MINet Management Software

8800 series
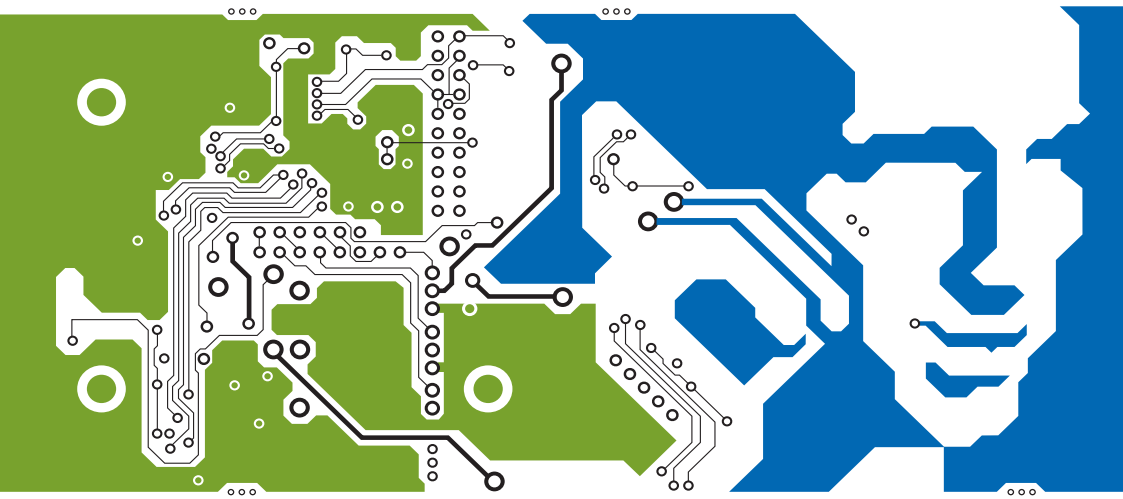
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1   About this guide

This guide is intended for operators of the Codan 8800 series Digital Microwave Radio who intend to use MINet regularly to:

• supervise and perform link monitoring

• configure and manage tasks

• issue reports

• follow up link events displayed on the PC

It assumes that you have a good knowledge of a Windows-based environment.

The following sections are included:

Section 1   About this guide—explains the terms and abbreviations used in this guide

Section 2   Overview—provides an introduction to MINet and shows how MINet interacts with Codan 8800 series DMR equipment

Section 3   Installation—lists system requirements, explains software installation, and shows how to verify that the correct software version is installed

Section 4   The MINet window—describes the MINet window for a 1+0 and a 1+1 configuration, and general functionality of MINet

Section 5   Setting up a link—describes how to set up a link

Section 6   Operating MINet—describes how to work with configuration files, access status and performance information, change passwords, upgrade firmware, switch memory banks, and reset terminals

Appendix A   Example network diagrams—provides diagrams and example IP addresses for out-of-band and in-band management

There is an index at the end of this guide.

Standards and icons

The following standards and icons are used in this guide:

This typeface...	Means...
Italic	a cross-reference or text requiring emphasis
Bold	the name of a button, knob, LED, and a segment of text from the display
Bold	text that is typed in as a command, or the name of a key on a computer keyboard

This syntax...	Means...
<variable>	the text within the brackets may vary depending on the context

This icon...	Means...
❑	a step within a task
NOTE	the text provided next to this icon may be of interest to you
CAUTION	proceed with caution as your actions may lead to loss of data, privacy or signal quality
WARNING	your actions may cause harm to yourself or the equipment

Definitions

Acronyms and abbreviations

This term	Means...
AIS	alarm indication signal
BBER	background block error rate
BER	bit error rate
BLER	block error rate
DIU	data interface unit
DMR	digital microwave radio
ES	errored seconds
ESR	errored-second ratio
ETSI	European Telecommunications Standards Institute
FCC	Federal Communications Commission
FCS	frame check sequence
GUI	graphical user interface
IDU	indoor unit
IF	intermediate frequency
LAN	local area network
LED	light-emitting diode
LOS	loss of signal (in tributary)
MIB	management information base
MINet	microwave intelligent network

This term	Means...
NMS	network management system
ODU	outdoor unit
OSI	open source interconnect
PDH	plesiochronous digital hierarchy
ppm	parts per million
RSL	received signal level
Rx	receive
SES	severely-errored second
SLIP	Serial Link Internet Protocol
SNMP	Simple Network Management Protocol
SQE	signal quality event
TCP/IP	Transmission Control Protocol/Internet Protocol
TFTP	Trivial File Transfer Protocol
TTL	time to live
Tx	transmit
UAS	unavailable seconds
UPS	uninterruptible power supply
NCBLER	not corrected block error rate

Glossary

This term...	Means...
active link	The link in a 1+1 redundancy system that is currently transmitting data.
alternate link	The link in a 1+1 redundancy system that is not currently active in the MINet window.
background block error rate (BBER)	The number of block errors occurring in a one-second period that did not occur as part of an SES.
block size	A block is 2 040 bits. This is used in performance calculations.
corrected block error rate	The number of errored blocks per second that are corrected by the internal FEC of the DMR. These corrected errors do not affect customer traffic.
errored block	A block (2 040 bits) that contains at least one errored bit.
errored second	The number of one-second periods with one or more errored blocks. Each second contains 16 blocks.
left terminal	The terminal displayed on the left side of the MINet window.
management information base (MIB)	A directory listing of the logical names of all information resources residing in a network and relevant to the network's management.
mute	The removal of Tx power.
not corrected block error rate	The number of errored blocks per second that are not corrected by the internal FEC of the DMR. These errors affect customer traffic.

This term...	Means...
peer channel	The channel used for remote radio communications, network management and auxiliary traffic.
right terminal	The terminal displayed on the right side of the MINet window.
severely-errored second (SES)	A one-second period with at least five errored blocks (30% error threshold).
Simple Network Management Protocol (SNMP)	The most common method by which network management applications query a management agent using a support MIB. SNMP operates at the OSI application layer.
total secs	The sample size in seconds.
unavailable secs (UAS)	The unavailable time due to consecutive severely-errored seconds. The UAS starts accumulating at the start of 10 consecutive SES (included as unavailable time), and stops with 10 consecutive non-SES (included as available time).

Units

Measurement	Unit	Abbreviation
Frequency	hertz	Hz
Power	decibels relative to 1 mW	dBm
Power	watt	W
Temperature	degrees Celsius	°C

Unit multipliers

NOTE	Units are expressed in accordance with ISO 1000:1992 'SI units and recommendations for the use of their multiples and of certain other units'.

Unit	Name	Multiplier
d	deci	0.1
k	kilo	1000
M	mega	1 000 000
G	giga	1 000 000 000

About this issue

This is the second issue of the MINet Management Software User Guide. This issue includes information on using MINet with 1+1 redundancy systems.

Associated documents

The associated documents are:

- Digital Microwave Radio 8800 series Quick Install Handbook (Codan part number 15-44024-EN)

- Digital Microwave Radio 8800 series Reference Manual (Codan part number 15-44025-EN)

- Digital Microwave Radio 8800 series Redundancy Systems Reference Manual (Codan part number 15-44029-EN)

2   Overview

This section contains the following topics:

Introduction to MINet

MINet is a PC-based element manager that controls and monitors the status of Codan 8800 series DMR links, either individually or within a network. MINet uses a GUI-based Windows environment and SNMP to communicate with and manage links that have management platforms based on TCP/IP.

MINet enables operators to perform the following activities within a Codan 8800 series DMR system:

- set any terminal's properties

- set alarm thresholds

- set security across the network

- perform tests

- view all data port information

- monitor and analyse traffic and system events

- report link events

- perform firmware upgrades to local, remote and network terminals

- log the performance of the terminal

NOTE	MINet automatically detects whether the terminal to which it is connecting is in a 1+0 or 1+1 system. The corresponding graphics in the MINet window are displayed (see page 21, *The MINet window*).

A link or microwave network can be managed with either in-band or out-of-band management, depending on the DIU plugged into the IDU.

Out-of-band management is performed via the link using a 64 KB bandwidth segment, known as a peer channel. Out-of-band management is essential with PDH DIUs, and may also be used with Eth 10/100 DIUs if required. An IP address must be assigned to the **ETH** port on the front of the IDU. For more information on out-of-band management see the *Digital Microwave Radio 8800 series Reference Manual* or *Digital Microwave Radio 8800 series Redundancy Systems Reference Manual* and page 31, *Out-of-band management*.

In-band management is available with an Eth 10/100 DIU. The link management is performed in a dynamic manner within the customer's bandwidth range. The bandwidth available for link management expands and contracts depending on the volume of management traffic required. An IP address must be assigned to the Eth 10/100 port on the DIU. For more information on in-band management see the *Digital Microwave Radio 8800 series Reference Manual* or *Digital Microwave Radio 8800 series Redundancy Systems Reference Manual* and page 32, *In-band management*.

Each IDU in a Codan 8800 series DMR contains an SNMP agent. MINet and the agent communicate using SNMP over TCP/IP. The SNMP agent contains a database of standard and private SNMP MIBs.

To acquire information, MINet communicates with the agent in the IDU. MINet generally functions as a master and the agent as a slave. An exception to this master-slave relationship is the handling of important alarm conditions, known as traps, which may be defined by the operator of the 8800 series DMR. Traps are initiated by the agent, then sent to MINet.

You can have multiple sessions of MINet open at a time, each with its own active configuration, however, only a single link can be active and polled at one time from a single PC. If an SNMP manager, such as HP OpenView, is used, multiple sessions can be initiated. A full network management system uses this multiple-session capability with traps and trap managers.

System access

MINet provides three levels of system access:

- user, for accessing terminals and viewing parameters

- administrator, for modifying parameters that do not affect traffic

- supervisor, for modifying any configurations in the DMR and upgrading firmware (full access)

System security is automatically activated when there is any attempt to modify system parameters or access a particular function when the operator does not have authorisation to do so. A further level of protection is the SNMP community name, which determines an operator's read/write authorisation.

Configurations

Each radio terminal contains factory-default settings that are stored in the firmware of the radio. When a new terminal is initially powered up, the factory settings are loaded as the active configuration of the radio. For more information on factory-default settings see the *Digital Microwave Radio 8800 series Reference Manual* or *Digital Microwave Radio 8800 series Redundancy Systems Reference Manual*. When a link is initially accessed using MINet, the radio configuration can be modified and this new configuration made active using MINet. Factory-default settings may be restored, if required, at any time using the front panel of the IDU, or MINet.

Each IDU stores an active configuration in a dedicated non-volatile memory. This configuration is used by the IDU when it is necessary to restart the terminal.

MINet operates directly with terminals in On-line mode, allowing the active configuration to be changed while the system is operational. On-line mode may also be used for maintenance and commissioning the system. The active configuration may be saved to a file as a backup configuration.

MINet may also be operated in Off-line mode. You can open saved backup files, and edit and save configurations to a file.

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3   Installation

This section contains the following topics:

System requirements

Required hardware

The following minimum hardware must be available:

- Pentium 3 processor
- 100 MB of free disk space
- 256 MB of memory

Required software

The following software must be installed:

- Microsoft Windows 98, 2000, NT 4.0, or XP with latest service packs

Installing MINet

Before installing MINet, it is strongly recommended that all other applications are closed.

If upgrading from a previous version of MINet, manually remove the earlier one using **Add or Remove Programs** (via **Start**—**Control Panel**).

To install MINet:

❑ Exit any active HP OpenView and/or MINet sessions.

❑ Place the MINet CD into the CD drive on your PC.

A MINet splashscreen appears.

❑ Click on **Install MINet**.

❑ Follow the prompts in the Installation Wizard.

When the installation is complete, a Codan logo, titled **MINet** <**X.XX**>, appears on the desktop.

Accessing MINet

Accessing MINet

To access MINet:

❑   Double-click on the MINet icon on the desktop.

The Authorisation dialog is displayed.

Authorisation is required to access links, and to read and modify terminal parameters. You can log into:

- user level, to access terminals and view parameters

- administrator level, to modifying parameters that do not affect traffic

- supervisor level, to modify any configurations in the DMR and upgrade firmware (full access)

Figure 1:   Authorisation dialog
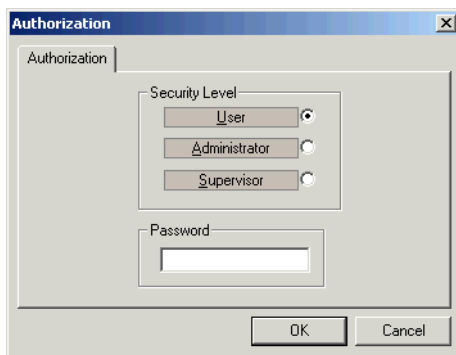
❑   Select the access level that you want to enter, then enter the factory-default password corresponding to the access level.

Security level	Factory-default password
User	user
Administrator	admin
Supervisor	super

NOTE	The password is case-sensitive.
CAUTION	You should change these passwords as soon as possible after MINet is installed. For more information see page 113, *Restricting access to the configuration of the 8800 series DMR*.

❑ Click **Supervisor**, type **super** as the password, then click **OK**.

The Load Active Configuration dialog is displayed.

Verifying correct installation

To verify correct installation:

❑ Click **Cancel** to work off line.

❑ From the **Help** menu, select **About** to verify that the correct version of MINet is installed.

❑ From the **File** menu, select **Exit** to close MINet.

Uninstalling MINet

To uninstall MINet:

❑ In Microsoft Windows, from the **Start** menu, select
Control Panel—**Add or Remove Programs**.

NOTE Your actions from this point depend upon the version of Microsoft Windows that you have installed. For more information on this topic refer to the on-line help provided for Windows.

❑ Remove MINet.

4   The MINet window

CODAN

NOTE

MINet automatically detects whether the terminal to which it is connecting is in a 1+0 or 1+1 system. The corresponding graphics in the MINet window are displayed.

Figure 2:   The MINet window for a 1+0 link

configuration filename

menu bar   tool bar   signal

link-end selection button

key operational parameters

link-end selection button

operating modes of left and right terminals

access level

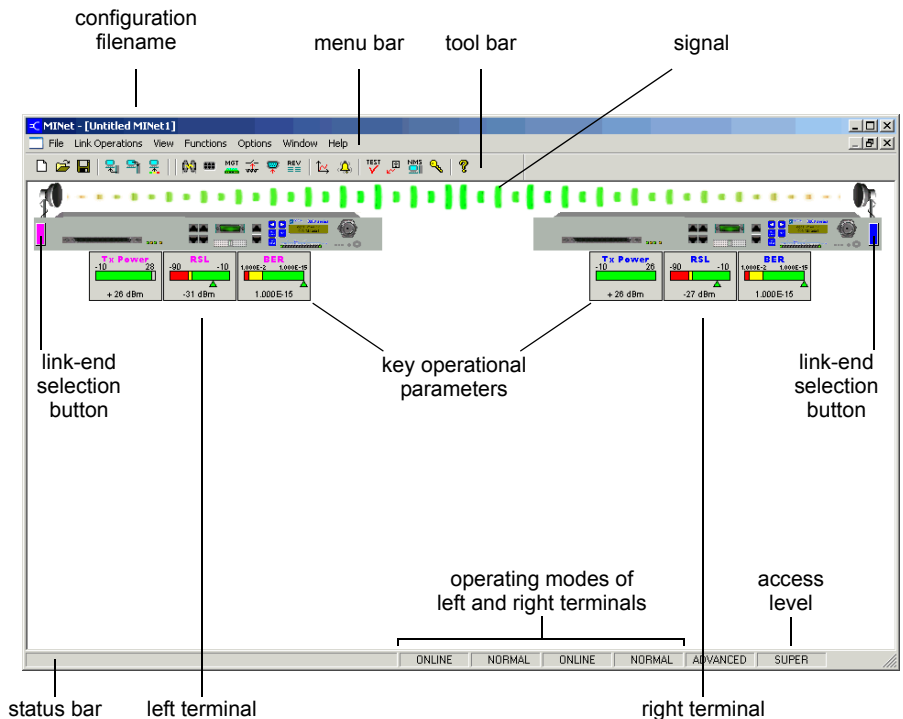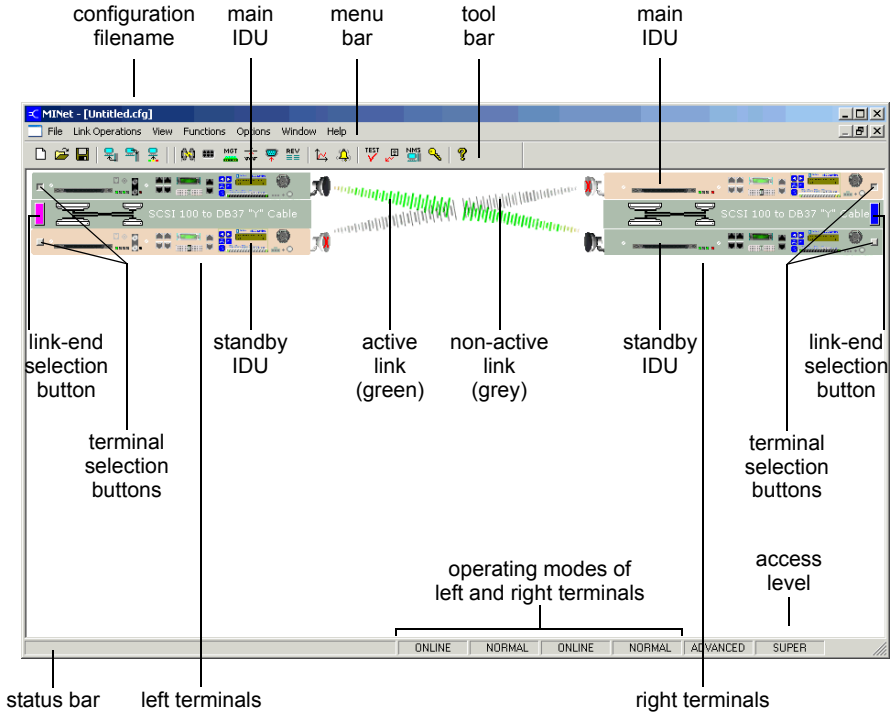status bar   left terminal

right terminal

Figure 3:   The MINet window for a 1+1 link

The MINet window shows a link with equipment at the left end and equipment at the right end. The left and right conventions used in this guide designate terminals that have their parameters displayed in either the left or right panel of the MINet window. The left or right position of a terminal in the MINet window does not affect configuration, management, or monitoring functionality.

In a 1+0 system, there is a terminal (IDU, ODU and antenna) at each end of the link (see Figure 2 on page 21). In a 1+1 redundancy system, there are two terminals at each end of the link, and either an access panel or Y-cable connecting the two IDUs (see Figure 3 on page 22).

NOTE

1+1 hot standby and 1+1 space diversity systems are represented by the same redundancy graphic, that is, two antennas at each end of the link.

There is a graphic representation of the status of the link between two terminals. This relates to information displayed in the status bar at the bottom of the window. For example, when the link is active and good (that is, data is passing between the terminals), the representation of the signal between these terminals is green. When the link is not active, the representation of the signal between the terminals is grey. When the link is down, the representation of the signal between the terminals is red.

In a 1+0 system, the key operational parameters of each terminal are displayed in the boxes immediately below the IDU (see Figure 2 on page 21). For E1/E3 and DS1/DS3 DIUs, these parameters are Tx Power, RSL, and BER. For Eth 10/100 DIUs, Util Tx and Util Rx are also displayed. For more information on these parameters see page 93, *Viewing the key operational parameters of a 1+0 link*.

Selecting the end of a link

You can select or deselect the end of a link by clicking on the link-end selection button on each terminal (pink for the left end, blue for the right end). When the end of a link is selected, the graphic representation of the terminal is grey. When the end of a link is not selected, the graphic representation of the terminal is pale pink.

Selecting a terminal in a 1+1 redundancy system

In a 1+1 redundancy system, you can select the terminal with which MINet is communicating by clicking on the terminal selection button on either terminal (see Figure 3 on page 22). The graphic representation of the selected terminal is grey. When a terminal is not selected, its graphic representation is pale pink. Only one of the two terminals at the end of a link may be selected at a time.

Changing parameters for a terminal

When a terminal is selected, you can use options in the menu bar to set up and monitor the parameters for the terminal. Figure 4 shows a typical dialog in which you can change or monitor parameters.

Figure 4:   Example dialog
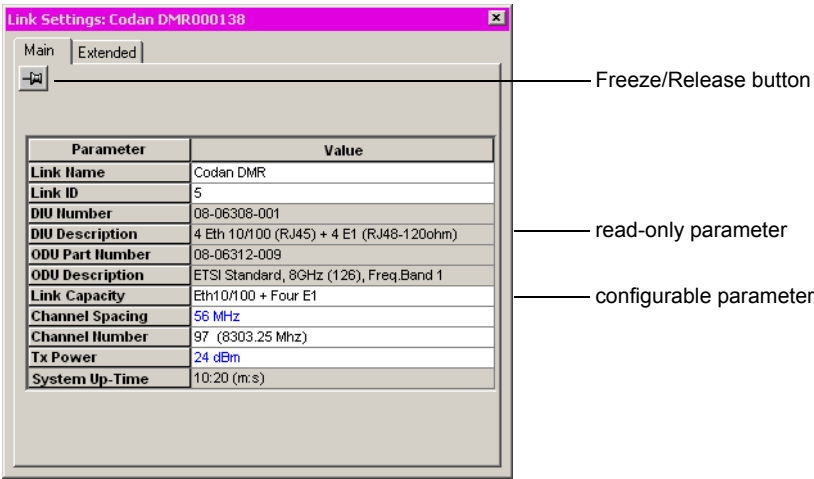
If you want to keep a dialog open while you open other dialogs for the terminal, click the Freeze button (🔲) in the dialog.

If you shift the dialogs around, then want to arrange the dialogs back to the original layout, from the **Window** menu, select **Cascade**.

Some parameters are derived from the hardware and are read-only, as shown by a grey background (see Figure 4 on page 24). Parameters that can be modified have a white background. Parameters that have been modified appear in blue until they are saved to the active configuration.

New parameter values may be selected from a drop list, or text may be typed into the field. When you click in the **Value** field of a parameter, a drop arrow may appear on the right of the field. Click on this arrow to see the available values from which to select. If a drop arrow does not appear, click once more in the field; a cursor appears, enabling you to enter text.

Zooming in

When the end of a link is selected, you can double-click on the left side of the image of the IDU to zoom in on the IDU. The image reflects the type of DIU used in the IDU, and in a 1+1 redundancy system, the type of connection between the IDUs. The tributary status For some DIUs is indicated by their colour:

Colour	Meaning
Green	Tributary is OK
Yellow	Tributary has a non-fatal, warning error or is not being used
Orange	Tributary is under operator control
Red	Tributary has a fatal error

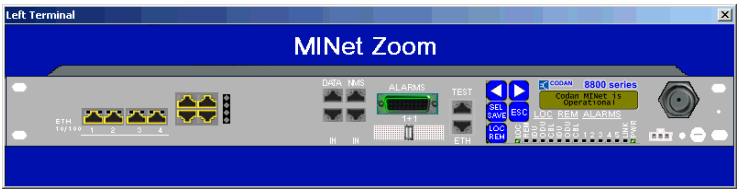Figure 5:   Front panel of the IDU in a 1+0 system

Figure 6:   Front panel of the IDU in a 1+1 system

Double-clicking over the keys and LCD zooms in on the front panel of the IDU.

Figure 7:   LCD and keys on the IDU

Menu and tool bars

The menu bar provides access to all MINet options. The most commonly-used MINet functions are accessed using buttons on the tool bar. The graphic on the tool-bar button associated with each function is also shown next to the option in its menu. Some functions are accessed only through the menu bar. These functions do not have any graphic next to the option in the menu.

When the mouse pointer is placed over any button in the tool bar, the name of the button appears below the button. An explanation of the function of the button is provided in the left side of the status bar.

You can hide the tool bar by deselecting **Toolbar** in the **View** menu.

Status bar

The status bar shows the current operating mode of MINet, and the status of the left and right terminals that are selected. After the system is powered on and communication between the PC and the 8800 series DMR has been established, **ONLINE** is displayed in the status bar. Active configuration parameters may be updated, and status and performance may be polled when MINet is on line.

When a parameter is modified during an on-line session, the status bar automatically switches from **NORMAL** to **CONFIG**. When the active configuration is updated, the status bar switches from **CONFIG** to **NORMAL**.

When the operator works with a configuration file (.cfg) that has been previously saved from the terminal during an on-line session, **FILE** is displayed in the status bar. If a file is saved when the system is on line, an additional *.cfs file, which includes terminal status data, is created for each terminal.

When MINet is off line, configurations can only be saved as a .cfg file. To update an active configuration with a configuration file, MINet must be on line.

The access level into which you are logged is shown at the right side of the status bar.

Configurations

You can have multiple configurations open in MINet at the same time. To see the configurations that you have open, or to switch between them, go to the **Window** menu.

5   Setting up a link

This section contains the following topics:

Introduction

This section assumes that a link has been installed according to the information provided in the *Digital Microwave Radio 8800 series Quick Install Handbook* and the *Digital Microwave Radio 8800 series Reference Manual* or *Digital Microwave Radio 8800 series Redundancy Systems Reference Manual*.

NOTE	In order to manage the 8800 series DMR using MINet software, the IP address of the PC running MINet and the connected DMR must belong to the same network.
NOTE	In order to manage a remote 8800 series DMR using out-of-band management, static routes may need to be added to the configuration of the DMR (see page 31, *Setting up the management PC and DMRs to communicate with each other*).

Once the terminals have been set up to communicate with a PC running MINet, the existing configuration of the link may be altered as required.

Setting up the management PC and DMRs to communicate with each other

Before setting up the management PC and DMRs, you should plan the network according to the type of management that you want to use. On a network diagram, you should assign IP addresses to the relevant ports. Examples of such diagrams are provided on page 123, *Example network diagrams*. These examples use the following IP address format:

IP address	212.180.<network address>.<host address> or 212.181.<network address>.<host address>
Subnet mask	255.255.255.0

Out-of-band management

Out-of-band management requires the following to be set up:

- the IP address of the management PC (see page 33, *Setting the IP address of the management PC*)

NOTE	The IP address of the management PC must use the *same* network address as the **ETH** port on the connected DMR.

- a static route on the management PC (see page 36, *Setting up a static route on the management PC (out-of-band management only)*)

- the IP address of the **ETH** port (see page 40, *Setting the IP address of the ETH port*)

NOTE	The IP address of the **ETH** port must use a *different* network address for terminals at each end of a link. Terminals located at the same site may use addresses in the same network.

In-band management

In-band management requires the following to be set up:

- the IP address of the management PC (see page 33, *Setting the IP address of the management PC*)

NOTE	The IP address of the management PC must use the *same* network address as each Eth 10/100 DIU on the network.

- the IP address of the Eth 10/100 DIU (see page 38, *Setting the IP address of the Eth 10/100 DIU (in-band management only)*)

- the IP address of the **ETH** port (for end-to-end connectivity during local maintenance) (see page 40, *Setting the IP address of the ETH port*)

 | NOTE | The IP address of the **ETH** port must use a *different* network address from each Eth 10/100 DIU on the network. |
  |------|---|

Setting the IP address of the management PC

The management PC running MINet *must* use the same network address as each Eth 10/100 DIU on the network for in-band management, or the same network address as the **ETH** port of the connected DMR for out-of-band management.

To set the IP address of the local PC:

NOTE   The options that you see depend upon the version of Microsoft Windows that you have installed (Windows XP is shown below). For more information on this topic refer to the on-line help provided for Windows.

❑ In Windows, from the **Start** menu, select **Control Panel**—**Network Connections**.

❑ Double click on **Local Area Connection**.

❑ Click **Properties**.

❑ Scroll through the listed components used by this connection, select **Internet Protocol (TCP/IP)**, then click **Properties**.
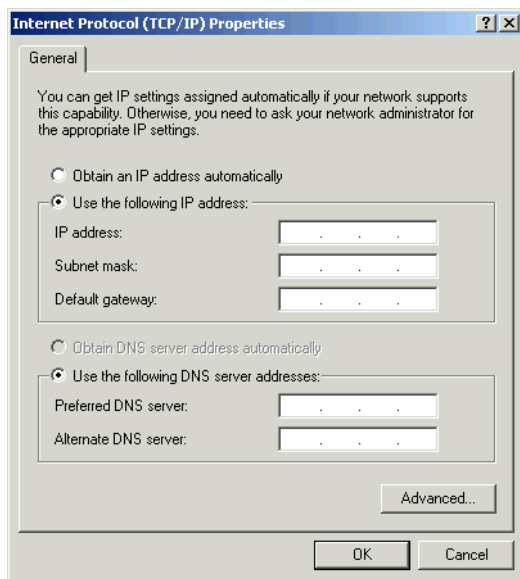
❑ Select **Use the following IP address**.

❑ Enter a suitable IP address for the PC that contains the same network address but a different host address as the respective port of the connected DMR, that is xxx.xxx.<network address>.<host address>.

For example, the management PC and DMRs used for out-of-band management (**ETH** port) and in-band management (Eth 10/100 DIU) would have the following IP addresses (see page 123, *Example network diagrams*):

Connected device	IP address
PC	212.181.1.10
DMR	Out-of-band (**ETH** port)
	212.181.1.100 212.181.1.200
	In-band (Eth 10/100 DIU)
	212.181.1.100 212.181.1.110 212.181.1.120 212.181.1.130 212.181.1.140 212.181.1.150 212.181.1.160 212.181.1.170

❑ Check that the subnet mask for the PC is the same as that for the DMR, that is 255.255.255.0.

❑ Connect the Ethernet port of the PC to the **ETH** port (out-of-band management) or Eth 10/100 DIU (in-band management) of the DMR using a crossover Ethernet cable.

NOTE	The network diagrams show this connection being made via an Ethernet connection for both out-of-band and in-band management (see page 123, *Example network diagrams*).

Setting up a static route on the management PC (out-of-band management only)

In order to manage a terminal or network using out-of-band management, a static route is required on the management or local PC. This may be set up in two ways:

Using the...	Purpose
route add command at the Command Prompt on the management PC	Used for network connectivity and management of a number of terminals, and requires the **NMS-IN** and **NMS-OUT** ports on IDUs at the same site to be daisy-chained together using a standard ethernet cable.
Find Agent IP button in MINet on a local PC	Used for local fault finding or maintenance activities.

To add a permanent static route for network connectivity and management purposes:

❑ In the Command Prompt session, type:

route add <**IP address of network**> **mask** <**subnet mask**> <**IP address of ETH port on local terminal**> **–p**

NOTE	The IP address of the **ETH** port on IDUs at the same site must use the same network address. Each site in the network must use a different network address.

For example, using the network diagram for out-of-band management presented on page 123, *Example network diagrams* as a guide:

route add 212.180.0.0 mask 255.255.0.0 212.181.1.100 –p

This sets up a static route on the PC for all terminals connected to the network.

❑ Ping each terminal on the network to check connectivity.

ping <**IP address of terminal**>

This command pings the specific terminal on the network. A reply should be received from the DMR.

The computer is now configured to communicate to all terminals in the network.

❑ Close the Command Prompt session.

To add a temporary static route to a local PC for fault finding purposes:

❑ Access MINet at Supervisor level (see page 18, *Accessing MINet*).
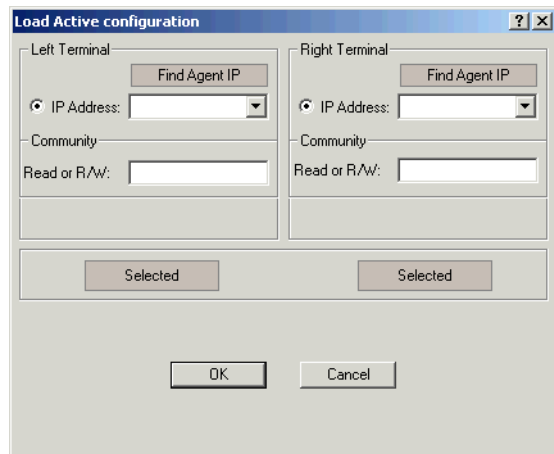
❑ Enter the IP address for one terminal, enter **codan** in the Community frames, then click **Find Agent IP** for the other terminal.

The terminal communicates with the terminal at the other end of the link and requests its IP address.

A message is displayed that asks if you would like to add the IP address of the other terminal to the routing table of the PC.

❑ Click **Yes** to add the temporary route to the routing table of the local PC.

Setting the IP address of the Eth 10/100 DIU (in-band management only)

The IP address of the Eth 10/100 DIU is set using the keys on the front panel of the IDU. For more information on using these keys see the *Digital Microwave Radio 8800 series Reference Manual* or *Digital Microwave Radio 8800 series Redundancy Systems Reference Manual*.

To set the IP address of the Eth 10/100 DIU:

❑ Press **SEL**/**SAVE** to enter the menu options.

```
Please Wait . . . .
. . . . . . . . . .
```

❑ Scroll through the menu options using ◀ or ▶ until **CONFIGURATION** is displayed.

```
CONFIGURATION
```

❑ Press **SEL**/**SAVE** to enter the **CONFIGURATION** menu.

A password prompt is displayed.

```
ENTER PASSWORD
```

❑ Enter the supervisor password:

ESC ESC ▶▶▶.

```
ENTER PASSWORD
*****
```

❑ Use ◀ or ▶ to move through the **CONFIGURATION** menu until **IP MANAGEMENT** is displayed.

```
IP MANAGEMENT
```

❑ Press **SEL**/**SAVE** to enter the **IP MANAGEMENT** menu.

❑ Use ◀ or ▶ to move through the **IP MANAGEMENT** menu until **ETH 10/100 IP** is displayed.

```
ETH 10/100 IPAdd
192 . 168 . 3 . 1  *
```

❑ Set the IP address to an appropriate address as assigned by a network administrator.

For example, using the network diagram for in-band management presented on page 123, *Example network diagrams* as a guide, an appropriate address would be:

212.181.<network address>.<host address>, or 212.181.1.110

❑ Use ◀ or ▶ to move through the **IP MANAGEMENT** menu until **ETH 10/100 IPmask** is displayed.

❑ Set the Eth 10/100 IPmask address to the required value.

NOTE   You need to use the same subnet mask for the PC running MINet.

❑ Repeat the above steps on the front panel of the other terminals in the network.

Setting the IP address of the ETH port

The IP address of the **ETH** port is set using the keys on the front panel of the IDU. For more information on using these keys see the *Digital Microwave Radio 8800 series Reference Manual* or *Digital Microwave Radio 8800 series Redundancy Systems Reference Manual*.

To set the IP address of the **ETH** port:

❑   Press **SEL**/**SAVE** to enter the menu options.

```
Please Wait . . . .
. . . . . . . . . . .
```

❑   Scroll through the menu options using ◀ or ▶ until **CONFIGURATION** is displayed.

```
CONFIGURATION
```

❑   Press **SEL**/**SAVE** to enter the **CONFIGURATION** menu.

A password prompt is displayed.

```
ENTER PASSWORD
```

❑   Enter the supervisor password:

ESC ESC ▶▶▶.

```
ENTER PASSWORD
*****
```

❑   Use ◀ or ▶ to move through the **CONFIGURATION** menu until **IP MANAGEMENT** is displayed.

```
IP MANAGEMENT
```

❑   Press **SEL**/**SAVE** to enter the **IP MANAGEMENT** menu.

❏ Use ◀ or ▶ to move through the **IP MANAGEMENT** menu until **ETH IP** is displayed.

```
ETH IP
192 . 168 . 3 . 1   *
```

❏ Set the IP address to an appropriate address as assigned by a network administrator.

For example, using the network diagrams presented on as a guide, an appropriate address would be:

212.180.<network address>.<host address>, or
212.181.<network address>.<host address>
212.181.1.100 (out-of-band management)
212.180.6.100 (in-band management)

> NOTE
> The IP address of the **ETH** port on IDUs at the same site must use the same network address. Each site in the network must use a different network address.

> NOTE
> For in-band management, the IP address of the **ETH** port must use a different network address from the IP address of the Eth 10/100 DIU.

❏ Use ◀ or ▶ to move through the **IP MANAGEMENT** menu until **ETH IpMask** is displayed.

❏ Set the address from the **ETH IpMask** option as the subnet mask.

> NOTE
> You need to use the same subnet mask for the PC running MINet.

❏ Repeat the above steps on the front panel of the other terminal to set its IP address and subnet mask.

Setting the redundancy status of an IDU (1+1 redundancy systems only)

If you are setting up a 1+1 redundancy system, you must designate each IDU at one end of the link as either the primary or secondary unit. The redundancy status is set using the keys on the front panel of the IDU. For more information on using these keys see the *Digital Microwave Radio 8800 series Reference Manual* or *Digital Microwave Radio 8800 series Redundancy Systems Reference Manual*.

To set the redundancy status of the IDU:

❑ Press **SEL**/**SAVE** to enter the menu options.

```
Please Wait . . . .
. . . . . . . . . .
```

❑ Scroll through the menu options using ◀ or ▶ until **CONFIGURATION** is displayed.

```
CONFIGURATION
```

❑ Press **SEL**/**SAVE** to enter the **CONFIGURATION** menu.

A password prompt is displayed.

```
ENTER PASSWORD
```

❑ Enter the supervisor password:

ESC ESC ▶▶▶.

```
ENTER PASSWORD
*****
```

□ Use ◀ or ▶ to move through the **CONFIGURATION** menu until **OPERATIONS** is displayed.

□ Press **SEL**/**SAVE** to enter the **OPERATIONS** menu, then use ◀ or ▶ to move through the menu until **1+1 CONFIG** is displayed.

□ On the main IDU (upper), use ◀ or ▶ to scroll to **PRIMARY**.

□ On the standby IDU (lower), use ◀ or ▶ to scroll to **SECONDARY**.

□ Press **SEL**/**SAVE** to save the status on both IDUs.

Loading the active configuration

To load the active configuration:

❑   Access MINet at Supervisor level (see page 18, *Accessing MINet*).
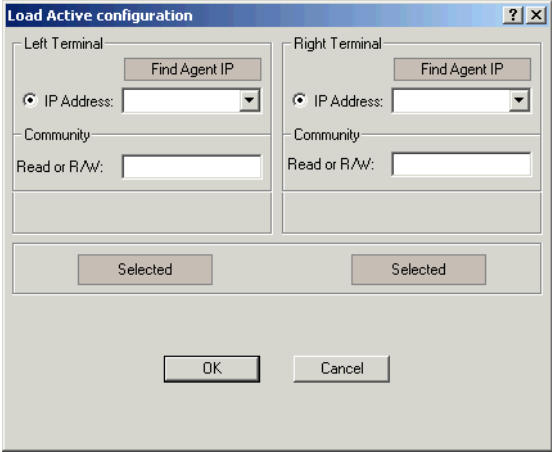
❑   Enter the IP addresses for the left and right terminals, enter **codan** in the Community frames, then click **OK**.

MINet connects to the left and right terminals. The configuration of the connected terminals is displayed. If these terminals have just been installed, the factory-default configuration is displayed.

If either connection fails, MINet prompts you to retry the connection process.

❑   If the terminal to which you are connecting has a Y-cable or access panel connected, you will be asked if you want to load an alternate 1+1 link.
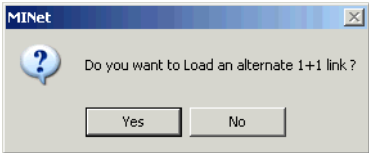
❑ If you want to load an alternate link click **Yes**, enter the IP addresses for the left and right terminals, enter **codan** in the Community frames, then click **OK**.

❑ If you want to work off line, click **Cancel**.

NOTE

For information on working off line with existing configuration files see page 90, *Opening an existing configuration from file*.

Setting up a configuration

When you start up MINet, you will be asked if you want to load an active configuration. If you load an active configuration, the DMR will connect to the terminals that you nominate, and in the case of a new installation, the parameters displayed are those of the factory-default configuration. You can change this configuration in the radio, then save this configuration to the PC for backup purposes. Alternatively, you may work off line with an existing backup configuration (see page 90, *Opening an existing configuration from file*).

When the IP addresses are entered, the default community authorisation is automatically inserted by MINet. Initially, the supervisor authorisation is read/write to enable the operator to perform all tasks required to make the link operational. The operator may change this authorisation as required (see page 63, *Setting up a community name*).

The procedure for changing the active configuration or an existing configuration file is the same. Depending on the parameter, you can enter new data, select new parameter values from a drop down list, or toggle the status of a parameter with a check box (see page 24, *Changing parameters for a terminal*). Unsaved parameter values are indicated with blue text. The operator can easily verify changes on the screen before saving the configuration file or updating the active configuration.

Certain link parameters must be identical at each terminal for the link to operate properly. In a 1+1 redundancy system, these link parameters must be identical at all terminals for redundancy operation. When the operator modifies parameters of one terminal that must be identical at both terminals, MINet automatically identifies these parameters. The system prompts the operator to copy the parameters to the other terminal, and for a 1+1 redundancy system, to the other link. Some parameters cannot be modified; these fields are greyed out.
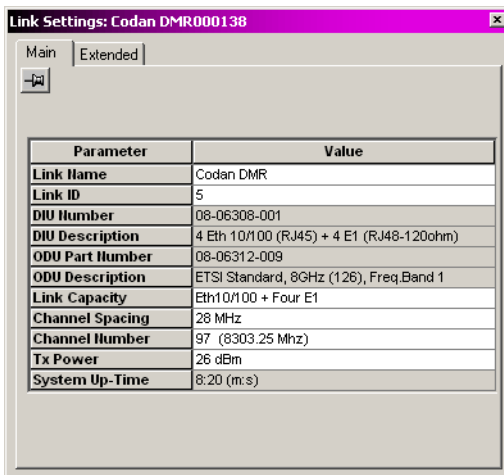
Codan recommends that you configure a link according to a pre-defined network plan. Example network plans for out-of-band and in-band management are provided on page 123, *Example network diagrams*. The information displayed in the following screens is from these plans.

Setting up the link settings

NOTE   The content of the Link Settings dialog varies depending on the DIU installed and whether or not a Y-cable or access panel is connected.

To set up the link settings:

❑ From the **Functions** menu, select **Configuration**, then **Link Settings...**, or click 🔊 in the tool bar.

Link Settings: Codan DMR000138

Main | Extended

Parameter	Value
Link Name	Codan DMR
Link ID	5
DIU Number	08-06308-001
DIU Description	4 Eth 10/100 (RJ45) + 4 E1 (RJ48-120ohm)
ODU Part Number	08-06312-009
ODU Description	ETSI Standard, 8GHz (126), Freq.Band 1
Link Capacity	Eth10/100 + Four E1
Channel Spacing	28 MHz
Channel Number	97 (8303.25 Mhz)
Tx Power	26 dBm
System Up-Time	8:20 (m:s)

NOTE   For help with changing values see page 24, *Changing parameters for a terminal*.

CAUTION   Some information should be identical at both terminals for the link to operate. MINet will prompt you to copy information to the other terminal when you save the configuration. In a 1+1 redundancy system, you are also prompted to copy the information to the other link.

NOTE   Saving information does not update the information to the terminals.

❑   Enter or select Main and Extended information on the left terminal as required, using the descriptions in the following table as a guide.

Parameter	Description
Link Name (Main)	The name that identifies this link as part of your network.
Link ID (Main)	A unique, terminal-to-terminal identifier in the range from 1 to 10000.
DIU Number (Main)	The Codan part number of the DIU. This is read from the IDU.
DIU Description (Main)	The description that corresponds to the DIU Number. This is read from the IDU.
ODU Part Number (Main)	The Codan part number of the ODU. This is read from the ODU.
ODU Description (Main)	The description that corresponds to the ODU Part Number. This is read from the ODU.
Link Capacity (Main)	The available options are dependent on the DIU installed.

Parameter	Description
Channel Spacing (Main, Eth 10/100 DIU only)	The spacing between centre frequencies of designated channels. The spacings are: • ETSI: 14, 28, or 56 MHz • FCC: 12.5, 25, or 50 MHz Channel spacing determines the data throughput of the link.
Channel Number (Main)	The centre frequency of the transmit frequency. The frequencies are nominally in 250 kHz steps.
Tx Power (Main)	The Tx power for this ODU. The available range is –10 dB up to the maximum allowable Tx power for the ODU, in 1 dB steps.
System Up-Time (Main)	The length of time that the link has been operational since the last cold reset.
Space Diversity (Main, 1+1 redundancy system only)	The type of redundancy mode. Select On for a 1+1 space diversity system, and Off for a 1+1 hot standby system.
Terminal Name (Extended)	A unique name of the terminal, identifying the specific end of the link, e.g. A or B.
Terminal Location (Extended)	The location of the terminal, e.g. geographical coordinates.
Contact Details (Extended)	The details for a local contact/service person.

Parameter	Description
Force AIS on all T1s/E1s (Extended)	An AIS may be injected on the data stream to maintain transmission at certain defined events.
FEC Correctable Bytes (Extended)	The amount of FEC for the link. This amount may be configured as 10 or 20 when an Eth 10/100 DIU is installed. The value cannot be configured for other DIUs.
ODU Temperature (Extended)	The operating temperature of the ODU in °C. This is read from the ODU.
Tx Power Level (Extended)	The actual power level that is used for transmission. This is read from the ODU.
ATPC Control (Extended)	ATPC provides feedback to the remote transmitter from the receiver, based upon a set of RSL thresholds set at the receiver. If you enable ATPC, you must enter threshold and optimal values for the RSL, and timer parameters.
RSL Upper Threshold (ATPC) (Extended)	The upper limit at which the receiver will inform the remote transmitter to reduce output power.
RSL Optimal Value (ATPC) (Extended)	The required optimal received power level at the receiver.
RSL Lower Threshold (ATPC) (Extended)	The lower limit at which the receiver will inform the remote transmitter to increase output power.

Parameter	Description
ATPC Timeout (Extended)	The ATPC timeout meets a regulatory requirement to enable or disable a timeout function for operation of ATPC at the maximum Tx power. If the timeout is enabled, you need to set a duration, the alarm condition, and subsequent events following the timeout.
ATPC Timer (Minutes) (Extended)	The timer sets the length of time that the DMR will transmit at maximum power before applying an ATPC timeout. The timer may be set for 1 to 60 minutes, in 1 minute intervals.
ATPC Timeout Alarm (Extended)	The timeout alarm, if enabled, sends an alarm to the alarm log according to the severity level set below.
ATPC Timeout Alarm Level (Extended)	If a timeout alarm is enabled, this sets the level of the alarm sent to the log.
Disable ATPC at Timeout Alarm (Extended)	If a timeout alarm is generated and this option is set to On, the Tx power level is reset to the nominal value (10 dB lower than the Tx power level set on the Main tab).

❑   If you are working on line, update the active configuration (see).

NOTE   When you update the active configuration in a 1+1 redundancy system, you may be prompted to copy information to the other terminal, then the other link.

❑ Enter or select Main and Extended information for the right terminal as required, then update the active configuration.

❑ In a 1+1 redundancy system, select the other link and enter appropriate information for the left and right terminals, then update the active configuration.

❑ If you are working off line, from the **File** menu, select **Save** to save the configuration file.

NOTE   A configuration file must be saved for all terminals in a 1+1 redundancy system.

❑ If you want to save the log file see page 92, *Saving an alarm log file*.

Setting up the interfaces

NOTE

The content of the Interfaces dialog varies depending on the DIU installed and the link capacity (see page 47, *Setting up the link settings*).

To set up the interfaces:

❑ From the **Functions** menu, select **Configuration**, then **Interfaces...**, or click ▦ in the tool bar.
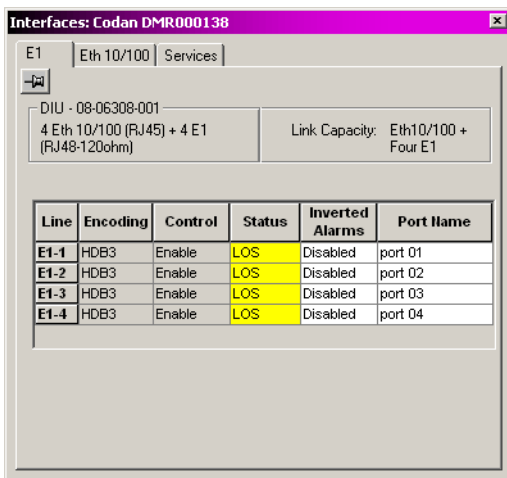
NOTE

For help with changing values see page 24, *Changing parameters for a terminal*.

Each type of interface has a tab.

❑ Select the interface tab that you want to set up.

Each port for the interface is configured separately.

❑ Enter or select information for the E1/E3 or DS1/DS3 DIUs on the left terminal as required, using the descriptions in the following table as a guide.

Parameter	Description
Encoding	The encoding for the port must match the encoding of the device attached to the tributary line. The encoding for each port must be identical at both terminals. This encoding may be configured for DS1/DS3 DIUs only.
Control	A port can be enabled to pass data, or it can be disabled. When a port is disabled, any alarms for this port are also disabled.
Status	The status of the port, read from the IDU. For more information on viewing the status of the E1/E3 or DS1/DS3 tributary see Table 1 on page 94.
Inverted Alarms	An alarm contact for the attached device may be configured for inverted operation (opens on alarm) or non-inverted operation (closes on alarm).
Port Name	The name for the port, e.g. you may use the name of the attached device.

❑   Enter or select information for the E1/E3 or DS1/DS3 DIUs on the right terminal as required.

❑   Enter or select information for the Eth 10/100 DIU on the left terminal as required, using the descriptions in the following table as a guide.

Parameter	Description
Flow Control	The terminals can use a handshaking protocol, or this can be disabled.
Port Control	A port can be enabled to pass data, or it can be disabled. When a port is disabled, any alarms for this port are also disabled.
Port Status	The status of the port, read from the DIU. For more information on viewing the status of the Eth 10/100 tributary see Table 1 on page 94.
Auto Negotiation	The ports can negotiate their communication requirements or have these requirements selected for them. If you switch off auto negotiation, you must select values for Speed Control and Duplex Control.
Speed Control	The speed of data transmission that is set for the link.
Speed Status	The actual speed of data transmission over the link. For more information on viewing the status of the Eth 10/100 tributary see Table 1 on page 94.
Duplex Control	The method of data transmission that is set for the link. It can be full or half duplex.

Parameter	Description
Duplex Status	The actual duplex control used for the data transmission over the link. For more information on viewing the status of the Eth 10/100 tributary see Table 1 on page 94.
Force Disconnect	The Eth 10/100 DIU port can be forced to disconnect as a result of a link-down indication. This is used in conjunction with spanning tree protocol for redundancy LAN applications.
Throughput Control	A guaranteed port speed may be set on a port by port basis.

❑ Enter or select information for the Eth 10/100 DIU on the right terminal as required.

❑ Select information for each service (the physical ports on the IDU) on the left terminal as required, using the descriptions in the following table as a guide.

Parameter	Description
MAC Address	This is the unique hardware address of every Ethernet card. This is read from the **ETH** port on the IDU, and from the Eth 10/100 DIU, if fitted.
Flow Control	The **NMS-IN**, **NMS-OUT**, **DATA** and **TEST** ports on the IDU can use a handshaking protocol.
Bits Stop Bits Parity Bit Baud Rate	The communication requirements for the device attached to the **NMS-IN**, **NMS-OUT**, **DATA** and **TEST** ports.

NOTE   The **TEST** port is for factory-use only.

❑   Select information for each service on the right terminal as required.

❑   Update the active configuration (see page 77, *Updating the active configuration for a new link*).

❑   In a 1+1 redundancy system, select the other link and enter appropriate information for the left and right terminals, then update the active configuration.

❑   If you are working off line, from the **File** menu, select **Save** to save the configuration file.

NOTE   A configuration file must be saved for all terminals in a 1+1 redundancy system.

❑   If you want to save the log file see page 92, *Saving an alarm log file*.

Setting up IP addresses and subnet masks for each port on the IDU

NOTE   The content of the IP and Peer IP tabs in the Management dialog varies depending on the DIU installed and whether or not a Y-cable or access panel is connected.

Each port on the IDU may be attached to an external device, and each of these devices needs to be allocated its own IP address. Similarly, information from these external devices (such as alarms and traps) needs to be directed to destinations where appropriate action can be taken. To do this, each terminal needs to store information on its location within the network, so that information can be sent via the most direct route to other terminals.

Configurations that have E1/E3 or DS1/DS3 type DIUs use out-of-band management only. Eth 10/100 DIUs have the option to use either in-band or out-of-band management, or both. In-band management uses some of the link's customer-traffic bandwidth for management purposes. Out-of-band management uses a dedicated 64 KB peer channel for link management purposes between the terminals.

To set up the IP addresses and subnet masks:

❑ From the **Functions** menu, select **Configuration**, then **Management...**, or click 🖳 in the tool bar.

❑ Select the **IP** tab.

Management: Codan DMR000138

Community and Traps		Change Front Panel Sequence	
IP	Peer IP		Routing Table

IP Table

Interface	IP	Subnet Mask
NMS In (SLIP)	10.0.1.56	255.0.0.0
NMS Out (SLIP)	10.0.1.57	255.0.0.0
Link	10.0.1.58	255.0.0.0
ETH	212.180.1.100	255.255.255.0
Eth 10/100 Mng	0.0.0.0	0.0.0.0
NMS In (SLIP) Dest	10.1.1.1	
NMS Out (SLIP) Dest	10.1.1.2	
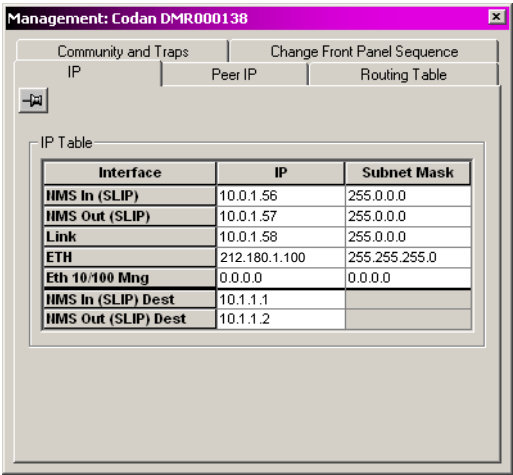
NOTE   For help with changing values see page 24, *Changing parameters for a terminal*.

❑ Enter the IP address and subnet mask for each physical port on the IDU for the left terminal as required, using the descriptions in the following table as a guide.

Interface	Description
NMS In (SLIP)	The **NMS-IN** port is allocated an IP address to provide out-of-band management of the link. Management via a modem and standard dial-up telephone line is provided through this port. This port is used to cascade terminals via SLIP at a site.
NMS Out (SLIP)	The **NMS-OUT** port connects to an **NMS-IN** port and is used for cascading IDUs.
Link	The link is allocated an IP address to provide downstream management via the RF path.
ETH	The **ETH** port is used for out-of-band management of configured terminals.
Eth 10/100 Mng (Eth 10/100 DIU only)	The **ETH 10/100 Mng** port is used for in-band management of terminals where an Eth 10/100 DIU is installed.
NMS In (SLIP) Dest	NMS In/Out (SLIP) Dest are IP addresses that enable routing of **NMS-IN** to **NMS-OUT** between two links at a repeater site.
NMS Out (SLIP) Dest	
Alternate ETH IP (1+1 redundancy system only)	The ETH IP address of the backup terminal.

❑ Enter IP information for the right terminal as required.

❑ Update the active configuration (see page 77, *Updating the active configuration for a new link*).

The **Peer IP** tab shows the IP address table of the terminal at the other end of the link.
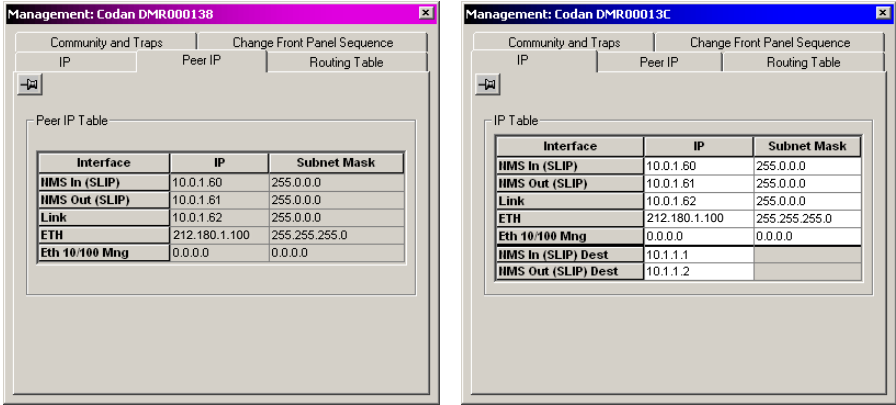
Management: Codan DMR000138

Community and Traps | Change Front Panel Sequence
IP | Peer IP | Routing Table

Peer IP Table

Interface	IP	Subnet Mask
NMS In (SLIP)	10.0.1.60	255.0.0.0
NMS Out (SLIP)	10.0.1.61	255.0.0.0
Link	10.0.1.62	255.0.0.0
ETH	212.180.1.100	255.255.255.0
Eth 10/100 Mng	0.0.0.0	0.0.0.0

Management: Codan DMR00013C

Community and Traps | Change Front Panel Sequence
IP | Peer IP | Routing Table

IP Table

Interface	IP	Subnet Mask
NMS In (SLIP)	10.0.1.60	255.0.0.0
NMS Out (SLIP)	10.0.1.61	255.0.0.0
Link	10.0.1.62	255.0.0.0
ETH	212.180.1.100	255.255.255.0
Eth 10/100 Mng	0.0.0.0	0.0.0.0
NMS In (SLIP) Dest	10.1.1.1	
NMS Out (SLIP) Dest	10.1.1.2	

❑ In a 1+1 redundancy system, select the other link and enter appropriate information for the left and right terminals, then update the active configuration.

❑ If you are working off line, from the **File** menu, select **Save** to save the configuration file.

NOTE A configuration file must be saved for all terminals in a 1+1 redundancy system.

❑ If you want to save the log file see page 92, *Saving an alarm log file*.
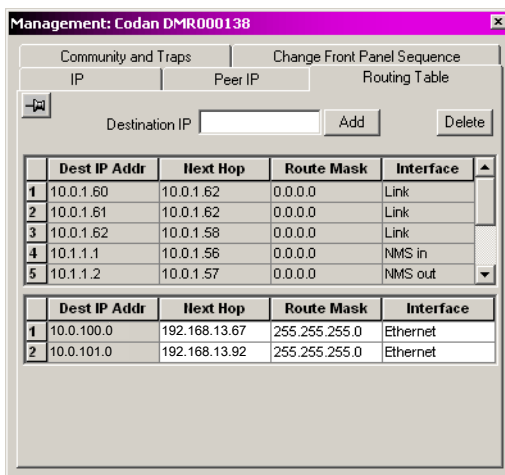
Setting up a routing table

A routing table contains static routes that have been added to each terminal. Generally, if RIP protocol is enabled for the terminal, a static routing table is not required.

CAUTION   Static routes should only be added to a terminal by an experienced IP network administrator.

To set up a routing table:

❑   Connect to the active configuration in which you want to set up the routing table (see page 44, *Loading the active configuration*).

❑   From the **Functions** menu, select **Configuration**, then **Management...**, or click ⬛ in the tool bar.

❑   Select the **Routing Table** tab for the left terminal.

NOTE   For help with changing values see page 24, *Changing parameters for a terminal*.

❑ Enter an IP address into the **Destination IP** field, then click **Add**.

The terminal communicates with the destination IP address.

The **Next Hop**, **Route Mask**, and **Interface** fields are filled automatically from the exchanged information.

❑ If you want to delete an IP address and associated hop and route mask information, select the IP address, then click **Delete**.

❑ Enter IP addresses for the right terminal as required.

❑ Update the active configuration (see page 77, *Updating the active configuration for a new link*).

❑ In a 1+1 redundancy system, select the other link and enter appropriate information for the left and right terminals, then update the active configuration.

❑ From the **File** menu, select **Save** to save the configuration file.

NOTE   A configuration file must be saved for all terminals in a 1+1 redundancy system.
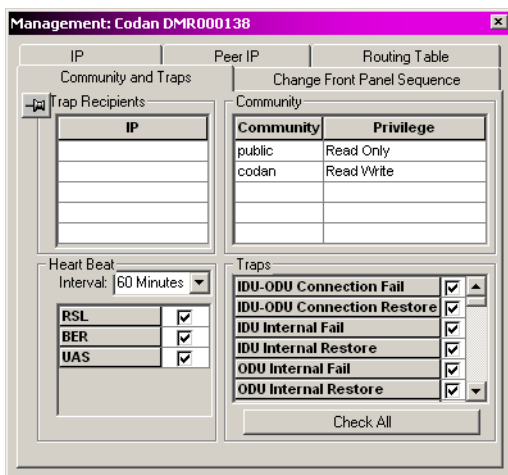
❑ If you want to save the log file see page 92, *Saving an alarm log file*.

Setting up a community name

A community name is a basic SNMP convention that is used to provide system security.

To set up the community name:

❑ From the **Functions** menu, select **Configuration**, then **Management...**, or click in the tool bar.

❑ Select the **Community and Traps** tab for the left terminal.

NOTE   For help with changing values see page 24, *Changing parameters for a terminal*.

❑ In the **Community** frame, **Community** field, enter the name of a community that will be using the link.

The community designation may be any alphanumeric string.

❑ Select the type of access privilege that you want this community to have from the corresponding drop list in the **Privilege** field, using the descriptions in the following table as a guide.

Value	Description
Read Only	Operators logged in as User/Administrator/Supervisor have read access only.
Read Write	Operators logged in as User have read access only.
	Operators logged in as Administrator have limited read/write access.
	Operators logged in as Supervisor have full read/write access.

❑ Enter or select community and privilege information for the right terminal as required, then update the active configuration.

❑ Update the active configuration (see page 77, *Updating the active configuration for a new link*).

❑ In a 1+1 redundancy system, select the other link and enter appropriate information for the left and right terminals, then update the active configuration.

❑ If you are working off line, from the **File** menu, select **Save** to save the configuration file.

NOTE   A configuration file must be saved for all terminals in a 1+1 redundancy system.

❑ If you want to save the log file see page 92, *Saving an alarm log file*.

Setting up trap handling

SNMP v2 has the ability to highlight an event occurring in a network, and send notification of this event (known as a trap) from the SNMP agent to the SNMP manager. The 8800 series DMR can raise traps and send these to a network manager. The event causing the trap (for example, a hardware fault or a general performance parameter such as RSL), and the recipient of the trap can be configured easily using MINet.

To set up trap handling:

❑ From the **Functions** menu, select **Configuration**, then **Management...**, or click 🔳 in the tool bar.

❑ Select the **Community and Traps** tab for the left terminal.
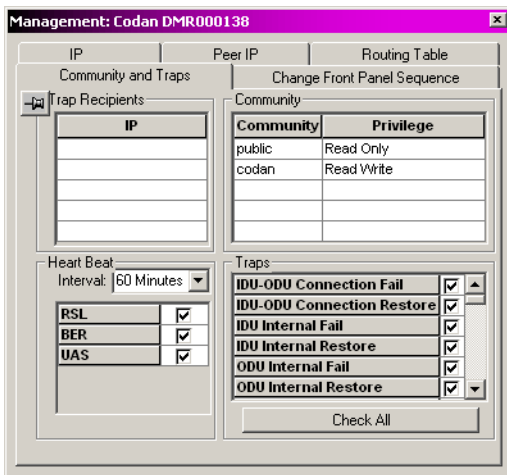
NOTE For help with changing values see page 24, *Changing parameters for a terminal*.

❑ In the **Trap Recipients** frame, **IP** field, enter the IP address of the SNMP manager.

❑ In the **Traps** frame, select the corresponding box for events that you want to have reported as traps.

If you do not want to have an event reported as a trap, ensure that the corresponding box is not selected.

NOTE   Any events that are selected are sent to *all* trap recipients.

❑   In the **Heart Beat** frame, **Interval** field, select the frequency with which you want status traps sent to trap recipients.

❑   In the **Heart Beat** frame, select the corresponding box for information that you want to have included in the status report, using the descriptions in the following table as a guide.

Parameter	Description
RSL	The received signal level.
BER	The current BER for the link.
UAS	The unavailable seconds for the link.

If you do not want to send a status report at a regular interval, ensure that all boxes are not selected.

❑   Enter trap information for the right terminal as required, then update the active configuration.

❑   Update the active configuration (see page 77, *Updating the active configuration for a new link*).

❑   In a 1+1 redundancy system, select the other link and enter appropriate information for the left and right terminals, then update the active configuration.

❑   If you are working off line, from the **File** menu, select **Save** to save the configuration file.

NOTE   A configuration file must be saved for all terminals in a 1+1 redundancy system.

❑   If you want to save the log file see page 92, *Saving an alarm log file*.

Setting up input/output alarms for the link

Output relays are used to control external equipment connected to the Codan 8800 series DMR system. The equipment is generally not directly related to communications. Such equipment could be a UPS, air-conditioning system, buzzer, lights etc. Relays enable the IDU to respond to a defined set of conditions.
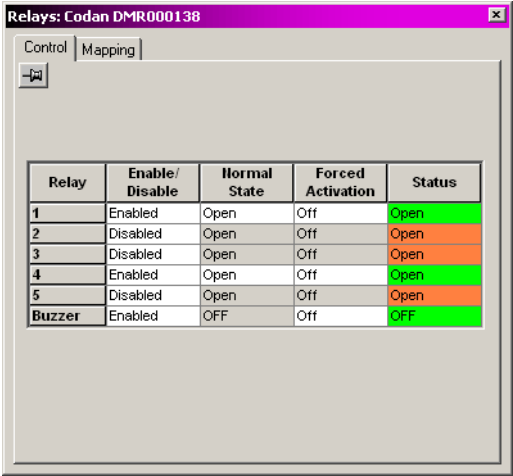
External inputs with an analog signal range of 2.5 to 9 V are used to alert the Codan 8800 series DMR terminal of events occurring outside the terminal.

When relay outputs and external inputs are used, a cable is connected between the external equipment and the **ALARMS** port on the IDU. A DB25 connector includes both relay outputs and external inputs. Wiring can enable up to five relays to be connected, plus an additional relay connected to a buzzer inside the IDU. Alarms are generated for the equipment in accordance with the parameters in the Relays dialog. You can activate up to four external inputs and view their status in the External Inputs dialog.

To set up input/output alarms:

❑ From the **Functions** menu, select **Configuration**, then **Relays...**, or click ⚡ in the tool bar.

❑ Select the **Control** tab for the left terminal.

This tab contains parameters that determine whether the accessory equipment is enabled, and if so, when and how it should be activated.

Relay	Enable/Disable	Normal State	Forced Activation	Status
1	Enabled	Open	Off	Open
2	Disabled	Open	Off	Open
3	Disabled	Open	Off	Open
4	Enabled	Open	Off	Open
5	Disabled	Open	Off	Open
Buzzer	Enabled	OFF	Off	OFF

NOTE   For help with changing values see page 24, *Changing parameters for a terminal*.

❑ Select the status that you want for each of the relays and the buzzer, using the descriptions in the following table as a guide.

Parameter	Description
Enable/Disable	The relay and buzzer can be enabled or disabled. The relay must be enabled if you want to map it to an alarm.
Normal State	The relay output can be defined as normally open or normally closed.
Forced Activation	When forced activation is on, the relay/buzzer is active.
Status	The status of the relay, read from the IDU. For more information on viewing the status of the relays see Table 1 on page 94.

❑ From the **Functions** menu, select **Configuration**, then **External Inputs...**, or click 🖳 in the tool bar.
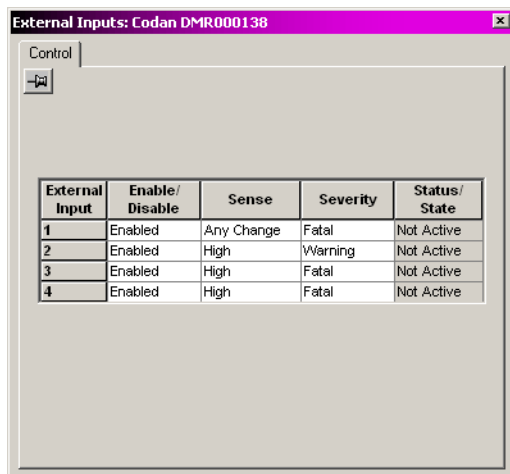
NOTE   For help with changing values see page 24, *Changing parameters for a terminal*.

❑ On the left terminal, select the status that you want for each of the external inputs, the sense, and the severity, using the descriptions in the following table as a guide.

Parameter	Description
Enable/Disable	An alarm status is logged in the alarm log when this input activates. If the buzzer relay is also mapped and enabled, the buzzer sounds when this input alarms. If the external input is disabled, an alarm status is not logged.
Sense	The input alarms on a low, a high, or any change to the current operator-defined status.
Severity	The alarm may be either a warning or indication of a fatal error. Active inputs may be filtered and sorted by levels of severity.
Status/State	The status of the input, read from the IDU. For more information on viewing the status of the inputs see Table 1 on page 94.

❑ From the **Functions** menu, select **Configuration**, then **Relays...**, or click 🔧 in the tool bar.

❑ Select the **Mapping** tab for the left terminal.

You are able to assign a defined set of events at the local terminal against each output relay or external input, and activate the buzzer if required. The actual number of events depends on the IDU configuration and the number of supported tributary lines.
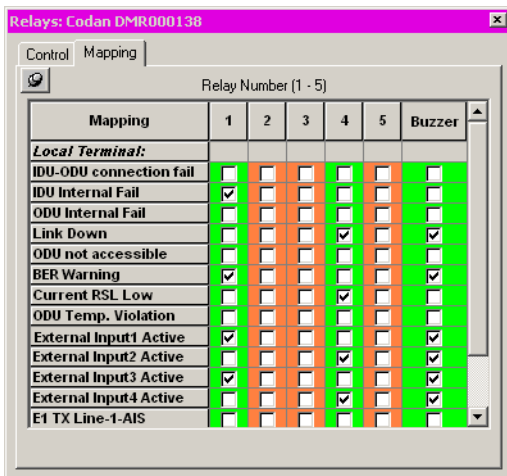
❑ Select the box corresponding to the event that you want to have indicated by a specific **ALARM** LED on the front panel of the IDU.

  If you want the internal buzzer to sound for this event, select the corresponding **Buzzer** box for the event.

❑ Enter or select input/output alarm information for the right terminal as required.

❑ Update the active configuration (see page 77, *Updating the active configuration for a new link*).

❑ In a 1+1 redundancy system, select the other link and enter appropriate information for the left and right terminals, then update the active configuration.

❑ If you are working off line, from the **File** menu, select **Save** to save the configuration file.

> NOTE   A configuration file must be saved for all terminals in a 1+1 redundancy system.
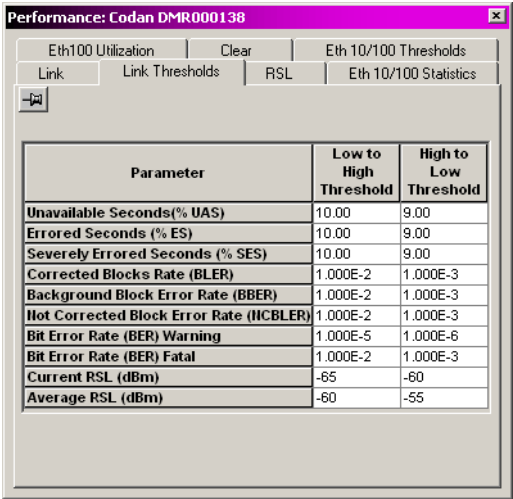
❑ If you want to save the log file see page 92, *Saving an alarm log file*.

Setting up performance measures for the link

NOTE The content of the Performance dialog varies depending on the DIU installed.

To set up performance measures:

❑ From the **Functions** menu, select **Status**, then **Performance...**, or click 🔟 in the tool bar.

❑ Select the **Link Thresholds** tab for the left terminal.

Performance: Codan DMR000138

| Eth100 Utilization | Clear | Eth 10/100 Thresholds |
| Link | Link Thresholds | RSL | Eth 10/100 Statistics |

Parameter	Low to High Threshold	High to Low Threshold
Unavailable Seconds(% UAS)	10.00	9.00
Errored Seconds (% ES)	10.00	9.00
Severely Errored Seconds (% SES)	10.00	9.00
Corrected Blocks Rate (BLER)	1.000E-2	1.000E-3
Background Block Error Rate (BBER)	1.000E-2	1.000E-3
Not Corrected Block Error Rate (NCBLER)	1.000E-2	1.000E-3
Bit Error Rate (BER) Warning	1.000E-5	1.000E-6
Bit Error Rate (BER) Fatal	1.000E-2	1.000E-3
Current RSL (dBm)	-65	-60
Average RSL (dBm)	-60	-55

NOTE For help with changing values see .

❑ Enter the low to high and high to low thresholds that you want for each parameter, using the descriptions in the following table as a guide.

Parameter	Description
Unavailable seconds	The percentage of unavailable time since the last clear of statistics.
Errored seconds	The percentage of errored seconds since the last clear of statistics.
Severely-errored seconds	The percentage of severely-errored seconds since the last clear of statistics.
Corrected blocks rate	The number of errored blocks per second that are corrected by the internal FEC of the DMR.
BBER	The number of block errors occurring in a one-second period that did not occur as part of an SES.
NCBLER	The number of errored blocks per second that are not corrected by the internal FEC of the DMR.
BER Warning	The level of BER at which a warning alarm is indicated or removed.
BER Fatal	The level of BER at which a fatal error is indicated or resolved.
Current RSL	The actual RSL in dBm measured at the receiver. If the current reading moves outside these thresholds, an alarm is indicated.
Average RSL	The average RSL in dBm over the period since the last clear of statistics.

❑   Enter the low to high and high to low thresholds that you want for each parameter on the right terminal as required.

❑ If you are using an Eth 10/100 DIU, select the **Eth 10/100 Thresholds** tab on the left terminal, then enter the thresholds that you want for each parameter, using the descriptions in the following table as a guide.

Parameter	Description
Eth 10/100 Tx Link Usage	The percentage of available bandwidth utilised during transmit.
Eth 10/100 Rx Link Usage	The percentage of available bandwidth utilised during receive.

❑ If you are using an Eth 10/100 DIU, select the **Eth 10/100 Thresholds** tab, then enter the thresholds that you want for each parameter on the right terminal as required.

❑ Update the active configuration (see page 77, *Updating the active configuration for a new link*).

❑ In a 1+1 redundancy system, select the other link and enter appropriate information for the left and right terminals, then update the active configuration.

❑ If you are working off line, from the **File** menu, select **Save** to save the configuration file.

NOTE   A configuration file must be saved for all terminals in a 1+1 redundancy system.

❑ If you want to save the log file see page 92, *Saving an alarm log file*.

Setting up polling parameters for the link

To set up the polling parameters:

❑ From the **Options** menu, select **NMS Management...**, or click in the tool bar.
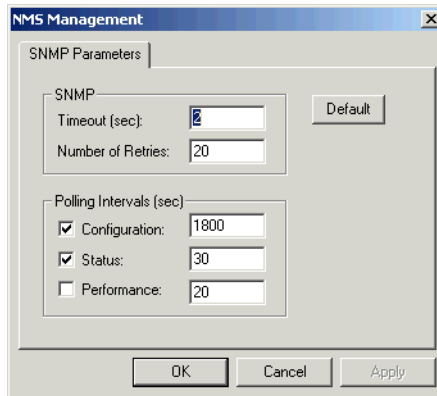
❑ Enter SNMP parameters for MINet as required, using the descriptions in the following table as a guide.

Parameter	Description
Timeout	The length of time that the NMS waits for a response from the IDU.
Number of Retries	The number of times that the NMS tries to poll for information before reporting that the poll has failed.

❑ Enter the interval (in seconds) at which you want to receive the following information.

If you do not want to receive the information, clear the corresponding check box.

Parameter	Description
Configuration	Polls all operator-changeable configuration parameters.
Status	Polls events such as alarms, counters and status. When status polling is in progress, a message appears on the left-hand side of the status bar.
Performance	Polls the results of performance indicators such as BER, RSL, unavailable time etc.

NOTE For systems with heavy communications traffic, it is recommended that longer polling intervals be used to reduce the number of management frames that are sent.

❑ Click **OK**.

Updating the active configuration for a new link
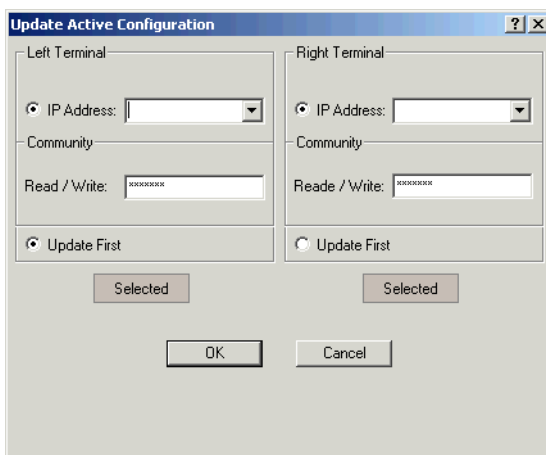
The active configuration is used by the Codan 8800 series DMR system to operate the link. It is stored in the IDU.

NOTE	During initial set up of a 1+1 redundancy system, the order in which the active configurations are updated is not critical. If you are updating the active configurations of a 1+1 redundancy system that has been fully commissioned and is operational, you must follow the process provided on page 87, *Updating the active configuration for an operational link*.

To update the active configuration:

❑ From the **Link Operations** menu, select **Update Active Configuration**, or click 🖫 in the tool bar.

❑ Click on the drop arrow in the **IP Address** field for the left and right terminals to select a previously-connected terminal, or enter the IP addresses of the new terminals, then click **OK**.

MINet remembers the correct SNMP community name for the selected IP address.

❑ If you do not want to update a terminal, click **Selected** for the terminal that you do not want to update.

The graphic representation of the terminal turns pale pink. To select the terminal again, click **Unselected** for the terminal that you want to select.

❑ If you want to update both terminals, select the terminal you want to update first, then click **OK**.

CAUTION	The terminal that is at the greatest number of hops from the management PC *must* be updated *first*.
NOTE	The number of network hops to each terminal may be determined from the TTL count in the ping response. The terminal with the *lowest* TTL count is the furthest away from the management PC and must be updated *first*.

❑ Cold reset the terminals when prompted.

MINet updates the terminals, as required.

❑ In a 1+1 redundancy system, update the other link when prompted if you have made changes.

Saving the active configuration to file

The active configuration is saved in a manner similar to saving Microsoft Windows files.

CAUTION
Saving a configuration file is not the same as updating the active configuration. To update the active configuration see page 77, *Updating the active configuration for a new link*.

To save an active configuration to file:

❑ Do one of the following:

• To save the current configuration under the same name, from the **File** menu, select **Save** (**Ctrl + S**).

• To save the current configuration under a new name, from the **File** menu, select **Save as...** (**Ctrl + A**).

A warning message appears to remind you that you must save alarm log files separately. When a configuration is saved, the alarms that were generated for that configuration, up to the time that the Save was performed, are recorded in a separate alarm log file. For more information see page 92, *Saving an alarm log file*.

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6 Operating MINet

This section contains the following topics:

NOTE   This section assumes that the communications hardware is operating properly and that MINet is set up correctly.

Modes of operation

MINet may be operated in any of the following modes:

- on line
- off line
- using saved files

While in any of the above modes, you can also be operating as:

- normal
- config
- basic
- advanced

On-line mode

On-line mode is accessed when MINet is connected to and communicating with a terminal, or pair of terminals, for loading or updating the active configuration stored in the terminal or terminals.

To access On-line mode, load an active configuration (see page 85, *Loading the active configuration*).

When you are in On-line mode, **ONLINE** is displayed in the status bar.

Off-line mode

Off-line mode is accessed when MINet is not connected to or communicating with a terminal, and not using a saved configuration file. Off-line mode indicates that MINet is running, however, no configuration is possible.

When you are in Off-line mode, **OFFLINE** is displayed in the status bar.

File mode

File mode is accessed when a saved configuration file is opened, or you save an active configuration from a terminal, or pair of terminals, to a configuration file on a PC for backup purposes. You can open a saved configuration file and make changes to the configuration, then change to On-line mode to update the active configuration at a terminal, or pair of terminals. A configuration file can be transmitted to Codan for technical support.

To access File mode, open a saved configuration file (see page 90, *Opening an existing configuration from file*), or save an active configuration (see page 91, *Saving a configuration to file*).

When you are in File mode, **FILE** is displayed in the status bar.

Normal mode

Normal mode indicates that link parameters are being monitored.

When you are in Normal mode, **NORMAL** is displayed in the status bar.

Config mode

Config mode indicates that link parameters are being modified.

When you are in Config mode, **CONFIG** is displayed in the status bar.

Basic mode

Basic mode is reserved for future development.

When you are in Basic mode, **BASIC** is displayed in the status bar.

Advanced mode

Advanced mode enables full configuration of the link.

When you are in Advanced mode, **ADVANCED** is displayed in the status bar.

Loading the active configuration

A configuration may be read from an IDU into MINet for monitoring, configuration, or management purposes.

To load the active configuration:

❑ Access MINet at Supervisor level (see page 18, *Accessing MINet*).
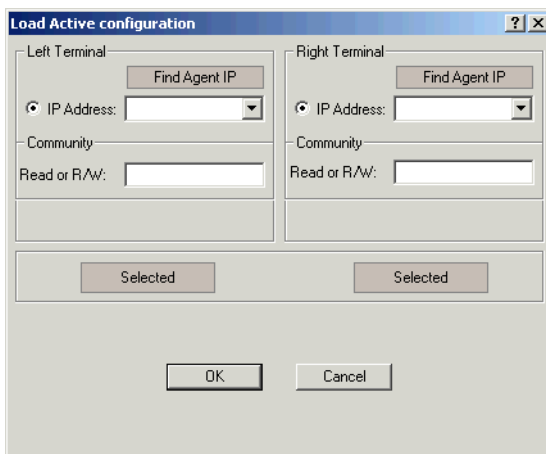
❑ Click on the drop arrow in the **IP Address** field for the left and right terminals to select a previously-connected terminal, then click **OK**.

MINet remembers the correct SNMP community name for the selected IP address.

MINet connects to the left and right terminals. A progress bar appears indicating that the active configuration is being loaded. The configuration of the connected terminals is displayed.

If either connection fails, MINet prompts you to retry the connection process.

❑ If the terminal to which you are connecting has a Y-cable or access panel connected, you will be asked if you want to load an alternate 1+1 link.
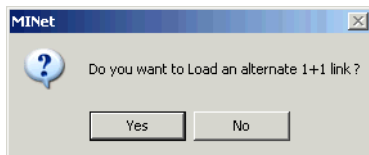
❑ If you want to load an alternate link click **Yes**, enter the IP addresses for the left and right terminals, enter **codan** in the Community frames, then click **OK**.

❑ If you want to change the active configuration see page 46, *Setting up a configuration*.

CAUTION

If you want to change the active configurations of a 1+1 redundancy system, change the non-active link *first* (see Figure 3 on page 22 and page 24, *Selecting a terminal in a 1+1 redundancy system*).
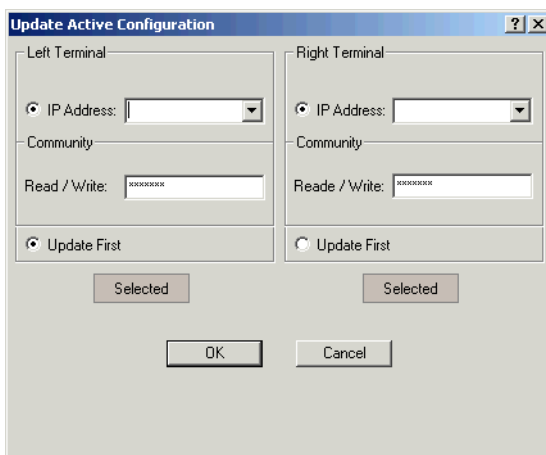
Updating the active configuration for an operational link

The active configuration is used by the Codan 8800 series DMR system to operate the link. It is stored in the IDU.

CAUTION

If you want to update the active configurations of a 1+1 redundancy system, update the non-active link *first* (see Figure 3 on page 22 and page 24, *Selecting a terminal in a 1+1 redundancy system*).

To update the active configuration:

❑ From the **Link Operations** menu, select **Update Active Configuration**, or click 🗗 in the tool bar.

❑ Click on the drop arrow in the **IP Address** field for the left and right terminals to select a previously-connected terminal, then click **OK**.

MINet remembers the correct SNMP community name for the selected IP address.

❑ If you do not want to update a terminal, click **Selected** for the terminal that you do not want to update.

The graphic representation of the terminal turns pale pink. To select the terminal again, click **Unselected** for the terminal that you want to select.

❑ If you want to update both terminals, select the terminal you want to update first, then click **OK**.

CAUTION	The terminal that is at the greatest number of hops from the management PC *must* be updated *first*.
NOTE	The number of network hops to each terminal may be determined from the TTL count in the ping response. The terminal with the *lowest* TTL count is the furthest away from the management PC and must be updated *first*.

❑ Cold reset the terminals when prompted.

MINet updates the terminals, as required.

❑ In a 1+1 redundancy system, update the other link when prompted if you have made changes.

Creating a new configuration file

CAUTION   Configuration files contain vital link information. Do not tamper with these files. Modify these files using MINet only.

To create a new configuration file:

❑   Access MINet at Supervisor level (see page 18, *Accessing MINet*).

❑   Load the active configuration of the terminal that you want to use as a basis for a new configuration (see page 85, *Loading the active configuration*).

❑   From the **File** menu, select **Save**, or click 🖫 in the tool bar.

Opening an existing configuration from file

CAUTION   Configuration files contain vital link information. Do not tamper with these files. Modify these files using MINet only.

To open an existing configuration file:

❑   Access MINet at Supervisor level (see page 18, *Accessing MINet*).

❑   Click **Cancel** to work off line.

❑   From the **File** menu, select **Open...**, or click 📂 in the tool bar.

❑   Navigate to the directory that contains existing .cfg and .cfs files for the configuration.

CAUTION   The .cfs file for each terminal must be present in this directory to open the associated .cfg file. You may need to show all file types.

❑   Select the .cfg file that you want to open, then click **Open**.

The configuration is opened. The MINet window displays the link, using the last known status. The Link Setting dialogs for each terminal are displayed, and the status bar indicates that MINet is operating in File mode.

Saving a configuration to file

If you want to modify an existing configuration stored on a PC, you must save the changes. Saving a configuration to file is performed in a manner similar to saving Microsoft Windows files.

CAUTION

Saving a configuration is not the same as updating the active configuration. To update the active configuration see page 87, *Updating the active configuration for an operational link*.

To save a configuration:

❑ Do one of the following:

• To save the current configuration under the same name, from the **File** menu, select **Save** (**Ctrl + S**).

• To save the current configuration under a new name, from the **File** menu, select **Save as...** (**Ctrl + A**).

A warning message appears to remind you that you must save alarm log files separately. When a configuration is saved, the alarms that were generated for that configuration, up to the time that the Save was performed, are recorded in a separate alarm log file. For more information see page 92, *Saving an alarm log file*.

Closing a configuration file

To close a configuration file:

❑ From the **File** menu, select **Close**.

If there are unsaved changes in the file, MINet prompts you to save these changes.

Saving an alarm log file

To save the alarm log file for a terminal:

❑ From the **Functions** menu, select **Status**, then **Alarms...**, or click 🔔 in the tool bar.

❑ Select the **Log** tab.

❑ Sort and show entries in the log as required.

❑ Click 🖫 (Save Alarms Log to File).

The **Save as** dialog is displayed.

❑ Modify the existing name and path as required, then click **Save**.

Viewing the key operational parameters of a 1+0 link

You can view the key operational parameters for an active link, or view these in a saved configuration file. You cannot view the status of a link while you are in Off-line mode.

The status of key operational parameters for the configuration are displayed in the MINet window, as shown in Figure 8 and Figure 9.

Figure 8:   Key operational parameters (E1/E3 or DS1/DS3 DIU)
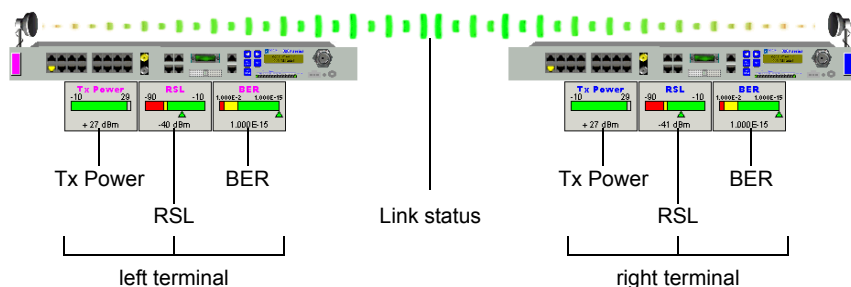
Figure 9:   Key operational parameters (Eth 10/100 DIU)
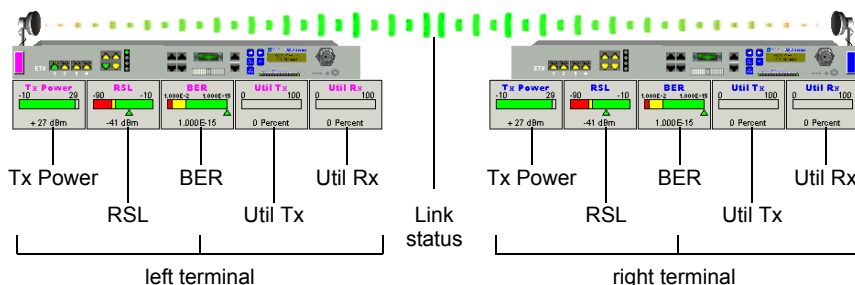
Viewing the status for a link

Table 1 shows the various parameters for which you can view status information, and how to access this information in MINet. The status information is displayed in one of the following colours:

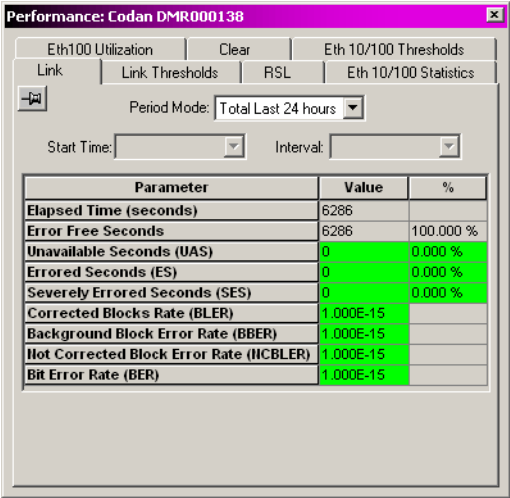| Colour	Description of status
Grey	Not active
Green	OK
Yellow	Warning
Orange	Operator control
Red	Fatal

Table 1: Status information

To access this status information...	On the menu bar, select...
1+1	Functions—Configuration—Management...—1+1 Status
Alternate firmware version (IDU)	Functions—Status—Components Revisions...
Boot version (IDU)	Functions—Status—Components Revisions...
DS1/DS3 tributary	Functions—Configuration—Interfaces...—DS1/DS3 tab
E1/E3 tributary	Functions—Configuration—Interfaces...—E1/E3 tab
Eth 10/100 tributary	Functions—Configuration—Interfaces...—Eth 10/100 tab
External inputs	Functions—Configuration—External Inputs...—Control tab

Table 1:   Status information (cont.)

To access this status information...	On the menu bar, select...
Firmware version (IDU, ODU)	Functions—Status—Components Revisions...
Hardware version (IDU, DIU, ODU)	Functions—Status—Components Revisions...
Link performance	Functions—Status—Performance...—Link tab
Output relay	Functions—Configuration—Relays...—Control tab
Part number (IDU, DIU, ODU)	Functions—Status—Components Revisions...
Serial number (IDU, DIU, ODU)	Functions—Status—Components Revisions...
Tx Mute	Functions—Operations—Test...—Operations tab

Viewing the performance of a link

NOTE   The content of the Performance dialog varies depending on the DIU installed.

You can view the performance of an active link, or view these in a saved configuration file. You cannot view the performance of a link while you are in Off-line mode.

Some parameters are set by the operator, others are calculated by the system on the basis of operator settings, and others are calculated by the system, independent of operator settings. The performance information is displayed in one of the following colours:

Colour	Description of status
Grey	Not active
Green	OK
Yellow	Warning
Orange	Operator control
Red	Fatal

To view the performance information:

❑   From the **Functions** menu, select **Status**, then **Performance...**, or click in the tool bar.

The following performance information may be displayed:

Tab	Description
Link	This tab displays major link performance statistics relative to an elapsed time period, which is determined by the selection made in the **Period Mode** field. The statistics displayed are: elapsed time, error-free seconds, unavailable seconds, errored seconds, severely-errored seconds, background block error rate, not corrected block error rate, and bit errror rate.

Tab	Description
Link Thresholds	This tab sets the BER and RSL performance thresholds of the link during operation (see page 72, *Setting up performance measures for the link*). The values set here determine the level at which an alarm activates (low to high), and when the alarm deactivates (high to low).
RSL	This tab displays RSL performance statistics relative to an elapsed time period, which is determined by the selection made in the **Period Mode** field. The current RSL is displayed in a colour-coded field, indicating its status according to the threshold set above. The statistics displayed are: elapsed time, average RSL, maximum RSL, and minimum RSL since the last reset.
Eth 10/100 Statistics (Eth 10/100 DIU only)	This tab displays Eth 10/100 performance statistics for each Ethernet port on the DIU. The statistics displayed are: input and output octets, alignment errors, FCS errors, single and multiple collision frames, SQE test errors, deferred transmissions, late and excessive collisions, carrier sense errors, and oversize frames.

Tab	Description
Eth 10/100 Utilisation (Eth 10/100 DIU only)	This tab displays utilisation statistics for transmit and receive over an Ethernet link. The statistics displayed are: link usage (Mbps), and Tx/Rx link utilisation (%). The statistics displayed comply with the Ethernet MIB standard.
Clear	This tab clears the performance statistics of the link and restarts all counters.
Eth 10/100 Thresholds	This tab sets the Eth 10/100 thresholds of the link during operation (see page 72, *Setting up performance measures for the link*). The values set here determine when the terminal shows an alarm for Ethernet utilisation as a percentage of the total utilisation.

Viewing the alarms for a link

NOTE   The content of the Alarms dialog varies depending on the DIU installed and whether or not a Y-cable or access panel is connected.

You can view the alarms for an active link, or view these in a saved configuration file. You cannot view the alarms for a link while you are in Off-line mode.

MINet monitors the alarm status for all the major components of the 8800 series DMR system comprising:

- link

- ODU

- IDU

- tributaries

- Eth 10/100 (if used)

The alarm information is displayed in one of the following colours:

Colour	Description of status
Green	OK
Yellow	Warning
Orange	Operator control
Red	Fatal

To view the alarm status:

❑ From the **Functions** menu, select **Status**, then **Alarms...**, or click 🔔 in the tool bar.
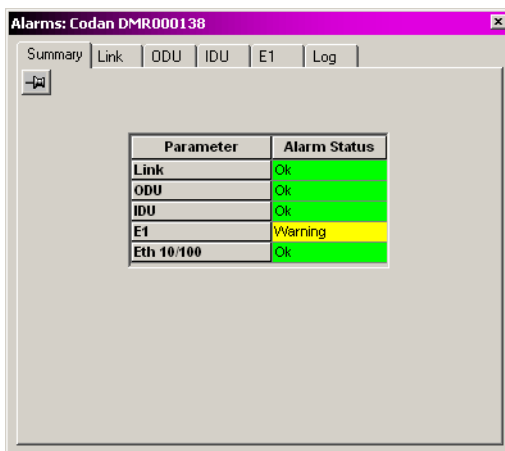
The following alarm status information may be displayed:

Tab	Description
Summary	This tab displays a top level summary of the alarm status of each component of the 8800 series DMR. The alarms are: link, ODU, IDU, E1/E3 or DS1/DS3, and Eth 10/100 (if used).

Tab	Description
Link	This tab displays alarm status information for the link. The alarms displayed are: link down, remote terminal not accessible, remote terminal failure and warning, unavailable seconds, errored seconds, severely-errored seconds, block error rates, bit error rates, RSL, and link ID violation.
	If you want to view the thresholds that have been set for the link, click **Thresholds** to display the **Link Thresholds** tab in the Performance dialog.
ODU	This tab displays alarm status information for the ODU. The alarms displayed are: transmitter failure, ODU internal failure (Tx, Rx, RF, Power, OF), telemetry, ODU not responding, receiver failure, ODU temperature violation, and transmitter mute.
IDU	This tab displays alarm status information for the IDU. The alarms displayed are: IDU internal failure (Tx, Rx, Power), telemetry, modem synchronisation, and external inputs.
E1/E3 or DS1/DS3	This tab displays alarm status information for each tributary port used. The port monitors what is being transmitted on the channel, and if Tx AIS is present, the status is shown as active.

Tab	Description
Log	This tab displays a list of accumulated alarms for the 8800 series DMR. You can sort alarms according to severity, time or description, and whether or not they are active, and you can show alarms according to the severity. You can clear all the alarms from this tab. If you want to save a record of the alarms on this tab see page 92, *Saving an alarm log file*.

Performing tests on a link

Two tests are provided for link maintenance. To perform a test on a link, you must be on line. The tests that you can perform are:

- loopback

- Tx mute control

Loopback test

Loopback tests are performed for maintenance and fault finding. Loopback tests may be applied to the IDU, ODU, or to the individual E1/DS1 tributaries. The IDU or ODU loopback affects all traffic on the DMR, and should only be used for maintenance purposes when a technician is at the site.
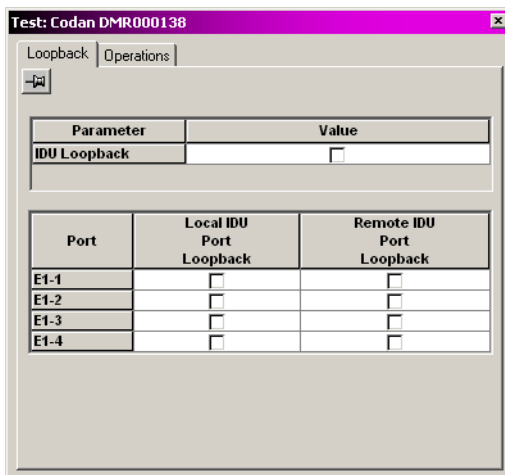
CAUTION   Network management may be lost when using the IDU or ODU loopback test.

Tributary loopbacks only affect the channel being looped back. Such loopbacks may be applied over network management without affecting other tributary traffic or management traffic. Loopbacks may be applied on the local IDU, or remotely to the far end of the link.

CAUTION   Once an IDU or ODU is placed in loopback mode, you must switch the DMR off then on again to return to normal operation.

To perform a loopback test:

❑ From the **Functions** menu, select **Operations**, then **Test...**, or click 🗹 in the tool bar.

❑ Select the **Loopback** tab.

❑ If you want to loopback the IDU, select the **IDU Loopback** box.

> NOTE
>
> ODU RF Loopback may be available on some frequency bands. It will be displayed on the dialog if it is available.

❑ Select any tributaries that you want to test, and whether the loopback is performed locally (local IDU port loopback), or across the link (remote IDU port loopback).
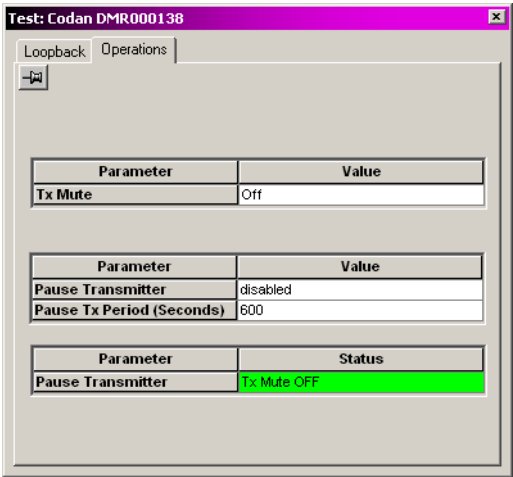
> NOTE
>
> A remote loopback loops the selected tributary on the remote terminal back to the local end.

Tx Mute Control test

The Tx Mute function lowers the Tx power level to effectively switch off the transmitter. The Tx power level in a muted state is always < –45 dBm. It may be applied permanently, or for a pre-determined period of time. This feature may be used during installation or during commissioning to check if interference is present.

To mute the transmitter:

❑ From the **Functions** menu, select **Operations**, then **Test...**, or click ☑ in the tool bar.

❑ Select the **Operations** tab.

❑ In the **Tx Mute** field, select **On** to mute the transmitter.

CAUTION	Ensure that a management connection is available to re-enable the remote transmitter after the test, or alternatively, use the Pause Transmitter function.

❑ If you want to temporarily mute a transmitter, set the **Pause Transmitter** field at the terminal to **Enabled**, then set the length of the pause in the **Pause Tx Period** field.

The transmitter will resume normal operation at the end of the period.

Upgrading firmware in the DMR

The IDU and ODU both include two memory banks to hold the Codan 8800 series DMR firmware. TFTP is used to upgrade the Codan 8800 series DMR firmware version. Any TFTP server can be used for this purpose, however Codan recommends the following freeware program: Pumpkin from Klever Group, Inc. (http://www.klever.net/kin/index.html).

NOTE   When firmware is upgraded, the new version is always placed into the alternate memory bank.

CAUTION   Firmware upgrades should only be performed by suitably-trained personnel.

To upgrade the DMR:

❑   Ensure that the terminal is powered up and working correctly.

❑   At the Command Prompt, ping the IDU from the PC being used to perform the firmware upgrade to confirm network connection.

❑   Ensure that a TFTP server is running on the network before performing the firmware upgrade.

❑   Access MINet at Supervisor level (see page 18, *Accessing MINet*).

❑   Connect to an active configuration (see page 85, *Loading the active configuration*).

❑   In a 1+1 redundancy system, select the link that is not currently transmitting data.

❑   If you do not want to upgrade a terminal, click the link-end selection button for the terminal that you do not want to upgrade (see Figure 2 on page 21 or Figure 3 on page 22).

❑   From the **Functions** menu, select **Operations**, then **TFTP (S/W Download)...**, or click 🖳 in the tool bar.
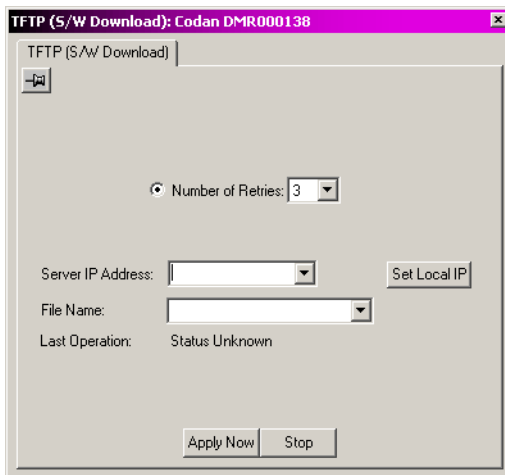
❑ Enter the IP address of the TFTP server into the **Server IP Address** field, or if the local PC is the TFTP server, click **Set Local IP** to enter the IP address of the local PC.

❑ Enter the filename for the upgrade firmware of either the IDU or the ODU in the **File Name** field.

CAUTION	The **File Name** field is case-sensitive.
NOTE	Use the ODU*.bin filename or the IDU*.bin filename. Only one file is transferred to the DMR at a time.

❑ Click **Apply Now**.

The status of the TFTP activity is displayed in the **Last Operation** field. During a transfer, **In Process** is displayed. When the transfer is completed successfully, **Success** is displayed.

NOTE	An upgrade to an IDU may take from 30 seconds to 10 minutes. An upgrade to an ODU may take 5 to 15 minutes.

WARNING	Do not interrupt the upgrade process as it *will* cause irreversible damage to the link. *Wait* for **Success** to be displayed *before* continuing. If an error occurs, repeat the process until **Success** is displayed.

❑ Upgrade the remaining firmware by entering the appropriate filename in the **File Name** field, then click **Apply Now**.

❑ Click ![REV icon] in the tool bar to check that the version of the upgraded firmware is displayed in the **Alternate S/W Rev** field.

NOTE	You cannot view the alternate firmware version of the ODU.

❑ Switch over the memory banks (see page 111, *Switching over the firmware memory banks*).

❑ In a 1+1 redundancy system, repeat the firmware upgrade process on the active link.

Switching over the firmware memory banks

A version of the firmware for the Codan 8800 series DMR is stored in each of the active and alternate memory banks in both the IDU and the ODU. The versions stored in memory are typically the latest version loaded and the previous version loaded. Generally, bank switchover is performed after a TFTP firmware upgrade, or after a system irregularity when the backup firmware is needed.

For the IDU, the current firmware versions present in the active and alternate banks are displayed in the Components Revisions dialog (see Table 1 on page 94). For the ODU, only the active firmware version is displayed.

To perform bank switchover:

❑ Connect to an active configuration (see page 85, *Loading the active configuration*).

❑ In a 1+1 redundancy system, select the link that is not currently transmitting data.

❑ From the **Link Operations** menu, select **Bank SwitchOver**.
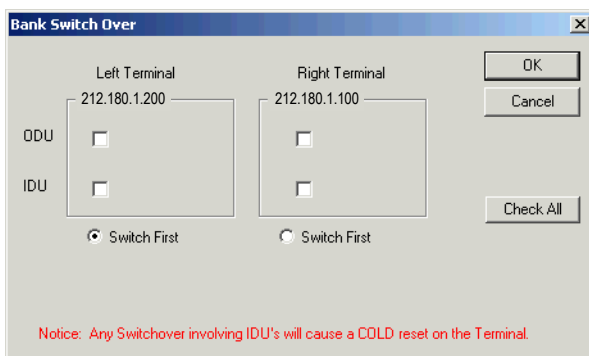
❑ Select the terminal at which you want to switch the memory banks first.

CAUTION	Performing a bank switchover resets the link. The terminal that is at the greatest number of hops from the management PC *must* be updated *first*.
NOTE	The number of network hops to each terminal may be determined from the TTL count in the ping response. The terminal with the *lowest* TTL count is the furthest away from the management PC and must be updated *first*.

❑ Select the IDU and/or the ODU check boxes for the individual units at the terminal you have selected for switching.

❑ Click **OK** to switch the memory banks.

❑ In a 1+1 redundancy system, repeat the bank switchover process on the active link, if required.

Restricting access to the configuration of the 8800 series DMR

Access to your 8800 series DMR system is restricted via the keys on the front panel on the IDU, and at the launch of MINet. There are three levels of password protection provided for the 8800 series DMR. The factory-default passwords for the front panel of the IDU and MINet are shown in Table 2.

NOTE   The front panel and MINet passwords act independently of each other.

Table 2:   Access levels and factory-default passwords

Access level	Purpose	Default password for keys on front panel	Default password for MINet
User	Provides read-only access.	**ESC ESC ESC ESC ESC**	user
Administrator	Provides read/write access to configuration options. You cannot access options that may affect the integrity of the link.	**ESC ESC SEL**/**SAVE SEL**/**SAVE SEL**/**SAVE**	admin
Supervisor	Provides full read/write access to all configuration options.	**ESC ESC ▶ ▶ ▶**	super

These passwords should be changed after commissioning the link, or if there is a risk that unauthorised personnel will tamper with system settings. The front panel password can only be changed using MINet.

If an unauthorised change to a parameter is attempted through MINet, the Authorisation dialog is displayed.

Changing the password for access via the keys on the front panel

NOTE   The password set in this dialog is applicable to this IDU only.

To change the password for the front panel of the IDU:

❑   Open the configuration file, or connect to the terminal that you want to change (see page 90, *Opening an existing configuration from file* or page 85, *Loading the active configuration*).

❑   From the **Functions** menu, select **Configuration**, then **Management...**, or click 🖳 in the tool bar.

❑   Select the **Change Front Panel Sequence** tab.
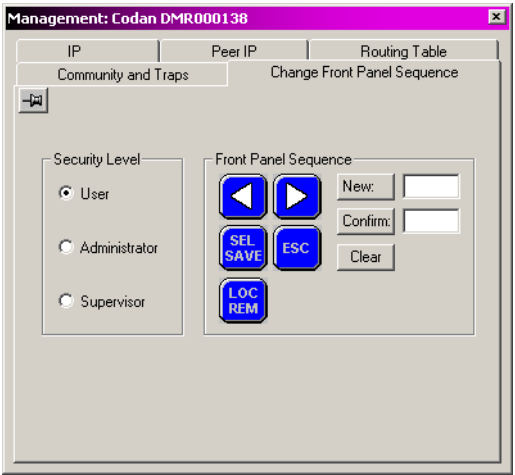
❑   In the **Security Level** frame, select the access level for which you want to change the password.

❑   Click **New**.

❑ Press the keys in the **Front Panel Sequence** frame to create a sequence of five key presses.

NOTE	Press the keys slowly. An asterisk will appear in the field when the key press is registered.

If you make a mistake at any point, click **Clear**.

❑ Click **Confirm**.

❑ Repeat the exact sequence of key presses.

❑ Update the active configuration (see page 87, *Updating the active configuration for an operational link*).

❑ If you are working off line, from the **File** menu, select **Save** to save the configuration file.

❑ If you want to save the log file see page 92, *Saving an alarm log file*.

Changing a password for access to MINet

When you change these passwords, they become applicable to all sessions of MINet run from the PC.

To change a password for an access level in MINet:

❑ From the **Options** menu, select **NMS Security...**, or click 🔑 in the tool bar.

❑ Select the **Change Password** tab.

❑ Select the access level for which you want to change the password.

❑ In the **Password** frame, **Old** field, enter the existing password.

❑ Enter the password that you want to use in the **New** field.

❑ Enter the password again in the **Confirm** field, then click **OK**.

You are informed of any errors made while entering the old password, or confirming the new password.

NOTE   The password is case-sensitive.

❑ Click **OK** or **Cancel**.

Changing the current access level in MINet

You can change from one operating level in MINet to another, if you have the correct authorisation password.

To change to another access level in MINet:

❑ From the **Options** menu, select **NMS Security...**, or click 🔑 in the tool bar.

❑ Select the **Authorisation** tab.

❑ Select the new access level into which you want to log.

❑ Enter the password into the **Password** field, then click **Apply**.

> NOTE   The password is case-sensitive.

> NOTE   Configurations must be updated to gain correct access levels (see page 87, *Updating the active configuration for an operational link*).

❑ Click **OK** or **Cancel**.

Resetting a link or an individual terminal

You can reset an entire link, or individual terminals using MINet. A reset shuts down and restarts the link or the terminal.

WARNING   Resetting a link or a terminal will affect customer traffic.

Resetting a link

To reset a link:

❑   Connect to an active configuration (see page 85, *Loading the active configuration*).

❑   In a 1+1 redundancy system, select the link that is not currently transmitting data.

❑   From the **Link Operations** menu, select **Reset Link**.
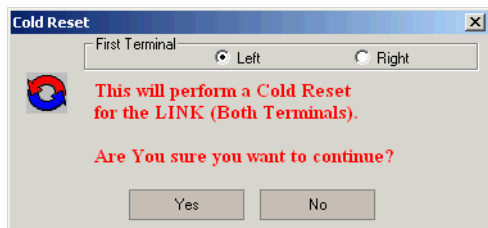
❑   Select the terminal that you want to reset first.

CAUTION   The terminal that is at the greatest number of hops from the management PC *must* be updated *first*.

NOTE   The number of network hops to each terminal may be determined from the TTL count in the ping response. The terminal with the *lowest* TTL count is the furthest away from the management PC and must be updated *first*.

❑ Click **Yes**.

❑ In a 1+1 redundancy system, reset the active link, if required.

Resetting an individual terminal

To reset an individual terminal:

❑ Connect to an active configuration (see page 85, *Loading the active configuration*).

❑ In a 1+1 redundancy system, select the link that is not currently transmitting data.

❑ From the **Link Operations** menu, select **Reset Terminal**, then select the terminal that you want to reset.
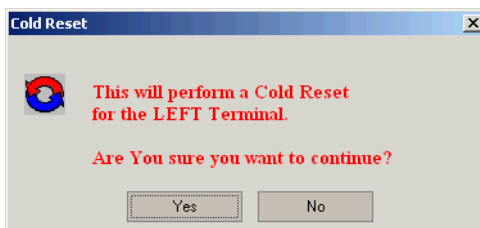
❑ Click **Yes**.

Setting the factory-default configuration

A factory-default configuration is stored in the memory of the IDU. You can reset the active configuration to its factory-default configuration.

CAUTION   IP addresses and link parameters will be lost.

This activity should only be performed after all precautionary measures have been taken. It is recommended that all current configurations are saved before implementing the factory-default configuration to prevent the loss of complex configurations.

To set the link to the factory-default configuration:

❑   Connect to an active configuration (see page 85, *Loading the active configuration*).

❑   From the **Link Operations** menu, select **Set Factory Default**.

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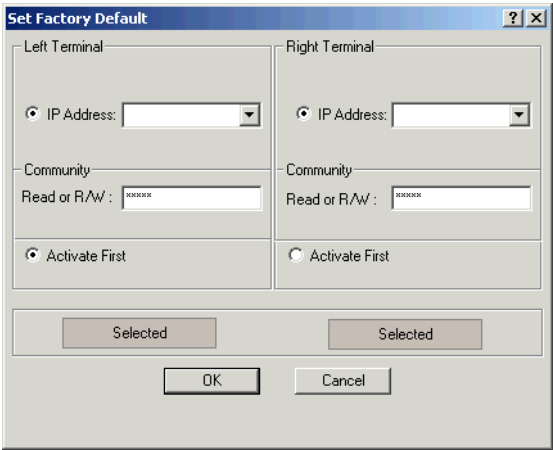
❑ Select the terminal that you want to set to the factory-default configuration first.

CAUTION	The terminal that is at the greatest number of hops from the management PC *must* be updated *first*.
NOTE	The number of network hops to each terminal may be determined from the TTL count in the ping response. The terminal with the *lowest* TTL count is the furthest away from the management PC and must be updated *first*.
CAUTION	The IP address and link parameters will be lost.

If technical assistance is required...

If you need to send configuration information to Codan for technical support, send the .cfg file and both .cfs files for the link.

Should you require technical assistance from Codan, please refer to the contact details supplied with the equipment. These details are also available on the internet at www.codan.com.au. In the Microwave Links section, click on Product Support.

Outside of normal office hours, Codan has Customer Service Engineers on call to provide emergency technical assistance. They will either answer your call immediately or return your call as soon as possible.

If you are connected to a voice mail system when you call, please follow the instructions carefully, that is, leave your name and contact phone number (including the country code), then a brief, clear description of your problem.

Appendix A—Example network diagrams

Table 3:   Example network diagrams

Title
Out-of-band management of a 1+0 network
In-band management of a 1+0 network

This page has been left blank intentionally.

Out-of-band management of a 1+0 network

SITE 2

SITE 2 IDU 1

DIU	NMS IN	NMS OUT	ETH Port

ETH IP address
212.180.2.100

SITE 3

SITE 3 IDU 1

DIU	NMS IN	NMS OUT	ETH Port

ETH IP address
212.180.3.100

SITE 3 IDU 2

DIU	NMS IN	NMS OUT	ETH Port

ETH IP address
212.180.3.200

SITE 1

SITE 1 IDU 1

DIU	NMS IN	NMS OUT	ETH Port

ETH IP address
212.181.1.200

SITE 1 IDU 2

DIU	NMS IN	NMS OUT	ETH Port

ETH IP address
212.181.1.100

SITE 4

SITE 4 IDU 1

DIU	NMS IN	NMS OUT	ETH Port

ETH IP address
212.180.4.100

SITE 4 IDU 2

DIU	NMS IN	NMS OUT	ETH Port

ETH IP address
212.180.4.200

SITE 5

SITE 5 IDU 1

DIU	NMS IN	NMS OUT	ETH Port

ETH IP address
212.180.5.100

Management station
IP address 212.181.1.10
Subnet mask 255.255.255.0

Use the command prompt to add the following route to the
management station:
route add 212.180.0.0 mask 255.255.0.0 212.181.1.100

In-band management of a 1+0 network

SITE 2

SITE 2 IDU 1

Eth 10/100 DIU	NMS IN	NMS OUT	ETH Port

Eth 10/100 IP address
212.181.1.120

ETH IP address
212.180.2.100

SITE 3

SITE 3 IDU 1

Eth 10/100 DIU	NMS IN	NMS OUT	ETH Port

Eth 10/100 IP address
212.181.1.130

ETH IP address
212.180.3.100

SITE 3 IDU 2

Eth 10/100 DIU	NMS IN	NMS OUT	ETH Port

Eth 10/100 IP address
212.181.1.140

ETH IP address
212.180.3.200

SITE 1

SITE 1 IDU 1

Eth 10/100 DIU	NMS IN	NMS OUT	ETH Port

Eth 10/100 IP address
212.181.1.100

ETH IP address
212.180.6.200

SITE 1 IDU 2

Eth 10/100 DIU	NMS IN	NMS OUT	ETH Port

Eth 10/100 IP address
212.181.1.110

ETH IP address
212.180.6.100

Management station
IP address 212.181.1.10
Subnet mask 255.255.255.0

SITE 4

SITE 4 IDU 1

Eth 10/100 DIU	NMS IN	NMS OUT	ETH Port

Eth 10/100 IP address
212.181.1.150

ETH IP address
212.180.4.100

SITE 4 IDU 2

Eth 10/100 DIU	NMS IN	NMS OUT	ETH Port

Eth 10/100 IP address
212.181.1.160

ETH IP address
212.180.4.200

SITE 5

SITE 5 IDU 1

Eth 10/100 DIU	NMS IN	NMS OUT	ETH Port

Eth 10/100 IP address
212.181.1.170

ETH IP address
212.180.5.100

Index

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