tested, stop them and start another set of voice channels.
- 7 Stop all fax and speech recognition channels, if these channels are present.
- 8 Verify that all voice channels are in Idle state.
- 9 In CallPilot Manager, click **Maintenance** → **Channel Monitor**.
Result: The Channel Monitor appears.
- 10 Select the whole system and stop all channels.
- 11 Select and start the same number of call channels as voice channels that you have started. For example, if you have started 8 voice channels, then start 8 call channels.
- 12 On the CallPilot server desktop, click **Start** → **Programs** → **CallPilot** → **System Utilities** → **System Monitor**.
Result: The CallPilot System Monitor window appears. By default, the Channel Monitor tab appears on top.
- 13 Observe the System Monitor window and verify that all the required multimedia (DSP) and call channels are in Idle state, and that all other channels are Off Duty (out of service).
- 14 Use a telephone to dial the service DN that you entered in the SDN table for Voice Messaging.
- 15 Verify that CallPilot answers the call and that the CallPilot greeting plays.
- 16 Observe the System Monitor and record which call channel and which voice channel changes to Active state.
- 17 Hang up the telephone.

- 18** Repeat steps 14 to 17 until all the selected voice and call channels are tested.

Note: If the calls are not cycling through all voice and call channels, then stop the tested voice and call channels. The next call is forced to move to the untested voice and call channels. When you stop the channels, there can be a short delay before the channels go to Off Duty state, because stopped channels go to a one-minute standby mode to be ready for the next call.

- 19** Stop the voice and call channels that have been tested. Then repeat steps 5 to 18 until all voice channels and the same number of call channels are tested.

—End—

To test call channels and fax channels

Note: If CallPilot has no fax channels, go to ["To test call channels and speech recognition channels" \(page 102\)](#).

Step	Action
1	In CallPilot Manager, click System → Service Directory Number . Result: The Service Directory Number window appears.
2	In the Service DN box, enter the primary DN for the fax UCD group.
3	In the Media Type box, select Fax . Note: You can leave the Application Name as Voice Messaging.
4	Click Save .
5	Click Maintenance → Multimedia Monitor . Result: The Multimedia Monitor appears.
6	In the Multimedia Monitor window, select and start a maximum of 8 fax channels for testing. Note: Nortel recommends that you test a maximum of 8 fax channels at one time. For example, if you have a 96-channel system, start only 8 fax channels. When those 8 fax channels are tested, stop them and start another set of fax channels.
7	Stop all voice and speech recognition channels, if these channels are present.

- 8 Verify that all fax channels are in Idle state, and leave the Multimedia Monitor window open so that you can observe when channels change to the Active state.
- 9 In CallPilot Manager, click **Maintenance** → **Channel Monitor**.
Result: The Channel Monitor appears.
- 10 Select the whole system and stop all channels.
- 11 Select and start the same number of call channels as fax channels that you have started. For example, if you start 8 fax channels, then start 8 call channels.
Note: Ensure you select and start call channels that are not already tested (for example, as part of the voice channel test).
- 12 On the CallPilot server desktop, click Start → Programs → CallPilot → System Utilities → System Monitor.
Result: The CallPilot System Monitor window appears. By default, the Channel Monitor tab appears on top.
- 13 Observe the System Monitor window and verify that all the required multimedia (DSP) and call channels are in Idle state, and that all other channels are Off Duty (out of service).
- 14 Use a telephone to dial the service DN that you entered in the SDN table.
- 15 Verify that CallPilot answers the call and that the CallPilot greeting plays.
- 16 Observe the System Monitor and record which call channel and which fax channel changes to the Active state.
- 17 Hang up the phone.
- 18 Repeat steps 14 to 17 until all the selected fax and call channels are tested.
Note: If the calls are not cycling through all fax and call channels, then stop the tested fax and call channels. The next call is forced to move to the untested fax and call channels. When you stop the channels, there can be a short delay before the channels go to Off Duty state, because stopped channels go to a one-minute standby mode to be ready for the next call.
- 19 Stop the fax and call channels that have been tested. Then repeat steps 5 to 18 until all fax channels and the same number of call channels are tested.

—End—

To test call channels and speech recognition channels

Step	Action
------	--------

- | | |
|----|---|
| 1 | In CallPilot Manager, click System → Service Directory Number .
Result: The Service Directory Number window appears. |
| 2 | In the Service DN box, enter the primary DN for the speech recognition UCD group. |
| 3 | In the Media Type box, select Speech Recognition .
Note: You can leave the Application Name as Voice Messaging. |
| 4 | Click Save . |
| 5 | Click Maintenance → Multimedia Monitor .
Result: The Multimedia Monitor appears. |
| 6 | In the Multimedia Monitor window, select and start a maximum of 8 speech recognition channels for testing.
Note: Nortel recommends that you test a maximum of 8 speech recognition channels at one time. For example, if you have a 96-channel system, start only 8 speech recognition channels. When those 8 speech recognition channels are tested, stop them and start another set of speech recognition channels. |
| 7 | Stop all fax and voice channels, if these channels are present. |
| 8 | Verify that all speech recognition channels are in Idle state, and leave the Multimedia Monitor window open so that you can observe when channels change to Active state. |
| 9 | In CallPilot Manager, click Maintenance → Channel Monitor .
Result: The Channel Monitor appears. |
| 10 | Select the whole system and stop all channels. |
| 11 | Select and start the same number of call channels as speech recognition channels that you have started. For example, if you start 8 speech recognition channels, then start 8 call channels.
Note: Ensure you select and start call channels that are not already tested (for example, as part of the voice or fax channel test). |

- 12** On the CallPilot server desktop, click **Start** → **Programs** → **CallPilot** → **System Utilities** → **System Monitor**.

Result: The CallPilot System Monitor window appears. By default, the Channel Monitor tab appears on top.

- 13** Observe the System Monitor window and verify that all the required multimedia (DSP) and call channels are in Idle state, and that all other channels are Off Duty (out of service).
- 14** Use a telephone to dial the service DN that you entered in the SDN table.
- 15** Verify that CallPilot answers the call and that the CallPilot greeting plays.
- 16** Observe the System Monitor and record which call channel (on the Channel Monitor window) and which speech recognition channel (on the Multimedia Monitor window) changes to Active state.
- 17** Hang up the phone.
- 18** Repeat steps [Step 14](#) to [Step 17](#) until all the selected speech recognition and call channels are tested.

Note: If the calls are not cycling through all speech recognition and call channels, then stop the tested speech recognition and call channels. The next call is forced to move to the untested speech recognition and call channels. When you stop the channels, there can be a short delay before the channels go to Off Duty state, because stopped channels go to a one-minute standby mode to be ready for the next call.

- 19** Stop the speech recognition and call channels that have been tested. Then repeat steps [Step 5](#) to [Step 18](#) until all speech recognition channels and the same number of call channels are tested.

—End—

To restore the SDN Table and put all channels back in service

Step	Action
1	In CallPilot Manager, click System → Service Directory Number . Result: The Service Directory Number window appears.
2	In the Service Directory Number window, select the check box for the Voice Messaging Service DN that you have been using for testing.

- 3 Click Delete Selected.

Result: The Service DN is deleted.

Note: If you are ready to begin CallPilot administration, you can choose to keep this Service DN. However, ensure that the Service DN is configured as required for normal operation. For example, do not leave the Service DN set to the Primary DN for the voice UCD group.

- 4 In CallPilot Manager, click Maintenance → Channel Monitor.

Result: The Channel Monitor appears.

- 5 In the Channel Monitor window, select the whole system and start all channels.

- 6 Verify that all call channels are in Idle state.

- 7 Click **Maintenance** → **Multimedia Monitor**.

Result: The Multimedia Monitor appears.

- 8 In the Multimedia Monitor window, select the whole system and start all channels.

- 9 Verify that all multimedia channels are in Idle state.

Result: The CallPilot tests are completed.

—End—

What is next?

Once your testing indicates that the server upgrade, new installation and configuration, platform migration, or system rebuild is successful, perform a full system backup. See Chapter 8, "Backing up and restoring CallPilot information" of the *Administration Guide* for more information.

Appendix A

CallPilot T1/SMDI interfaces

In this appendix

"CallPilot T1 interface and EMC cable requirements" (page 105)

"CallPilot SMDI interface" (page 117)

CallPilot T1 interface and EMC cable requirements

CallPilot provides a T1 interface to connect to external switching equipment using one or more T1 links. Customers can connect to a channel bank or other equipment that meets the Nortel T1 interface specifications.

For more information on supported equipment, see:

- Chapter 3 "Connecting the CallPilot server to the SL-100 or DMS-100 switch" (page 23)



WARNING

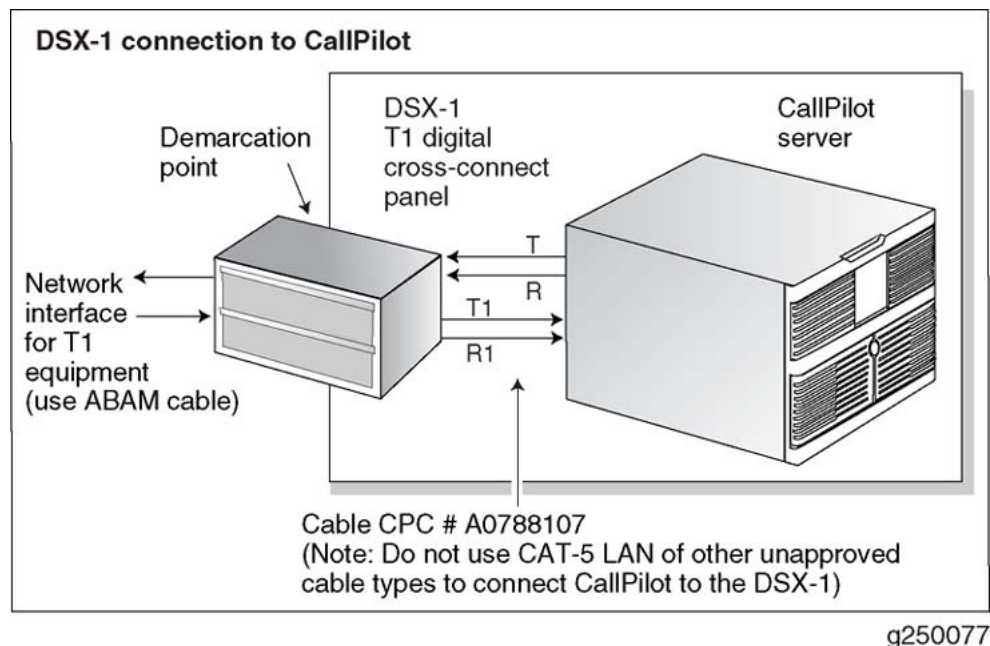
Risk of personal injury and risk of hardware failure

Switches used with CallPilot require a single-point ground topology to which the CallPilot Server must also be grounded. For more information, see the "Site inspection checklist" and "Single-point grounding requirements in the CallPilot Installation and Configuration Task List."

CallPilot T1 electrical interface requirements

The illustration shows specific electrical requirements for the T1 equipment interface to CallPilot.

CallPilot must always connect to a DSX-1 digital cross-connect panel. The cross-connect is the demarcation point between CallPilot and the external network.



Note 1: Electrical Characteristics are defined for the DSX-1 interface only.

Note 2: Electrical Characteristics at the network interface are defined in ANSI T1.403-1999, Network and Customer Installation Interfaces -- DS1 Electrical Interface.

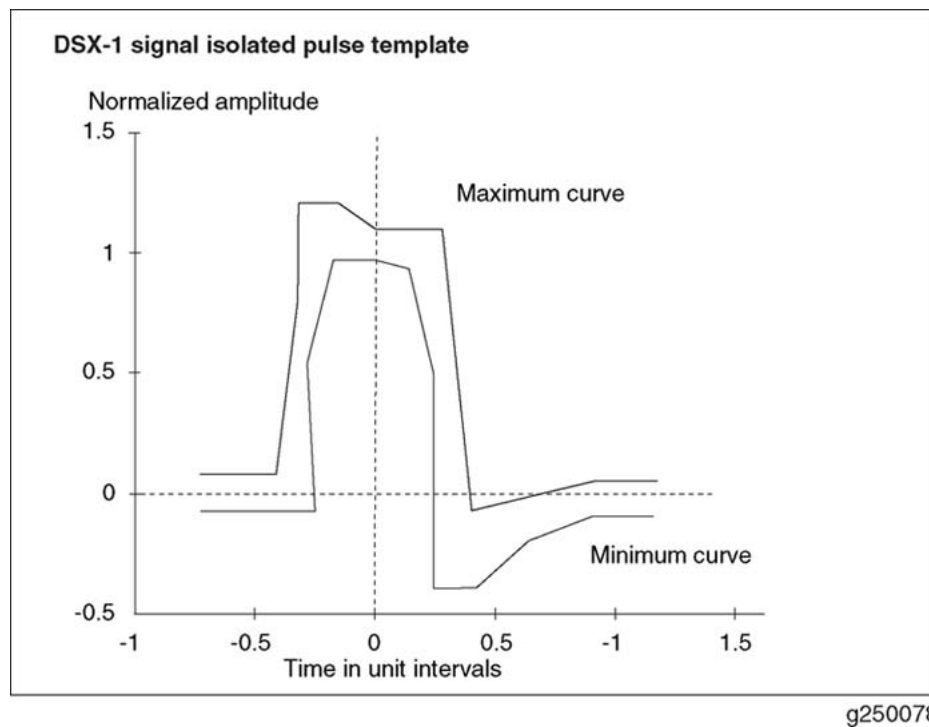
CallPilot T1 electrical requirements

Digital network interface	DSX-1 interface only
Line rate	1.544 Mb/s $\pm$ 32 ppm
	During synchronized operation, the line-rate accuracy must be as specified in ANSI T1.101 (Ref 13) for the appropriate stratum level.
Level	3.0V (nominal peak to peak)
	The amplitude of an isolated pulse must be between 1.2 V and 1.8 V. If the carrier puts DC voltage on the trunk to control a customer premises CSU or Smart Jack, then a CSU or Smart Jack is required.
Pulse width	323.85 ns (nominal)

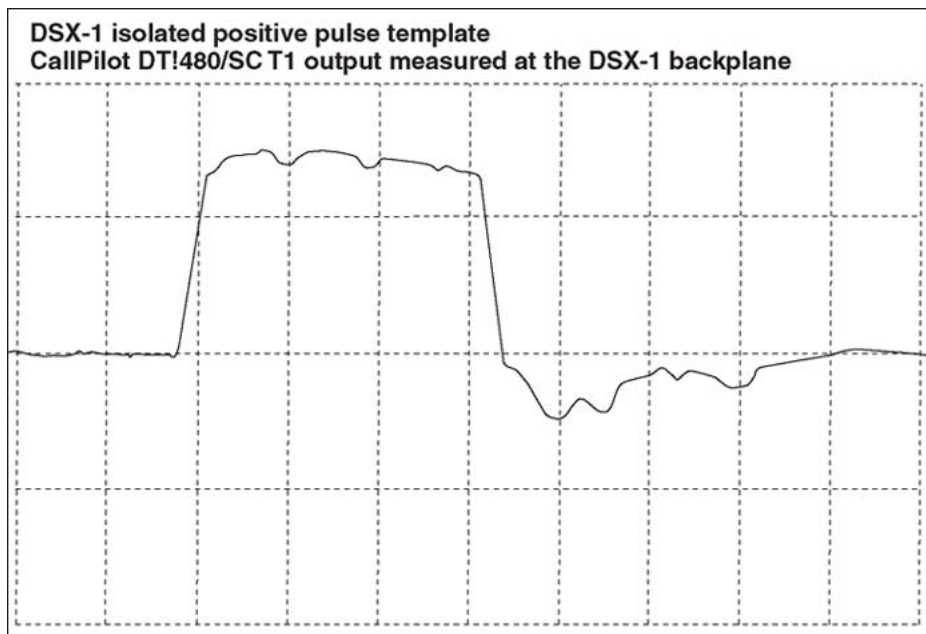
Pulse shape	ANSI T1.403b-2002 (see the illustration DSX-1 signal isolated pulse template " CallPilot T1 signal isolated pulse characteristics " (page 107))
Line impedance	100 Ω resistive $\pm 5\%$
Impedance matching	The characteristic impedance of exchange cables used to provide DS-1 service is nominally 100 W at 772 kHz. To assure that performance objectives are met, match this impedance by the PBX at the DSX-1 interface.
Line Build Out (LBO)	0 to 655 ft
Connectors	RJ-48C
Other Electrical characteristics	Complies with AT&T TR62411, ANSI T1.401b-2002, ANSI T1.403b-2002

CallPilot T1 signal isolated pulse characteristics

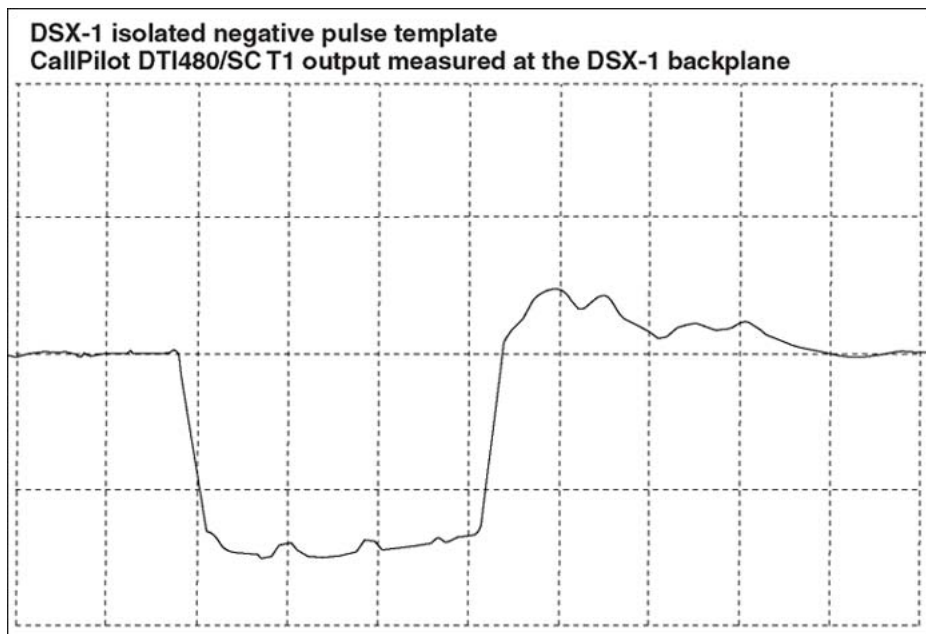
The exact electrical characteristics of T1 signals are specified in the table for both DSX-1 interface.

**DSX-1 isolated pulse template corner points**

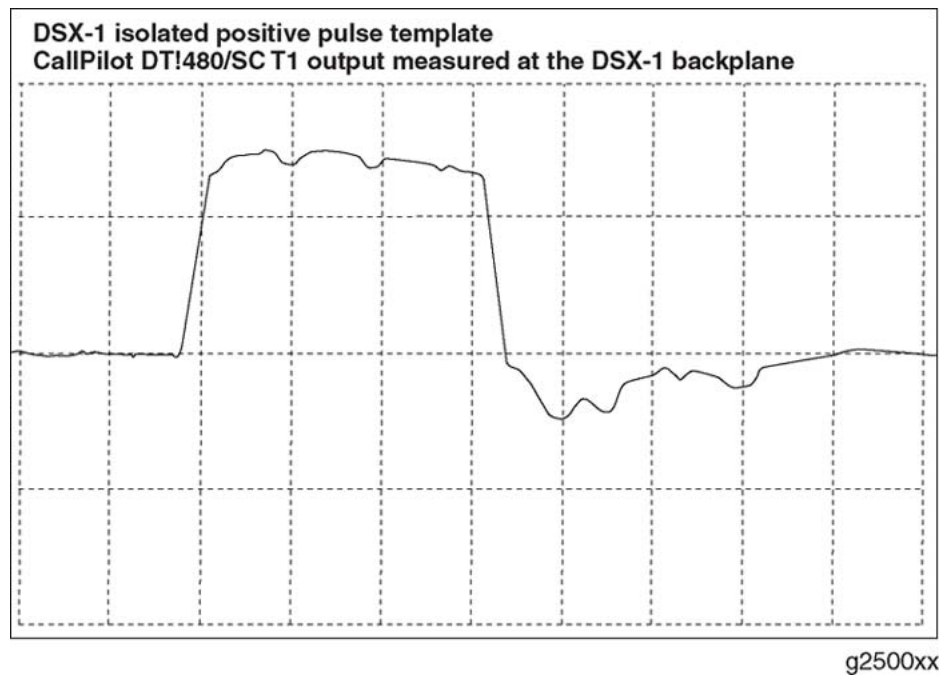
Minimum curve		Maximum curve	
Time (unit intervals)	Normalized amplitude	Time (unit intervals)	Normalized amplitude
-0.77	-0.05	-0.77	0.05
-0.23	-0.05	-0.39	0.05
-0.23	0.50	-0.27	0.80
-0.15	0.95	-0.27	1.15
0.00	0.95	-0.12	1.15
0.15	0.90	0.00	1.05
0.23	0.50	0.27	1.05
0.23	-0.45	0.35	-0.07
0.46	-0.45	0.93	0.05
0.66	-0.20	1.16	0.05
0.93	-0.05		
1.16	-0.05		



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CallPilot T1 EMC cable requirements

The T1 cable must:

- be non-loaded, staggered-twist, paired cable with a characteristic impedance of 100 ohms at 772 kHz.

ATTENTION

To comply with the FCC Part 15, CISPR 22 and EN 55022 EMC emissions requirements, the T1 cable must be shielded, and must have a ferrite bead (Manufacturer: Fair-Rite Products Corporation, Part Number: 0443164251) placed on the cable, one inch from the connector.

- terminate on the DSX-1 regardless of external end equipment at the far end.

Notes:

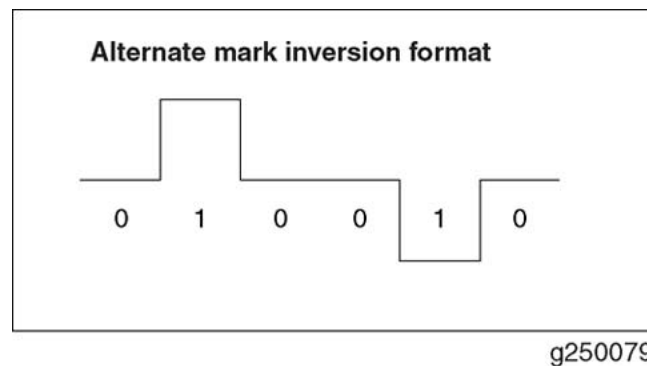
- All terminators and connectors in the circuit must also meet the impedance requirement.
- A cable type that meets the T1 specification is called ABAM.
- Cat 5 LAN cable does **not** meet the T1 specification and must not be used.

T1 cable pinouts

Pin Number	Lead designation
1	Receive ring
2	Receive tip
3	No connect
4	Transmit ring
5	Transmit tip
6	No connect
7	No connect
8	No connect
RJ-45 Metallic Shield	To cable shield drain wire

CallPilot T1 encoding requirements

A T1 signal uses bipolar electrical code format. CallPilot uses the B8ZS bipolar code format for T1 signals.



Voice signals on each channel in both directions must be digitally encoded to be multiplexed into the T1 stream. T1 uses pulse code modulation (PCM). Two PCM formats used in T1 are:

- Mu-Law (m-law) is used in Japan and North America.
- A-Law is used in the rest of the world.

Set CallPilot to the same format as the T1 source regardless of the location of the equipment.

Example:

If channel banks are set to Mu-Law, set CallPilot to Mu-Law.

Encoding	Description
Speech encoding	A-law or μ -law encoding/decoding, defined in ITU-T Recommendation G.711 as in accordance with ANSI T1.403b-2002
Line coding	Alternate mark inversion (AMI) with zero code suppression (ZCS) and B8ZS in accordance with ANSI T1.403b-2002

CallPilot T1 clocking requirements

Timing	Description
Timing Synchronization	CallPilot Configuration: • slave-timed when interconnecting to synchronous digital hierarchy equipment • master-timed when interconnecting to other equipment (for example, analog channel banks)
Clock and data recovery	Complies with AT&T TR62411 and Bellcore TA-TSY-000170
Jitter tolerance	Complies with AT&T TR62411 and ANSI T1.403b-2002

CallPilot T1 clocking synchronization

CallPilot T1 links must be configured to establish the correct timing synchronization mode. In T1 systems, one end of each link must be configured as a timing master to provide a timing reference to the far end. The other end must be configured as a timing slave that uses T1 timing derived from the loop to time outgoing data. If both ends of a T1 link are

configured as master-timed, T1 slips cause periodic signal distortion. The following table shows the correct timing configuration for CallPilot timing synchronization.

Connecting equipment timing mode	CallPilot timing mode (first T1 Link)	CallPilot timing mode (all additional T1 links)
Line Side T-1 (always master-timed)	Slave (mandatory)	Slave (mandatory)
Channel Bank (slave mode suggested)	Master (suggested)	Master (suggested)
Note: If the Channel Bank is Master timed, the CallPilot server must be slave timed.		

CallPilot T1 signalling requirements

T1 uses in-band signaling to indicate the status of each T1 channel. Control signals are transmitted in the same channel as the message (that is, voice data).

- Signaling indicates the state of both terminals: the switch line card and the CallPilot agent. (for example, on-hook)
- T1 uses robbed bit signaling. This means that specific bits in the data stream are replaced with control information.
- The signaling mechanism is specified as part of the frame format.
- CallPilot supports only SuperFrame (SF) format framing. In SF, the eighth (least significant) bit of each time slot in the sixth and twelfth frames are robbed to provide per channel signaling. The bit from the sixth frame is called the A bit. The bit from the twelfth frame is called the B bit.
- This provides, at most, four signaling states for each terminal.

The following table displays the meaning of the different signaling states that CallPilot uses to indicate the status of an agent to the switch.

Generic CallPilot to switch AB bit signaling

CallPilot uses different signaling states to indicate the status of an agent to the switch.

State	A bit	B bit
Loop Open (On Hook)	0	1

State	A bit	B bit
Loop Closed (Off Hook)	1	1
Ring Ground (Service Request)	0	0

Note: The far end responds to a service request with LCF (A/B=0/1).

Generic switch to CallPilot AB bit signaling

The switch uses different signaling states to indicate the status of a line to the CallPilot server.

State	A bit	B bit
Loop Current Feed (Off Hook)	0	1
LCF Open (On Hook)	1	1
Ringing	0	0/1

Note: The B-bit toggles during ringing (that is, for ringing, A/B=0/0→0/1→0/0).

SL-100 switch to CallPilot A/B bit signaling

The table displays the different signaling states that CallPilot uses to indicate the status of an agent to/from the SL-100 switch.

State	Transmit A/B	Receive A/B
Idle	0 / 1	1 / 1
Incoming Call		
Idle	0 / 1	1 / 1
Ringing from SL-100	0 / 1	0/0<->0/1
CallPilot Response (Answer)	1 / 1	0/0<->0/1
SL-100 Acknowledgement	1 / 1	0 / 1
Outcalling		
Idle	0 / 1	1 / 1
Channel Seizure by CallPilot (Service Request)	0 / 0	1 / 1

State	Transmit A/B	Receive A/B
SL-100 Acknowledgement	0 / 0	0 / 1
CallPilot Response	1 / 1	0 / 1
Call Disconnect from Switch		
Talking (call in progress)	1 / 1	0 / 1
SL-100 disconnects	1 / 1	1 / 1
CallPilot goes On Hook (that is, Idle)	0 / 1	1 / 1
CallPilot Disconnect		
Talking (call in progress)	1 / 1	0 / 1
CallPilot goes On Hook	0 / 1	0 / 1
SL-100 goes On Hook (that is, Idle)	0 / 1	1 / 1

CallPilot T1 signaling specifications

Signaling	Description
Framing	SF (D3/D4) (Specified in ANSI T1.107-1995, Digital Hierarchy -- Formats Specification and ANSI T1.403b-2002)

Note: ESF is not supported on CallPilot.

Trunk signaling	A/B Robbed bit in SF format with ground start line timing and signaling (ANSI T1.403b-2002)
FXO/FXS signaling	CallPilot always emulates type FXO.
Minimum flash hook interval	300 mS (ANSI T1.403b-2002)
Maximum flash hook interval	1 second (ANSI T1.403b-2002)
Disconnect interval	1.5 seconds minimum (ANSI T1.403b-2002)

CallPilot T1 alarms

CallPilot uses only red and yellow T1 alarms.

Alarm	Color	Description
Carrier Group	Red	Local equipment cannot detect T1 signal from the remote equipment; the local equipment transmits the remote alarm indication (RAI) signal to the remote equipment on the T1 link (in accordance with ANSI T1.403b-2002).
Remote	Yellow	Local equipment detects RAI from the remote equipment, that is, the remote equipment cannot detect the T1 signal from the local equipment (in accordance with ANSI T1.403b-2002).
AIS	Blue	Not supported on CallPilot
Other	--	Not supported on CallPilot

CallPilot T1 DTMF requirements

DTMF Tone detection	Values
DTMF digits	0 to 9, *, #, A, B, C, D in accordance with Bellcore LSSGR Sec. 6 and ANSI T1.403b-2002
Dynamic range	-36 dBm to +3 dBm for each tone
Minimum tone duration	50 milliseconds (ANSI T1.403b-2002)
Minimum interdigit timing	45 milliseconds (ANSI T1.403b-2002)
Maximum interdigit timing	3 seconds (ANSI T1.403b-2002)
Acceptable twist and frequency variation	Meets Bellcore LSSGR Sec. 6 and EIA 464 requirements
Noise tolerance	Meets Bellcore LSSGR Sec. 6 and EIA 464 requirements for Gaussian, impulse, and power line noise tolerance

DTMF Tone detection	Values
Cut through	Local echo cancellation in permits 100% detection with a >4.5 dB return loss line
Talk off	Detects less than 20 digits while monitoring Bellcore TR-TSY-000763 standard speech tapes (LSSGR requirements specify detecting no more than 470 total digits). Detects 0 digits while monitoring Mitel speech tape #CM 7291.

DTMF tone dialing	Values
DTMF digits	0 to 9, *, #, A, B, C, D in accordance with Bellcore LSSGR Sec 6, TR-NWT-000506
Frequency variation	Less than ± 1 Hz
Rate	10 digits/s
Level	-4.0 dBm for each tone (nominal)

CallPilot T1 pulse dialing requirements

Pulse dialing	Values
10 digits	0 to 9
Nominal pulsing rate	10 pulses per second (PPS)
Maximum pulsing rate	20 pulses per second (PPS)
Break ratio	60% (nominal)

CallPilot T1 troubleshooting

Begin CallPilot T1 troubleshooting at the demarcation point (that is, at the DSX-1 cross-connect). The DSX-1 provides the facility for passive monitoring of T1 signals in both directions by means of monitor jacks. The DSX-1 allows bantam (mini-310) cross-connect cables to be used to establish loopbacks in either or both directions. This meets the required objective of a capability for T1 loopback as demanded by GNTS. The DSX-1 also facilitates the insertion of test equipment again with bantam cross-connect cables.

CallPilot SMDI interface

CallPilot servers connect to external switching equipment by means of an RS-232 physical link. The servers receive and transmit call control information using the Simple Message Desk Interface (SMDI) protocol. The

connection is generally referred to as the SMDI link, but SMDI is a data link layer protocol (layer 2), which by definition must ride on top of a physical layer protocol (layer 1) physical connection.

For more information on supported equipment, see:

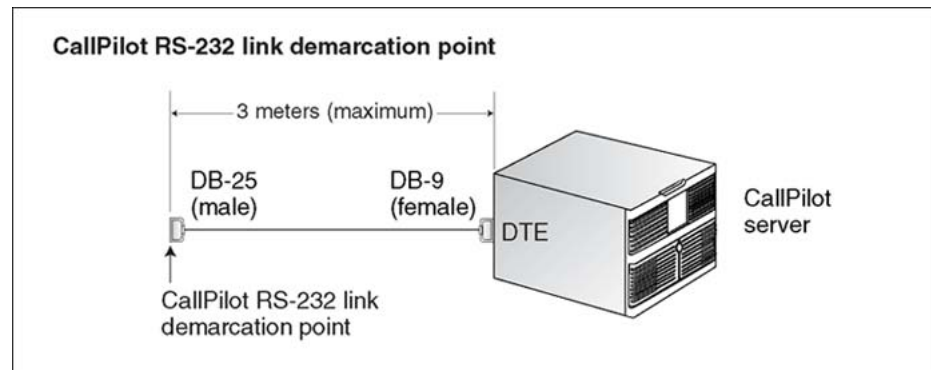
- [Chapter 3 "Connecting the CallPilot server to the SL-100 or DMS-100 switch" \(page 23\)](#)

CallPilot SMDI Link interface requirements

CallPilot SMDI link RS-232 demarcation point

The demarcation point of the CallPilot SMDI Link is the point at which the RS-232 interface of the CallPilot server terminates in an RS-232 connector for external equipment attachment.

The CallPilot SMDI Link external equipment requirements are specified with two industry standards for all CallPilot applications and configurations. An installation can employ whatever modem type (or no modem) meets the particular application criteria (for example, modulation scheme, interoperability, familiarity, reliability, product longevity, and cost).



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DB-9 to DB-25 connector signal translation

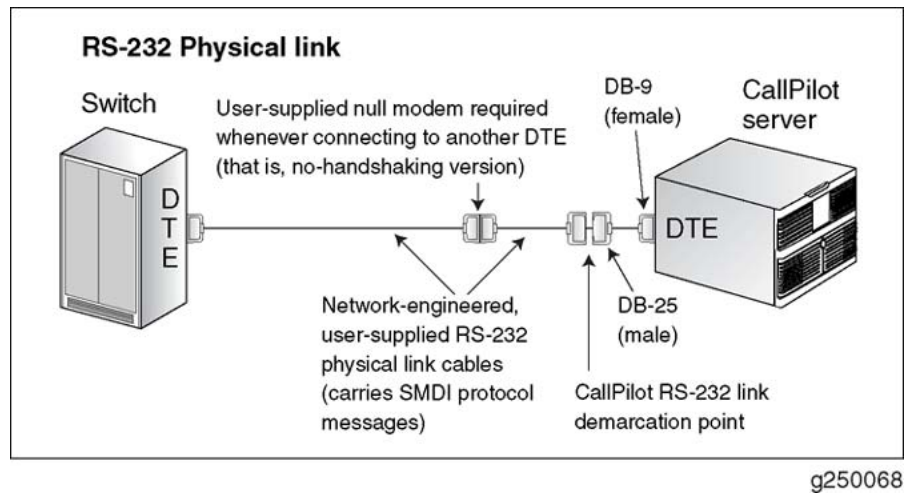
When converting from DB-9 to DB-25 (for example, CallPilot serial COM port to DB-25 connector at the demarcation point), use the signal translation shown in the following table.

Straight conversion DB-9 to DB-25					
DB-9 connector			↔	DB-25 connector	
P in	RS-232 signal names			P in	RS-232 signal names
1	Data carrier detect	CD	↔	8	Received line signal detector
2	Received data (Rx)	RD	↔	3	Received data
3	Transmitted data (Tx)	TD	↔	2	Transmitted data
4	Data terminal ready	DTR	↔	20	Data terminal ready
5	Signal ground (SG)	GND	↔	7	Signal ground/Common return
6	Data set ready	DSR	↔	6	Data set ready
7	Request to send	RTS	↔	4	Request to send
8	Clear to send	CTS	↔	5	Clear to send
9	Ring indicator	RI	↔	22	Ring indicator
Soldered to DB-9 metal - shield		FGND	↔	1	Protective ground
					FGND

CallPilot SMDI link RS-232 physical link

In its simplest form, the CallPilot SMDI link connects directly to external terminating equipment using an RS-232 physical link for the entire transmission medium.

The following illustration shows the inclusion of a null modem in the RS-232 path. A null modem is required whenever (usually) the RS-232 interface on the terminating switch equipment is of type DTE, so that RS-232 equipment at each end does not attempt to transmit on the same signals of the RS-232 link. Alternatively, if the terminating RS-232 equipment is of type DCE, the null modem must not be used.



As indicated in Reference Number 1, referred to on 1, the SMDI protocol can be carried on an RS-232 physical link. SMDI formatted messages are composed simply of strings of ASCII characters, which are conveyed from one end of the RS-232 link to the other in serial data transmission format.

The RS-232 protocol is defined in Reference Number 2 on 1; however, note that the protocol does not include any definition of or reference to the SMDI protocol.

The ASCII character set is not specifically covered by the RS-232 specification, but the requirements for serial ASCII character transmission (and, therefore, SMDI protocol) fall within the definitions of the RS-232 standard as defined in reference 2 on 1.

SMDI Link RS-232 connections at the CallPilot demarcation point

If external SMDI link RS-232 terminating equipment is in close proximity (for example, less than or equal to 15 meters using low capacitance shielded RS-232 cable), a sufficient condition for the SMDI link RS-232 connection medium is a direct connect RS-232 cable conforming to all of the requirements of this document, (for example, the case of a coresident PBX), including a crossover cable (that is, null modem) if the terminating equipment is also of type DTE.

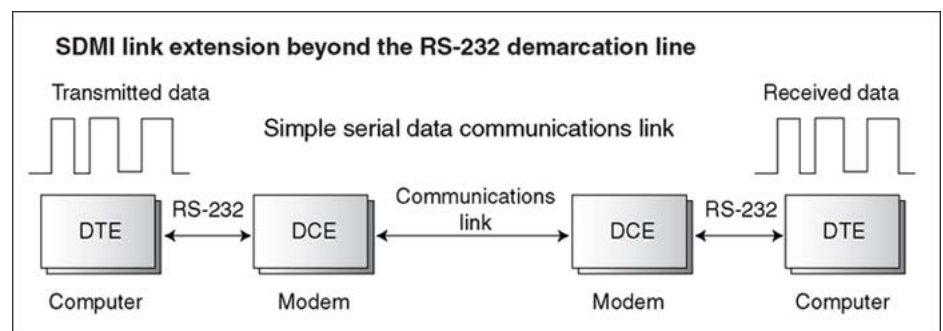
The null modem must be of the no-handshaking type to ensure that far-end SMDI link RS-232 terminating equipment is not dependent on handshaking signals from CallPilot. If a null modem with handshaking is employed, downstream modem equipment can be unable to communicate with CallPilot because CallPilot does not support hardware handshaking.

SMDI link transmission equipment for distant connections

If the SMDI link terminating equipment cannot be directly connected by means of an RS-232 cable conforming to this document (for example, terminating equipment proximity exceeds 15 meters), consider the following: an external modem or other equipment as described in Reference Number [1 on 1](#) can be used to extend the connection range further than that allowed by this document for the RS-232 physical link at the demarcation point.

If a modem or other equipment is necessary to connect CallPilot to the switch (for example, RS-232 physical link of the SMDI protocol link distance exceeds 15 meters), perform the following: select a modem or other equipment that meets the particular application requirements, contingent on the physical link interface characteristics at the CallPilot RS-232 demarcation point conforming to this document. For example, you can use the same modem at each end of the analog line, thus ensuring compatibility.

One stipulation of the RS-232 standard is that the maximum RS-232 cable length is constrained such that the cable interchange capacitance of the entire link does not exceed 2500 pF. In applications where the cable interchange capacitance exceeds 2500 pF, use a network engineered solution that respects the RS-232 standard, yet allows the range of the entire SMDI connection to be extended. This is typically achieved by the use of either short-haul or long-haul modems and a network communication link (depending on application requirements) as shown in the following conceptual diagram:



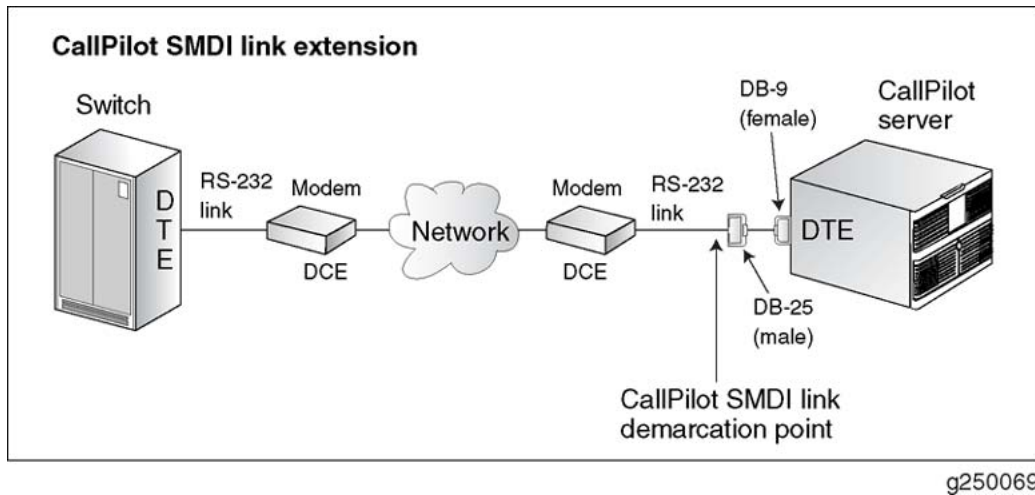
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SMDI link CallPilot SMDI link by modem

The CallPilot RS-232 link that carries SMDI protocol messages can be range extended over any communication facility (for example, leased line telephony loop) using any modem that is:

- Compliant with all of the requirements of the CallPilot RS-232 link as specified in ["CallPilot SMDI link RS-232 demarcation point"](#) (page 118)
- Compatible with the far end modem

See the following illustration for a generic scheme for SMDI link modem range extension.



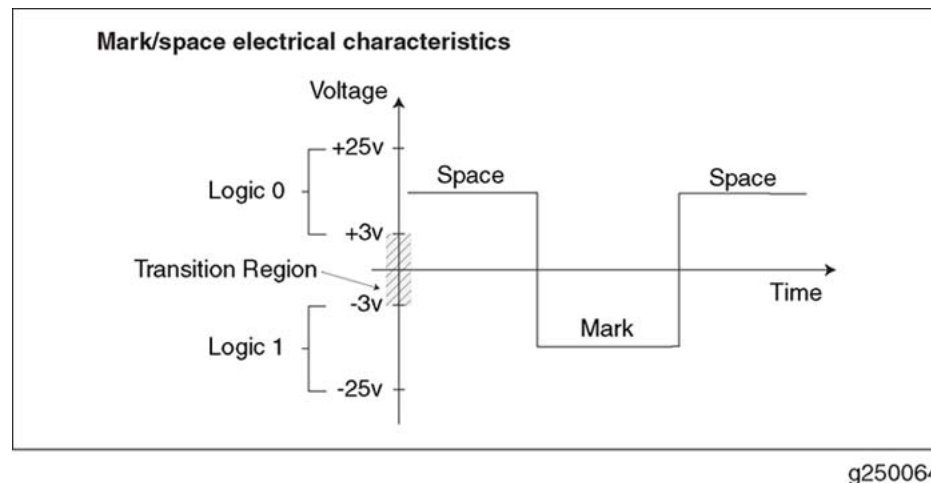
To minimize the probability of interworking issues, use the same modem type at both near and far end.

CallPilot SMDI link RS-232 characteristics

All specifications for the RS-232 interface are included in the EIA/TIA-232-F specification. Some of the salient characteristics are shown here for convenience. For more information, see Reference Number 1 listed on 1.

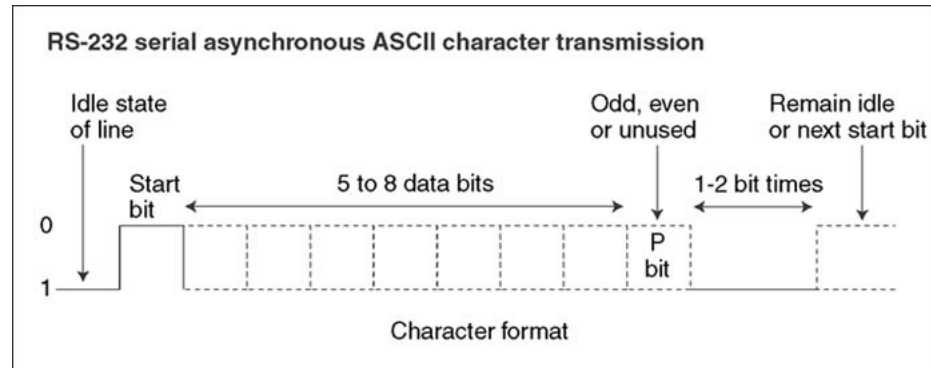
CallPilot SMDI link RS-232 mark/space electrical characteristics

RS-232 has specific requirements for both the transmitted and received voltage levels used to represent mark and space logical bits.

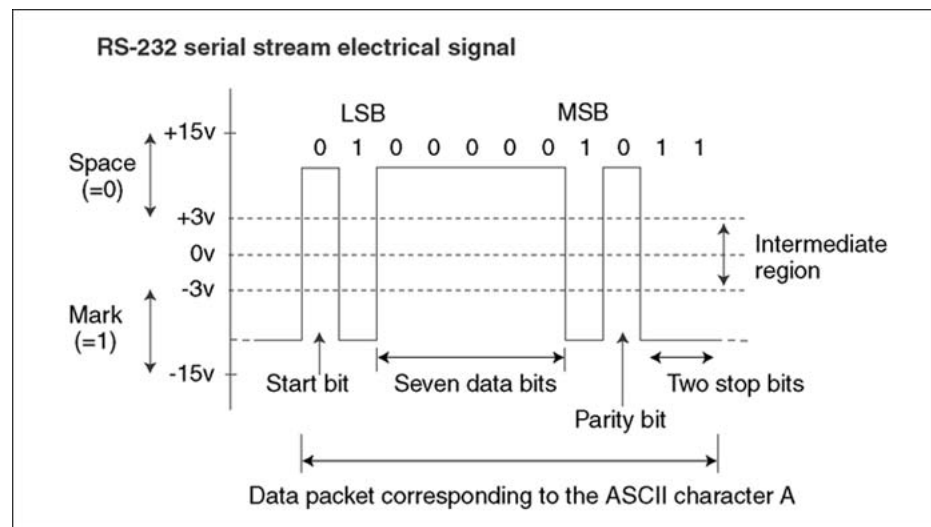


CallPilot SMDI link RS-232 serial data transmission characteristics

RS-232 can be used to convey ASCII characters in asynchronous serial format as the data payload.



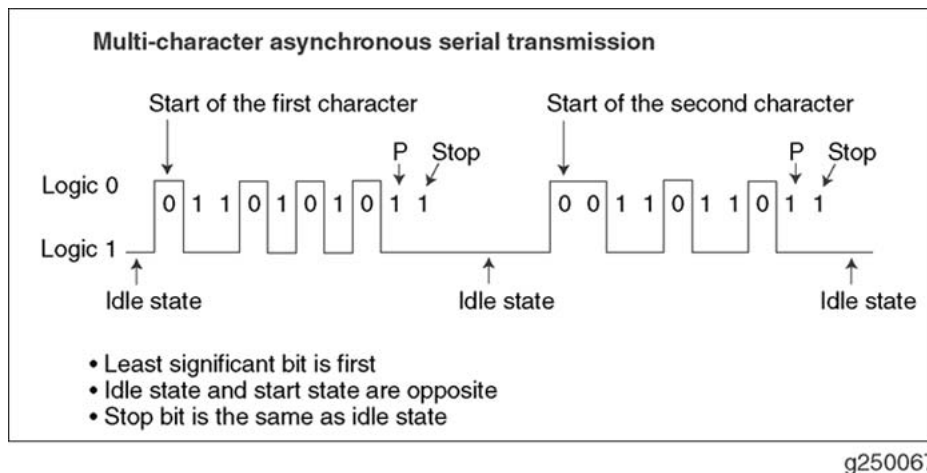
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CallPilot SMDI link RS-232 multi-character serial data transmission characteristics

RS-232 can be used to convey indefinitely long strings of ASCII characters asynchronously, when idle state gaps are used as character delimiters, as shown in the following illustration:



CallPilot SMDI link RS-232 connector pinouts

The EIA/TIA-232-F RS-232 standard provides details of RS-232 compatible connectors for interconnections; however, the DB-25 and DB-9 connector pinouts used most frequently are provided below for convenience.

9-pin AT style connector

Pin number	RS-232 signal names
1	Data carrier detect
2	Received data
3	Transmitted data
4	Data terminal ready
5	Signal ground
6	Data set ready
7	Request to send
8	Clear to send
9	Ring indicator

25-pin AT style connector

Pin number	RS-232 signal names
1	Protective ground
2	Transmitted data
3	Received data
4	Request to send
5	Clear to send
6	Data set ready

Pin number	RS-232 signal names
7	Signal ground/Common return
8	Received line signal detector
9	+ voltage
10	- voltage
11	
12	Secondary received line signal detector
13	Secondary clear to send
14	Secondary transmitted data
15	DCE transmitter signal element timing
16	Secondary received data
17	Receiver signal element timing
18	
19	Secondary request to send
20	Data terminal ready
21	Signal quality detector
22	Ring indicator
23	Data signal rate selector
24	DTE transmitter signal element timing
25	

CallPilot SMDI link RS-232 cable requirements

The following table describes the CallPilot SMDI Link RS-232 physical link cable characteristics for the entire RS-232 link.

Characteristic	Description
SMDI Link Demarcation point	At the RS-232 DB-25 male connector for the RS-232 link segment that terminates on the CallPilot server SMDI RS-232 DB-9 connector. This connector, and thus the demarcation point, must be located within three meters of the CallPilot server SMDI link RS-232 DB-9 connector.
Shielded RS-232 cable	Required for all sections.
Shield ground connection	At DCE end only, not at DTE end and not on both ends of any null modem.
Conductor resistance including intermediate connectors	25 ohms maximum per conductor (end to end, not per section).

Characteristic	Description
Characteristic Impedance	110 ohms (nominal).
Interchange circuit capacitance	2500 pF maximum (See reference 2 on 1).
Maximum total RS-232 Link Length	7.5 meters (based on medium capacitance RS-232 shielded cable with a maximum mutual conductor to conductor capacitance of 100 pF/meter). 15 meters (based on low capacitance RS-232 shielded cable with a maximum mutual conductor to conductor capacitance of 50 pF/meter).
RS-232 Specification Revision #	EIA/TIA-232-F.

CallPilot SMDI link RS-232 connector requirements

Connector	Description
SMDI Link Demarcation point	At the RS-232 DB-25 male connector for the RS-232 link segment that terminates on the CallPilot server SMDI RS-232 DB-9 connector. This connector, and thus the demarcation point, must be located within three meters of the CallPilot server SMDI link RS-232 DB-9 connector.
Shielded RS-232 connectors	Required for all
Terminal type at the CallPilot RS-232 connector	DTE
RS-232 Specification Revision #	EIA/TIA-232-F

CallPilot SMDI interface requirements of the RS-232 link

The SMDI link interface requirements of the RS-232 are fully defined by the EIA/TIA-232-F specification. Specific configuration settings for proper operation of the SMDI link are as shown in the following table:

Parameter	Description
Data rate	9600 baud
Mode	Asynchronous, full duplex
Data bits	7

Parameter	Description
Parity	Enabled, Even
Stop bits	1
H/W Flow Control	None
S/W Flow Control	None
RS-232 Specification Revision #	EIA/TIA-232-F

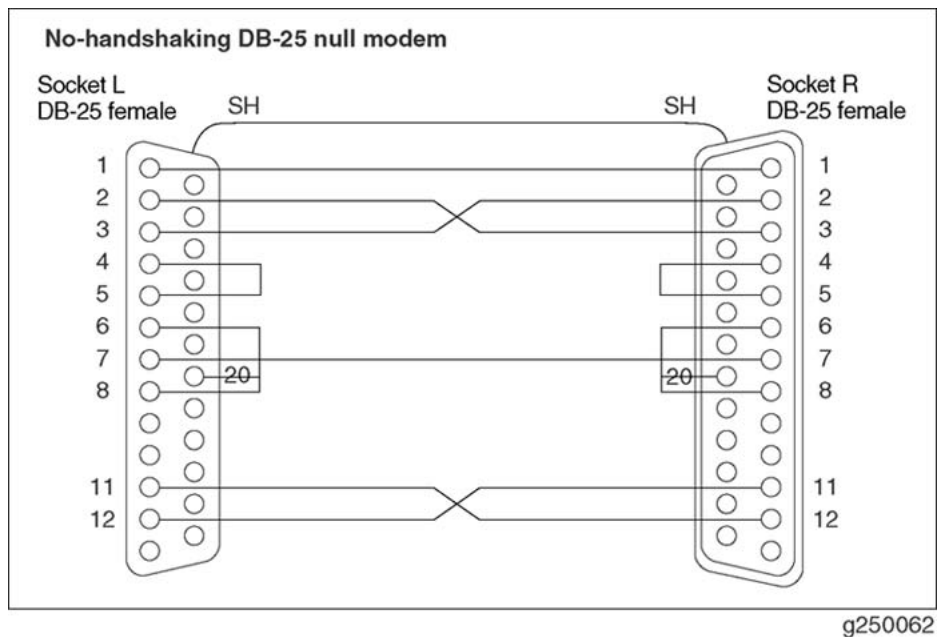
CallPilot SMDI link RS-232 interface external equipment

Null modem examples (DCE to DTE converter)

A no-handshaking DB-25 null modem is required when connecting two DCE type, RS-232 terminating equipment together by means of a standard RS-232 cable.

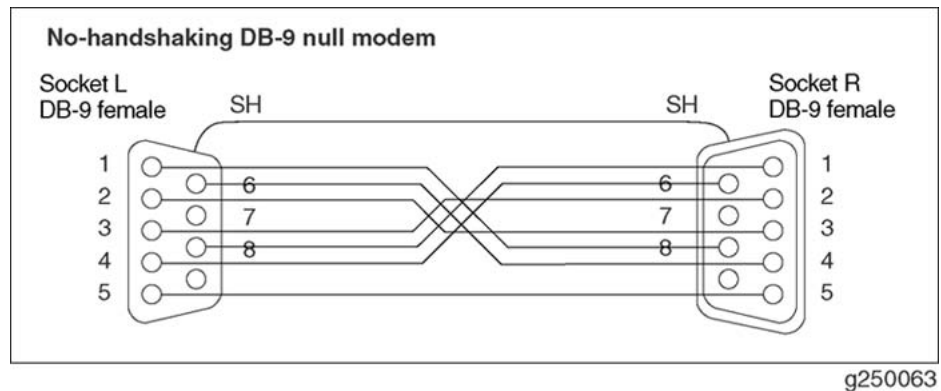
Note: If a null modem with hardware handshaking is employed, downstream modem equipment may be unable to communicate with CallPilot because CallPilot does not support hardware handshaking.

The following illustration shows how to implement a no-handshaking DB-25 null modem.



A no-handshaking DB-9 null modem can be used instead of a DB-25 connectorized null modem, if convenient.

The following illustration shows how to implement a



Modem standards

ITU-T modem standards (formerly CCITT)

ITU-T defines several prominent specifications for defining modem standards in the V-series (formerly CCITT documents). The foundation standards for modems define the physical interface, modulation technique, and basic operations. These basis standards are identified by the speed of data transmission (modulation technique), and include:

- V.22bis ITU-T Standard for 2-wire communications at 2400 bps and below.

Note: This type of modem is inadequate for the 9600 baud rate of the CallPilot SMDI link.
- V.32 ITU-T Standard for 2-wire communications at 9600 bps and below.
- V.32bis ITU-T Standard for 2-wire communications at 14.4K bps and below.
- V.34 ITU-T Standard for 2-wire communications at 28.8K bps and below.
- V.34bis ITU-T Standard for 2-wire communications at 33.3K bps and below.
- V.90 ITU-T Standard for 2-wire communications at 56K bps and below.
- V.92 ITU-T Standard for 2-wire communications at 56K bps and below.

An additional standard exists to define error detection and correction methods between modems:

- V.42 ITU-T Standard for modem error detection and correction. The target standard for SMDI data links, using these flow control guidelines, uses either a V.22, V.42bis, or V.32 modem with V.42 error-detection and correction capability.

Nortel proprietary modem standards

The Input Output Module (IOM) is a peripheral of DMS-100 that supports various modem types over proprietary DS-30 links. For more information about the DS-30 standard, see DMS-100 IOM documentation.

CallPilot SMDI link interface compliant equipment examples**General Datacomm GDC V.F. 28.8K modem (obsolete)**

The General Datacomm GDC V.F. 28.8K Modem (CPC A0620530) meets CallPilot SMDI link requirements. Other types of ITU-T-compliant modems have not been officially tested.

SMDI V.3600 33.6K modem

The SMDI V.3600 33.6K stand-alone SMDI modem kit (NTRH9098) replaces, and is fully compatible with, the General Datacomm 28.8K modem.

DMS-100 IOM NTFX34AA RS-232 smart connector

The DMS-100 Input Output Module (IOM) supports a form of proprietary modem called a Smart Connector, which uses a 4-wire DS-30 link for the connection between the Smart Connector and the IOM shelf. The NTFX34AA version of Smart Connector supports a 28.8K bps RS-232 interface, which can be located up to 225 meters distant from the IOM.

Standards documents for CallPilot SMDI link requirements

Reference Number	Document Number	Title
1	Bellcore TR-NWT-00 0283	Simplified Message Desk Interface (SMDI) Generic Requirements
2	EIA EIA/TIA-232-F	Interface between Data Terminal Equipment and Data Circuit Terminating Equipment Employing Serial Binary Data Interchange

Index

A

adding a user 94
AudioCodes T1-CAS gateway

B

boards
 DTI/480JCT 17
 MPB96 17
boards, replacement
 detecting 68

C

call channels
 test 98, 100, 102
call queuing 18
call routing
 SL-100/DMS-100
 call queuing 18
 channel diagram 20
 DNs, service DNs 18
 UCD agent 18
 UCD groups 18
 Uniform Call Distribution (UCD) 18
CallPilot
 verifying that services are fully
 operational 89
CallPilot components
 CTbus 17
 DTI/480JCT board 17
 modem 17
 MPB board 17
 server 17
 SMDI components

 switch 16
 T1 components 16
CallPilot Manager 72
 viewing events 91
CallPilot server
 log on instructions 72
CallPilot SMDI interface
 interface requirements 118
 modem standards 128
 RS-232 characteristics 122
 RS-232 interface external
 equipment 127
 Standards documents 129
CallPilot software
 testing 93
CallPilot T1 interface
 CallPilot T1 encoding
 requirements 111
 CallPilot T1 signal isolated pulse
 characteristics 107
 T1 Alarms 116
 T1 cabling requirements 110
 T1 clocking synchronization 112
 T1 DTMF requirements 116
 T1 electrical interface
 requirements 105
 T1 pulse dialing requirements 117
 T1 signalling requirements 113
 T1 troubleshooting 117
calls, verification 92
channel bank , 26
channel verification 98
channels
 back in service 103

- testing 93
- checklists
 - installation and configuration 13
- Configuration Wizard 89
 - online help 68
 - overview 67
 - running 74
 - using to detect replacement boards 68
- configuring
 - CallPilot server 67
 - SL-100/DMS-100 programming 39
- CTbus 17

D

- desktop client PCs 18
- diagrams
 - call routing channels 20
 - T1 equipment interface 105
- DNS, service DNS 18
- DSX-1 26, 26

F

- fax channels 100

I

- I/O port 38
- IOC shelf or IOM , , 24, 26

L

- line side T1 cards , 25
- logging on to CallPilot server 69
- logging on to Windows NT 69

M

- message
 - leaving 95
 - retrieving 97
- modem 17
 - SMDI link 28
- multimedia channel verification 98

N

- Nortel server subnet

- connection test 92

P

- password
 - pcAnywhere 78
- pcAnywhere caller passwords
 - changing 78
- PCs
 - desktop client 18
- Performance Enhancement Packages (PEP) 38
- ping command 92
- pinouts
 - SMDI for leased or private line 29
 - T1 cable

S

- SDN Table
 - restoring 103
- SMDI components
 - IOC or IOM shelf , 24, 26
 - terminal server
- speech recognition channels 102
- system readiness
 - checking 90
- system-ready indicators 89

T

- T1 components 26
 - AudioCodes T1-CAS gateway
 - channel bank , 26
 - line side T1 cards , 25
- T1 equipment interface 105
- T1 interface
 - CallPilot T1 clocking requirements 112
- terminal server ,
- testing
 - adding a user for 94
- testing call channels 98, 100, 102
- testing fax channels 100
- testing speech recognition channels 102
- testing voice channels 98
- troubleshooting T1 interface 117

U

UCD Agent Login (UCDA) and Logout
(UCDD) codes 40
UCD, Uniform Call Distribution 18

V

verifying that CallPilot services are fully
operational 89

voice channels 98
Voice Messaging DN
configuring 94

W

Windows NT
viewing events 91

Nortel CallPilot

T1/SMDI and CallPilot Server Configuration

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