

Link Installation Wizard

BRS Channel Settings

Any changes to the Channel field may result in a Link re-synchronization.

Configuration

☒ BRS Notation
 Band Plan:
 ☐ Pre - Transition
 ☒ Post - Transition

Bandwidth:
 

Quad Band

Frequency [MHz]:
 

A2,A3,B1,B2 (2518.50)

A1,A2,A3,B1 (2513.00)

A2,A3,B1,B2 (2518.50)

A3,B1,B2,B3 (2524.00)

B1,B2,B3,C1 (2529.50)

B2,B3,C1,C2 (2535.00)

B3,C1,C2,C3 (2540.50)

C1,C2,C3,D1 (2546.00)

C2,C3,D1,D2 (2551.50)

< Back

Next >

Cancel

Monitor Link

Radio Interface	3.2	3.4
RSS [dBm]	-55	-55
Quality	<div> <div>No Serv</div> <div>Ethernet</div> <div>Ethernet + TDM</div> </div>	<div> <div>No Serv</div> <div>Ethernet</div> <div>Ethernet + TDM</div> </div>

Figure 3-14: BRS Channel Settings Post-Transition

WinLink User and Installation Guide

Version 1.795

3-39

## Selecting the Service Parameters

You define the type of service required, Ethernet Only or Ethernet with TDM in the Services screen as shown below. Notice that the Distance between the sites automatically appears in the Distance box (from Version 1.600).

---

**Note:**

*WinLink ACCESS versions are Ethernet Only.*

---

**Link Installation Wizard**

**Services**  
Select the Services and Rate from the lists below.

Service Configuration TDM Jitter Buffer

Services: Ethernet + 4xE1

Rate [Mbps]: Adaptive

Distance: 0 Km / 0 Miles

Evaluate

IDU	HQ	Remote Site
Product Type	WL1000-IDUC-4E1	WL1000-IDUC-4E1
HW Version	2	2
SW Version	1.770_b710_Sep 9 2007	1.770_b710_Sep 9 2007

< Back Next > Cancel

**Monitor Link**

Radio Interface	HQ	Remote Site
RSS [dBm]	-61	-63

Figure 3-15: Installation Wizard, Service dialog box

**\* To select the services and rates:**

1. In the Services box, select a service:
  - Ethernet Only
  - Ethernet + E1/T1.

The available bandwidth depends on the number of E1/T1 ports selected.

2. In the Rate box, select the required transmission rate.  
If Adaptive is selected (refer to page 1-5 for information about Automatic Adaptive Rate), WinLink constantly monitors and adjusts the transmission rate to ensure maximum throughput for the link at the highest quality. ACCESS versions are preset to adaptive and the rate selection is disabled.
3. Click the Evaluate button. The optimum transmission rate for the selected services is evaluated. Table 3-1: Rates per Bandwidth shows the rates used by WinLink.
4. Click **Next**.  
If TDM services were selected, then the TDM parameters dialog box appears, (see [Figure 3-16: TDM Parameters dialog box](#)).

---

**Note:**

*ACCESS versions do not have TDM services. Instead, ACCESS versions operate at a default rate of 2 Mbps.*

---

If Ethernet Only was selected, then the Finish screen appears (see [Figure 3-19: Installation Wizard, Finish Screen](#)) showing a summary of the link configuration, the alignment is complete.

*Table 3-1: Rates per Bandwidth*

Modulation/FEC	5 MHz	10 MHz	20 MHz
BPSK / $\frac{3}{4}$	2.25 Mbps	4.5 Mbps	9 Mbps
QPSK / $\frac{1}{2}$	3 Mbps	6 Mbps	12 Mbps
QPSK / $\frac{3}{4}$	4.5 Mbps	9 Mbps	18 Mbps
16QAM / $\frac{1}{2}$	6 Mbps	12 Mbps	24 Mbps
16QAM / $\frac{3}{4}$	9 Mbps	18 Mbps	36 Mbps
64QAM / $\frac{2}{3}$	12 Mbps	24 Mbps	48 Mbps
64QAM / $\frac{3}{4}$	13.5 Mbps	27 Mbps	

## Setting the Clock Configuration

If TDM services are selected then the TDM parameters dialog box appears. (TDM is not relevant in WinLink ACCESS versions.)

The TDM Parameters dialog box contains five working modes; select the appropriate clock mode according to your application. Choosing one of these modes sets the TDM clock behavior on both sides of the

link. The user equipment must be configured as described in the following table.

*Table 3-2: TDM Clock Modes*

	Unit Clock Mode		User Equipment Side	
	Local Unit	Remote Unit	HQ side	Branch side
1	Transparent	Transparent	Internal/Recover	Internal/Recover
2	Loop Time	Recover	Internal	Recover
3	Recover	Loop Time	Recover	Internal
4	Internal	Recover	Recover	Recover
5	Recover	Internal	Recover	Recover

### **Transparent/Transparent**

WinLink transparently regenerates the clock from line clock side to Tx clock on the opposite side of the link.

### **Loop time/Recover**

The local unit receive clock is the transmit clock on both sides of the link.

### **Recover/Loop time**

The remote unit receive clock is the transmit clock on both sides.

### **Internal/Recover**

The local unit internal oscillator generates the clock while the remote unit recovers this clock.

### **Recover/Internal**

The remote unit internal oscillator generates the clock while the local unit recovers this clock.

---

### ***Note:***

*The Line code option is used with T1 Systems.*

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**Link Installation Wizard**

**TDM Parameters**  
Configure the TDM Parameters below.

**TX Clock**

	Remote site	HQ
<input checked="" type="radio"/>	Transparent	Transparent
<input type="radio"/>	Loop Timed	Recovered
<input type="radio"/>	Recovered	Loop Timed
<input type="radio"/>	Internal	Recovered
<input type="radio"/>	Recovered	Internal

**Master Clock**

Current	Mode
Not Available	Automatic

< Back   Next >   Cancel

**Monitor Link**

Radio Interface	Remote site	HQ
RSS [dBm]	-73	-72

Figure 3-16: TDM Parameters dialog box

**Note:**

*This dialog box is available with IDU-E and IDU-C units; it is activated after TDM service is chosen in the previous Service dialog box. In Ethernet only services, the TDM dialog box does not appear.*

## Setting the T1 Line Code

The T1 line code can be set as B8Zs or AMI in the TDM Parameters dialog box.

The default is B8ZS.

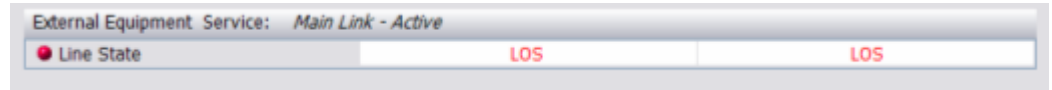
**\* To change the line code**

- In the TDM Parameters dialog box, set the line code to B8ZS or AMI.

## Setting the TDM Backup (for IDU-R only)

IDU-R units have two E1 trunk lines, one for WinLink air interface via the ODU, and the second external equipment such as a PBX. The TDM backup screen is displayed in IDU-R systems only.

The external equipment status is displayed on the Main screen of the Manager in IDU-R systems.



*Figure 3-17: External Equipment Status*

### To use the Backup Mode

1. Click Enabled Backup Mode.
2. Set which link is backup link; either WinLink or the external equipment.

The second link becomes the main link.

### To disable the Backup mode

1. Click Disable Backup Link
2. Set which link is the Main Link; either WinLink or the external equipment.

*Figure 3-18* shows the TDM Backup Service screen.

**Link Installation Wizard**

**TDM Backup Service**  
Backup Mode functionality configuration

**TDM Backup**

☐ Enabled Backup Mode
 

- ☐ Use WinLink1000 as Backup Link
- ☐ Use External Equipment as Backup Link

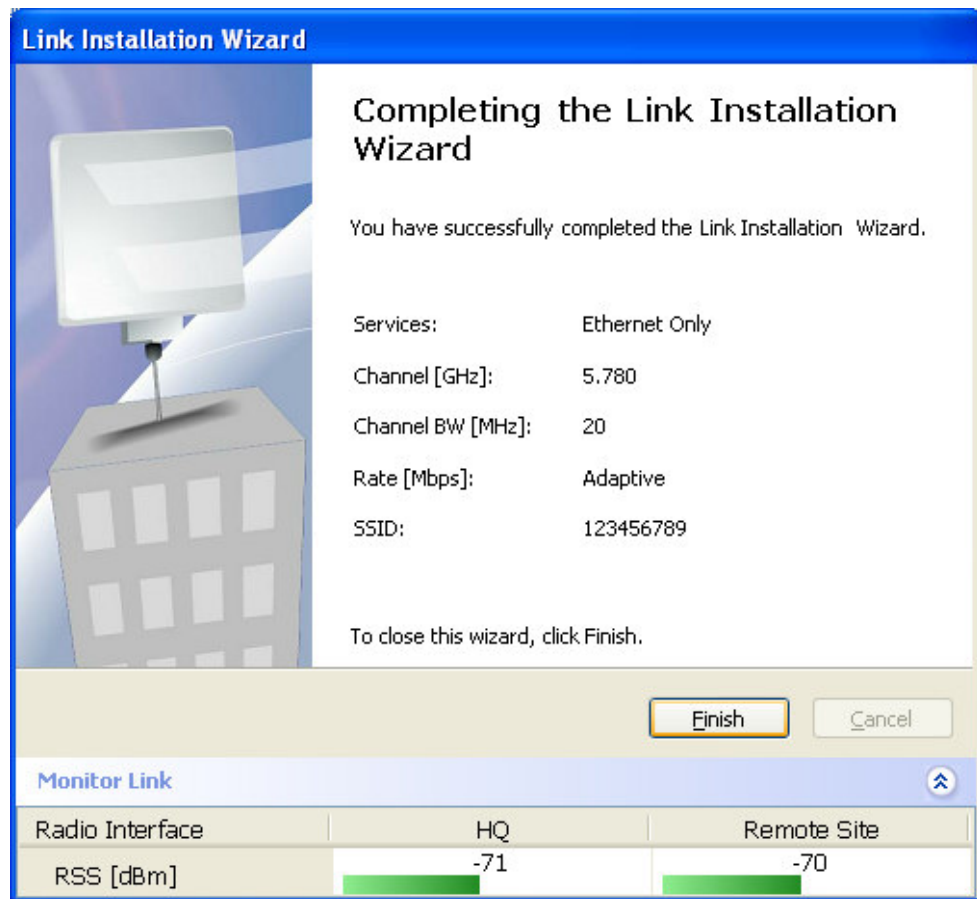
☒ Disabled Backup Mode
 

- ☐ Use WinLink1000 as Main Link
- ☒ Use External Equipment as Main Link

< Back    Next >    Cancel

Radio Interface	HQ	Remote Site
RSS [dBm]	-69	-68

*Figure 3-18: TDM Backup Service, IDU-R units only*



*Figure 3-19: Installation Wizard, Finish Screen*

3. Click **Finish** to complete the installation wizard.

Verify that the Radio Signal Strength (RSS) is according to expected results as determined by the Link Budget Calculator.

Verify that the Radio Signal Strength (RSS) numerical value is relative to the expected results that were determined by the Link Budget Calculator.



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## Chapter 4

# Getting Started

This section provides the following information for WinLink:

- Turning the system on and off
- Starting the WinLink™ Manager software
- Controls and indicators
- Normal Indications
- Default settings
- Technical Specifications

## Turning On WinLink

### \* To turn on WinLink:

- Connect the AC/DC converter to the IDU power connector and to the mains. See Connecting Power to an IDU for full instructions on connecting the power.

The PWR indicator lights up (IDU-E only) and remains lit as long as the IDU is receiving power.

## Controls and Indicators

WinLink requires no operator attention once installed, with the exception of occasional monitoring of front panel indicators and statistics data. Intervention is only required when WinLink must be configured to its operational requirements, or diagnostic tests are performed.

### ***IDU Front Panel Indicators***

The front panel of the IDU-C and IDU-E includes a series of LED indicators that show the operating status of the unit.

The following figure shows the IDU-E front panel:



*Figure 4-1: IDU-E Front Panel*

The following table describes the indicators:

*Table 4-1: Front Panel LEDs*

Name	Color	Function
PWR	Green	ON –Power supply is ON (IDU-E only)
IDU	Green	ON – IDU operational
With Ethernet only	Green	ON – During power-up only
With TDM	Orange	ON - During power-up only
	Red	ON – Failure
ODU	Green	ON – ODU-to-IDU communication link is operating
	Red	ON – ODU-to-IDU communication link is disrupted
LINK	Green	ON – Wireless link is synchronized
	Orange	ON – During installation mode only
	Red	ON – Wireless link lost synchronization
SERVICE	Green	ON – E1 or T1 line is synchronized
	Orange	ON – Alarm detected at the remote interface
		ON – Local or Remote loopback
	Red	ON – Alarm detected at the local interface

## ODU/LAN Indicators

The ODU/LAN and TDM connectors (IDU-E rear panel, IDU-C front panel) have LED indicators that show the operating status. The following tables describe the indicators.

*Table 4-2: ODU/LAN LEDs*

Name	Color	Function	Location
LINK	Green	On – Good Ethernet link integrity	ODU/LAN connectors
ACT	Orange	Blinks according to the Ethernet traffic	ODU/LAN connectors

## IDU Back Panel Indicators

*Table 4-3: TDM Traffic Indicators*

Function	Green LED	Red LED
OK	On	Off
AIS	Off	On
LOS	On	On
Loopback	On	Blinking

Upon turning on WinLink, the PWR LED in the IDU-E front panel lights to indicate that WinLink is on. [Table 4-4](#) shows the correct status of the indicators at power-up.

*Table 4-4: WinLink Indicators at Startup*

Indicator	Color	Status
PWR	Green	ON (IDU-E only)
IDU		
With Ethernet only	Green	ON for short duration during startup
With TDM only	Orange	ON for short duration during startup
	Green	For normal operation after successfully connecting the ODU to the IDU.
ODU	Green	ON shows normal operation
LINK	Orange	ON for short duration during startup
	Green	ON shows normal operation
SERVICE	Green	ON shows normal operation
		OFF when Service is configured for Ethernet only

If the above LED indications do not appear following initial power turn-on, refer to [Chapter 5](#) for the diagnostic test instructions.

### **ODU Indicators**

Color	Function	Location
Green	Blinking – Good Ethernet link integrity	IDU/LAN connectors
Orange	On - during power on self test	IDU/LAN connectors

### **Default Settings**

[Table 4-5](#) lists the default settings of the WinLink configuration parameters.

*Table 4-5: Default Settings*

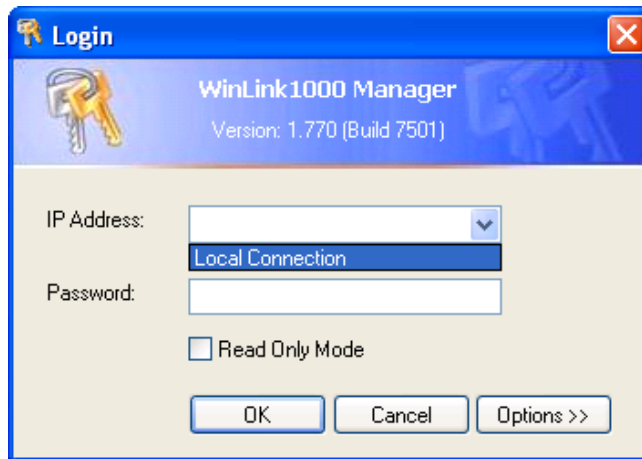
Parameter	Default Value
ODU IP Address	10.0.0.120
Subnet Mask	255.0.0.0
Manager Login password	Admin
SSID	–
Link Password	Wireless-bridge
Rate	Adaptive
Services	Ethernet
Ethernet Configuration	Auto Detect
Radio Link Failure Actions	No action
Bridge	Non PoE systems: Hub Mode, Aging time = 300 sec PoE systems: Bridge Mode
Community values	Read-write – netman Read-only – public

## Starting the WinLink Manager Software

### \* To start the WinLink™ 1000 Manager:

1. Connect the management station to the LAN.
2. Double-click the WinLink™ 1000 Manager icon on the desktop, or click Start > Programs > WinLink™ 1000 Manager.

The Login dialog box appears.



*Figure 4-2: Login Screen*

3. For IP Address do one of the following:
  - Type an IP address for the ODU (for Network mode), OR
  - Click Local Connection (if you are connected directly to the IDU LAN port).

The default IP address for the ODU is 10.0.0.120. The Subnet mask is 255.0.0.0. For Versions 1.700 and greater, any valid subnet mask may be used.

4. Enter the password

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**Note:**

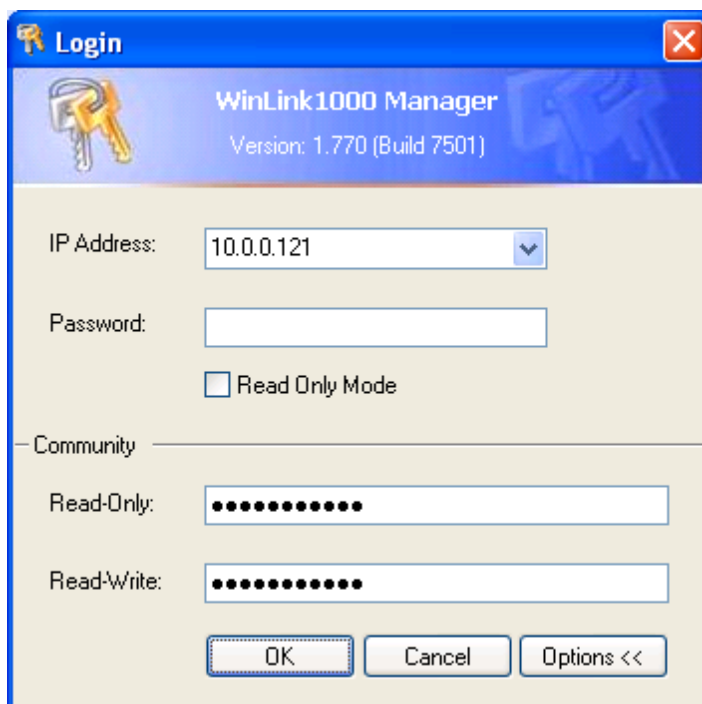
*The actual IP address is defined during link configuration (see [Defining the Management Addresses](#)).*

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Default password – **admin** (see the section on Changing the Management Password)

5. If you are a user with Read-Write permission, click Options to enter the community options.

WinLink™ 1000 is protected with Community passwords. A user may be defined with read-only permission or with read-write permission. See the section Changing Community Values for more detail.



*Figure 4-3: Login Screen with Community Options Visible*

- If using the system for the first time, leave the default community passwords, **netman** for read-write, and **public** for read-only.
- If community values were previously defined, enter them under Community in the Read-Only or Read-Write boxes.
- If you are a user with read-only permission, click the Read Only Mode check box.

The WinLink™ 1000 Manager main screen is displayed (see [Figure 4-4](#)).

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**Note:**

*With BRS systems the link must be activated at both sites when installing for the first time. A red Inactive Link box appears in the center of the Manager screen. Activation is performed later.*

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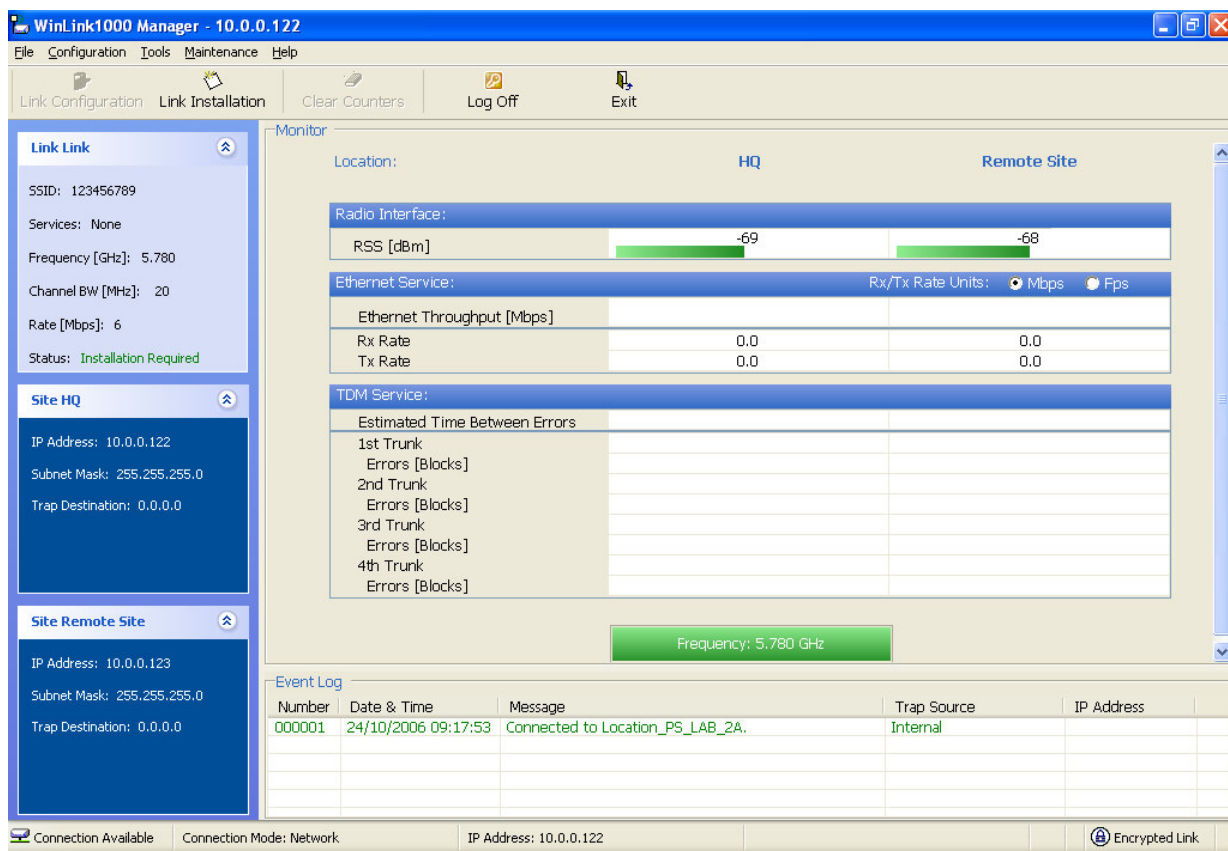


Figure 4-4: WinLink™ 1000 Manager Main Screen

## Over the Air Connection indication

During the login the Manager reports on over the air connection.

### Note:

Over the Air connection to remote unit is not recommended

- Select the relevant option for your login requirements.

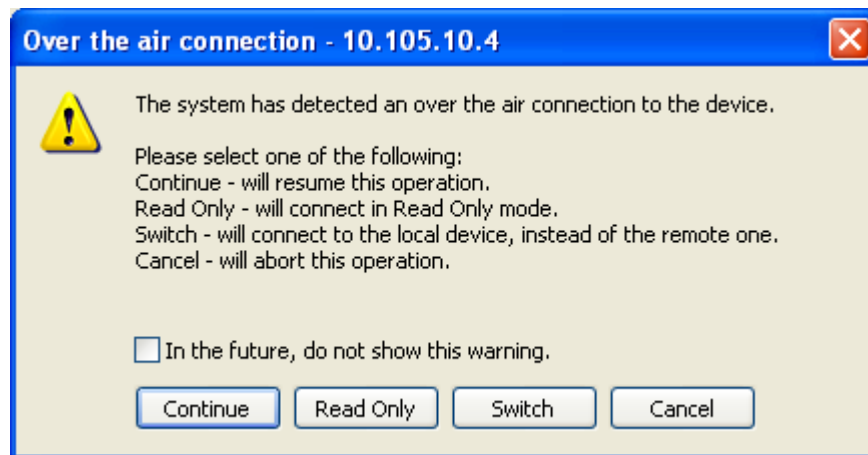


Figure 4-5: Over the Air Connection

## Managing WinLink

Before starting a management session, make sure that a communication link between local and remote units exists. The Link Status indication bar in the middle of the Main menu must be green and the *Radio Link - Sync* message must appear in the event log (see [Figure 4-6](#)).

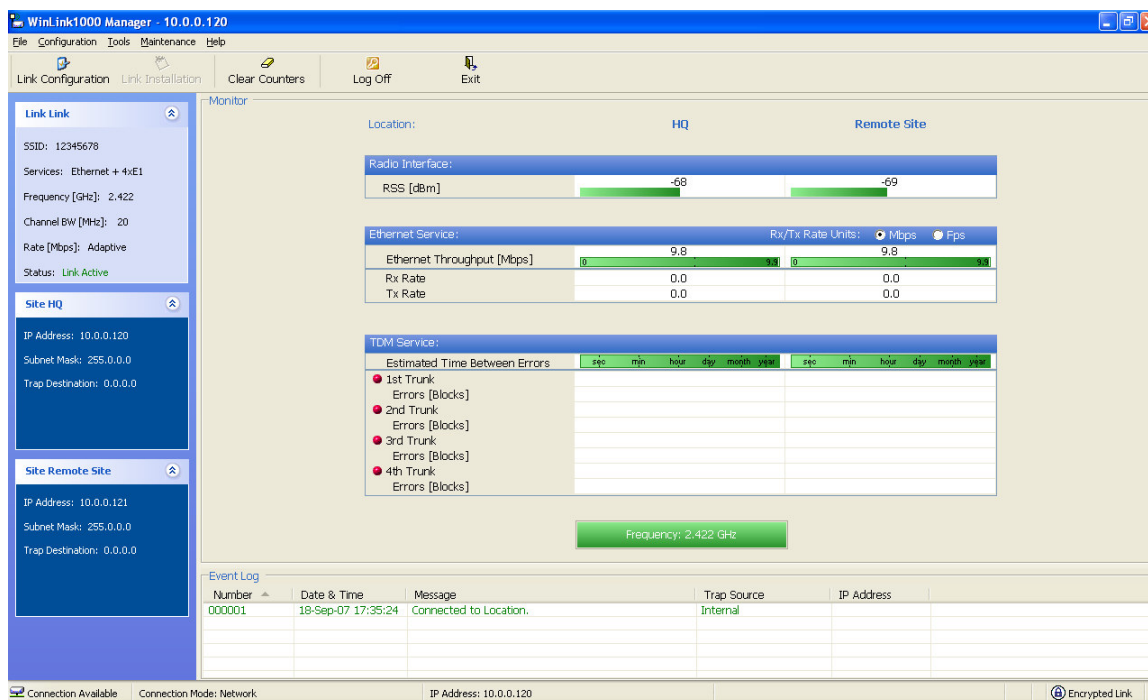


Figure 4-6: Main Screen, Wireless Link is Active

The WinLink™ 1000 Manager Main screen consists of the following elements:



### Toolbar buttons

<b>Link Configuration</b>	Changes configuration parameters of operating wireless link; assigns text files for storing alarms, statistics and configuration data
<b>Link Installation</b>	Performs preliminary configuration of the system This button is disabled once a link is defined.
<b>Clear Counters</b>	Clears error counters (available with TDM only)
<b>Log off</b>	Logs off WinLink™ 1000 Manager
<b>Exit</b>	Exits WinLink™ 1000 Manager

### Menu bar

<b>File</b>	Log off, and exit
<b>Configuration</b>	Use for link configuration, individual site configuration or link installation
<b>Tools</b>	Accesses Performance Monitoring Report, Active Alarms, Change password, Event log handling, Set Preferences
<b>Maintenance</b>	Provides the following functions: Clear counters, Loopbacks, System Reset.
<b>Help</b>	Provides WinLink™ Manager Help, Link Budget Calculator, Get Link Information About WinLink

### Link details pane

- Summarizes information on the radio frequency, IP address, type of TDM service, number of assigned E1 or T1 timeslots, and IP details of the local and remote WinLink units.

### Monitor pane

- Displays the link quality between local and remote devices and the following statistics:
- Radio signal strength (RSS) in dBm
- Current Ethernet bandwidth in Mbps. This is not the actual traffic rate, but the maximum capacity (Net symmetrical Throughput "Full-Duplex") that can be supported currently, (see [Figure 4-7](#)).  
The scale on the bar varies depending on the link distance and air interface quality.
- Local/remote receive and transmit traffic rate, in Mbps or Fps (frames per second).
- TDM status  
The Estimated Time Between Errors bar gives an indication of the TDM quality. The ETBE constantly calculates the expected TDM ratio according to the current air interface conditions.

- Link Status: Shows the channel frequency. The color of the box indicates the status.  
Green is an active link  
Red is an inactive link  
Magenta shows an authentication or compatibility problem  
Brown shows severe compatibility problem.
- Event log – stores alarms generated by local and remote units.

## Status Bar

Displays the following icons:

- Connectivity icon showing how the device is connected to the Ethernet.
- Network connection to the local unit – using IP of the local unit

Over the Air connection - using IP address of the remote for over the air connection

Local mode using broadcast - direct connection to IDU LAN port without IP address. This mode is only recommended when the managed PC is connected directly to the IDU (no network involved) the managed PC must have a static IP configured. (No DHCP)

- Encryption icon showing if the link is encrypted



encrypted link



Link Password Validation failed. The link is encrypted with default keys. Service and configuration is unavailable. Need to change the link password in either site

☐ No Encryption – an older release is used. No encryption is available

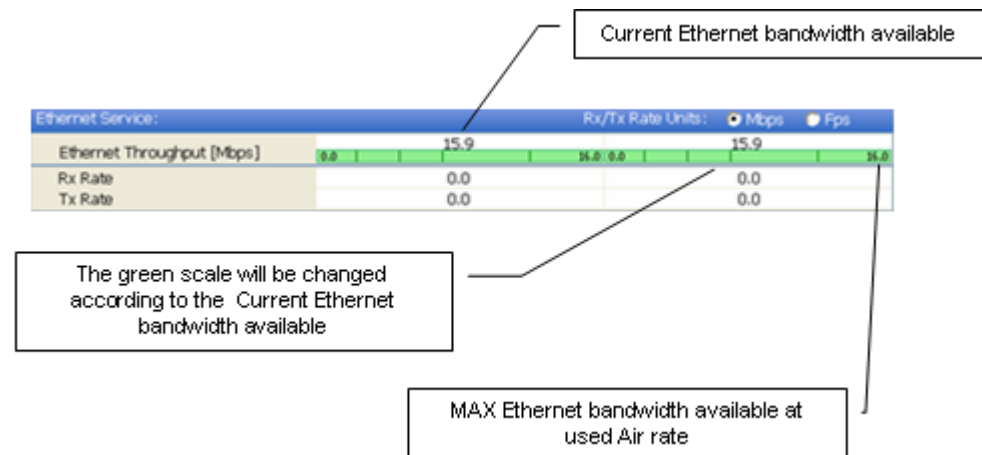


Figure 4-7: Ethernet Bandwidth Indication

✱ **To change link configuration parameters:**

1. In the Main menu, click Configure Link.

The Configure Link wizard appears. See Link Configuration Wizard for configuration details.

2. Click Next.
3. Continue through the configuration wizard and define the Link name and ID, Channel, Rate and Services.
4. Once you finish changing configuration parameters, click Finish.

The system takes a few seconds to activate the link with the new configuration.

***Turning Off WinLink***

✱ **To turn off WinLink:**

1. Exit the management application.
2. Remove the AC/DC converter power cord from the mains.

# Configuring the Link

This chapter describes configuration procedures, which are performed after the physical installation of the local and remote WinLink units and after the Installation Link wizard has been run. A Link Configuration wizard is used to redefine the configuration parameters if necessary. Both the HQ and sites in the link are defined simultaneously (both sides of the link are defined simultaneously).

The following parameters are configured via the Site Configuration Wizard:

- System parameters
- Frequency channel
- Air interface rate
- Service parameters
- TDM
- Hub Site Synchronization Settings.

The following parameters are configured via the Configuration dialog box.

- Transmit power
- Management and trap addresses
- Bridge mode
- Ethernet mode
- Community values.

For HSS screens see  
Hub Site Synchronization.

After installing the link, the system configuration can be modified.

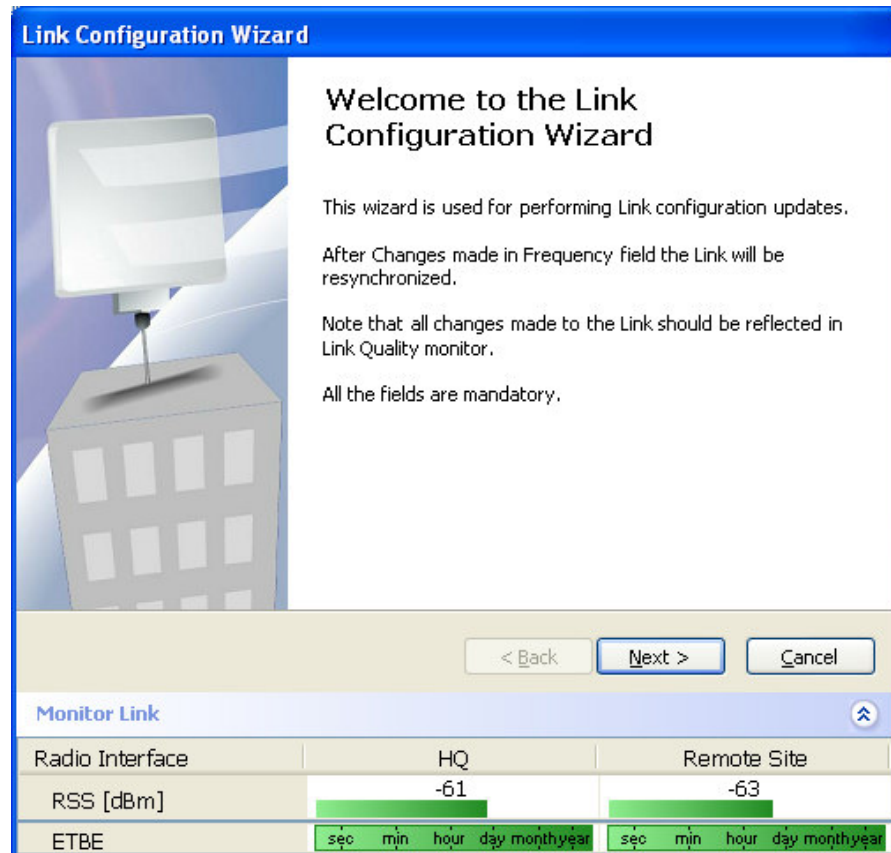
# Link Configuration Wizard

## *Configuring System Parameters*

### \* To change general parameters:

1. In the Main menu, click the **Link Configuration** button.

The Configuration wizard opens:



*Figure 5-1: Configuration Link Wizard*

2. Click **Next**.

The Link Configuration dialog box appears:

**Link Configuration Wizard**

**System**  
Fill in the attribute fields below.

SSID: setup\_num6

Link Name: setup\_num6

Site 1: HQ

Site 2: Remote Site

Link Password: ..... [Change...](#)

< Back   Next >   Cancel

**Monitor Link**

Radio Interface	HQ	Remote Site
RSS [dBm]	-61	-63
ETBE	sec min hour day month year	sec min hour day month year

Figure 5-2: Link Configuration, System dialog box

3. In the System dialog box, enter the new data for the link. All fields with a white background can be edited.
4. Click Next.

The Channel Settings dialog box appears.

### Selecting Channels: Automatic Channel Select

You are required to define the operating frequency channel. Newer versions have a feature called Automatic Channel Select (ACS). This allows you to define several allowable frequency channels to which you can change if interference is detected on the channel in use. ACS performs channel monitoring and selects the channel with the lowest interference for the transmission.

Automatic Channel Select enables coexistence with any radar system that may be active in the area.

**Note:** For the ETSI version, skip to page 5-62; for the BRS version, skip to page 5-64.

**Link Configuration Wizard**

**Channel Settings**  
Any changes to the Channel field may result in a Link re-synchronization.

Operating Channel [GHz]: 5.780

Channel Bandwidth [MHz]: 20

☒ Automatic Channel Selection

Available Channels List [GHz]

<input checked="" type="checkbox"/> 5.740	<input checked="" type="checkbox"/> 5.755	<input checked="" type="checkbox"/> 5.770	<input checked="" type="checkbox"/> 5.785	<input checked="" type="checkbox"/> 5.800	<input checked="" type="checkbox"/> 5.815
<input checked="" type="checkbox"/> 5.745	<input checked="" type="checkbox"/> 5.760	<input checked="" type="checkbox"/> 5.775	<input checked="" type="checkbox"/> 5.790	<input checked="" type="checkbox"/> 5.805	<input checked="" type="checkbox"/> 5.820
<input checked="" type="checkbox"/> 5.750	<input checked="" type="checkbox"/> 5.765	<input checked="" type="checkbox"/> 5.780	<input checked="" type="checkbox"/> 5.795	<input checked="" type="checkbox"/> 5.810	<input checked="" type="checkbox"/> 5.825

Reselect Channel

< Back   Next >   Cancel

**Monitor Link**

Radio Interface	HQ	Remote Site
RSS [dBm]	-61	-63
ETBE	sec min hour day month year	sec min hour day month year

Figure 5-3: Channel Select dialog box - Automatic Channel Select

✱ **To define automatic channel selection:**

1. Select the main frequency from the Operating Channel menu.
2. Select the required Bandwidth 5, 10, or 20 MHz.
3. Click the check box if Automatic Channel Selection is required.
4. Click the check boxes in the Available Channels List of all the allowable channels that can be automatically selected.
5. If you are not satisfied with the channel that is selected automatically, click **Reselect Channel**.

A new channel will be selected from one of the Available Channels that have been defined.

**Note:**

By clicking *Reselect Channel*, the ODU scans the selected channels looking for radio frequency activity. Once it determines which of the channels is free of RF signal activity, it locks onto it. If you require a different channel than the one selected, you must first remove the

*operating channel that the ODU finds most free of RF signal activity from the available channel list.*

6. Click **Next**.

The Rate Select box appears.

**Note:** If you have the standard version, proceed to Configuring Service Parameters, page 5-65. For the ETSI version, proceed to the next section; for the BRS version, skip to page 5-64.

## The 5.4 GHz ETSI Version

In accordance with ETSI, unlicensed wireless data equipment is not allowed to interrupt radar services. Therefore, if the ETSI Version detects Radar activity, it automatically changes the frequency channel. This feature is termed Dynamic Frequency Selection (DFS). According to the standard, a channel with active Radar is prohibited from use for 30 minutes. Before any transmission, WinLink™ probes a channel for Radar signals for a period of 60 seconds.

In the 5.4 GHz ETSI version, the Automatic Channel Selection is selected by default and a minimum of two channels must be defined as available.

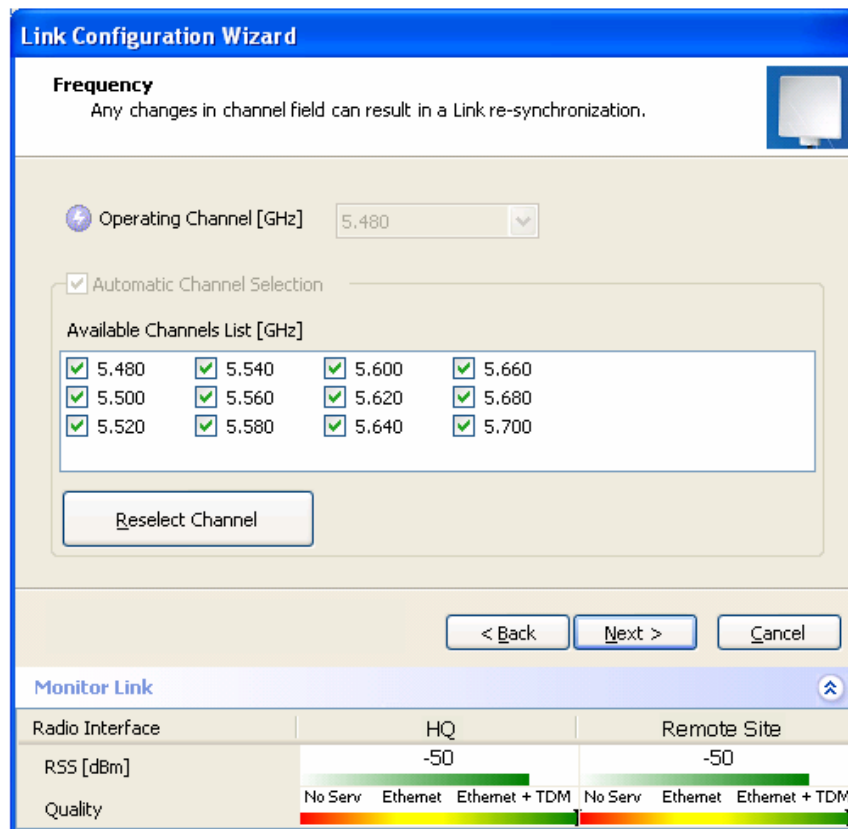



Figure 5-4: Channel Select dialog box (DFS, ETSI requirement)



The  sign on the configuration Wizard and Status bar indicates that the radar detection is on.

✱ **To define automatic channel selection in the 5.4 ETSI version**

1. Select the main frequency from the Operating Channel menu.

---

**Note:**

*Automatic Channel Selection is selected by default.*

---

2. Click at least two check boxes in the Available Channels List of all the allowable channels that can be automatically selected.

---

**Note:**

*Installation will not continue until at least two channels are defined.*

---

Selecting a new channel causes the system quality to change. The quality bar shows the adjustment until the system finds the best quality link.

Any channel selected is evaluated for 60 seconds; therefore this selection process may take a few minutes.

3. If you are not satisfied with the channel that is selected automatically, click **Reselect Channel**.

A new channel will be selected from one of the Available Channels that have been defined.

---

**Note:**

*The reselection process may take a few minutes.*

---

4. Click **Next**.

The maximum rate is selected according to the link conditions

The quality bar may fluctuate until the system finds the best quality link.

5. Click **Next**.

The Service Parameters dialog box appears. Proceed to page 5-65.

## BRS Version: Configuring BRS Channel Settings

### **Note:**

*Both sites in a BRS Link must be configured identically.*

### \* To Configure BRS Channel Settings

1. Select the Band Plan: Pre-Transition or Post-Transition.
2. Select the Bandwidth required.
  - Single Band (5MHz)
  - Double Band (10MHz)
  - Quad Band (20MHz)
3. Select the Frequency.
4. Click Next. The system is re-synchronized to the changes.

**Link Installation Wizard**

**BRS Channel Settings**  
Any changes to the Channel field may result in a Link re-synchronization.

**Configuration**

☒ BRS Notation      Band Plan: ☐ Pre - Transition    ☒ Post - Transition

Bandwidth: Quad Band

Frequency [MHz]: A2,A3,B1,B2 (2518.50)

A1,A2,A3,B1 (2513.00)  
A2,A3,B1,B2 (2518.50)  
A3,B1,B2,B3 (2524.00)  
B1,B2,B3,C1 (2529.50)  
B2,B3,C1,C2 (2535.00)  
B3,C1,C2,C3 (2540.50)  
C1,C2,C3,D1 (2546.00)  
C2,C3,D1,D2 (2551.50)

< Back    Next >    Cancel

**Monitor Link**

Radio Interface	3.2	3.4
RSS [dBm]	-55	-55
Quality	No Serv   Ethernet   Ethernet + TDM	No Serv   Ethernet   Ethernet + TDM

Figure 5-5: BRS Channel Settings Post-Transition

## ***Configuring Service Parameters***

You define the type of service required, Ethernet Only or Ethernet with TDM. The bandwidth remaining available for Ethernet if TDM services are required is shown in the dialog box.

---

### ***Note:***

*ACCESS versions are Ethernet Only.*

---

In the Service Parameters dialog box select the number of E1 connections (x1 or x2 for IDU-E, or x4 for IDU-C). Define the required transmission rate, and the distance between the sites.

### **\* To configure E1/T1 and Ethernet services:**

1. In the Service dialog box, select one of the following:
  - Ethernet plus a number of E1/T1 channels (see [Figure 5-6](#)).
  - Ethernet data only.
2. Select the transmission rate required.
  - Adaptive
  - 9 Mbps
  - 12 Mbps
  - 18 Mps
  - 24 Mbps
  - 36 Mbps
  - 48 Mbps

The default rate is Adaptive. ACCESS versions only operate in Adaptive mode.

Adaptive Modulation - The system changes modulation automatically depending on channel characteristics in order to guarantee continuation of service. The adaptive modulation enables the user to maximize Ethernet throughput without degradation of the TDM service quality. When Ethernet only service is used, the adaptive modulation enables improving the Ethernet performance in case of air performance degradation (periodical interference or RSS changes).

In event of interference at one site, there is no need to use a lower modulation at the other site (as in previous versions). In such a case the actual rate changes automatically only at the problematic

site, while the second side of the link maintains the highest rate possible (Asymmetric).

Adaptive modulation can be changed in both Installation and Configuration wizards.

For versions 1.6 and greater, distance between the sites is automatically measured.

If TDM services are selected, then the Evaluate icon shows on the screen while the maximum rate is evaluated.

When evaluation is complete the icon changes and the following message is shown:

Service has been evaluated, click **Next** to continue.

3. Click **Next**.

The TDM Parameters dialog box or the Finish screen appears depending on which services were selected.

**Link Installation Wizard**

**Services**  
Select the Services and Rate from the lists below.

Service Configuration TDM Jitter Buffer

Services: Ethernet + 4xE1

Rate [Mbps]: Adaptive

Distance: 0 Km / 0 Miles

Evaluate

IDU	HQ	Remote Site
Product Type	WL1000-IDUC-4E1	WL1000-IDUC-4E1
HW Version	2	2
SW Version	1.770_b710_Sep 9 2007	1.770_b710_Sep 9 2007

< Back Next > Cancel

**Monitor Link**

Radio Interface	HQ	Remote Site
RSS [dBm]	-61	-63

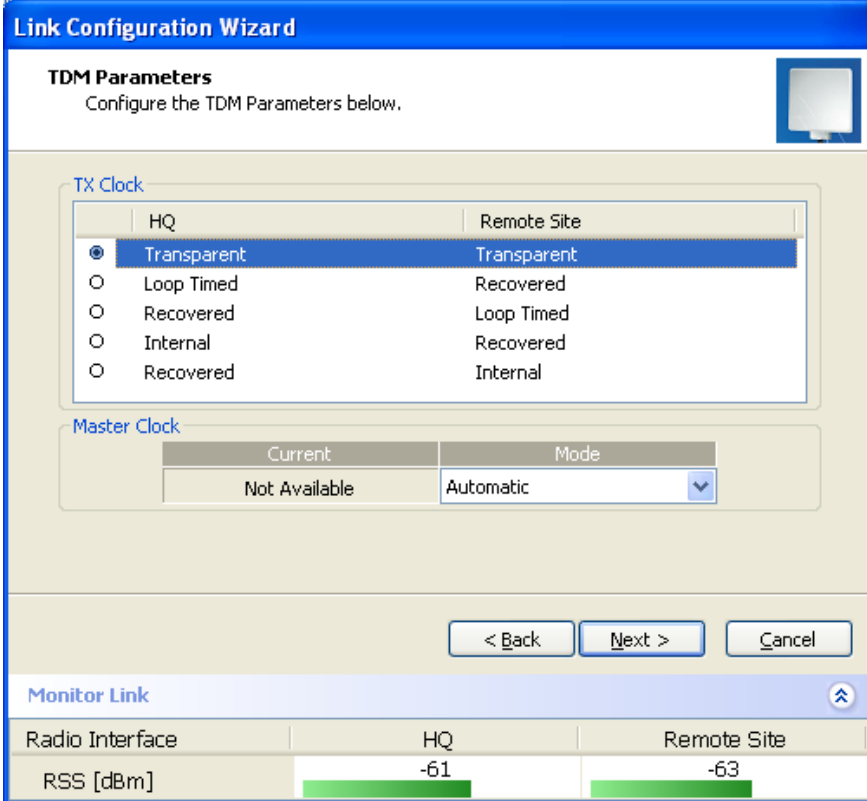
Figure 5-6: Services Dialog Box, E1/T1 Interface

## Configuring TDM Operation

### Setting the Clock Configuration

The TDM clock feature is enabled for carrier class IDU-C in addition to the hardware version 2 and greater IDU-E with TDM. A TDM dialog box will appear where IDU supports the clocking configuration feature (see [Figure 5-7](#) and [Figure 5-8](#)).

A new master clock configuration option is available in the Link Configuration Wizard. The automatic mode selects the clock from the first trunk that is working in normal mode (or is configured to loop-back maintenance). If a specific trunk is selected, this trunk shall be used as the system master regardless of the trunks state. The current master clock trunk is also displayed.



The dialog box is titled "Link Configuration Wizard" and contains a section for "TDM Parameters" with the instruction "Configure the TDM Parameters below." It features a "TX Clock" section with two columns: "HQ" and "Remote Site". Each column has a list of clock modes with radio buttons. In the "HQ" column, "Transparent" is selected. In the "Remote Site" column, "Transparent" is also selected. Below this is a "Master Clock" section with a "Current" field showing "Not Available" and a "Mode" dropdown menu set to "Automatic". At the bottom of the main configuration area are buttons for "< Back", "Next >", and "Cancel". A "Monitor Link" section at the very bottom shows a table with "Radio Interface", "HQ", and "Remote Site" columns. The "RSS [dBm]" row shows values of -61 for HQ and -63 for Remote Site, each accompanied by a green progress bar.

TX Clock		
	HQ	Remote Site
<input checked="" type="radio"/>	Transparent	Transparent
<input type="radio"/>	Loop Timed	Recovered
<input type="radio"/>	Recovered	Loop Timed
<input type="radio"/>	Internal	Recovered
<input type="radio"/>	Recovered	Internal

Master Clock	
Current	Mode
Not Available	Automatic

Monitor Link		
Radio Interface	HQ	Remote Site
RSS [dBm]	-61	-63

Figure 5-7: TDM clock dialog box for T1 IDU

Link Configuration Wizard

TDM Parameters

Configure the TDM Parameters below.

TX Clock

5.4

5.2

Transparent

Loop Timed

Recovered

Internal

Recovered

Transparent

Recovered

Loop Timed

Recovered

Internal

Master Clock

Current

Mode

1st Trunk

Automatic

Automatic

1st Trunk

2nd Trunk

< Back

Next >

Cancel

Monitor Link

Radio Interface

HQ

Remote Site

RSS [dBm]

-36

-38

ETBE

sec

min

hour

day

month

year

sec

min

hour

day

month

year

Figure 5-8: TDM clock dialog box for E1 IDU

If TDM services are selected then the TDM parameters dialog box appears.

The TDM Parameters dialog box contains five working modes; select the appropriate clock mode according to your application. Choosing one of these modes sets the TDM clock behavior on both sides of the link. The user equipment must be configured as described in [Chapter 3](#).

**Transparent/Transparent**

WinLink™ regenerates the clock from line clock side to Tx clock on the opposite side of the link.

**Loop time/Recover**

The local unit receive clock is the transmit clock on both sides of the link.

**Recover/Loop time**

The remote unit receive clock is the transmit clock on both sides.

**Internal/Recover**

The local unit internal oscillator generates the clock while the remote unit recovers this clock.

**Recover/Internal**

The remote unit internal oscillator generates the clock while the local unit recovers this clock.

---

**Note:**

*The Line code option is used with T1 Systems.*

---

*Table 5-1: TDM Clock Modes*

	Unit Clock Mode		User Equipment Side	
	Local Unit	Remote Unit	HQ side	Branch side
1	Transparent	Transparent	Internal/Recover	Internal/Recover
2	Loop Time	Recover	Internal	Recover
3	Recover	Loop Time	Recover	Internal
4	Internal	Recover	Recover	Recover
5	Recover	Internal	Recover	Recover

**Setting the T1 Line Code**

The T1 line code can be set as B8Zs or AMI in the TDM Parameters dialog box.

The default is B8ZS.

---

**Note:**

*This dialog box is available only when TDM service was selected in the previous Services dialog box.*

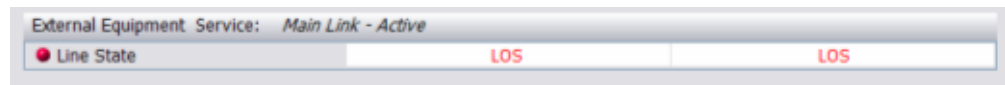
---

✱ **To change the line code**

1. Run the Configuration wizard until you reach the Services dialog box.
2. Verify that T1 services have been selected.
3. Click Next to open the TDM Parameters dialog box.
4. Set the line code to B8ZS or AMI as required.
5. Click **Next**.

**Setting the TDM Backup (IDU-R only)**

The IDU-R units have two E1/T1 trunk lines, one for WinLink™ air interface via the ODU, and the second external is for peripheral equipment- I.E. PBX. The external equipment status is displayed on the Main screen of the Manager in IDU-R systems.



*Figure 5-9: IDU-R - External Equipment Status*

✱ **To use the Backup Mode**

1. Click Enabled Backup Mode.
2. Set which link is backup link; either the link or the external equipment.

The second link becomes the main link.

3. Click **Next** to continue.

✱ **To disable the Backup mode**

1. Click Disable Backup Link
2. Set which link is the Main Link; either the link or the external equipment.
3. Click **Next** to continue.



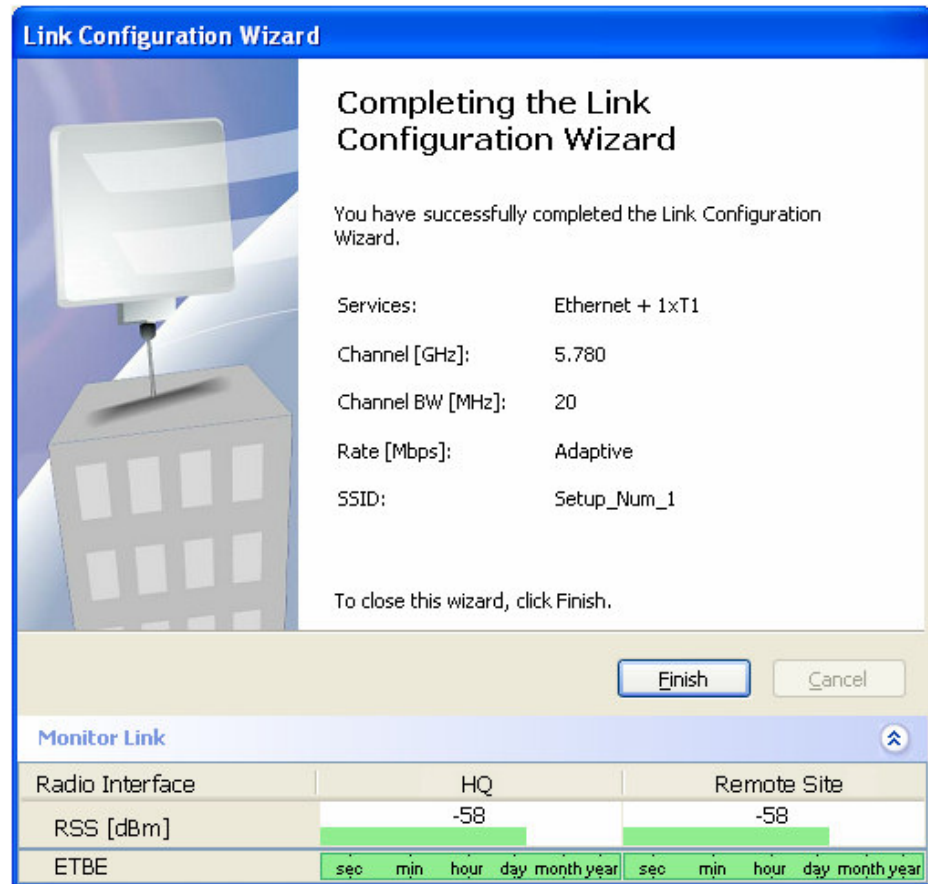


Figure 5-10: Configuration Link, Finish screen

The Finish screen appears, showing a summary of the link configuration (see [Figure 5-10](#)) above.

- Click **Finish** to complete the configuration wizard.

The Main screen is displayed.

## Configuring the Site

### ***Editing the Configuration Parameters by Site***

You can edit the configuration parameters for each site individually. The following functions are available from either the left side of the dialog box, or the buttons on the top of the dialog box (see [Figure 5-11](#)).

#### Functions on the left of the dialog box:

<b>System</b>	Edit the contact person and location details. View the system details
<b>Air Interface</b>	Change the transmit power

<b>Inventory</b>	View the hardware and software inventory.
<b>Management</b>	Configure the IP address, Subnet Mask, Default Gateway, and the Trap Destination.
<b>Security</b>	Change the Community Values and the Link Password
<b>Date and Time</b>	Set the date and time of the server and of the System.
<b>Advanced</b>	Configure the Bridge, define the LAN connection and set the external alarm inputs.

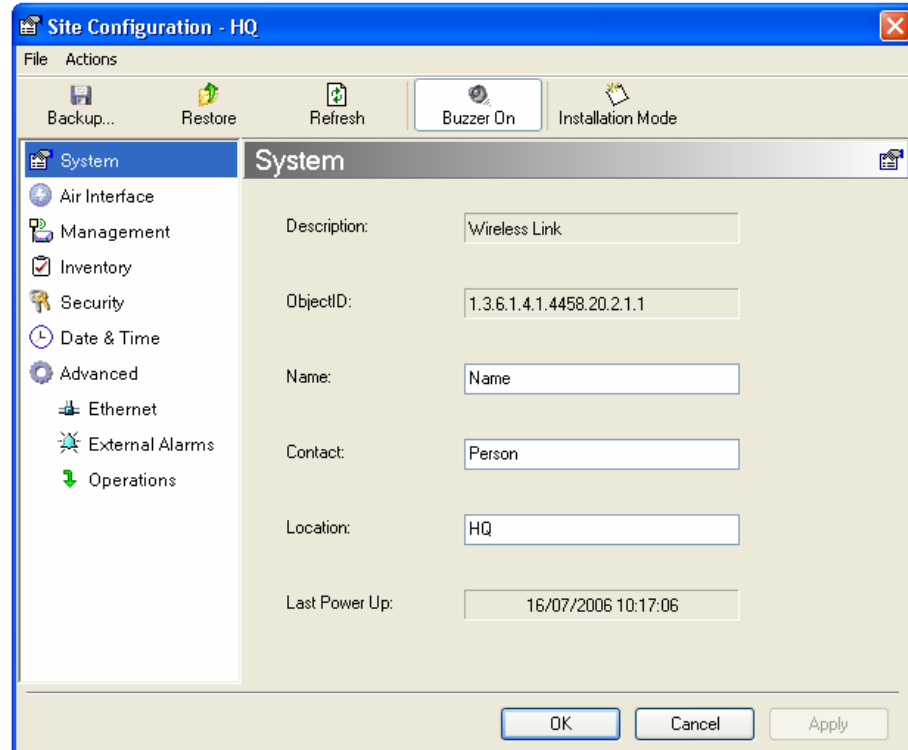
**Functions at the top of the dialog box:**

<b>Backup</b>	Save a backup.ini file with the current configuration.
<b>Restore</b>	Load the backup.ini file created by the backup.
<b>Installation Mode</b>	Return to Installation Mode for the entire link. Selecting the Mute check box before clicking the Install Mode button mutes the Beeper.
<b>Mute</b>	Mutes the alignment tone at startup. Reactivate the beeper during alignment.

**\* To edit the Configuration Parameters:**

1. Click **Configuration** from the main menu.
2. Select which site to configure.

The Configuration dialog box opens. (See [Figure 5-11](#))



*Figure 5-11: Configuration Dialog Box*

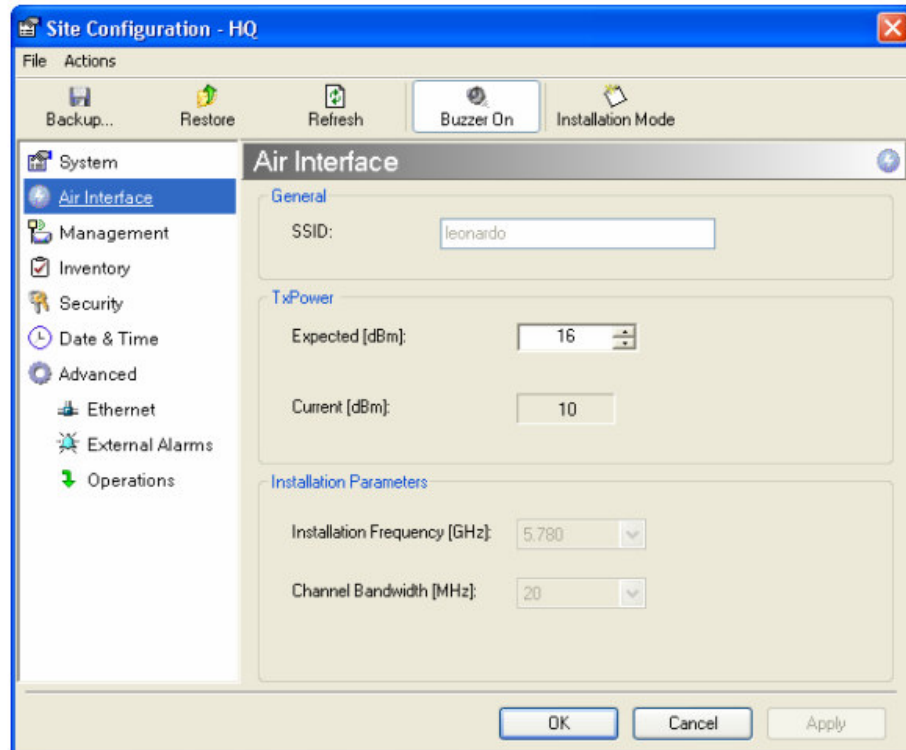
3. Select the appropriate item in the left hand list to open a dialog box.
4. Click **Apply** to save changes.

### ***Changing the Transmit Power***

Each site can have a different transmit power level.

#### **\* To change the Transmit Power:**

1. Click **Configuration** from the main menu.
2. Select which site to configure.  
The Configuration dialog box opens.
3. Select Air Interface. (See [Figure 5-12](#))
4. Select the required Transmit Power Level. For available power limits for each system, see Product Specification Table, page I-160.
5. Click Apply to save the changes.



*Figure 5-12: Changing the Transmit Power*

## ***Defining the Management Addresses***

Each site must be configured separately, first site A then site B.

### **\* To define the Management Addresses:**

1. Click **Configuration** from the main menu.
2. Select which site to configure.

The Configuration dialog box opens:

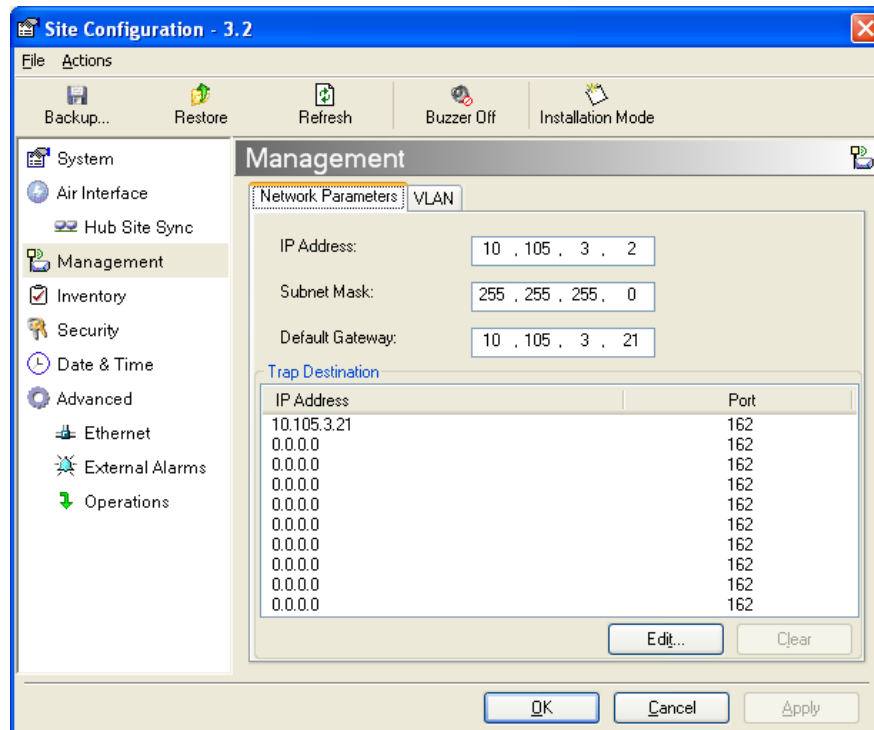


Figure 5-13: Management Addresses - Site Configuration dialog box

3. Select **Management**.
4. Enter the IP address of the ODU in the IP address field.

**Note:**

*If performing configuration from the WinLink™ 1000 Manager, the IP address is entered in the login screen.*

5. Enter the Subnet Mask.
6. Enter the Default Gateway.
7. Enter the Trap Destination. This is the IP address of the PC running the management application. The event log will be stored at this address.
8. Click **Apply** to save the changes.

## Configuring VLAN Settings

VLAN Management enables separation of user traffic from NMS Traffic. The user decides if such a separation is required. Both the HQ and Remote site are configured with VLAN Management.

✱ **To enable VLAN management:**

1. Click **Configuration** from the main menu.
2. Select which site to configure (HQ or Remote site).
3. Select Management.
4. Open the VLAN tab.
5. Check The Enabled box.
6. Enter a VLAN ID.

After entering the VLAN ID, only packets with the specified VLAN ID are processed by the ODU. This includes all the protocols supported by the ODU (ICMP, SNMP, TELNET and NTP). The VLAN priority is used for the traffic sent from the ODU to the management workstation. VLAN management affects all types of management connections (local, network and over the air).

7. Enter a Priority number.

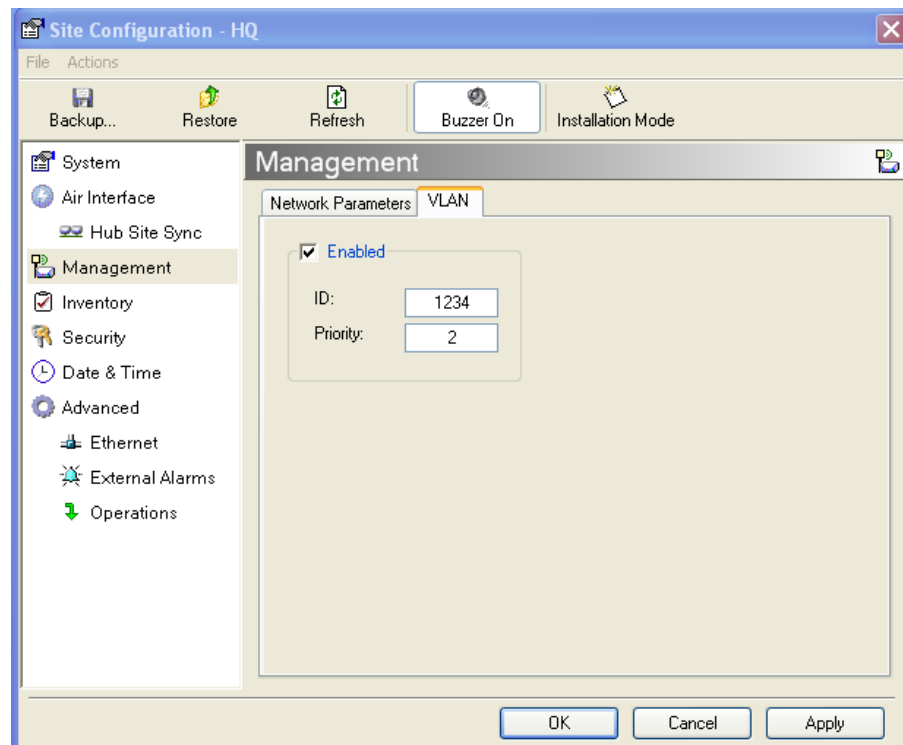


Figure 5-14: Configuring VLAN Settings



**Warning**

*Changing this parameter causes the management application to immediately disconnect. In order to avoid problems, it is recommended to verify the change by setting the VLAN only to one ODU, and only after verifying the VLAN network operation, change the other VLAN setting can be changed.*

## Troubleshooting:

If the VLAN ID is forgotten or there is no VLAN network connected to the ODU:

- Reset the device.

In the first two minutes both VLAN and no VLAN connections are available.

## Setting the Date and Time

The ODU maintains a date and time value. The date and time value should be synchronized with any Network Time Protocol (NTP) version 3 compatible server<sup>1</sup>. On power-up the ODU configures the initial date and time using an NTP server. If the server IP is not configured or is not reachable, a default time is set. When configuring the NTP server IP, you should also configure the offset from the Universal Coordinated Time (UTC). If there is no server available, you can either set the date and time, or you can set the manager workstation time. Note that manual setting is not recommended since reset, power up, or synchronization with an NTP server will override the setting.

---

### **Note:**

*The NTP uses UDP port 123. If a firewall is configured between the ODU and the NTP server this port must be opened<sup>2</sup>.*

*It can take up to 8 minutes for the NTP to synchronize the ODU date and time.*

---

### \* To set Date and time

1. Click **Configuration** from the main menu.
2. Select which site to configure.

The Configuration dialog box opens.

3. Select Date & Time:

---

<sup>1</sup>Windows XP is configured by default as a server.

<sup>2</sup> Windows XP command w32tm /stripchart /computer:<server IP> can be use to check the NTP server connectivity

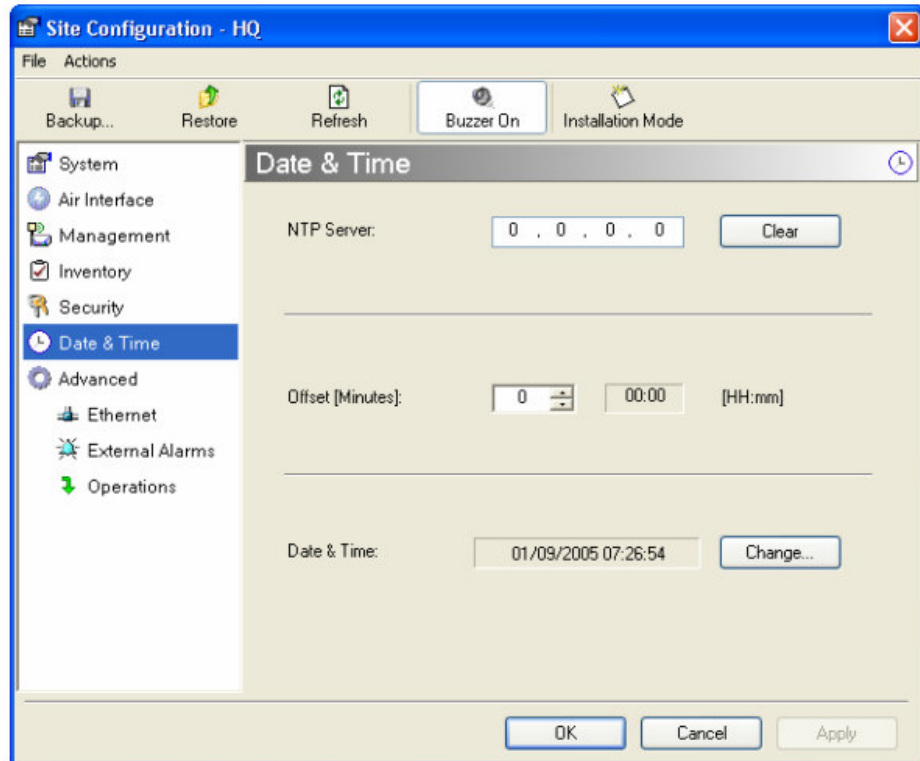


Figure 5-15: NTP Server Address - Site Configuration dialog box

4. If entering an address for the NTP Server, click **Clear**, and then enter the new address.
5. Set the Offset value.
6. To manually set the date and time, click **Change** and edit the new values.

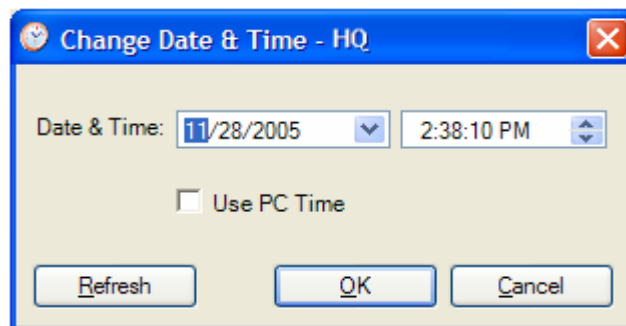


Figure 5-16: Change Date and Time - HQ dialog box

## Configuring the Bridge

Bridge configuration is required in various network topologies, such as protection (1+1) and ring application. The bridge configuration



parameters are located under the Advanced tab of the Configuration dialog box:

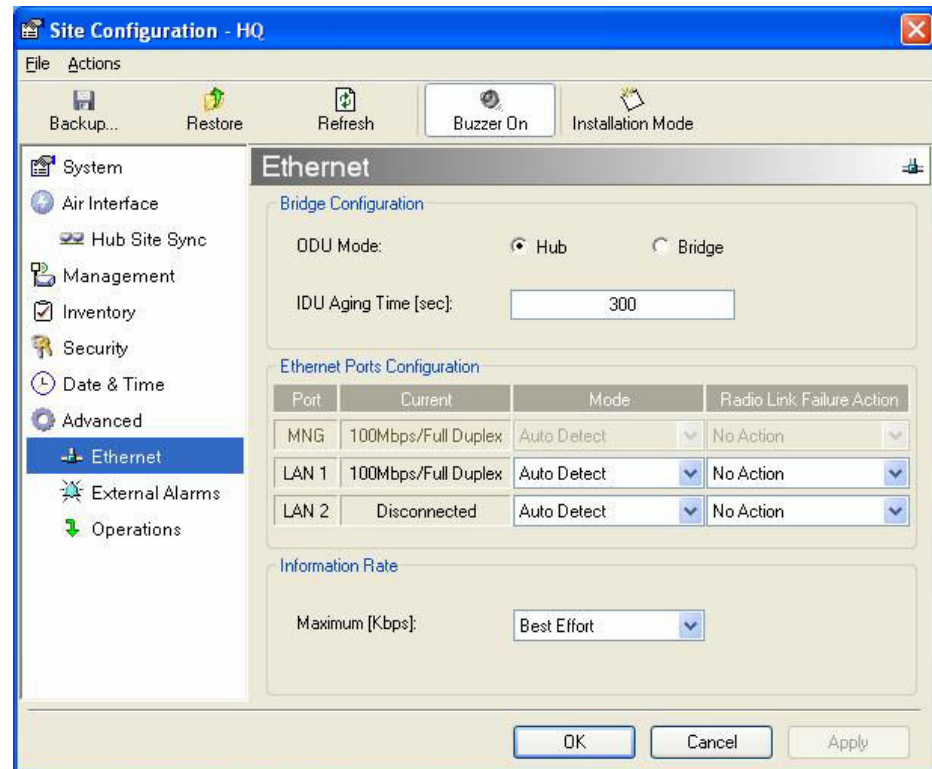


Figure 5-17: Bridge Configuration - Site Configuration dialog box

## ODU Bridge Mode

This parameter controls the ODU mode with two optional values,

- Hub Mode – in Hub mode the ODU transparently forwards the all the packets over the wireless link.
- Bridge Mode – In Bridge mode the ODU performs both learning and aging, the aging time of the ODU is fixed at 300 seconds.

---

### **Note:**

*Changing these modes requires system reset.*

---

## IDU Aging time

This parameter controls the IDU aging time.

The IDU has a 2047 MAC address-learning table. The aging time parameter controls the time each MAC address is dropped from the table.

Default value is 300 seconds.

---

**Note:**

*Any change to these parameters is effective immediately.*

*Each side of the link can be configured separately.*

---

- The following list details common configurations; both sides are must be configured with the same parameter.
- Standard (Default) Configuration for Ethernet Applications
- Set IDU aging to 300 seconds, ODU set to Bridge mode
- Fast aging mode – for rapid network topology changes
- Set IDU aging to one second, ODU set to Hub mode.
- Hub Mode
- The ODU is set to HUB mode. IDU aging is not applicable.
- Ethernet Bridge

The ODU is set to Bridge mode. The IDU aging is not applicable.

### ***Configuring Ethernet Mode***

The Ethernet mode is configurable for line speed (10/100BaseT) and duplex mode (half or full duplex). This mode provides an Auto detect feature where the line speed and duplex mode are detected automatically using auto negotiation. Use the manual configuration when external equipment does not support auto negotiation. The default setting is Auto Detect.

The maximum Ethernet Information Rate can be limited via the pull down menu. The default setting is Best Effort.

---

**Note:**

*It is not recommended to configure the port that is used for the management connection, since a wrong configuration can cause management disconnection or Ethernet services interruption.*

---

#### **\* To configure the Ethernet Mode:**

1. From the **Configuration** menu, select the site to reconfigure.  
The Site Configuration dialog box opens.
2. Click **Advanced > Ethernet**.
3. In the Ethernet Ports Configuration pane, use the drop-down menu to select the LAN configuration.

4. Click **Apply** to save the changes.
- 

**Note:**

*It is possible to close the Ethernet service by disconnecting the Ethernet port. The user should be aware that it is possible to close the port and not have any access to the device. If this should occur the workaround is as follows:*

- Connect the system from the remote site
  - Connect via other Ethernet port (IDU-C)
  - Power down the equipment and connect immediately after the power up (the fastest way is to enter install mode).
- 

## **Setting the Maximum Information Rate**

The maximum Ethernet throughput of the link can be limited. The default setting is Best Effort, where the highest information rate available for the link conditions and settings is used.

**\* To set the Ethernet information rate:**

1. From the **Configuration** menu, select the site to reconfigure.
  2. Click Advanced > Ethernet  
The Configuration dialog box opens.
  3. In the Information Rate pane, use the drop-down menu to select the maximum Information Rate.
  4. Select **Other** to define the throughput with 8 Kbps resolution
  5. Select **Best Effort** for the highest information rate possible for the link conditions and settings
  6. Click **Apply** to save the changes.
- 

**Note:**

*ACCESS systems have a maximum rate of 2048 kbps.*

---

## **Configuring the Jitter Buffer**

By configuring the Jitter Buffer, the receiver jitter buffer for each site can be enlarged, thereby increasing system resistance to interference (the larger the jitter buffer, the longer the interference period that the system will overcome without TDM BER). You can also decrease the jitter buffer to decrease the system delay.

The jitter buffer can be configured between 2.1 and 16.0 milliseconds.

✱ **To configure the Jitter Buffer:**

1. In the Main menu click the **Link Configuration** button.
2. Run the Configuration wizard (see [Figure 5-1](#)).
3. On the Services screen, select the TDM Jitter Buffer tab:

**Link Configuration Wizard**

**Services**  
Select the Services and Rate from the lists below.

Service Configuration | **TDM Jitter Buffer**

**HQ**  
Size [ms]:

**Remote Site**  
Size [ms]:

*Warning! Changing TDM Jitter Buffer size will affect the TDM delay.*

IDU	HQ	Remote Site
Product Type	WL1000-IDUC-4E1	WL1000-IDUC-4E1
HW Version	2	2
SW Version	1.770_b710_Sep 9 2007	1.770_b710_Sep 9 2007

**Monitor Link**

Radio Interface	HQ	Remote Site
RSS [dBm]	-69	-71

*Figure 5-18: Jitter Buffer Configuration*

4. Choose the desired values for HQ and Remote Site.  
After setting the new value, the user must evaluate the expected quality. During the evaluation the ETBE bar is displayed.
5. Click **Next >** to perform the change or **< Back** to cancel the change.

**Caution**

Extra caution should be use when decreasing the value, since the service quality might be affected in the case of interference. In cases of asymmetric interference, the jitter buffer can be set to different values per site. In such cases the latency will also be asymmetric.

## Changing Community Values

The ODU communicates with the management application using SNMPv1 protocol. The protocol defines three types of communities:

- Read-Only for retrieving information from the ODU
- Read-Write to configure and control the ODU
- Trap used by the ODU to issue traps.

The community string must be entered at login. The user must know the password and the correct community string in order to gain access to the system. A user may have read-only privileges.

It is not possible to manage the ODU if the read-write or the read community values are forgotten. A new community value may be obtained from technical support for the purpose of setting new community; the serial number or the MAC address of the ODU must be supplied.

---

### **Note:**

*The manager application and the ODU use the community strings **public-bru1** for the local unit and **public-bru4097** for the remote unit. These are the factory defaults, but can only be used one time on the first installation.*

---

A new community string must be set when entering the system for the first time. The read-write community and read-only community have a minimum of five alphanumeric characters. (Bru1 and bru4097 are not permitted). Changing the trap community is optional by clicking the check box.

## Editing Community Strings

The community change dialog box is available from the **Configuration > Security** tab. Both read-write and read-only communities must be defined.

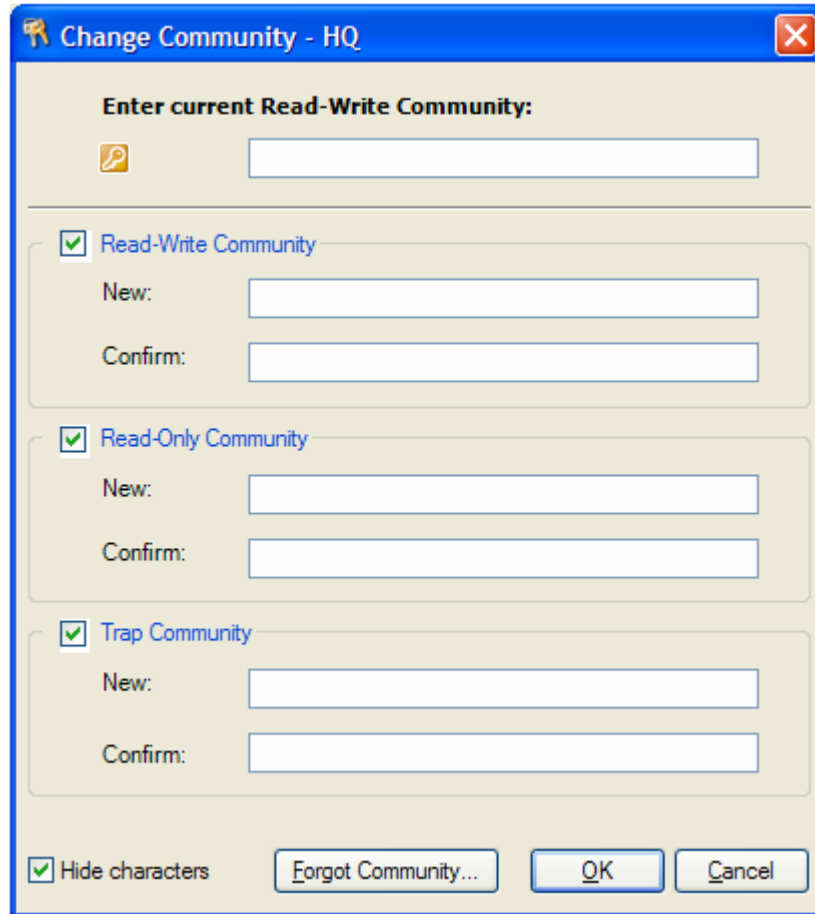
On entering for the first time, use the following as the current community:

- For Read/Write community, use **netman**.
- For Read Only community, use **public**.
- For Trap community, use **public-bru1**.

### **\* To change a community:**

1. From the Configuration dialog box, select the **Security** tab
2. Type the current read-write community (default is **netman**).

3. Select the communities to be changed by clicking the check box.
4. Type the new community and re-type to confirm.
5. Click **OK** to save.



The image shows a Windows-style dialog box titled "Change Community - HQ". At the top, there is a section labeled "Enter current Read-Write Community:" with a small icon and a text input field. Below this, there are three sections, each with a checked checkbox and a label: "Read-Write Community", "Read-Only Community", and "Trap Community". Each of these sections contains "New:" and "Confirm:" text input fields. At the bottom left, there is a checked checkbox labeled "Hide characters". To the right of this are three buttons: "Forgot Community...", "OK", and "Cancel".

*Figure 5-19: Changing the Community String*

### ***Forgotten Community string***

If the read-write community string is unknown, an alternative community key can be used. The alternative community key is unique per ODU and can be used only in order to change the community strings. The alternative community key is supplied with the product, and it is recommended to keep it safe.

If both the read-write community and the alternative community key are unavailable, then an alternative community key can be obtained from customer support using the ODU serial number or MAC address. The serial number is located on the product, and the MAC address is displayed in the manager inventory tab.

When you have the alternative community key, click the **Forgot Community** button and enter the Alternative Community (Figure 5-20). Then reconfigure the read-write community string.

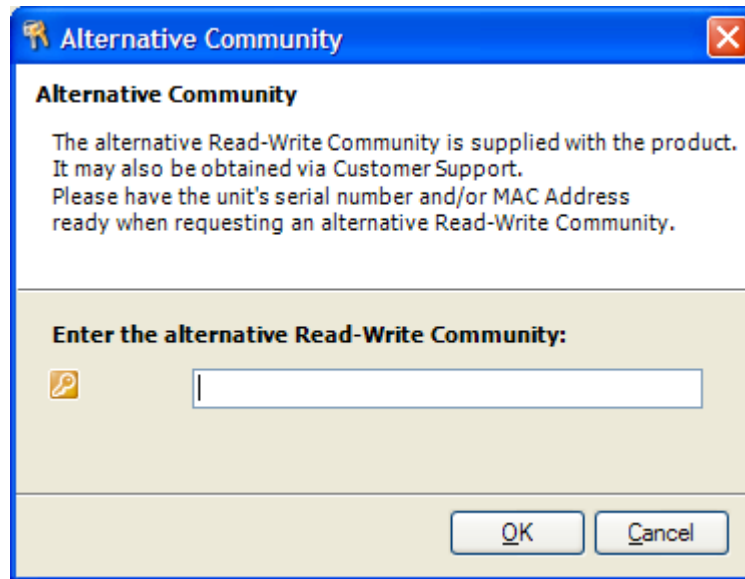


Figure 5-20: Alternative Community Dialog box

### **Muting the alignment tone**

The ODU alignment tone becomes audible as soon as power is supplied, and continues until the ODUs are aligned and the link established.

It is possible to mute the tone until the alignment procedure is to be performed.

#### **\* To mute the alignment tone:**

1. Click on **Configuration** in the Menu bar and select the relevant site.
2. The Configuration dialog box opens.
3. In the Configuration dialog box, click the Buzzer button. The button toggles between on and off.  
The tone stops.

#### **\* To restore the alignment tone:**

1. Click **Configuration** in the Menu bar and select the relevant site.  
The Configuration dialog box opens.
2. In the Configuration dialog box, click the Buzzer button. The button toggles between on and off. The tone starts.

## Setting External Alarm Inputs

The IDU-C has two external alarm inputs in the form of dry-contact relays. The Alarm interface is located on the front panel of the IDU-C and is a 9-pin D-type female connector, see IDU-C Alarm Connector, Wiring Specifications for the pinout. The user enables or disables each of the alarms and can configure the text that appears in the alarm trap. The ODU sends the alarm within less than a second from actual alarm trigger.

### \* To set the external alarm inputs:

1. Open the Site Configuration Alarms configuration by clicking **Configuration > Advanced**.

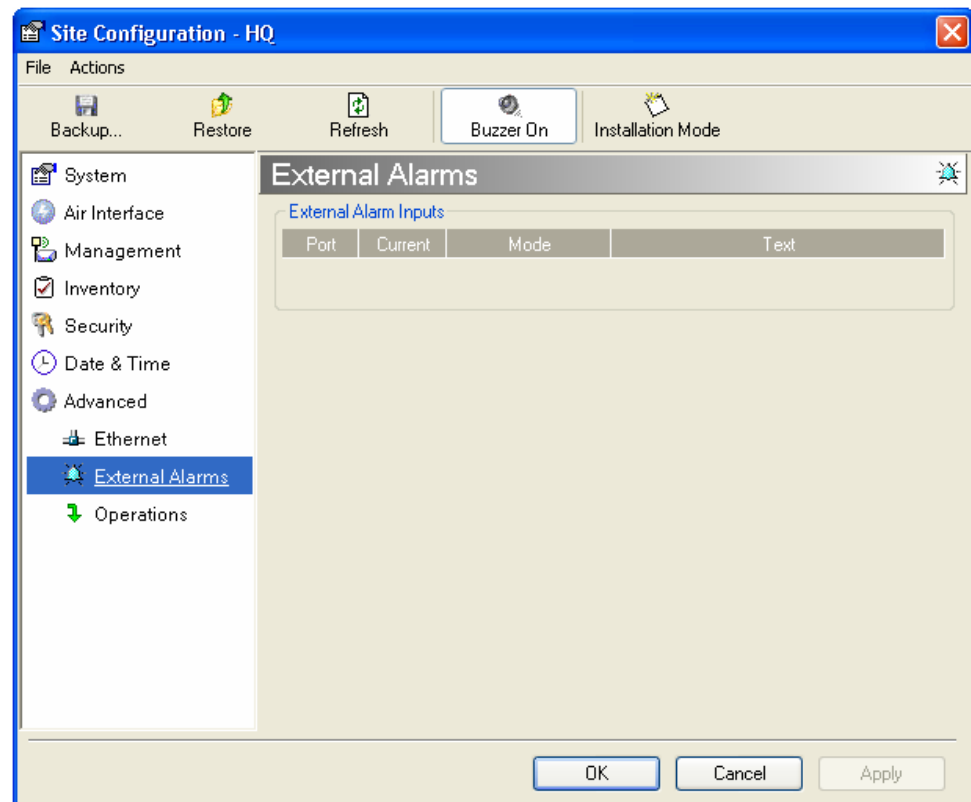


Figure 5-21: External Alarm Configuration

2. Enter a description of the alarms in the fields.
3. Click **Apply** to save.



# Managing Configuration Files

## ***Saving Configuration in a File***

The management software allows you to save configuration parameters of the local and remote units on the management station as an INI file. Each site is saved in a separate INI file.

### **\* To save the configuration in a file:**

1. Click **Configuration** from the main menu.
2. Select which site to backup.  
The configuration dialog box opens.
3. Click **Backup**.
4. In the Save As dialog box, indicate in which folder and under what name configuration file is to be saved, and click **Save**.

## ***Restoring a Configuration File***

Configuration files (\*.ini) can be uploaded from the management station. Verified configuration files can be distributed to other units that use the same configuration.

### **\* To restore a configuration file:**

1. From the **Configuration** menu, select the site to reconfigure.  
The Configuration dialog box opens.
2. Click **Restore**.
3. From the Open dialog box select \*.ini file to upload and click **OK**.

## ***Resetting***

---

### ***Note:***

*Resetting the link causes service disconnection.*

*In order to maintain the link configuration, reset the remote site first.*

---

### **\* To reset the unit:**

1. From **Maintenance**, reset the remote unit.
2. From **Maintenance**, reset the local unit.

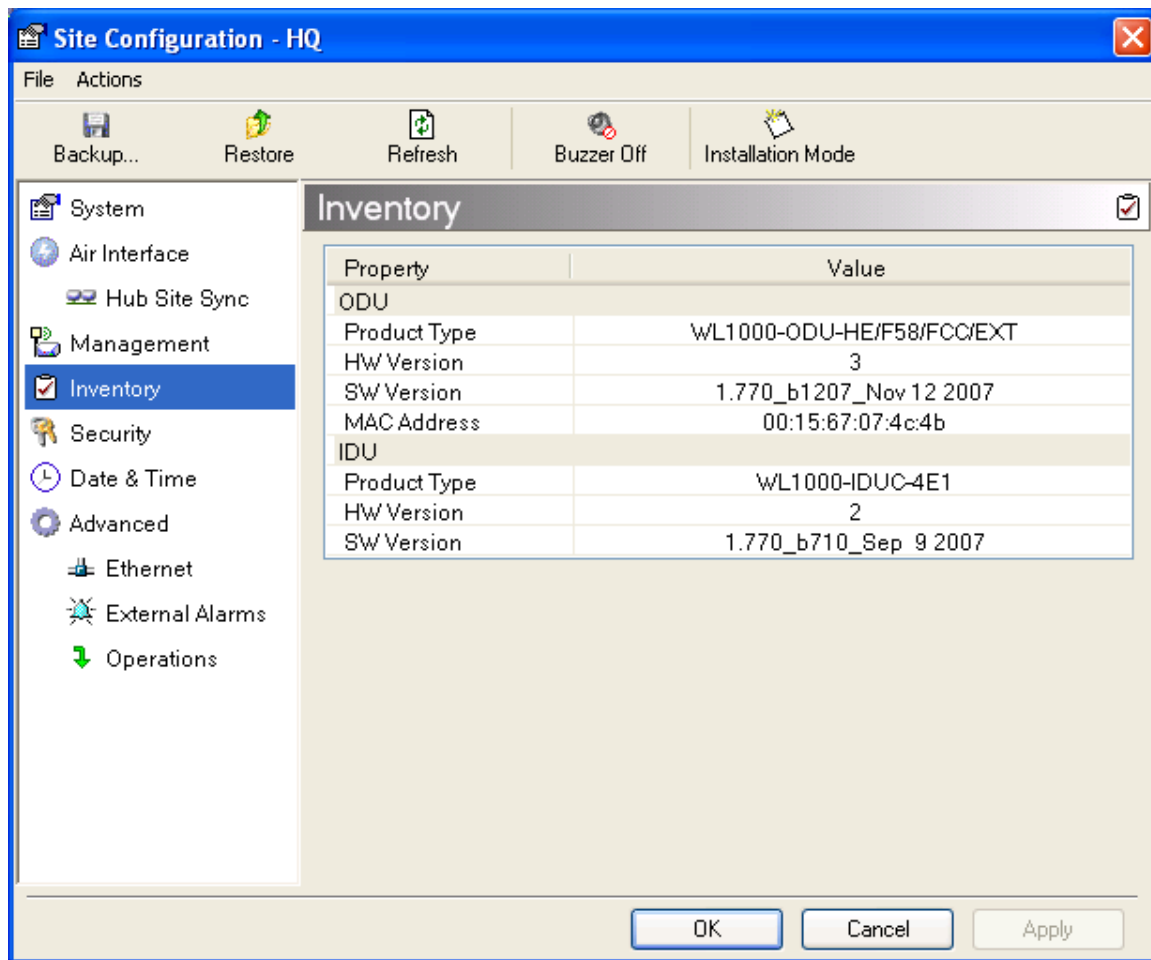
✱ **To reset to Factory Defaults**

1. Click Configuration in the Menu bar and select any one of the sites.  
The Configuration dialog box opens.
2. Select Operations in the Configuration dialog box.
3. Click the **Restore Defaults** button.  
A message box asking if you want to restore factory default appears.
4. Click the check box if you want to keep the current IP settings.
5. Click **Yes** to continue.

***Displaying the Inventory***

✱ **To view the inventory data**

1. Click Configuration from the main menu.
2. Select which site to configure.  
The configuration dialog box opens.
3. Select Inventory (*Figure 5-22*).



*Figure 5-22: Inventory Screen*

## Configuration via Telnet

A Telnet terminal can be used to configure and monitor the ODU.

The login username/password is identical to the communities' strings; Read allows display only, Read/Write allows display and set commands.

*Table 5-2* depicts the Telnet commands that are supported:

*Table 5-2: Telnet Commands*

<b>Command</b>	<b>Explanation</b>
display inventory	Displays ODU product name, Name, Location, hardware and software revisions, uptime, MAC address, IDU product name, IDU software and hardware revisions
Display management	Displays IP, Subnet, Gateway, Traps table
display link	Displays State, SSID, Channel BW, RSS, TSL, Frequency/ACS, DFS, Rate/ARA, Distance
display Ethernet	Displays Bridge Mode, Aging time, Port table (State, Status and action)
display tdm	Displays Clock Mode, Master Clock Mode, Current Clock, Quality[1], TDM table (Line status, Error Blocks)
display ntp	Displays Time, Server and Offset
set ip <ipaddr> <subnetMask> <gateway>	Set the ODU IP address, subnet mask and gateway The user must reset the ODU after the command completion
display PM <interface:AIR,LAN1,LAN2,TDM1, TDM2,TDM3,TDM4> <interval:current,day,month>	Shows the performance monitor tables for each interface according to user defined monitoring intervals
set trap <index:1-10> <ipaddr> <port:0-65535>	Set a specific trap from the traps table (set trap 3 10.0.0.133 162)
set readpw <oldpasswd> <passwd>	Set the read access password (read community)
set writepw <oldpasswd> <passwd>	Set the read-write access password (read-write community)
set trappw <oldpasswd> <passwd>	Set the trap community string
set buzzer <mode:0=OFF,1 =ON>	Toggle the buzzer mode (0 – off, 1 – on)
set tpc<power:Value between minimal TX power, and maximal TX power>	Set the ODU transmit power. If a wrong value is entered, both min and max values shall be displayed in the error reply
set bridge <mode:0=Bridging OFF,1= Bridging ON >	Set the ODU bridge mode (0 – off, 1 – on)
set name <new name>	Set the name of the link
set location <new location>	Set the name of the location
Set contact <new contact>	Set the name of the site manager
set Ethernet <>port:MNG,LAN1,LAN2> <mode:AUTO,10H,10F,100H,100F,DIS ABLE>	Set the mode and speed of each ethernet port

Command	Explanation
Reboot	Reset both the IDU and the ODU. The user shall be prompt that the command will reset the card and that he has to reconnect the telnet session after TBD seconds.
Help	Displays the available commands

*Figure 5-23*, below, shows the available Telnet commands via the Help command.

```
Hello admin, welcome to ODU Management CLI!

+-----+
      Software Revision      1.770   Build 1115_August 13 2007
+-----+

admin@10.103.6.1-> help

    display inventory
    display management
    display link
    display ethernet
    display tdm
    display ntp
    display PM <interface:AIR, LAN1, LAN2, TDM1, TDM2, TDM3, TDM4>
               <interval:current, day, month>
    set ip <ipaddr> <subnetMask> <gateway>
    set trap <index:1-10> <ipaddr> <port:0-65535>
    set readpw <oldpasswd> <passwd>
    set writepw <oldpasswd> <passwd>
    set trappw <oldpasswd> <passwd>
    set buzzer <mode:0=OFF,1 =ON>
    set tpc <power:Value between minimal TX power, and maximal TX power>
    set bridge <mode:0=Bridging OFF,1= Bridging ON >
    set name <new name>
    set location <new location>
    set contact <new contact>
    set Ethernet <port:MNG, LAN1, LAN2>
                 <mode:AUTO,10H,10F,100H,100F, DISABLE>
    reboot
    help

Command "help" finished OK.
```

*Figure 5-23: Telnet Management Screen*

# Link Lock Security Feature

## *The purpose of Link Lock*

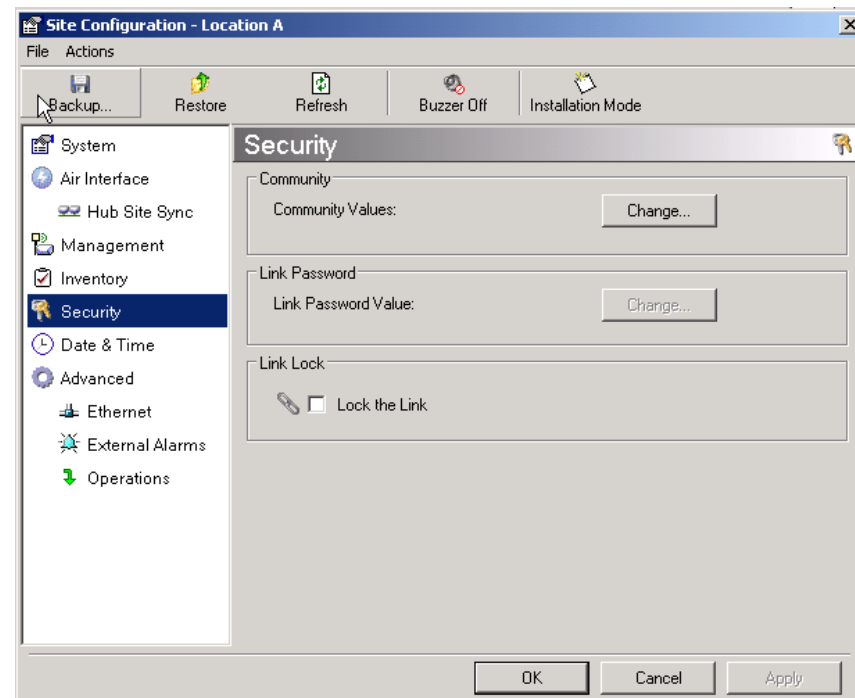
Link Lock is a part of the WinLink security concept intended to meet a form of abuse encountered in the field. It is designed to prevent the situation where a remote ODU can be stolen and used as a “pirate” link to steal services or information. The Link Lock feature actually locks the local ODU to be synchronized ONLY to specific remote ODU. It is a **site** oriented feature.

The lock can only be set from a live link. It is based on MAC authentication and is site oriented and activated on a per ODU basis. For example, if you lock the remote ODU to the local ODU, you must still lock the local ODU to the remote ODU to ensure complete two way locking.

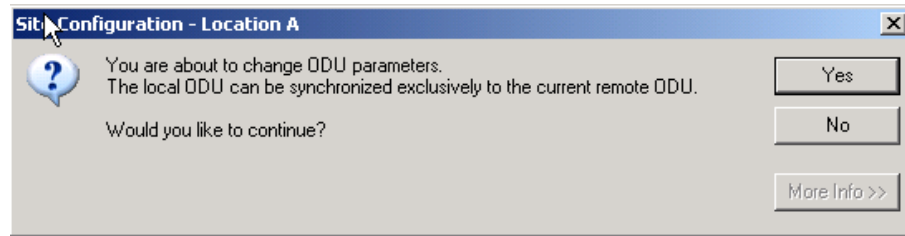
It can only be removed when the link is unsynchronized. In such a case, an alarm is raised by the WinLink™ 1000 Manager.

### \* **To enable Link Lock:**

1. From the Link Configuration menu, select “**1 Configuration Location A**”.
2. Choose the Security tab. The following window is displayed:

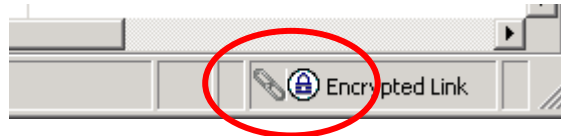


3. Click the Link Lock checkbox and then OK. You are asked to confirm the lock:

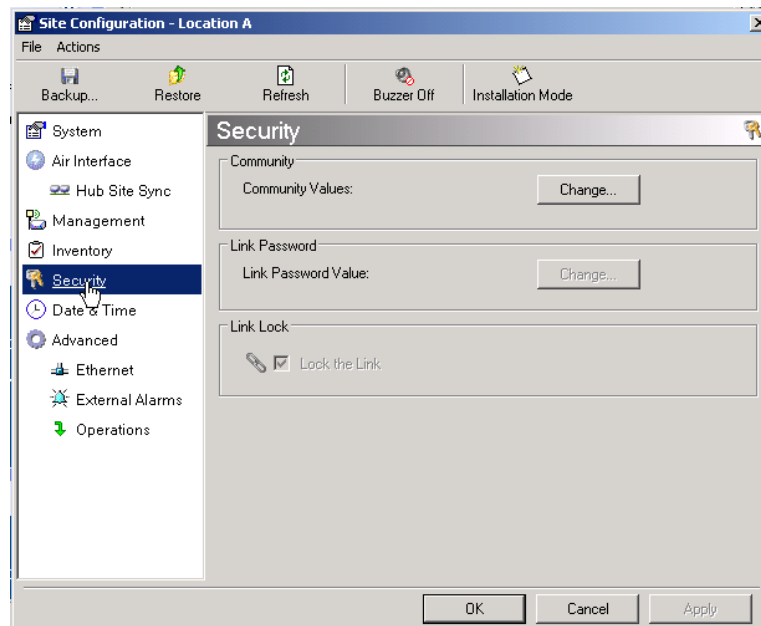


4. Click the Yes button and you are returned to the main window of the WinLink™ 1000 Manager.

Observe that a link icon is now displayed in the status bar on the bottom right of the WinLink™ 1000 Manager window.



The link to the remote unit is now locked. If you repeat steps 1 and 2 above, the Security screen will look like this:



The Link Lock checkbox is now unavailable.

**Note:**

*The Link Lock status will only revert to unlocked as a result of a broken link, for example due to an ODU being switched off at either end of the link.*

*A simple ODU reset at either end will restore the link to its previous locked or unlocked state.*