Chapter 7 Programming Your Nortel PBX

This chapter describes how to configure a Northern Telecom Meridian 1 PBX for the PBXLink. If you have a Lucent PBX, see Chapter 1 (Programming Your Lucent PBX) instead.

To integrate a voice mail system with the Meridian 1, it is necessary to ensure that your PBX has the correct level of software to operate with the PBXLink. These are outlined below. All Meridian 1 systems with these options can support Bridged mode operation so there is no need for transfer mode on Meridian 1.

Throughout this chapter the convention will be used that **bold** type are things that need to be entered. For example:

CUST	0	[Example only]

CUST	- this is printed by the PBX
0	- this is entered by you
[Example only]	- this is just a comment

In our examples the analog lines for the voice mail system will be **2000, 2001, 2002** etc. The main voice mail number (or "pilot number") will be **2000**.

The work involved can be broken down into a number of separate tasks:

- Task 1: Preparing the PBX
- Task 2: Setting up the Voice Mail analog lines
- Task 3: Setting up the PBXLink's digital line
- Task 4: Setting up the Voice Mail users' telephones

These tasks are covered in the sections below:

After configuring the PBX, you will need to configure the PBXLink. See Chapter 8 (Configuring the PBXLink) for details.

Note: Your PBX configuration options may not be exactly the same as those shown in this chapter, as they depend on installed options and the PBX software version

Task 1: Preparing the PBX

Before starting any programming of the PBX, it is strongly recommended that you obtain a hard copy of the current PBX configuration.

This task consists of three parts:

- PBX Software Confirmation
  Checking that the PBX is running the right software
- Customer Data Block setup
  Ensuring that the Customer Data Block has the correct privileges
- Programming Calling Party Name Display
  Ensuring that the reason for a call being forwarded is sent to the PBXLink

PBX Software Confirmation

It is necessary to ensure that the correct software packages have been installed, for the PBXLink to operate correctly. To ensure this use overlay 22 as follows

```
>LD 22
REQ  PRT
TYPE PKG
OPTF   1
CUST   2
CTY    5
DNDI   9
EES    10
MSB    17
DDSP   19
MWC    46
DSET   88
CPND   95
ARIE   170
```

If the options underlined above are not present in the list of optional packages then you will need to upgrade the PBX software.

Customer Data Block Setup

It is necessary to enable certain options in the Customer Data Block to ensure correct operation of the digital line used by the PBXLink.

```
>LD 15
REQ       CHG
TYPE      CDB
CUST      0             [Example only]
LDN0
DGRP
NITE      2000          [The pilot number if night calls go to Voice Mail]
TSTL
SPRE
ATDN
NCOS
OPT       CFO           [Call forwarding Originating Party COS]
          MCI           [Message Centre Included]
          IDP           [Include Digit Display]
INTR
RTIM
CDR
ICI
FLSH
CHLN
FCAF
SPWD
FNAD      FDN           [Call Forward No Answer DID]
FNAN      FDN           [Call Forward No Answer NONDID]
FNAT      FDN           [Call Forward No Answer Trunk]
FNAL      FDN           [Call Forward No Answer Local]
CFNA      6             [Rings for Call Forward No Answer NONDID]
DFNA      6             [Rings for Call Forward No Answer DID]
PHDT
AQTT
AODN      2000          [Attendant overflow sent to Voice Mail]
SRCD
ATAC
CWCL
CWTM
CWBZ
DNDT
CCRS
MDID      YES           [No Answer DID to Voice Mail]
NDID      YES           [No Answer NONDID to Voice Mail]
MWFB      YES           [Busy DID to Voice Mail]
MATT
CONG
LLT
DLT
DIND
```

```
DIDT
LDTT    6           [Line Disconnect Tone Timer for 500/255 phones]
BOTO
NFCR
EEST    NO          [Enable End-to-End signaling for digital phones]
```

Programming Call Party Name Display

When the PBX forwards a call, it displays a 4 letter string on the display which explains why the call was forwarded. These 4 letter strings can be changed by the PBX administrator -- this is done in LD 95.

The relevant strings and their reasons for being displayed are:

- CFWD -- call forwarded because all calls have been forwarded to voice mail
- CFNA -- call forwarded because there was no answer
- HUNT -- call forwarded because the extension was busy

This LD95 session sets up the default strings:

```
>LD 95
REQ     CHG
TYPE    CPND
CUST    0           [Example only]
CNFG
MXLN
STAL
DFLN
DES
RESN    YES
CFWD    CFWD
CFNA    CFNA
HUNT    HUNT
PKUP
XFER    T
AAA     A
```

If your system does not use the default strings, then you must configure your PBXLink with the strings that you use. This is done in:

```
Configuration...
PBX Options...
Call Forward Display...
```

Task 2: Setting up the Voice Mail analog lines

Analog lines need to be used to connect the voice mail system to the PBX. At this stage it is important to know how many there are going to be and have extensions assigned for them. In bridged mode the PBX is configured to send calls directly to the analog port. For this reason the first analog port has an extension of **2000**.

This is how to set up an analog line.

```
>LD 10
REQ   NEW
TYPE  500
TN    0 0 3 1        [Example only]
CDEN  SD             [SD if QPC60, DD if QPC452, 4D if QPC594]
DES
CUST  0              [Example only]
DIG
DN    2000
HUNT  2001
TGAR
NCOS
RNPG
CLS   HTA FBD DTN XFA FND MWD LDTA
            [HTA: Hunting allowed (REQUIRED)]
            [FBD: Forward-on-busy disallowed (REQUIRED)]
            [DTN: DTMF Dialing Allowed (RECOMMENDED)]
            [XFA: Transfer allowed (RECOMMENDED)]
            [FND: Forward-no-answer disallowed (RECOMMENDED)]
            [MWD: Message Waiting disallowed (RECOMMENDED)]
            [LDTA: Line disconnect tone allowed (RECOMMENDED)]
FTR
```

Note that LDTA is only provided on Release 17 and later.

Repeat this process for each of the analog ports, using the appropriate DN and TN. In each case the HUNT extension should be the DN of the next analog line connected to the voice mail system. This way a call will arrive at the first port and the PBX will hunt for a free analog line and deliver the call ringing to it.

Task 3: Setting up the PBXLink's digital line

Configure the digital line being used for the PBXLink as a 2616 with 1 add on module. Key 0 is the primary DN for the digital line and can be set to any value. Keys 16 onwards are bridged appearances of the analog ports going to the voice mail system.

This example has 6 voice mail ports, starting with extension 2000.

```
>LD 11
REQ   NEW
TYPE  2616
TN    0 0 1 4              [Example only]
DES
CUST  0                    [Example only]
AOM   1
FDN
TGAR
NCOS
RNPG
SSU
CLS   ADD HFD CNDA DNDA
HUNT  000
LHK
KEY   00 SCR 2999          [This can be any DN]
KEY   12 DSP
KEY   13 MIK
KEY   14 MCK
KEY   16 SCN 2000          [Pilot number for the voice mail system]
MIX
KEY   17 SCN 2001
MIX
KEY   18 SCN 2002
MIX
KEY   19 SCN 2003
MIX
KEY   20 SCN 2004
MIX
KEY   21 SCN 2005
MIX
KEY                        [Add more extensions here as needed...]
```

Using Both Digital Ports

This section does not apply to the PBXLink ISA.

To use the second digital ports program up a second digital line exactly the same way as the first, on a different TN and with each analog line appearing bridged to only one of the digital lines. It is recommended that the analog lines alternate between each of the digital lines as they proceed along the hunt group. This ensures that there is an even work load on each of the digital PBX lines.

Task 4: Setting up the Voice Mail users' telephones

Users need to have their phones set up so that their calls are forwarded to the voice mail system if they do not answer or if they are on the phone. It is also important to ensure that the PBXLink is able to illuminate the message waiting indicator on the users phone, or if they don't have a light then allow stuttered dial tone.

The exact way that this is done depends upon the sort of set that the user has: analog, digital or SL-1.

Setting up a user's analog set

If the user has an analog set then the setup will look like this.

```
>LD 10
REQ    CHG
TYPE   500
TN     0 0 2 4
CDEN
DES
CUST
DIG
DN
HUNT   2000
TGAR
NCOS
RNPG
CLS    HTA FNA MWA LPA CFTA SFA
FTR    FDN 2000
       EFD 2000
       EHT 2000
```

Setting up a user's digital set

A digital set, say a 2008, would be set up like this:

```
>LD 11
REQ    CHG
TYPE   2008
TN     0 0 4 3
ECHG
DES
FDN    2000
TGAR
NCOS
RNPG
SSU
CLS    HTA FNA MWA CFTA
EFD    2000
HUNT   2000
EHT    2000
LHK
```

Setting up a user's SL-1 set

If the user has an SL-1 set then it could be set up like this.

```
>LD 11
REQ    CHG
TYPE   SL1
TN     0 0 6 2
CDEN
DES
CUST
KLS
FDN    2000
TGAR
NCOS
RNPG
SSU
CLS    HTA FNA MWA CFTA
EFD    2000
HUNT   2000
EHT    2000
LHK
KEY    04 MWK 2000
```

The Next Step

Having configured the PBX, you now need to configure the PBXLink. This is explained in Chapter 8 (Configuring the PBXLink).

Chapter 8 Configuring the PBXLink

You need to configure the PBXLink to tell it how your PBX and voice mail system are configured. There are many settings which can be changed, and these are all described in Chapter 11 (Configuration Parameters). However most of these can be left at the default setting on most systems, and only a few important ones need changing. These are described below.

Configuration Menus

The PBXLink is configured through menus. If you have a PBXLink ISA, these are accessed through either the built-in SMDI serial port, or through the external management serial port, as described below. If you have a PBXLink box, you can also access the menus through the front panel keypad and LCD. Operation of the keypad and LCD is described in Chapter 12 (Using the LCD and Key Pad - PBXLink).

To access the configuration menus through the SMDI port, you will need to have got the SMDI port working with suitable terminal emulation software, as described in Chapter 2 (Installing Your PBXLink) or Chapter 3 (Installing Your PBXLink ISA). You can also access the menus through the management serial port if you have this set up.

When you type

```
M <enter>
```

on the terminal, you will see the main menu displayed. This looks similar to

PBXLink ISA v 2.70

1. Configuration...
2. Monitor PBXLink...
3. Reboot/Download...

Then type

1 <enter>

to enter the main configuration menu. This offers several sub-menus, and looks similar to:

```
Configuration

1 - Integration [Started]
2 - PBX Type...
3 - PBX Options...
4 - SMDI Options...
5 - Serial Port Options...
6 - Remote Access...
7 - Reset to Factory Default...
```

Check the following menu options:

Configuration.../PBX Type
This must be set to the type of PBX you have. When this setting is set correctly, the port LED will stop flashing (this is the LED on the bracket of the PBXLink ISA, and the LED labeled PBX A on the PBXLink box).

If you have a Nortel Meridian 1 or SL-100 PBX, choose the `Nortel M1` option.

If you have a Lucent PBX, you need to choose `Lucent 2 wire` or `Lucent 4 wire` as appropriate. If you have a 4 wire system, try the `Lucent 4 wire` option first; if this does not stop the LED flashing, try the `Lucent Old 4w` option. If you are not sure whether you have a 2-wire or 4-wire system, you can try all the options to see which stops the LED flashing without risk of damage.

Note that when you change the PBX type, the PBXLink will restart. This means that you will be back outside the menu systems so, after allowing it a few seconds, you will have to type `M <enter>` again to get back into the configuration menus.

Configuration.../Integration
This should be set to **Started**.

Configuration.../PBX Options.../Mode of Operation (Lucent only)
In Chapter 4 (Programming Your Lucent PBX) you set up your PBX for either bridged mode or transfer mode. This option should be set accordingly.

Configuration.../PBX Options.../Phone Set (Lucent only)
This should be set according to the PBX setting for the PBXLink digital port.

Configuration.../PBX Options.../Voice Coding (Lucent only)
This should be set to Mu Law (the default) if you are in the US or Canada. Otherwise, set it to A Law.

Configuration.../PBX Options.../Analog Ports on A
This should be set according to the number of analog lines connected to your voice mail system.

Configuration.../PBX Options.../Configure Port A
This should be set to `Calls + MWI`, the default.

Configuration.../PBX Options.../Prime number (Nortel and Lucent bridged mode only)
This should be set to the extension number that voice mail users call to pick up their voice mail..

Configuration.../PBX Options.../Message Waiting Ind...(Lucent only)
These settings must match those in the Feature Access Codes pages of the PBX programming, and are the prefixes that are dialed before an extension number to turn on or off a Message Waiting Indicator.

The defaults are *4 and #4, which are the defaults for most PBXs.

Configuration.../PBX Options.../Call Forward display...(Nortel only)
These settings must match those in LD 95 of PBX programming (see Chapter 7 (Programming Your Nortel PBX)), and indicate what the PBX should expect on the display of the digital phone it is emulating. There are three settings: one for all calls forwarded, one for forward on no answer, and one for forward on busy.

The Next Step

Having configured both the PBX and the PBXLink, you can now test the installation. This is best done without yet starting the voice mail system, as explained in Chapter 9 (Testing the PBXLink).