

# Ericsson W3x Series

## Mobile Broadband Router for WCDMA/HSPA Mobile Networks

User's Guide



  
Mobile  
Broadband

**ERICSSON** 

# Ericsson W3x Series

## Mobile Broadband Router for WCDMA/HSPA Mobile Networks

### User's Guide

#### Copyright

© Ericsson AB 2008 - All Rights Reserved

#### Disclaimer

No part of this document may be reproduced in any form without the written permission of the copyright owner.

The contents of this document are subject to revision without notice due to continued progress in methodology, design and manufacturing. Ericsson shall have no liability for any error or damage of any kind resulting from the use of this document.

#### Trademark List

<i>Firefox</i> <sup>®</sup>	Firefox is a registered trademark of Mozilla Foundation.
<i>Internet Explorer</i> <sup>®</sup>	Internet Explorer is a registered trademark of Microsoft Corporation.
<i>MSN Messenger</i> <sup>®</sup>	MSN Messenger is a registered trademark of Microsoft Corporation.
<i>Opera</i> <sup>®</sup>	Opera is a registered trademark of Opera Software ASA.
<i>Safari</i> <sup>®</sup>	Safari is a registered trademark of Apple Computer, Inc.
<i>Windows</i> <sup>®</sup>	Windows is a registered trademark of Microsoft Corporation.

*All other brand and product names are trademarks or registered trademarks of their respective holders.*

# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Structure of this Guide	1
1.2	Related Documents	2
<b>2</b>	<b>W3x Series Overview</b>	<b>3</b>
2.1	Product Variants	3
2.2	W30 – Data Router	4
2.3	W35 – Data and Voice Router	5
2.4	Feature Summary	5
2.5	Housing	7
2.5.1	Back Side Interfaces	7
2.5.2	Left Side Interfaces	9
2.5.3	Right Side Interface	10
2.5.4	Front Panel	10
<b>3</b>	<b>Configuration and Management</b>	<b>14</b>
3.1	Access and Login to the Web User Interface	14
3.1.1	Enter PIN Code	15
3.1.2	Enter Password	15
3.1.3	Inactivity Timeout	16
3.2	Overview	18
3.2.1	Alarms	19
3.2.2	Network Information	20
3.3	Wireless LAN Configuration Wizard	21
3.3.1	Enable the Wireless LAN	21
3.3.2	Network Name	22
3.3.3	Wireless LAN Authentication	22
3.3.4	Wireless LAN Configuration Wizard Confirmation	28
3.4	Internet	29
3.4.1	Mobile Network Connection Details	30

3.4.2	Traffic Statistics	31
3.4.3	Authentication	31
3.4.4	Cellular Band Selection	34
3.5	LAN	36
3.5.1	LAN IP Address	36
3.5.2	DHCP Server	37
3.5.3	LAN Port Status	39
3.6	Wireless LAN	40
3.6.1	Enable WLAN	40
3.6.2	Region	41
3.6.3	Radio Channel	41
3.6.4	Transmit Power [dBm]	41
3.6.5	Data Rate	41
3.6.6	Scan for Wireless Networks	42
3.6.7	Network Name (SSID)	43
3.6.8	WLAN Security	43
3.6.9	Connected Devices	45
3.6.10	Whitelist	45
3.7	NAT	47
3.7.1	UPnP IGD	48
3.7.2	Application Level Gateways	48
3.7.3	Port Forwarding	49
3.8	File and Printer Sharing	52
3.8.1	How it Works	52
3.8.2	Host Name and Workgroup	53
3.8.3	File Sharing	53
3.8.4	Printer Sharing	54
3.9	System	56
3.9.1	Basic System Information	57
3.9.2	Configuration Backup and Restore	57
3.9.3	System Restart	58
3.9.4	Software Update	59
3.9.5	Factory Reset	60

3.10	Event Log	62
3.10.1	Persistent Logging	63
3.11	Change Password	63
3.12	Logout	64
<b>4</b>	<b>Telephony and Fax (W35 only)</b>	<b>65</b>
4.1	SIM Authentication	65
4.2	Information Tones	66
<b>5</b>	<b>Battery (W35 only)</b>	<b>67</b>
5.1	Installation of the Battery	67
5.2	Battery Function	67
<b>6</b>	<b>PC Configuration</b>	<b>68</b>
6.1	IP Settings	68
6.1.1	Obtain IP Settings Automatically	68
6.1.2	Configure Static IP Address	70
6.2	Wireless LAN Settings	70
6.2.1	Prepare the Wireless Client(s)	70
6.2.2	Install the Wireless LAN Interface	70
6.2.3	Configure Access to the W3x WLAN	71
6.3	USB Sharing Settings	71
6.3.1	Check Workgroup Settings	72
6.3.2	Access a Shared Storage Device	73
6.3.3	Set Up a Connection to a Shared Storage Device	73
6.3.4	Access a Shared Printer	74
<b>7</b>	<b>Troubleshooting</b>	<b>77</b>
7.1	Restart	77
7.2	Reset to Factory Default Settings	77
7.3	LAN Connections	78
7.4	Internet Access	79
7.4.1	Change TCP Settings	80

7.5	Wireless LAN Connection	80
7.6	Access to Shared Files or Printer	82
7.7	Telephony and Fax Service (W35 only)	83
<b>Glossary</b>		<b>85</b>

# 1 Introduction

This chapter describes the structure of this guide and provides a list of reference documents.

## 1.1 Structure of this Guide

This *User's Guide* contains information that is needed for an end-user to configure and manage the Ericsson Mobile Broadband Router (MBR) W3x product series.

This guide describes both the Ericsson W30 and W35 and when design and functionality are in common, the term "Ericsson W3x" is used. Any information that is unique to a specific model is described with the corresponding product name; Ericsson W30 or Ericsson W35.

The following chapters are included:

- **Chapter 1** – "Introduction" – provides information about this guide and provides a list of reference documents.
- **Chapter 2** – "W3x Series Overview" gives an overview of the Ericsson W3x product series
- **Chapter 3** – "Configuration and Management" – provides detailed information about how to perform configuration and management of the Ericsson W3x.
- **Chapter 4** – "Telephony and Fax (W35 only)" – includes information about the telephony and fax function in the Ericsson W35. It also includes instructions on how to enter the SIM authentication codes via a telephone handset.
- **Chapter 5** – "Battery (W35 only)" – includes information about how to handle battery installation and charging for the Ericsson W35.
- **Chapter 6** – "PC Configuration" – gives instructions for configuring computers to work with the Ericsson W3x.
- **Chapter 7** – "Troubleshooting" – describes how to solve a number of issues that could occur during installation, configuration, and use of the Ericsson W3x.

- The **Glossary** includes abbreviations and explanations to technical terms used in this guide.

## 1.2 Related Documents

In the following documents, more information about the Ericsson W3x can be found:

- Ericsson W3x Series, Quick Installation Guide, XX/LZT 108 9869, Ericsson AB 2008.
- Ericsson W3x Series, Safety and Regulatory Information, 3/1551-CRH 102 168, Ericsson AB 2008.
- Ericsson W3x Series, License Information, 4/1551-CRH 102 168, Ericsson AB 2008.



## 2 W3x Series Overview

This chapter gives an overview of the Ericsson Mobile Broadband Router (MBR) W3x product series.

### 2.1 Product Variants

The Ericsson W3x product series consist of two models:

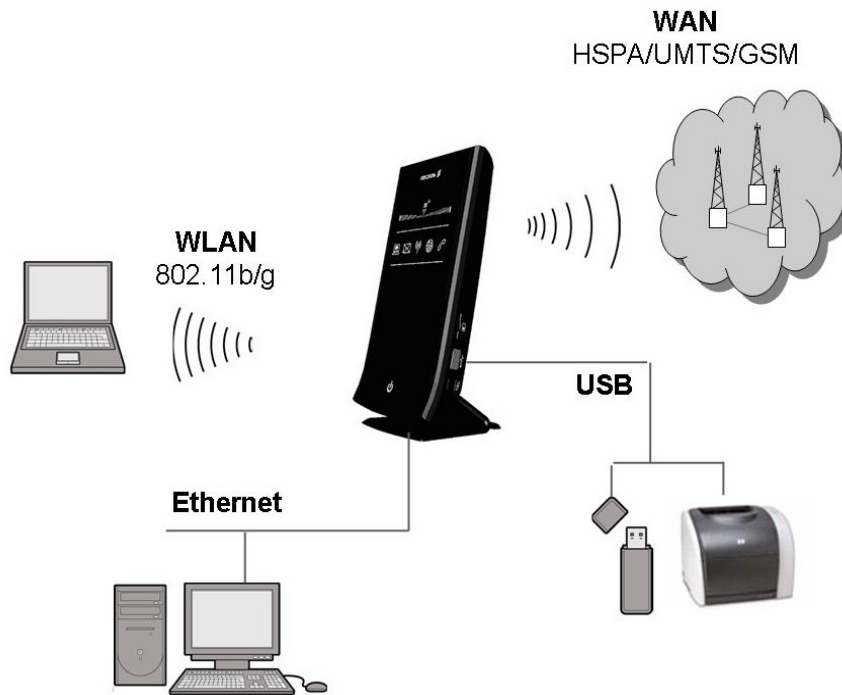
- **Ericsson W30** – Data Router
- **Ericsson W35** – Data and Voice Router

The W3x product series facilitates protected, high-speed Internet access for multiple users in home and small or branch office environments. It includes advanced data capabilities such as router and switch functionality, and provides the users with multiple possibilities for local area connectivity (Ethernet and WLAN).

With WCDMA/HSPA radio access capability the Ericsson W3x is well suited to provide broadband data access with data speeds similar to fixed line DSL services. The data rate is up to 7.2 Mbps and the up-link speed is up to 2 Mbps.

## 2.2 W30 – Data Router

The Ericsson W30 data router provides data capabilities such as data access (e.g. Internet) in the respect that it allows multiple computers to be connected to the router using Ethernet or wireless LAN (WLAN). It also supports file and printer sharing via the USB port.



*Figure 1 - Overview of Interfaces on the Ericsson W30*

## 2.3 W35 – Data and Voice Router

The Ericsson W35 data and voice router incorporates the same set of functions and data features as the Ericsson W30. Additionally, this model also includes high quality voice and fax services via the telephony interfaces. A broad range of network related services such as Prepaid Subscription, CLI (Calling Line Identification), Call Waiting, Call Barring, Call Forwarding, and Multiparty Conference Calls are available.

WCDMA/HSPA radio access is well suited for combined and efficient data and voice transmission over the mobile network.

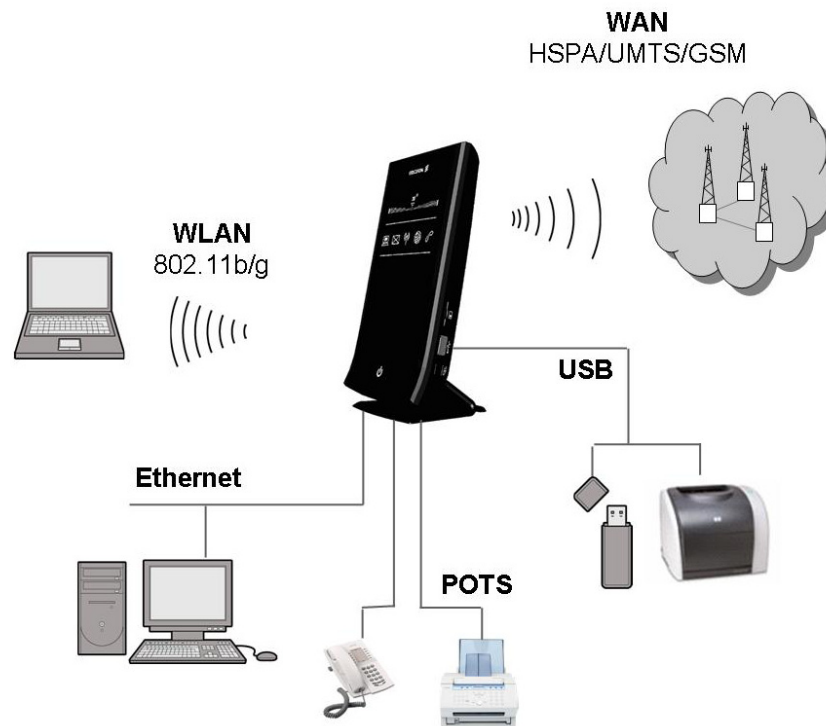


Figure 2 - Overview of Interfaces on the Ericsson W35

## 2.4 Feature Summary

The Ericsson W3x features the latest technology, which makes it highly suitable for everyday broadband services:

- **Wireless Broadband Services at Reliable High Speed**  
The Ericsson W3x uses WCDMA/HSPA as primary radio access and GSM/GPRS/EDGE as fall-back.

- **Web-based user interface** for configuration of the device with wizard support.
- **Advanced Networking**  
Supports an advanced local network setup providing IP routing, Ethernet switching, DHCP service, and NAT.
- **File and Printer Sharing**  
Network file and printer sharing is supported through a USB connection.
- **Local Wireless Access with High-level Security**  
The Ericsson W3x may function as a WLAN access point for the wireless local network supporting WEP, WPA, and WPA2 with pre-shared keys for WLAN security.

In addition to the above, the Ericsson W35 also includes the following features:

- **Voice Services**  
The Ericsson W35 includes voice capabilities accessed over standard analog telephone line interfaces. Network services such as Prepaid Subscription, Caller ID (1<sup>st</sup> call only), CLIP, Call Waiting, Call Forwarding, and Multiparty Conference Calls are supported.
- **Fax Service**  
The Ericsson W35 supports fax over IP (T.38) functions using packet switched connection. If T.38 Fax is offered by the service provider as a service with the Ericsson W35, simply connect an ordinary fax machine to the "Phone/Fax" connector on the back of the unit and the fax will work without further configurations.
- **Battery back-up**  
For voice back-up purposes, an optional (available as an accessory) rechargeable battery-pack can be connected between the AC/DC adapter and the Ericsson W35.

For more information about the Ericsson W3x product series, see [www.ericsson.com/fwt](http://www.ericsson.com/fwt)

## 2.5 Housing

The housing on the Ericsson W3x is designed to be either wall mounted or standing on the desk by use of the provided table stand.

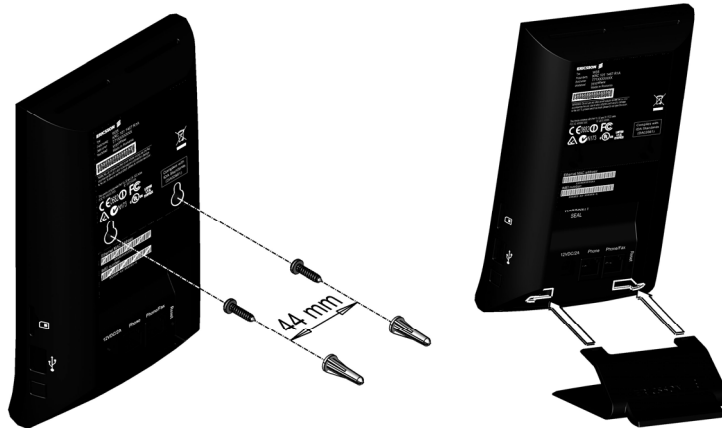


Figure 3 - Mounting alternatives

### 2.5.1 Back Side Interfaces

The back side of the Ericsson W3x includes the following interfaces:



Figure 4 – Ericsson W35 back side

The interfaces are described in the tables below:

*Table 1 – Ericsson W3x back side interfaces*

<b>Label</b>	<b>Description</b>
<b>Ethernet 1-4</b>	Ethernet LAN connectors for connecting client PCs to the Ericsson W3x.
<b>10-28VDC</b>	Power input for connecting the provided power supply adapter or an optional external battery pack (Ericsson W35 only).
<b>Reset</b>	<p>A small hole in the housing used to restore the Ericsson W3x configuration to factory default settings. The following procedure resets all configurable values back to factory default, including the login password.</p> <ol style="list-style-type: none"> <li>1. Press the <b>Reset</b> button with the tip of a pen. The <b>Standby</b> button starts blinking.</li> <li>2. Wait until the <b>Standby</b> button shows steady blue which indicates that the reset is finished.</li> </ol>

In addition to the above, the Ericsson W35 also includes interfaces for telephony and fax services.

**Note:** Telephony and fax services must be supported by the subscription/network in order to work.

The interfaces are described in the tables below:

*Table 2 – Additional back side interfaces on Ericsson W35*

<b>Label</b>	<b>Description</b>
<b>Phone</b>	Telephone connector, for connecting an analog telephone to the Ericsson W35.
<b>Phone/Fax</b>	Telephone/Fax connector, for connecting a fax machine to the Ericsson W35.

## 2.5.2 Left Side Interfaces

The left side of the Ericsson W3x is equipped with the following interfaces:



Figure 5 – Ericsson W3x left side

The table below describes the interfaces:

Table 3 – W3x left side interfaces

Interface	Type	Description
<b>SIM</b>	SIM card slot	SIM card slot for inserting a SIM card. <b>Note:</b> The Ericsson W3x must be disconnected from the power mains (or an optional battery removed) when inserting or removing the SIM card.
<b>USB</b>	USB-A	USB connector for connecting USB device(s), e.g. a memory stick or a printer to the Ericsson W3x.
<b>Button</b>		For future use.

### 2.5.3 Right Side Interface

The right side of the Ericsson W3x is equipped with an antenna connector (type MCX) for connecting an optional external antenna.



Figure 6 – Ericsson W3x right side


### 2.5.4 Front Panel

The front panel of the Ericsson W3x includes a signal quality indicator, LED indicators and a Standby button as described below.

#### 2.5.4.1 Signal Quality Indicator

The signal quality indicator shows the quality of the signal from the mobile network. The more segments displayed in the bar graph, the stronger the signal.



The symbol in the centre of the graph () is blinking when searching for a mobile network connection and when a connection is established, it indicates the following:

- When **3G** is displayed there is a connection to a UMTS network.
- **3G** with a **+** sign indicates connection to a HSPA network.
- When the 3G symbol is **unlit** and the segment bar displays signal, there is a connection to a GSM/GPRS/EDGE (2G) network.






### 2.5.4.2 W30 LED Indicators

The following LED indicators are visible on the front of the Ericsson W30:



Figure 7 - Ericsson W30 LED indicators

Table 4 – Description of Ericsson W30 LED indicators

Symbol	Color	Description
	Blinking (blue)  Off	Various alarm conditions exist that makes it impossible to establish a connection to the mobile network (and Internet). Information is specified on the "Overview" web page. No alarms.
	On (blue) Off	The Wireless LAN is activated. The Wireless LAN is not activated.
	On (blue) Off	A connection to Internet is established. No Internet connection is established.






### 2.5.4.3 W35 LED Indicators

The following LED indicators are visible on the front of the Ericsson W35:



Figure 8 - Ericsson W35 LED indicators

Table 5 – Description of Ericsson W35 LED indicators

Symbol	Color	Description
	Blinking (blue) Off	New voice mail message(s) is available. No voice mail message(s) is available.
	Blinking (blue) Off	Various alarm conditions exist that makes it impossible to establish a connection to the mobile network (and Internet). Information is specified on the "Overview" web page. No alarms.
	On (blue) Off	The Wireless LAN is activated. The Wireless LAN is not activated.
	On (blue) Off	A connection to Internet is established. No Internet connection is established.
	On (blue) Off	A connected telephone is off-hook. A connected telephone is on-hook.


#### 2.5.4.4 Built-in Ethernet Indicators

The Ethernet LAN connectors (**Ethernet 1-4**) have two built-in indicators each.

The left indicator shows the speed of data traffic between the Ericsson W3x and the connected client. If the speed is 100 Mbps, the indicator is green. When the indicator is unlit, the speed is 10 Mbps.

The indicator to the right is yellow when a LAN connection is established and flashes to show data traffic activity.

#### 2.5.4.5 Standby Button


The Standby  button at the bottom of the front shows steady blue when the Ericsson W3x has finished the start-up procedure.

The button can be pressed to switch the Ericsson W3x to a standby (low-power) mode (equal to when the Ericsson W35 is running on optional battery power). The button shows red when the unit is in standby mode and only phone services are available.

## 3 Configuration and Management

When the physical installation of the Ericsson W3x is finished (as described in the **Quick Installation Guide**), the internal Web User Interface (WUI) is available for configuration and status control.

This chapter provides detailed information about configuration options and management of the Ericsson W3x using the WUI.

The WUI is available in five languages; English, German, Spanish, French and Italian. Each page in the WUI includes country flags for the supported languages: 

Click on a flag to change to the preferred language.

### 3.1 Access and Login to the Web User Interface

The WUI can be accessed locally from a PC connected to either an Ethernet LAN port or to the wireless LAN interface.

**Note:** First time setup must be done via an Ethernet port as the wireless LAN interface in the Ericsson W3x is disabled by default.

When accessing the web pages, the following web browsers are supported:

- Internet Explorer® 5.0 or higher
- Safari® 1.3 or higher
- Firefox® 1.0 or higher
- Opera® 8 or higher

Start a web browser on a PC connected to the Ericsson W3x and type **http://mbr** or **http://192.168.1.1** in the **Address** (URL) field.

**Note:** If you change the internal IP address (192.168.1.1) on the Ericsson W3x, you have to use the new address to access the web pages.

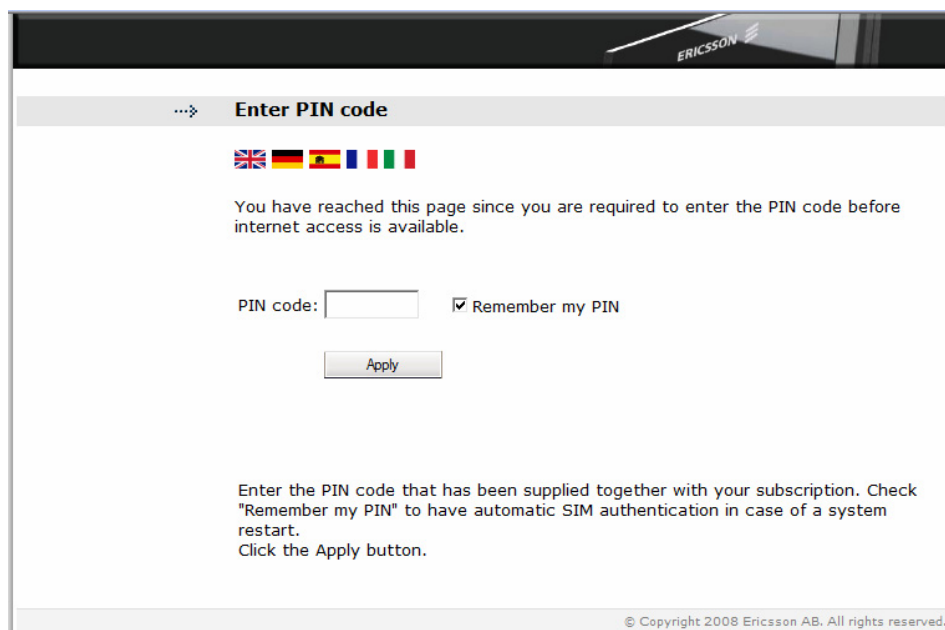
A start page is displayed in one of the following appearances depending on the operational status of the Ericsson W3x described in section 3.1.1 and 3.1.2.

### 3.1.1 Enter PIN Code

The SIM card contains information about the subscription and is normally protected by a PIN (Personal Identification Number) code and a PUK (Personal Unblock Key) code.

Normally, you have to enter a PIN code to activate the SIM card. In some cases, however, PIN authentication is not required and it is possible to use the SIM card without entering a PIN code.

The **Enter PIN code** page is displayed if a PIN code is required:



*Figure 9 - Enter PIN code page*

Enter the PIN code (provided with the SIM card).

You can also check “Remember my PIN” to have automatic SIM authentication in case of a system restart.

Click the **Apply** button to save the settings.

### 3.1.2 Enter Password

If a PIN code is not needed for SIM authentication, or if automatic SIM authentication is enabled, the **Enter password** page is displayed:

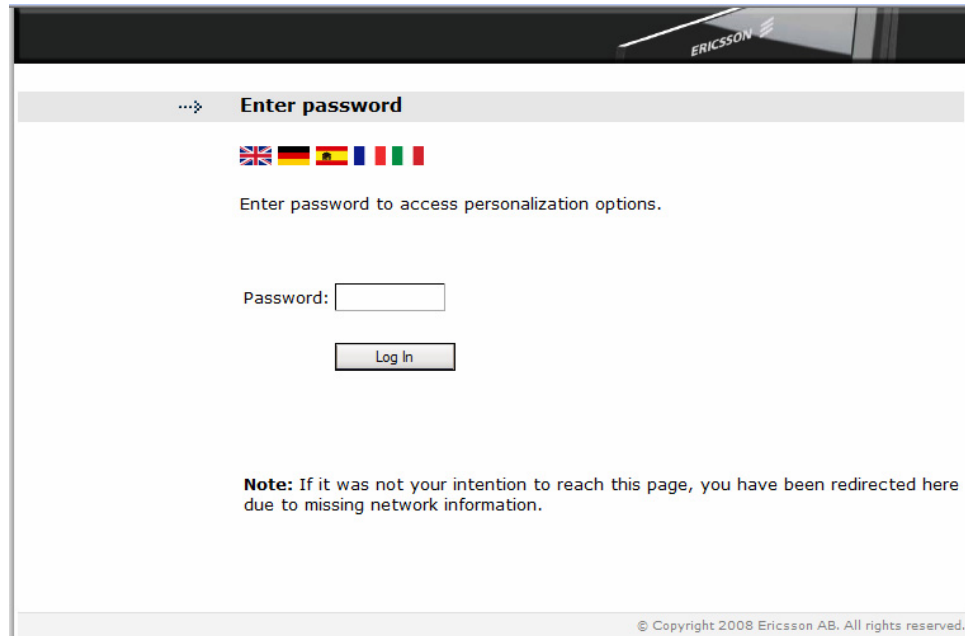


Figure 10 – Enter password page

Type **user** in the “Password” field and click the **Log In** button. For security purposes, it is recommended to change the default password, see section 3.11 – *Change Password*.

**Note:** You might, at any time, be redirected to the **Enter password** page without your intention if there are any problems with the connection to the mobile network and/or Internet. In this case, just enter the password and check the “ALARMS” section on the **Overview** page.

After a successful login, the **Overview** page is displayed, see section 3.2 – *Overview*.

### 3.1.3 Inactivity Timeout

The WUI has an inactivity timeout set to 20 minutes. Before this timeout expires, it is preceded by a notification (displayed on top of the current displayed page) one minute before the automatic logout:

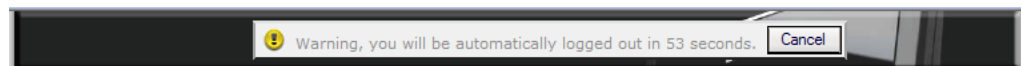
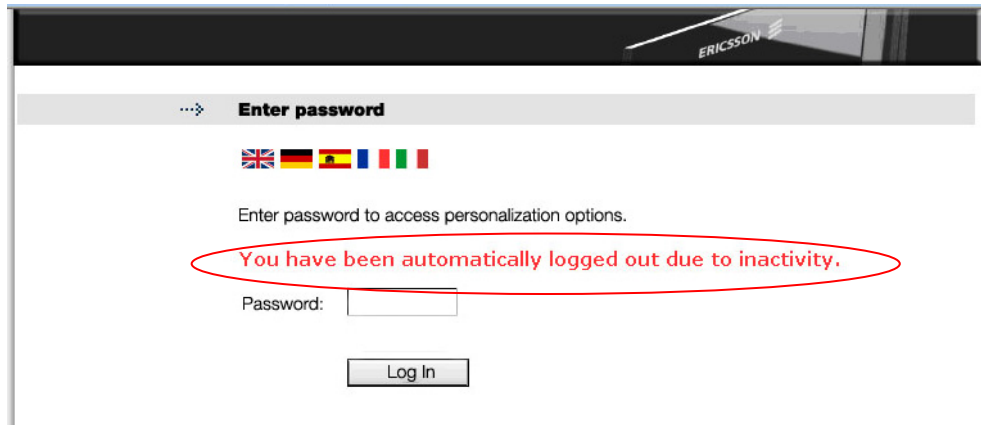


Figure 11 - Inactivity Timeout Warning

The **Cancel** button can be clicked to abort the automatic logout.

When the timeout expires, the **Enter password** page is displayed with a notification about the automatic logout:



*Figure 12 – Enter password page (after inactivity timeout)*

Enter the "Password" and click **Log In** to make a new login.

## 3.2 Overview

The **Overview** page gives an overview of the settings on the Ericsson W3x as described below.

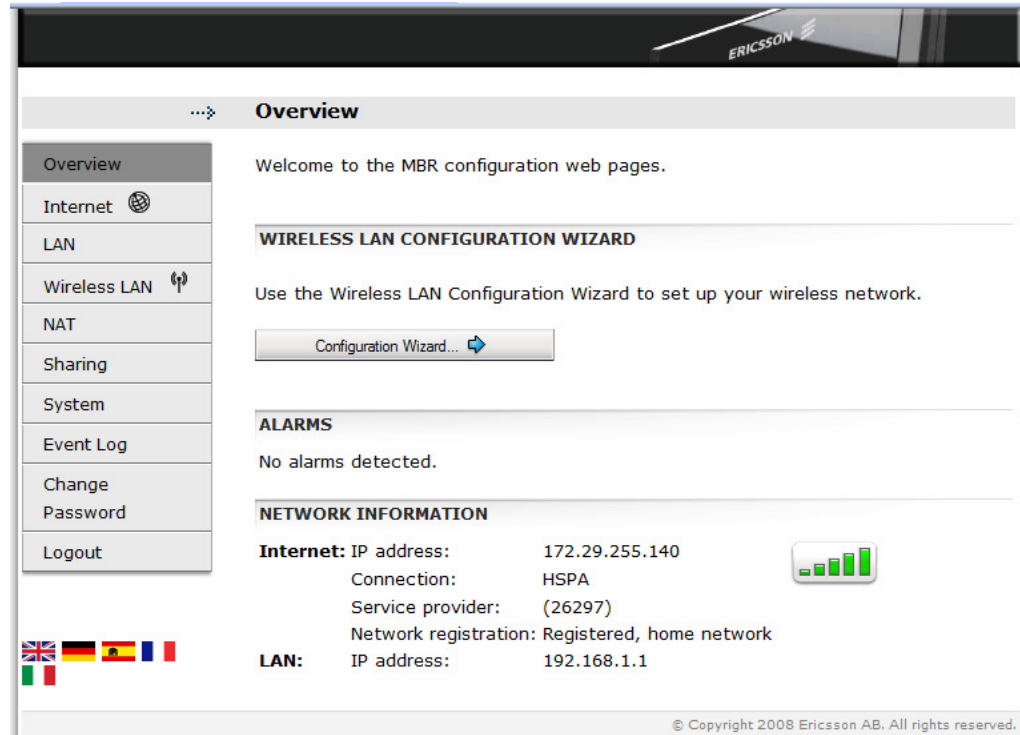



Figure 13 - Overview page

The **Overview** page provides the following functions:

- The left-hand menu (visible on all web pages) that includes configuration topics for additional configuration described one by one in the following sections.
- The **Configuration Wizard...** button which is the entrance to the step-by-step configuration wizard recommended to be used for setting up your Wireless LAN. See section 3.3 – *Wireless LAN Configuration Wizard*.
- The “ALARMS” section where detected error conditions are specified. See section 3.2.1 – *Alarms* for more information. If an alarm occurs, the **Alarm**  indicator (on the front of the Ericsson W3x) is blinking and a message is also sent to the Event log. See section 3.10 – *Event Log*.




- The “NETWORK INFORMATION” section where the most important connection status information is collected. This information (among others) is also found on the **Internet** and **LAN** web pages respectively.

### 3.2.1 Alarms

The “ALARMS” section on the **Overview** page includes detected active error conditions.

Events that generate an alarm are such that make it impossible to send or receive data, e.g. SIM card missing.

If there are no alarms currently detected the text "No alarms detected" is displayed. If an alarm is detected, the **Alarm**  indicator on the Ericsson W3x front panel is blinking, and the corresponding cause is displayed according to the table below:

*Table 6 - Alarm cause description*

<b>Alarm cause</b>	<b>Description</b>
No SIM card detected	There is no SIM card inserted, or the SIM card is not correctly inserted.
Invalid SIM card inserted	The inserted SIM card is invalid
No PIN code entered	No PIN code has been entered to activate the Internet and voice services.
Incorrect PIN code entered	The entered PIN code is incorrect.
SIM card blocked	The SIM card has been blocked (due to entering the wrong PIN code three times). The PUK is required to unblock the SIM card.
SIM card permanently blocked	The SIM card has been permanently blocked (due to entering the wrong PUK code ten times). A new SIM card is required.
No Auto APN was found	The APN (Access Point Name) could not be automatically configured based on information on the SIM card.
Alarm detection not working	The alarm detection function is currently not working.
Unknown alarm	An alarm that cannot be identified has


	occurred.
--	-----------

### 3.2.2 Network Information

The “NETWORK INFORMATION” section on the **Overview** page includes a selection of the Internet and LAN settings. This information (among others) is also displayed on the **Internet** and **LAN** pages respectively.

The **Internet** information includes connection status and basic settings. Details about the following items are displayed:

Table 7 - Network information (Internet) description

Text/symbol	Description
	The mobile network (HSPA, UMTS or GSM) signal quality available at the Ericsson W3x location. This signal quality affects the performance of the unit. If two or more bars are green, the connection is usually acceptable.
<b>IP Address:</b>	The IP address automatically assigned to the Ericsson W3x by the mobile network.  <b>Note:</b> If you require static IP addressing from your operator, contact them directly.
<b>Connection:</b>	The radio access technique currently used to enable Internet access. It can be HSPA, UMTS, EDGE, or GPRS.
<b>Service provider:</b>	The name of, or other reference to, the mobile network operator.
<b>Network registration:</b>	The current mobile network registration status: <ul style="list-style-type: none"> <li>- Not registered, not searching</li> <li>- Registered, home network</li> <li>- Searching</li> <li>- Registration denied</li> <li>- Unknown</li> <li>- Roaming</li> <li>- Limited Service</li> </ul>

The **LAN** section includes information about the following item:

Table 8 - Network information (LAN) description

Text	Description
<b>IP Address</b>	The LAN IP address of the Ericsson W3x.

### 3.3 Wireless LAN Configuration Wizard

The Ericsson W3x may function as a WLAN Access Point (AP) for the local network providing wireless client(s) with Internet and LAN access. The Wireless LAN Configuration Wizard guides you step-by-step through the basic setup for the Wireless LAN (WLAN).

**Note:** The wireless setup typically requires configuration of both the Ericsson W3x and the wireless clients. For more information about configuring wireless clients, see 6.2 – *Wireless LAN Settings*.

Click the **Configuration Wizard...** button on the **Overview** page to start the wizard.

#### 3.3.1 Enable the Wireless LAN

The Ericsson W3x WLAN interface is disabled by default.

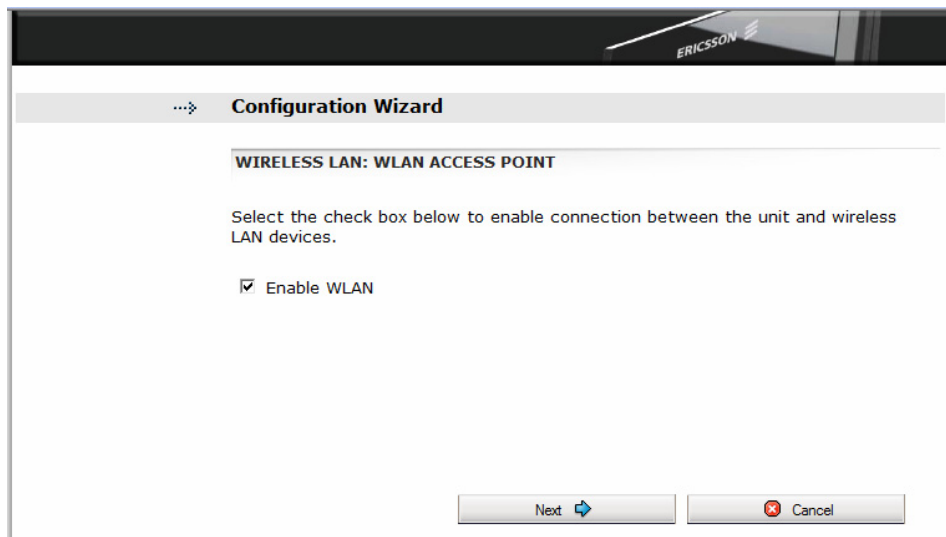


Figure 14 – Wireless LAN: WLAN Access Point page

To enable connection of one or more wireless clients to the Ericsson W3x, select the “Enable WLAN” check box.

Click **Next** to proceed.

**Note:** The WLAN interface will not be activated until the complete configuration details are entered.

### 3.3.2 Network Name

All clients on the local wireless network share a common Service Set Identifier (SSID) or network name. This name is required to establish connection between the Ericsson W3x and the wireless client(s), and to distinguish the wireless network from any other(s) that may be in use nearby. Only devices configured with the same network name as the one set on the Ericsson W3x can obtain access to it.

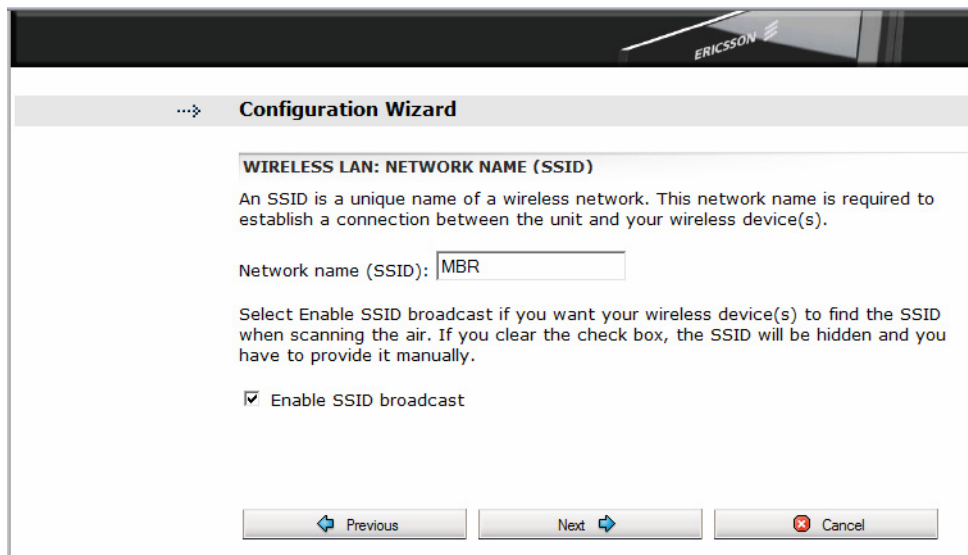


Figure 15 – Wireless LAN: Network Name (SSID) page

The network name is case-sensitive (distinguish between uppercase and lowercase letters) and can be changed to any combination of numbers (0 – 9), letters (a – z), and hyphens (-) with a maximum length of 32 characters.

If the “Enable SSID broadcast” option is selected, your local wireless client(s) will find the network name when scanning the air. If not, the network name is hidden and has to be manually provided to the wireless client(s).

If you want to change the preconfigured network name (MBR), type a new name in the “Network name (SSID):” field and also select if the SSID shall be hidden or not.

Click **Next** to proceed.

### 3.3.3 Wireless LAN Authentication

All communication on the wireless LAN can be protected from potential intruders and eavesdroppers through standard authentication and encryption methods.

Authentication is used to restrict access to the wireless network and encryption is the translation of data into a form that cannot be easily understood by unauthorized users. The encrypted data can only be sent and received by users with access to a private encryption key.

**Note:** Make sure that the operating system(s) and Wireless LAN interface(s) of the wireless client(s) support the selected authentication method.



Figure 16 – Wireless LAN: Authentication page

Select one of the authentication methods from the “Authentication” drop-down list. The available options are as follows:

- **Open (No security);**  
If you select “Open” as authentication method no client configuration is needed but be aware of that the WLAN will now be open without any kind of security.
- **WEP-64, WEP-128 (Low security);**  
WEP (Wired Equivalent Privacy) is considered to be a low security option. WEP encrypted data is translated into blocks of either 64 bits length or 128 bits length.
- **WPA, WPA2 (High security);**  
WPA (Wi-Fi Protected Access) and its successor WPA2 are the most reliable security options. WPA encryption uses the Temporal Key Integrity Protocol (TKIP) while WPA2 encryption follows the Advanced Encryption Standard (AES). AES offers a higher level of security and is approved for sensitive corporate and government data transmission.

- **WPA/WPA2 Mixed (High security)**  
WPA/WPA2 Mixed enables connection of both WPA and WPA2 clients.

Click **Next** to proceed.

### 3.3.3.1 Open

If you select “Open”, the last page of the configuration wizard, where you can review and confirm your settings, is displayed:



Figure 17 – WLAN Configuration Wizard Confirmation page

To confirm the settings and close the Configuration Wizard, click the **Finish** button.

You can use the **Previous** button to go back to previous pages and check your settings and/or make changes.

If you click the **Cancel** button, the Configuration Wizard closes and no changes are saved:

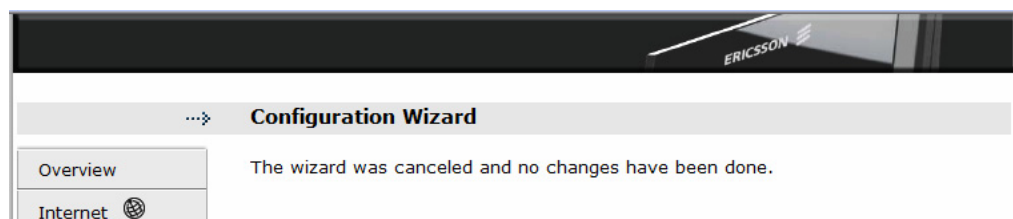


Figure 18 - Cancel Configuration Wizard

### 3.3.3.2 WEP Encryption Key

WEP encrypted data can only be sent and received by users with access to a private encryption key. This means that each client on your wireless network has to be configured with the same key as in the Ericsson W3x.

A 64-bit data encryption key includes 10 characters. A 128-bit data encryption key includes 26 characters. Only the hexadecimal numbers 0 to 9 and letters A to F are allowed.



Figure 19 – Wireless LAN: WEP (64 BIT) page

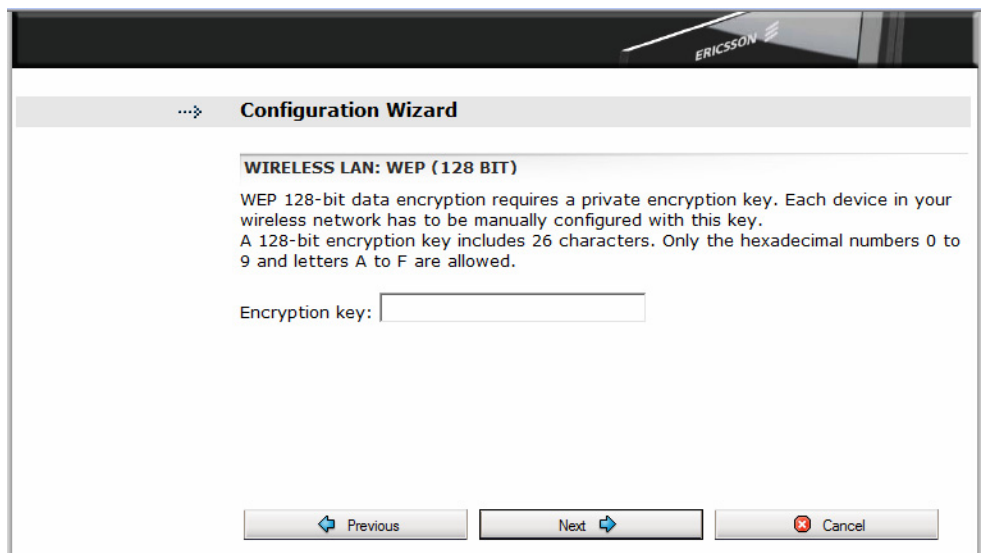


Figure 20 – Wireless LAN: WEP (128 BIT) page

Enter an encryption key in the “Encryption key” field.

Click **Next** to proceed.

### 3.3.3.3 WPA/WPA2 Passphrase

WPA and WPA2 authentication and encryption require a passphrase. Each client on your wireless network has to be configured with the same passphrase as in the Ericsson W3x.

A WPA or WPA2 passphrase is case sensitive and consists of between 8 and 63 optional characters. It is recommended that the passphrase contains at least 20 characters.



Figure 21 – Wireless LAN: WPA page



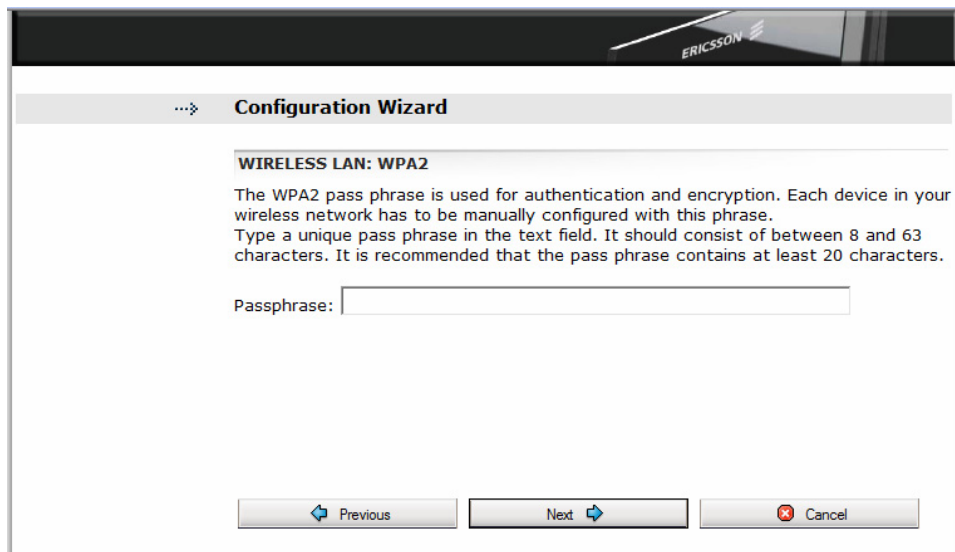


Figure 22 – Wireless LAN: WPA2 page

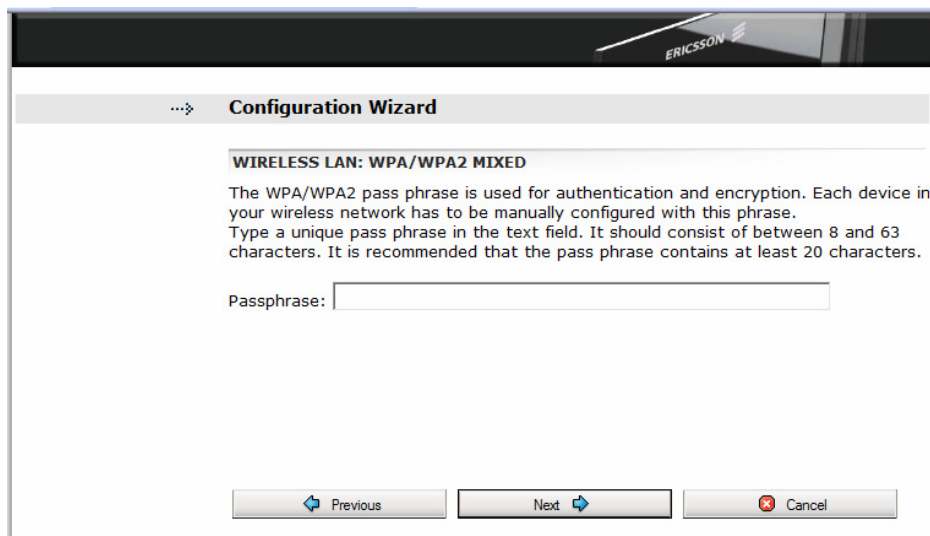


Figure 23 - Wireless LAN: WPA/WPA2 Mixed page

Type a unique passphrase in the “Passphrase” field.

**Note:** Avoid using special characters (such as ;, “ and ¢) when entering a pass phrase.

Click **Next** to proceed.

### 3.3.4 Wireless LAN Configuration Wizard Confirmation

On the last page of the Configuration Wizard, the current settings are displayed:

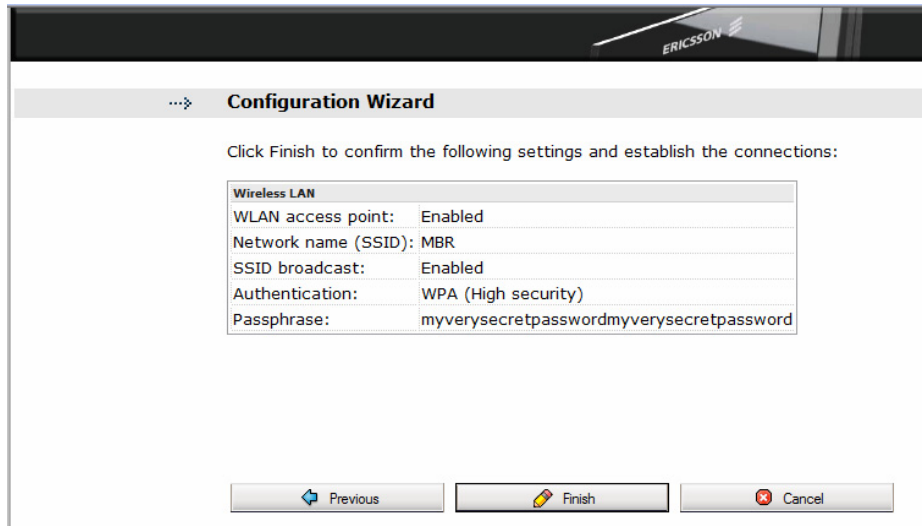


Figure 24 – WLAN Configuration Wizard Confirmation page

To confirm the settings and close the Configuration Wizard, click the **Finish** button.

You can use the **Previous** button to go back to previous pages and check your settings and/or make changes.

If you click the **Cancel** button, the Configuration Wizard closes and no changes are saved:

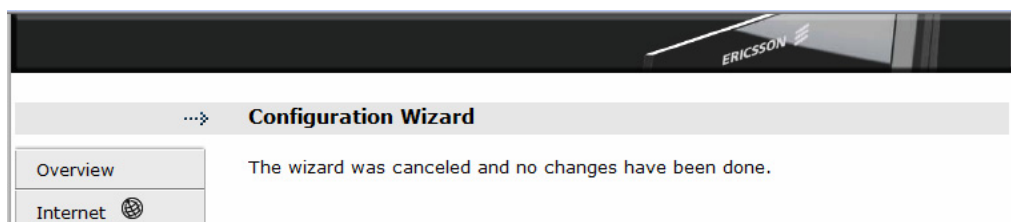


Figure 25 - Cancel Configuration Wizard

## 3.4 Internet

The **Internet** web page includes status information and settings for the connection to the mobile network.

**Note:** The information on this page may vary depending on product model and required authentication for Internet service setup.

**Internet**

Overview  
**Internet**  
 LAN  
 Wireless LAN  
 NAT  
 Sharing  
 System  
 Event Log  
 Change Password  
 Logout

Link status: Up  
 Mode: PPP  
 Connection: HSPA  
 Service provider: (26297)  
 Current APN: cpe.gsn.lkp

Network registration: Registered, home network  
 IP address: 172.29.255.140  
 DNS 1: 172.16.5.2  
 DNS 2: 172.16.5.3

**TRAFFIC STATISTICS**

Transmitted: 1.1 KiB (24 packets)  
 Received: 2.5 KiB (22 packets)  
 Error: 0 packets  
 Overruns: 0 packets  
 Dropped: 0 packets

Transmitted current month: 1.6 KiB  
 Received current month: 2.7 KiB  
 Transmitted previous month: -  
 Received previous month: -

**AUTHENTICATION**

PIN: [●●●●] [Change PIN](#)

Auto APN

APN: data.de.se

PPP user name: [ ]

PPP password: [ ]

Authentication Protocol:  PAP  CHAP

[Apply](#)

**CELLULAR BAND SELECTION**

Region: Global

**3G Settings:**

850  1900  2100

**2G Settings:**

850  900  1800  1900

[Apply](#)

© Copyright 2008 Ericsson AB. All rights reserved.

Figure 26 - Internet page


### 3.4.1 Mobile Network Connection Details

The Ericsson W3x connects to the HSPA/UMTS (3G) network when it is available and uses the GSM/GPRS/EDGE (2G) network as fallback.

**Note:** Your SIM card must support both 2G and 3G to have this capability. Check with your operator for any issues related to your local coverage for both 2G and 3G.

The following information is displayed regarding the connection to the mobile network:

Table 9 - Mobile Network connection details

Text/symbol	Description
	The mobile network (HSPA, UMTS or GSM) signal quality available at the Ericsson W3x location. This signal quality affects the performance of the unit. If two or more bars are green, the connection is usually acceptable.
<b>Link Status:</b>	The Internet access status, either Up or Down. If the link is up, a connection is established.
<b>Mode:</b>	The protocol used for the Internet data traffic: PPP (Point-to-Point Protocol).
<b>Connection:</b>	The radio access technique currently used to enable Internet access. It can be HSPA, UMTS, EDGE, or GPRS.
<b>Service provider:</b>	The name of, or other reference to, the mobile network operator.
<b>Current APN:</b>	The APN (Access Point Name) currently used.
<b>Network registration:</b>	The current mobile network registration status, which can be one of the following: <ul style="list-style-type: none"> <li>- Not registered, not searching</li> <li>- Registered, home network</li> <li>- Searching</li> <li>- Registration denied</li> <li>- Unknown</li> <li>- Roaming</li> <li>- Limited Service</li> </ul>
<b>IP Address:</b>	The IP address automatically assigned to the Ericsson W3x by the mobile network. <p><b>Note:</b> If you require static IP addressing from your operator, contact them directly.</p>

<b>DNS 1:</b>	The IP address to the primary DNS server.
<b>DNS 2:</b>	The IP address to the secondary DNS server.

### 3.4.2 Traffic Statistics

The “TRAFFIC STATISTICS” section on the **Internet** page includes information about the following items:

*Table 10 - Traffic Statistics description*

<b>Text</b>	<b>Description</b>
<b>Transmitted / Received:</b>	The total size (and number) of transmitted/received data packets.
<b>Error:</b>	The number of invalid data packets.
<b>Overruns:</b>	The number of packets lost due to too many incoming data packets.
<b>Dropped:</b>	The number of dropped data packets.
<b>Transmitted / Received current month:</b>	The total size of transmitted/received data for the current month.
<b>Transmitted / Received previous month:</b>	The total size of transmitted/received data for the previous month.

**Note:** The data size and packet counters have the upper limits of 4 GiB and  $2^{32}$  packets (more than 4 billion packets). When these limits have been reached, the counters wrap around to zero.

### 3.4.3 Authentication

Internet access requires authentication of the Ericsson W3x. Depending on the current Internet service setup, the authentication requests may differ. Your service provider provides the Ericsson W3x SIM card and details needed for authentication.

The “AUTHENTICATION” section on the **Internet** page includes the following authentication details that may be required:

*Table 11 - Authentication details*

<b>Text</b>	<b>Description</b>
<b>PIN:</b>	The PIN (Personal Identification Number) code, which

	is used for SIM authentication.
<b>Auto APN</b>	If enabled, the APN (Access Point Name) is automatically configured based on information on the SIM card. If this fails, an alarm is raised (displayed in the ALARMS section on the <b>Overview</b> page as “No Auto APN was found”) the APN has to be provided manually in the “APN” field (see below).
<b>APN:</b>	The APN, which is a reference to the HSPA/UMTS/GSM Internet access point on the service provider’s network. The APN usually has the format <name.service_provider.country>.
<b>PPP user name:</b>	The Point-to-Point Protocol Internet mode user name, which is used for user authentication.
<b>PPP password:</b>	The Point-to-Point Protocol Internet mode password, which is used for user authentication.
<b>Authentication Protocol:</b>	The authentication protocol ( <b>PAP</b> or <b>CHAP</b> ) to be used when PPP is used for authentication.

If authentication is required because of a reset to factory default configuration, fill in the appropriate fields and click **Apply** to save the settings.

**Note:** Only enter details you have received from your service provider and leave other fields empty.

### 3.4.3.1 Unblock SIM Card

If three attempts have been made with an incorrect PIN code, the SIM card is blocked and the **Unblock SIM** button is displayed besides the “PIN” field.

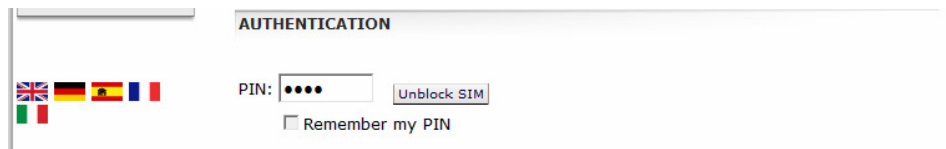


Figure 27 - Unblock SIM button

The PUK code is needed to unblock the SIM card. Click the **Unblock SIM** button to display the **Unblock SIM** page:

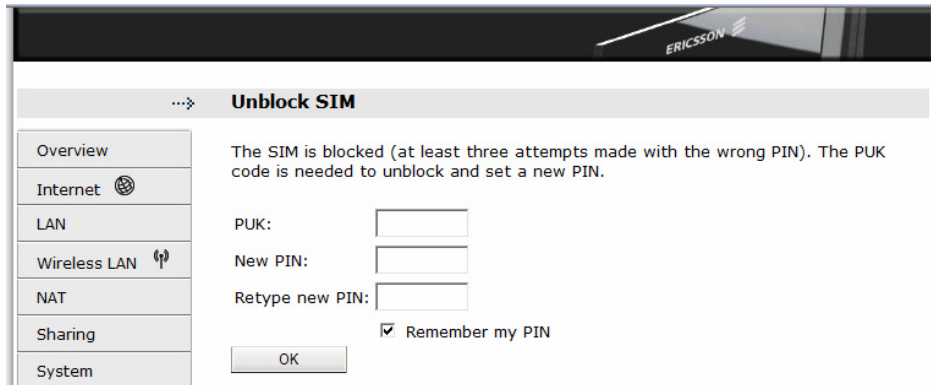


Figure 28 - Unblock SIM page

Type the PUK code in the “PUK” field and type a new PIN code in the “New PIN” and “Retype new PIN” fields. Click **OK** to save the settings.

**Note:** A restart of the Ericsson W3x (see section 3.9.3) is needed when the PUK code has been entered to unblock the SIM card.

**Note:** If ten attempts have been made with an incorrect PUK, the SIM card is permanently blocked, and a new SIM card is required.

### 3.4.3.2 Unlock Operator Lock

If the SIM card used in the Ericsson W3x is locked to a specific operator it cannot be replaced with any other SIM card without having received an unlock code from the service provider. If this is the case, and an invalid SIM card is inserted, the **Unlock Operator Lock** button is displayed besides the “PIN” field. Click the button to display the **Unlock operator lock** page:

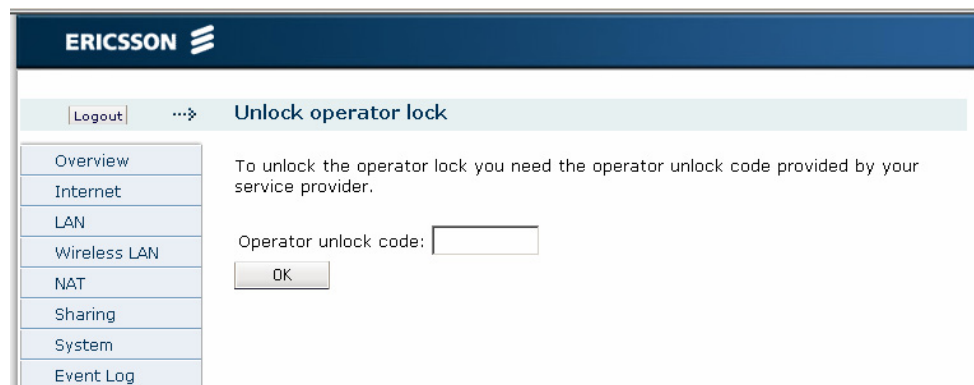


Figure 29 - Unlock operator lock page

Type the unlock code provided by the service provider in the “Operator unlock code” field and click **OK** to save the settings. The code consists of 10 characters.

### 3.4.3.3 Change PIN

If SIM authentication is verified, the “PIN” field cannot be edited. Instead the **Change PIN** button is displayed.

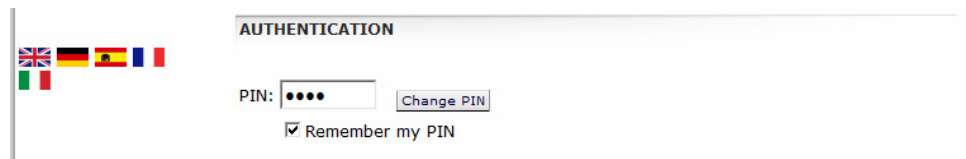


Figure 30 - Change PIN button

To change the PIN, click **Change PIN** to display the **Change PIN** page:

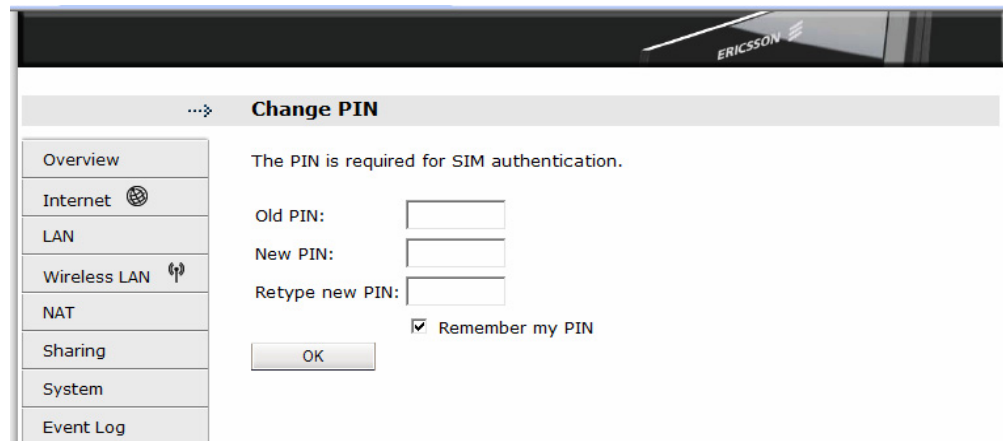


Figure 31 - Change PIN page

Type the current and new PIN in the corresponding fields. You can also check “Remember my PIN” to have automatic SIM authentication in case of a system restart. Click **OK** to save the settings.

### 3.4.4 Cellular Band Selection

The “CELLULAR BAND SELECTION” section on the **Internet** page includes settings for manually selection of the frequency bands to use.

Table 12 – Cellular band selection details

Text	Description
Region	The drop-down list includes Preferred Roaming List



	<p>(PRL) regions. The PRL contains information regarding allowed systems (GSM/UMTS) and bands. This information is used by the Ericsson W3x during the system selection and acquisition process, initially and when the Ericsson W3x is roaming.</p> <p>By setting a specific region, the Ericsson W3x favors bands within this region.</p> <p>Included regions in the list are:          Global          Europe/Rest of the World          North America          Australia          Japan          H3G, W2100, G900/1800</p> <p><b>Note:</b> A restart is required if changing this setting.</p>
<b>3G Settings</b>	<p>Select the frequency bands to be used for a 3G mobile connection; 850, 1900, 2100.</p>
<b>2G Settings</b>	<p>Select the frequency bands to be used for a 2G mobile connection; 850, 900, 1800, 1900.</p>

## 3.5 LAN

The **LAN** (Local Area Network) page includes settings for the connections between the Ericsson W3x and other local devices, and status of each physical LAN port.

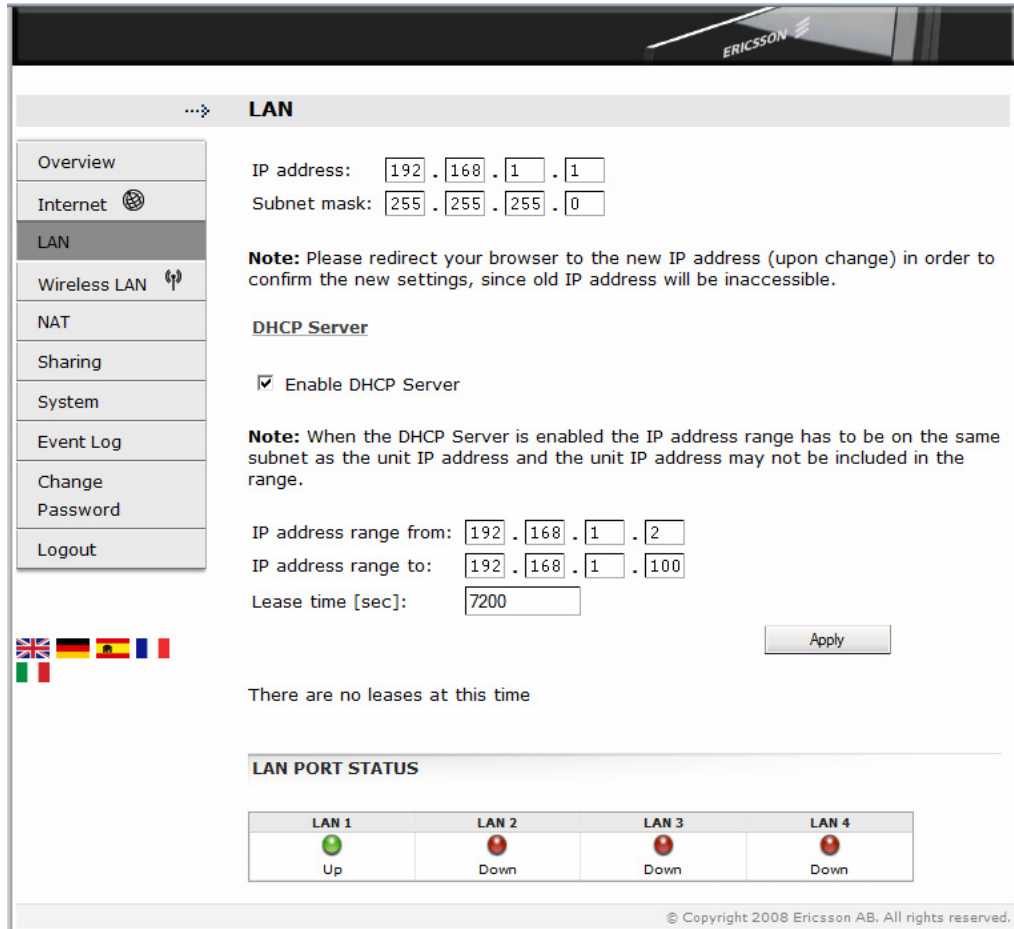


Figure 32 - LAN page

### 3.5.1 LAN IP Address

The LAN IP address and subnet mask of the Ericsson W3x is used for connections to clients on the LAN/WLAN.

The following configuration options are displayed on top of the **LAN** page:

Table 13 - LAN page description

Text	Description
IP address:	The LAN IP address of the Ericsson W3x.
Subnet mask:	The subnet mask, which determines the range of IP addresses on the subnet.

The LAN IP address and subnet mask can be changed, but before you do this, consider the following:

- Make sure that the new address is not included in the DHCP server IP address range, displayed in the “DHCP Server” section. The default range is 192.168.1.2 – 192.168.1.100.
- Make sure that the DHCP server IP address range is included in the new subnet. If you want to change the subnet not to include the DHCP IP address range, you first have to disable the DHCP server.
- If port forwarding rules have been configured, those settings have to be removed before changing the IP address or subnet mask. For information, see section 3.7.3 – *Port Forwarding*.

To change the LAN IP address or subnet mask of the Ericsson W3x, type the new values in the corresponding fields and click **Apply** to save the settings.

**Note:** If you change the LAN IP address while connected to the WUI, you will be disconnected. You have to redirect the web browser to the new address in order to confirm the new settings. Type the new LAN IP address in the **Address** (URL) field and press Enter.

### 3.5.2 DHCP Server

The Ericsson W3x incorporates a DHCP (Dynamic Host Configuration Protocol) server which dynamically assigns IP addresses to devices on the LAN/WLAN whenever they are switched on. The DHCP server also puts the hostname, supplied by the client DHCP request, in the local DNS (Domain Name System/Service) proxy.

The DNS proxy contains a small database of local host names and addresses supplied by client DHCP requests. In addition it also caches requests to remote DNS servers.

The following configuration options are displayed in the “DHCP server” section on the **LAN** page:

Table 14 - DHCP Server configuration options

Text	Description
<b>Enable DHCP server</b>	Select this checkbox to enable the DHCP server.  <b>Note:</b> If you already have a DHCP server on your network, you should disable this feature in the Ericsson W3x.
<b>IP address range from:</b>	The IP addresses that can be assigned to LAN/WLAN clients are collected from a predefined range of available IP addresses. The preconfigured range – from 92.168.1.2 to 192.168.1.100 is suitable for most local networks.
<b>IP address range to:</b>	
<b>Lease Time [sec]:</b>	The DHCP server uses the concept of a “lease”, that is the amount of time that a given IP address will be valid for a specific device. If the lease time expires and the device is still connected, the lease is automatically renewed.  The preconfigured lease time is 7200 seconds (2 hours) and a valid value must be within the range 60 and 2147483647 seconds.

**Note:** If you want to configure a connected device with a static IP address, make sure that the address is outside the DHCP server IP address range.

Before changing any of the DHCP server settings, read the following:

- The DHCP server IP address range has to be on the same subnet as the LAN IP address on the Ericsson W3x.
- The DHCP server IP address range must not include the LAN IP address on the Ericsson W3x.
- If port forwarding rules have been created, those settings have to be removed before changing the DHCP server IP address range. For more information, see section 3.7.3 – *Port Forwarding*.

To change the DHCP server settings, type the new values in the corresponding fields and click **Apply** to save the settings.

### 3.5.2.1 Leases

When there are clients connected to the Ericsson W3x that have been assigned IP addresses from the DHCP server they are presented in the “DHCP Server” section as in the example below:

Leases			
MAC address	IP address	Hostname	Lease expires in
00:17:a4:d1:87:06	192.168.1.20	erabdab-PC	7045 seconds

Figure 33 - DHCP server leases

If not, the text “There are no leases at this time” is displayed.

### 3.5.3 LAN Port Status

The “LAN PORT STATUS” section on the **LAN** page shows the link status of each Ethernet LAN port (**Ethernet 1 - 4**) on the Ericsson W3x.





LAN PORT STATUS			
LAN 1	LAN 2	LAN 3	LAN 4
 Down	 Down	 Down	 Up

Figure 34 - LAN Port Status

The status for each port is either green (Up) when a device is connected to the port or red (Down) when no device is connected.

## 3.6 Wireless LAN

A Wireless LAN (WLAN) is a local network that communicates through wireless connections.

The Ericsson W3x can be used as a WLAN Access Point (AP), connecting to wireless PCs according to the IEEE standard 802.11b/g, providing Internet and LAN access.

The WLAN settings are displayed on the **Wireless LAN** page.

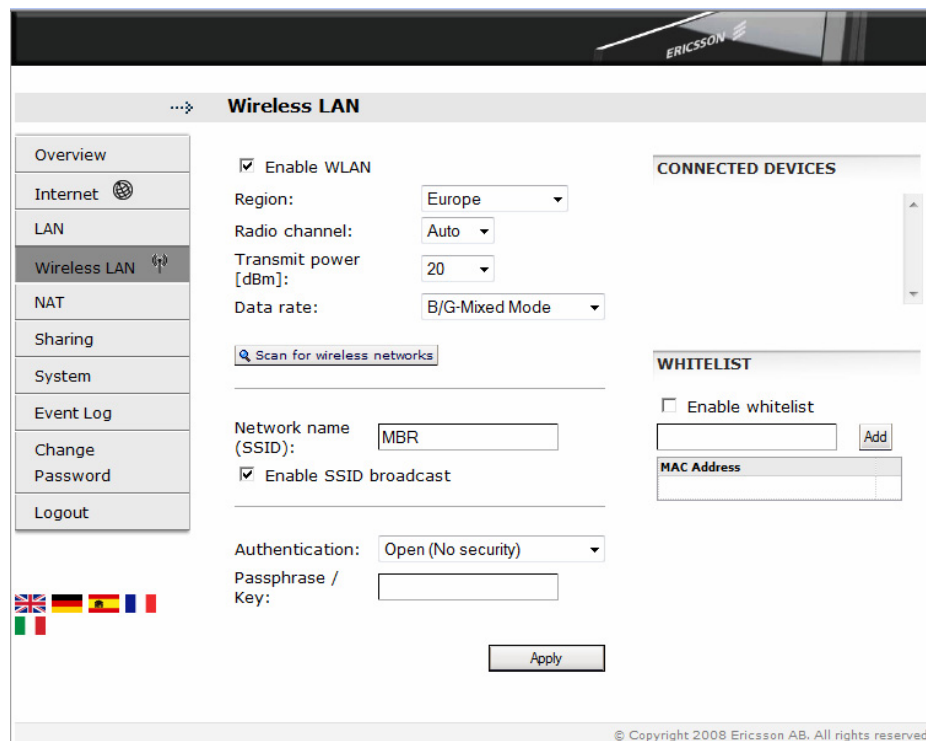


Figure 35 - Wireless LAN page

### 3.6.1 Enable WLAN

To enable the wireless LAN on the Ericsson W3x select the “Enable WLAN” check box and click the **Apply** button to save the setting. To ensure the security of your Wireless LAN, you are recommended to change the default settings for network name (SSID) and authentication.

**Note:** The wireless setup typically requires configuration of both the Ericsson W3x and the wireless client(s). For more information on configuration of wireless clients, see section 6.2 – *Wireless LAN Settings*.

### 3.6.2 Region

Wireless devices are thoroughly regulated and the countries have slightly different regulations. Therefore, the geographical region where the Ericsson W3x is used must be stated to make sure the correct radio frequencies are used when transmitting data.

Select the geographical region in which you reside from the “Region” drop-down list and click **Apply** to save the setting.

### 3.6.3 Radio Channel

The radio channel must be in accordance with the previous set region and only channels that are allowed in the configured region are available in the “Radio channel” drop-down list.

By selecting “Auto” (recommended) the radio in the Ericsson W3x will automatically scan each valid channel and choose the one with least interference.

Select either “Auto” or a specific channel number from the “Radio channel” drop-down list and click **Apply** to save the setting.

### 3.6.4 Transmit Power [dBm]

To avoid interference with other wireless networks, the transmit power level can be reduced. If you want to change the transmit power level according to your specific conditions, select an appropriate level from the “Transmit power [dBm]” drop-down list and click **Apply** to save the setting.

### 3.6.5 Data Rate

According to wireless LAN standards and the IEEE 802.11 protocols there are different data rates available for different modes. From the “Data rate” drop down list there are the following modes available:

- B-Mode Only (supporting IEEE 802.11b clients with a maximum data rate of 11 Mbit/s)
- G-Mode Only (supporting IEEE 802.11g clients with a maximum data rate of 54 Mbit/s)
- B/G-Mixed Mode (supporting both IEEE 802.11b/g clients as described above)
- Legacy B-Mode (supporting IEEE 82.11b legacy clients).

Select an appropriate data rate from the “Data rate” drop down list according to what is supported by the wireless clients that should connect.

Click **Apply** to save the setting.

### 3.6.6 Scan for Wireless Networks

If you want information about adjacent wireless networks, click the **Scan for wireless networks** button. A scanning is started and when finished, information about wireless networks is presented as in the example below:

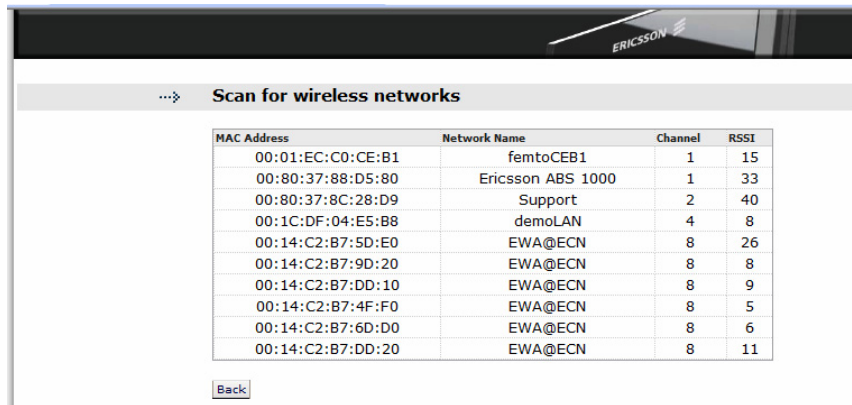


Figure 36 - Scan for wireless networks page

The list displays the following information about wireless networks that are nearby:

Table 15 - Scan for wireless networks description

Text	Description
<b>MAC Address</b>	The MAC address of the access point for the WLAN.
<b>Network Name</b>	The network name (SSID) of the WLAN.
<b>Channel</b>	The radio channel used by the WLAN.
<b>RSSI</b>	The RSSI (Received Signal Strength Indicator) which is a link indication expressed in dBm to show the signal strength of the wireless network.

This information can be of help when deciding which channel to use. Click **Back** to return to the **Wireless LAN** page where you can select a desired channel.



### 3.6.7 Network Name (SSID)

All clients on the WLAN share a common network name or SSID (Service Set IDentifier). This name is required to establish connection between the Ericsson W3x and other wireless client(s) and to distinguish the WLAN from any other(s) that may be in use nearby.

Only clients configured with the same network name (SSID) as the one set on the Ericsson W3x can obtain access to it.

**Note:** It is recommended to change the preconfigured network name “MBR” to something else that makes it harder for unauthorized persons to access your wireless network.

The following settings concerning the network name are displayed and can be modified on the **Wireless LAN** page:

*Table 16 - Network name description*

Text	Description
<b>Network name (SSID):</b>	<p>The network name (SSID) of the wireless network.</p> <p>The network name is case-sensitive (distinguish between uppercase and lowercase letters) and can be changed to any combination of numbers (0-9), letters (a-z), and hyphens (-) with a maximum length of 32 characters.</p>
<b>Enable SSID broadcast</b>	<p>If “Enable SSID broadcast” is checked, the SSID is continuously broadcasted and any nearby wireless client(s) will find it when scanning the air.</p> <p>If the checkbox is cleared, the SSID will be hidden and in this case the name has to be provided manually to every wireless client where access is to be granted.</p>

To change settings for the Network Name (SSID), type the new values in the corresponding fields and click **Apply** to save the settings.

### 3.6.8 WLAN Security

All communication on the wireless network can be protected using different authentication and encryption methods. The most common is to encrypt the WLAN using an encryption method such as WEP, WPA and WPA2.

Which authentication and encryption method that should be used depends on what is supported by the connected wireless client(s).

**Note:** Each wireless client must be configured to use exactly the same security mode and key/passphrase as the Ericsson W3x or they will not be able to connect.

In the “Authentication” drop-down list you select which type of authentication/encryption you want to use for your WLAN. The following subsections describe the authentication methods supported by the Ericsson W3x.

### 3.6.8.1 Open (No security)

If you select “Open” as authentication method no client configuration is needed but be aware of that the WLAN will now be open without any kind of security. For example, it is now possible for anyone with a computer and a wireless interface card to connect to the Ericsson W3x at any time and having access to both your home network and Internet connection.

### 3.6.8.2 WEP and WEP Encryption Key (Low security)

**WEP** (Wired Equivalent Privacy) is considered to be a low security option. The data is encrypted into blocks of either 64 bits length or 128 bits length.

WEP encrypted data can only be sent and received by users with access to a private encryption key. This means that each client on your wireless network has to be manually configured with exactly the same key as the one entered in the Ericsson W3x in order to allow encrypted data transmissions.

- WEP-64 bit data encryption requires a key including 10 characters. Only hexadecimal numbers 0-9 and letters a-f (uppercase or lowercase) are allowed.
- WEP-128 bit data encryption requires a key including 26 characters. Only hexadecimal numbers 0-9 and letters a-f (uppercase or lowercase) are allowed.

Enter an encryption key in the “Passphrase / Key” field and click **Apply** to save the settings.

### 3.6.8.3 WPA/WPA2 and Passphrase (High security)

**WPA** (Wi-Fi Protected Access) and its successor **WPA2** are the most reliable security options. WPA encryption uses the TKIP (Temporal Key

Integrity Protocol) while WPA2 encryption follows AES (Advanced Encryption Standard). AES offers a higher level of security and is approved for sensitive corporate and government data transmission. **WPA/WPA2 Mixed** enables connection of both WPA and WPA2 clients.

WPA and WPA2 authentication and encryption require a passphrase. A passphrase is a sequence of words or other text and is similar to a password in usage, but is generally longer for added security.

Each client on your wireless network has to be configured with exactly the same passphrase as the one entered in the Ericsson W3x in order to allow encrypted data transmission.

A WPA or WPA2 passphrase is case sensitive (distinguish between uppercase and lowercase letters) and consists of between 8 and 63 characters. It is recommended that the passphrase contains at least 20 characters.

Enter a passphrase in the “Passphrase / Key” field and click **Apply** to save the settings.

**Note:** Avoid using special characters (such as ;, “ and ¢) when entering a passphrase.

### 3.6.9 Connected Devices

The “CONNECTED DEVICES” list on the **Wireless LAN** page includes the MAC (Media Access Control) addresses of all wireless clients currently connected to the Ericsson W3x.

### 3.6.10 Whitelist

A common method of restricting WLAN access is to specify the MAC address(es) in a “whitelist” for those computers to be granted access to the WLAN. This kind of whitelist is also known as “MAC Association” or “MAC Access list”.

Up to 20 MAC addresses for wireless clients can be added to the whitelist. Once the whitelist has been enabled, only clients with an associated MAC address are allowed to connect to the WLAN.

**Note:** This feature does not require any configuration of clients, but it is recommended that some kind of encryption (WEP, WPA/WPA2) is used in combination with the whitelist.

### 3.6.10.1 Add Client(s) to the Whitelist

To add a client to the whitelist, you can either copy/paste a MAC address from the “CONNECTED DEVICES” list or type the client’s MAC address in the field below “WHITELIST” and click **Add**.

The MAC address has the form of xx:xx:xx:xx:xx:xx, where x is a hexadecimal number (0-9 and/or letters a-f), for example 00:80:37:8c:10:46.

Check “Enable whitelist” to activate the feature and click **Apply** to save the settings.

To delete a MAC address from the whitelist, click the **Delete** button next to the MAC address to delete.

### 3.6.10.2 Find a Wireless Client MAC Address

The MAC address for a WLAN adapter is normally found on the product label. For internal wireless PCI cards running on Windows platform, the command `ipconfig /all` (run from a Command Prompt window) can be used to display the MAC address (displayed as “Physical Address” against the network adapter). For example:

```
Wireless LAN adapter Wireless Network Connection:  
Media State . . . . . : Connected  
Description . . . . . : Intel(R) PRO/Wireless 3945ABG  
Physical Address. . . . . : 00-19-D2-39-14-54  
DHCP Enabled . . . . . : Yes  
Autoconfiguration Enabled . . . . . : Yes
```

## 3.7 NAT

The Ericsson W3x includes a NAT (Network Address Translation) service. With this service several computers on a LAN/WLAN can share the same Internet connection using a single public IP address.

Devices on the LAN/WLAN use dedicated private IP addresses, which cannot be used on the Internet. When a computer on the LAN/WLAN want to send a data package to the Internet, its IP address is automatically translated by NAT to an external (public) IP address allowed on the Internet. When a reply receives to this external IP address, it is translated back to the origin private IP address to be able to found its way back to the sending computer on the LAN/WLAN.

In this way, details about the local devices remain private and it is not possible to access a local computer on the LAN/WLAN directly from the Internet.

The **NAT** page includes the following settings:

The screenshot shows the NAT configuration page. On the left is a navigation menu with options: Overview, Internet, LAN, Wireless LAN, NAT (selected), Sharing, System, Event Log, Change Password, and Logout. Below the menu are flags for various countries. The main content area is titled 'NAT' and contains the following text: 'Network Address Translation (NAT) enables the LAN to use one set of IP addresses for internal traffic and one public IP address for external traffic.' Below this, there is a checkbox for 'Enable UPnP IGD' which is checked. Under the heading 'Application Level Gateway (ALG) supported protocols:', there are checkboxes for FTP, TFTP, PPTP, SIP, and RTSP. The 'Apply' button is visible. The 'PORT FORWARDING' section includes the text: 'Use port forwarding to allow a specific Internet application incoming access to a local network device.' Below this is an 'Add Instance' button and a table with the following data:

NAT Port	Server IP	Server Port	Protocol	
80	192.168.1.50	8080	tcp	Delete Edit

© Copyright 2008 Ericsson AB. All rights reserved.

Figure 37 - NAT page

### 3.7.1 UPnP IGD

The Ericsson W3x supports the Universal Plug and Play (UPnP) Internet Gateway Device (IGD) standard. UPnP IGD is used to provide automatic port forwarding allowing communication between certain Internet applications and the local network. When UPnP IGD is enabled, programs like MSN Messenger<sup>®</sup> and most network enabled games are allowed to pass the NAT service.

UPnP IGD is enabled by default, but if you want to disable the feature, clear the “Enable UPnP IGD” check box and click **Apply** to save the settings.

### 3.7.2 Application Level Gateways

From a security perspective, certain Internet applications, for example FTP applications that open additional ports upon transfer, are especially problematic to handle. An Application Level Gateway (ALG) provides a translation and transportation service for such a specific application. Incoming data packets are checked against existing NAT and packet filtering rules, IP addresses are evaluated and a detailed packet analysis is performed. If necessary, the contents of a packet are modified and if a secondary port is required, the ALG will open one. The Ericsson W3x includes ALG support for the following applications:

*Table 17 - ALG Supported Applications*

Application	Protocol	Port number
File Transfer Protocol (FTP)	TCP	21
Trivial File Transfer Protocol (TFTP)	UDP	69
Point-to-Point Tunneling Protocol (PPTP)	TCP/UDP	1723
Session Initiation Protocol (SIP)	TCP/UDP	5060
Real Time Streaming Protocol (RTSP)	TCP/UDP	554

The ALG for each application does not require additional configuration. The supported ALGs can be enabled and disabled individually.

To disable an ALG, clear the corresponding check box and click **Apply** to save the settings.

### 3.7.3 Port Forwarding

Port forwarding is used to allow an external user to access a service residing on a server connected to the LAN (to cross the NAT border). It enables access to servers on the LAN from the Internet (e.g. Web server) and also enables applications to work from the LAN (e.g. games, voice and chat) to the Internet.

**Note:** Port forwarding requires that the Ericsson W3x has a public IP address for Port Forwarding requests from the Internet to be handled correctly.  
 This IP address is displayed on the **Overview** page as the “Internet: IP address”. A private IP address usually begins with 10, 172, or 192. In this case, no incoming access from the Internet is allowed. For more information on public and private IP addresses, contact your service provider.

When a computer on the Internet sends data to the public IP address of the Ericsson W3x, it needs to know what to do with the data. A port forwarding rule tells the Ericsson W3x which computer on the local area network to send the data to.

The “PORT FORWARDING” section on the **NAT** page includes the following information about port forwarding rules:

*Table 18 - Port Forwarding description*

Text	Description
<b>NAT Port</b>	The NAT port number that the data traffic is allowed to be transported on.
<b>Server IP</b>	The IP address of the destination server on the LAN.
<b>Server Port</b>	The port number on the destination server which identifies the type of service that is directed, for example web service on port 8080.
<b>Protocol</b>	The protocol to be used for the service; TCP or UDP.
<b>Delete</b>	Click on the button to delete the port forwarding rule.
<b>Edit</b>	Click on the button to edit the port forwarding rule.

#### 3.7.3.1 Add a Port Forwarding Rule

To add a new port forwarding rule, click the **Add Instance** button. The **Add Port forwarding Instance** page is displayed:

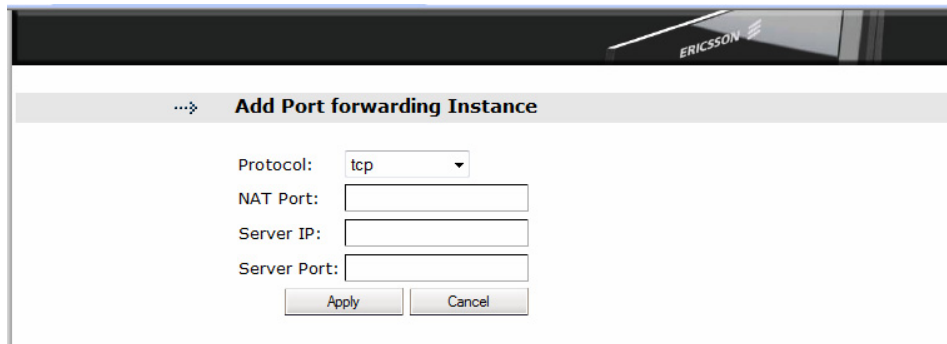


Figure 38 - Add Port forwarding Instance page

Select a “Protocol” from the drop-down list and type the appropriate values in “NAT Port”, “Server IP”, and “Server Port” fields and click **Apply** to save the setting.

Below are some examples of common applications and corresponding server port they use for network access. The “NAT Port” has often the same value as the “Server Port” value. Exceptions are made when the same applications are used on many clients on the LAN/WLAN, where each “Server IP” value needs to be unique and differ from the “NAT Port” value.

Table 19 - Common applications server ports

Application	Server Port
MSN Messenger®	6901
Unreal Tournament 2004®	7777, 7778, 7787, 28902
NetMeeting®	1720, 1503
Quake III®	27669 (+1 for each player)

**Note:** If multiple ports or port ranges are required, create a new port entry for each port or port range.

### 3.7.3.2 Port Forwarding Example

In the following example, port forwarding is used to allow incoming access (from the external network (Internet)) to an internal web server (on the LAN/WLAN). The TCP protocol is used for data traffic. The NAT port 80 on the Ericsson W3x is open and the destination computer on the LAN with static server IP address 192.168.1.101 has appointed the server port 8080 to be used.



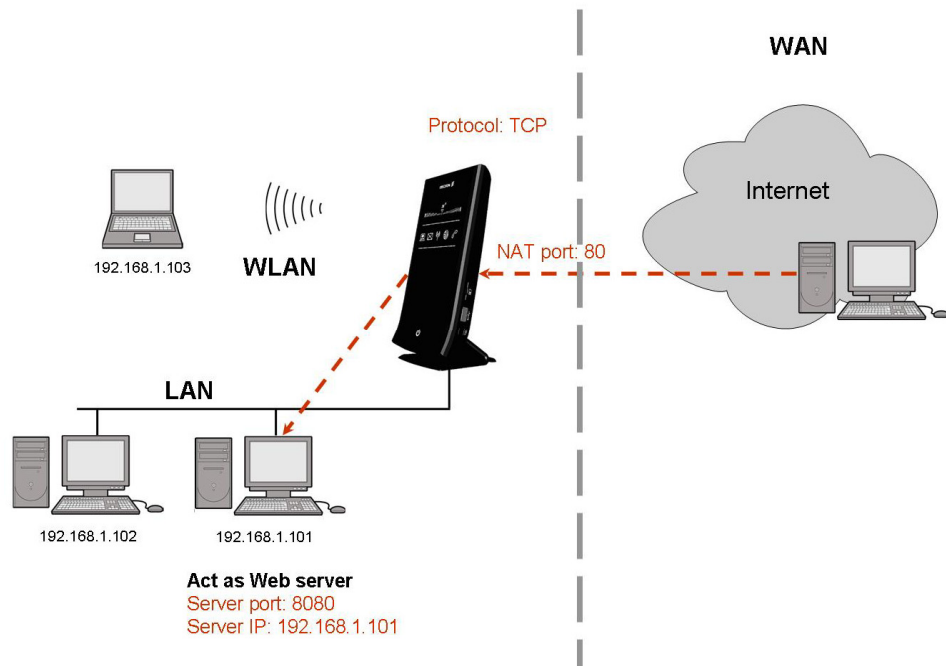


Figure 39 - Port forwarding example

### 3.7.3.3 Edit Port Forwarding Rule

To edit a port forwarding rule, click **Edit** next to the rule to edit. The **Edit Port forwarding** page is displayed:

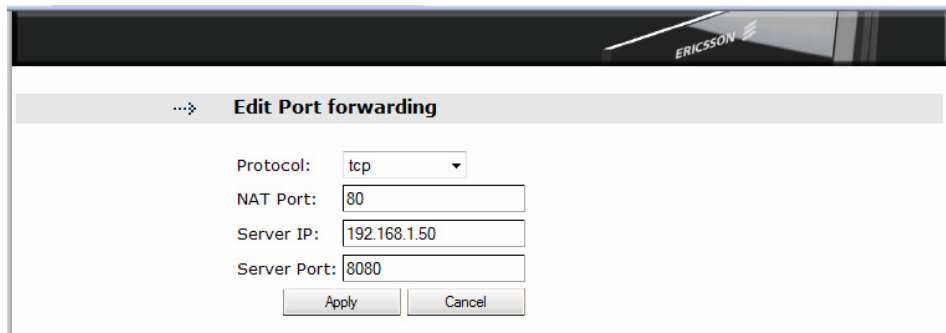


Figure 40 - Edit Port forwarding page

Change one or more value(s) in the “Protocol”, “NAT Port”, “Server IP”, or “Server Port” field(s) and click **Apply** to save the settings.

### 3.7.3.4 Delete Port Forwarding Rule

To delete a port forwarding rule, click **Delete** next to the rule to be deleted.

## 3.8 File and Printer Sharing

The Ericsson W3x supports local network storage and printer sharing through the USB port. If an external USB hub is connected, the Ericsson W3x supports connection of up to two storage devices and one printer at the same time.

The **Sharing** page displays information about connected USB device(s):

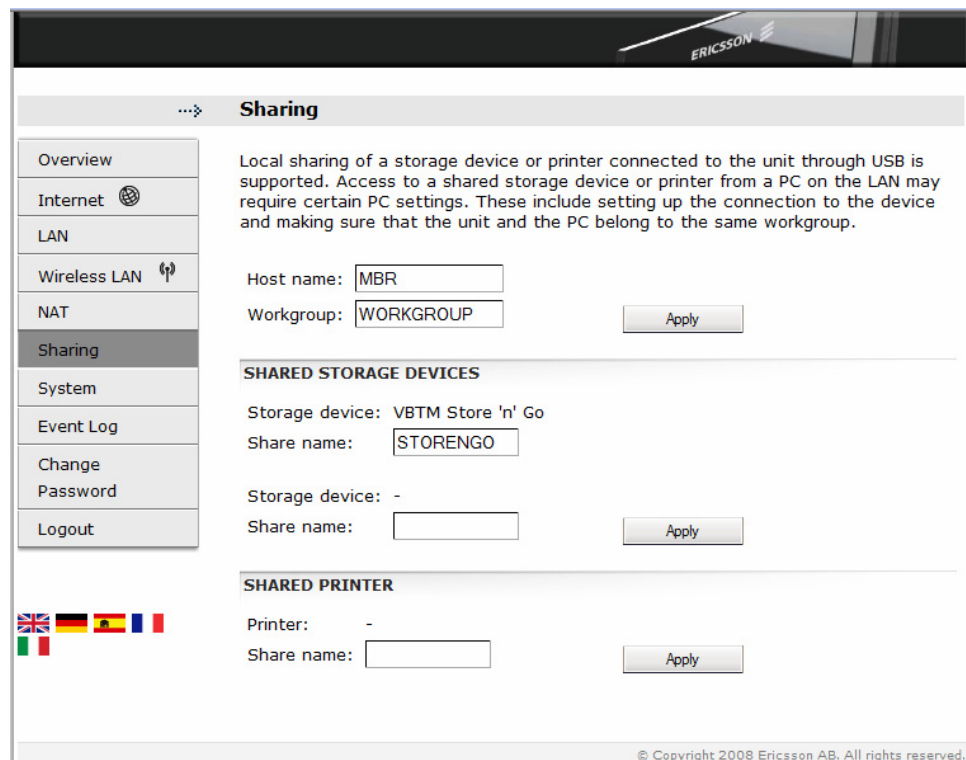


Figure 41 - Sharing page

### 3.8.1 How it Works

The Ericsson W3x uses Samba ([www.samba.org](http://www.samba.org)) as the base to implement file and printer sharing through SMB/CIFS. SMB and CIFS are the protocols used by Microsoft for sharing and the service is called “smb” on the Ericsson W3x.

- Linux Kernel auto detection of USB devices is used as part of the automatic configuration of the storage and printer sharing. When a new USB device (storage or printer) is detected, the Ericsson W3x automatically creates configuration files for Samba containing the new device. It then makes the smb service use the new configuration, thereby sharing the USB device via the SMB/CIFS protocol. This

process is totally automatic and there are no configuration parameters that can be set, other than renaming the shared resources.

The Ericsson W3x uses a relatively low powered processor and is not designed to be a multi tasking platform. This means that you may experience problems during high load situations such as simultaneously downloading a large file through the mobile network and printing a large document or copying a large file to/from a shared storage device mounted on the Ericsson W3x. Don't expect to have full performance on all simultaneous tasks.

### 3.8.1.1 Safe Removal of a USB Device

Before removing a USB device from the Ericsson W3x wait until the activity LED (if any) on the device stops blinking or wait some 30 seconds to be sure there is not any ongoing/remaining write operations to be made.

### 3.8.2 Host Name and Workgroup

All devices on the LAN/WLAN that want to access a USB shared storage device or printer must belong to the same workgroup as the Ericsson W3x.

The following information can be changed on the **Sharing** page:

*Table 20 - Sharing information*

Text	Description
<b>Host name:</b>	The name of the Ericsson W3x on the local network.
<b>Workgroup:</b>	The name of the group of devices sharing the same resources on the local network.

To change the host name or workgroup, type the new name in the corresponding field and click **Apply** to save the settings.

For information about setting up a connection from a PC to a shared device, follow the instruction in section 6.3.3 – *Set Up a Connection to a Storage Device* or section 6.3.4 – *Access a Shared Printer*.

### 3.8.3 File Sharing

When a USB storage device is connected to the Ericsson W3x the included files are shared with all devices on the local network (LAN/WLAN) and all local users have full access to the shared files.

**Note:** Only the first partition of the storage device will be automatically mounted and shared through the smb service.

The file system on a shared partition needs to be of a supported type; otherwise the automatic mounting of the device will not work. Currently the supported types are:

- **FAT**; Microsoft legacy file system from MS-DOS with 8.3 character filename
- **FAT32**; Microsoft Windows 95 file system based on FAT but with long file name
- **ext2**; Second extended file system, the standard Linux file system.
- **ext3**; Like ext2, but with journaling support.

When a storage device is connected to the USB port on the Ericsson W3x, information about the device is displayed in the “SHARED STORAGE DEVICES” section on the **Sharing** page. If this page is open when you connect the device, a refresh of the page may be required for the new information to be displayed.

*Table 21 - Shared storage devices description*

Text	Description
<b>Storage device:</b>	The manufacturer’s name of the device.
<b>Share name:</b>	The name of the shared resource used when accessing the device from a PC on the LAN/WLAN.

To give a shared device a specific name, type a name in the corresponding “Share name” field and click **Apply** to save the setting.

**Note:** If a “Share name” includes more than 12 characters or has embedded spaces, the share name will not be visible in Windows 95, 98 or ME clients.

To access shared files from a PC using Windows 2000 or XP, follow the instructions in section 6.3.2- “Access a Shared USB Storage Device”.

### 3.8.4 Printer Sharing

When a printer is connected to the USB port on the Ericsson W3x, it is automatically shared over the LAN/WLAN using SMB/CIFS protocol. The smb service only performs protocol conversion between SMB/CIFS and the local printer.

When a printer is connected to the USB port on the Ericsson W3x, information about the printer is displayed in the “SHARED PRINTER” section on the **Sharing** page. If this page is open when you connect the

printer, a refresh of the page may be required for the new information to be displayed:

*Table 22 - Shared printer description*

Text	Description
<b>Printer</b>	The manufacturer's name of the device.
<b>Share name</b>	The name of the shared printer used when accessing it from a PC on the LAN/WLAN.

To give a network printer a specific name, type a name in the "Share name" field and click **Apply** to save the setting.

**Note:** If a "Share name" includes more than 12 characters or has embedded spaces, the share name will not be visible in Windows 95, 98 or ME clients.

To access a shared printer from a PC using Windows 2000 or XP, follow the instructions in section 6.3.4 – *Access a Shared Printer*.

### 3.9 System

The **System** page includes system information and management functions, used to update and restore the Ericsson W3x.

**Note:** The information on this page may vary depending on product model and services included in the subscription.

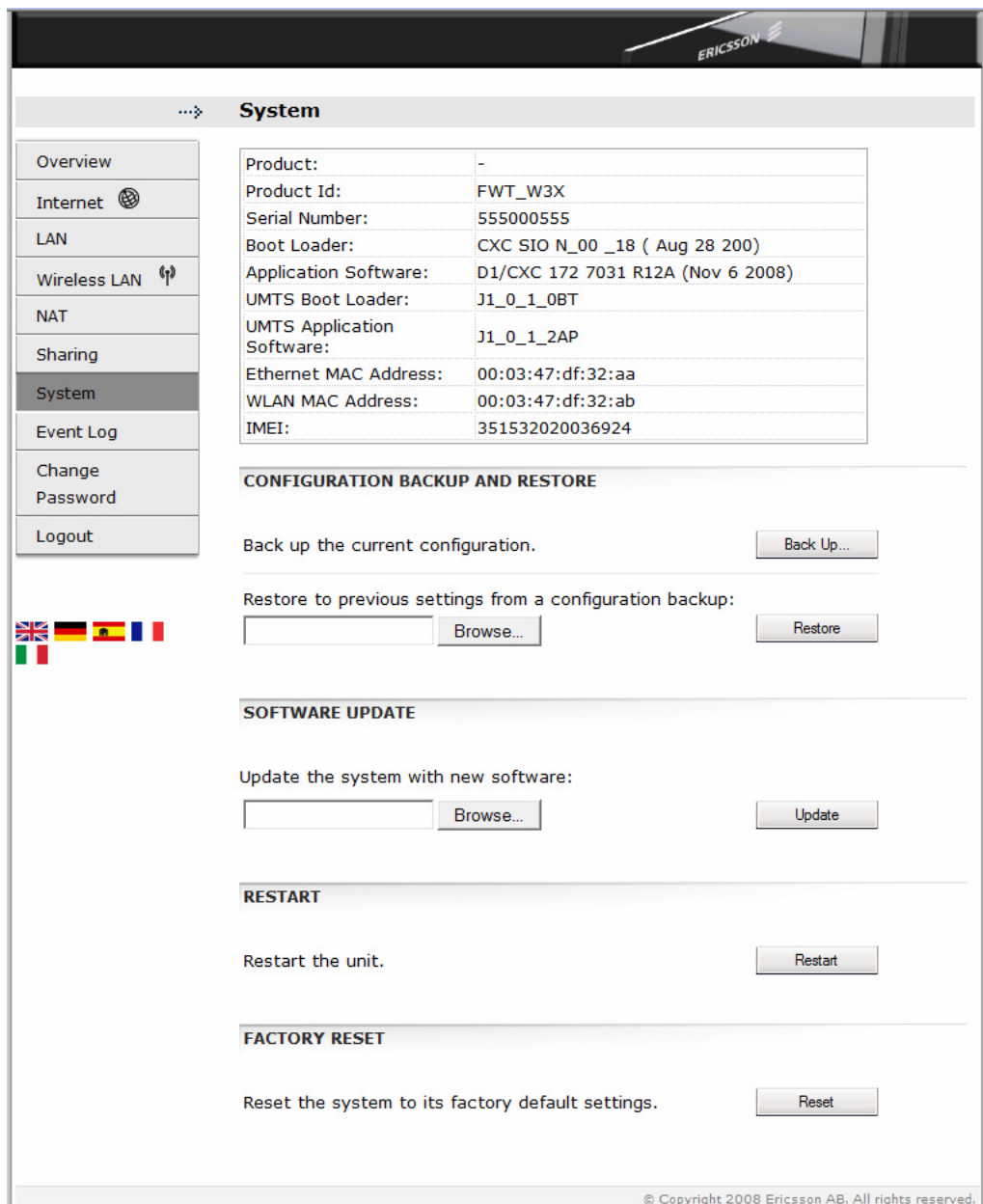


Figure 42 - System page

### 3.9.1 Basic System Information

The table on top of the page includes basic system information about the Ericsson W25. The following information is displayed:

*Table 23 – Basic System Information*

<b>Text</b>	<b>Description</b>
<b>Product</b>	The product name.
<b>Product Id:</b>	The product identification.
<b>Serial Number:</b>	The unique serial number of the unit.
<b>Boot Loader:</b>	The ID and version of the boot loader software.
<b>Application Software:</b>	The ID and version of the application software.
<b>UMTS Boot Loader:</b>	The ID and version of the UMTS boot loader software.
<b>UMTS Application Software:</b>	The ID and version of the UMTS application software.
<b>Ethernet MAC Address:</b>	The MAC address of the external Ethernet interface. This MAC address can also be found on the product label on the bottom of the unit.
<b>WLAN MAC Address:</b>	The MAC address of the WLAN interface. This MAC address can also be found on the product label on the bottom of the unit.
<b>IMEI:</b>	The unique IMEI number of the unit. This number can also be found on the product label on the bottom of the unit.

### 3.9.2 Configuration Backup and Restore

The current running configuration of the Ericsson W3x can be saved into a backup copy (locally stored on a PC). This backup copy can then be used for restoring the configuration to a specific state.

#### 3.9.2.1 Back Up Current Configuration

To back up the current running configuration, click the **Back Up...** button in the “CONFIGURATION BACKUP AND RESTORE” section on the **System** page.

Follow the instructions on the screen to select a location for the configuration file.

**Note:** **Do not** modify a configuration file. If you do, the file might be invalid and not accepted if you want to make a restore. All configuration changes should be made on the web pages.

### 3.9.2.2 Restore from Backup File

In case of a system failure or a corrupted configuration, the system can be restored from a previously stored backup file.

To restore from a backup file, click the **Browse...** button in the “CONFIGURATION BACKUP AND RESTORE” section on the **System** page to locate the configuration file.

When a file has been selected it is displayed in the text field below “Restore to previous settings from a configuration backup”.

Click **Restore** to restore the configuration. When finished, a confirmation message is displayed:

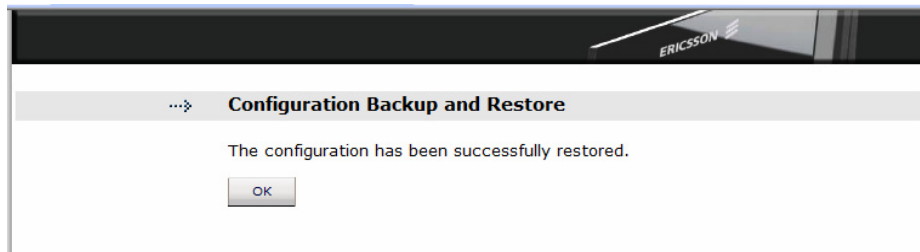


Figure 43 - Configuration Restore Confirmation

Click **OK** to return to the **System** page.

### 3.9.3 System Restart

You can at any time restart the Ericsson W3x. The restart does not result in any configuration changes.

To restart the Ericsson W3x, click **Restart** in the “RESTART” section on the **System** page.

During the restart process the following information is displayed:



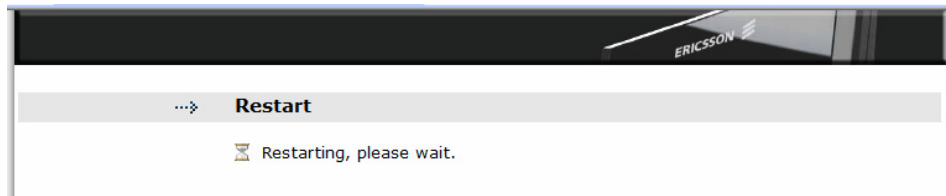


Figure 44 - Restart Progress Message

When the restart is completed you have make a new login to the WUI. Type **http://192.168.1.1** in the Address (URL) field to display the **Enter password** page.

### 3.9.4 Software Update

New Ericsson W3x software versions can be installed from a local file.

First, make sure that the new software file is available on your PC. Then click **Browse...** in the “SOFTWARE UPDATE” section on the **System** page to locate the file. The selected file will be displayed in the “Update the system with new software” field.

Click **Update** to start the installation. During the installation process, a new window showing the progress is displayed:

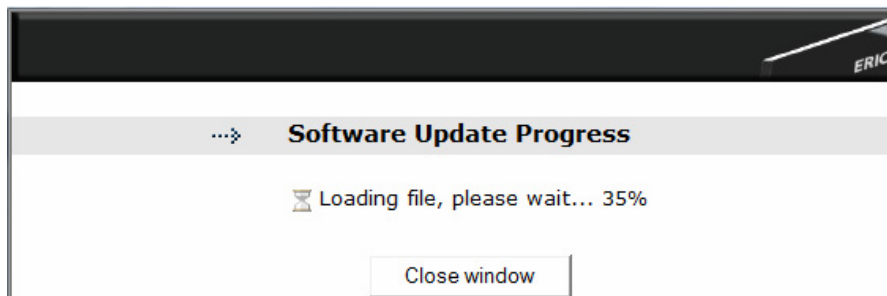


Figure 45 - Software Update Progress page

When the update is completed, the following window is displayed:

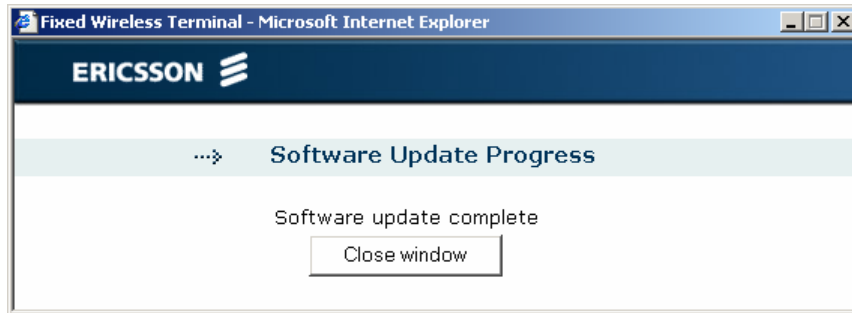


Figure 46 - Software update complete

Click the **Close window** button to close the window. The following page is displayed:

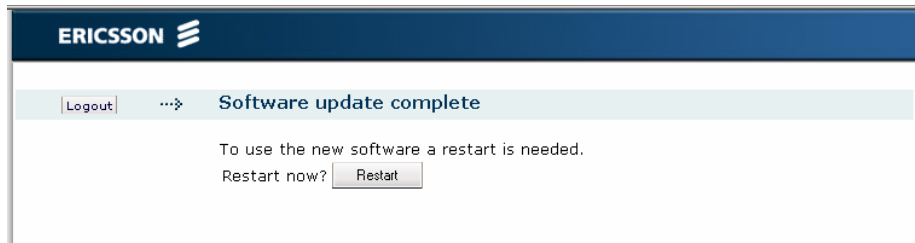


Figure 47 - Software update complete page

Click the **Restart** button to restart the Ericsson W3x.

### 3.9.5 Factory Reset

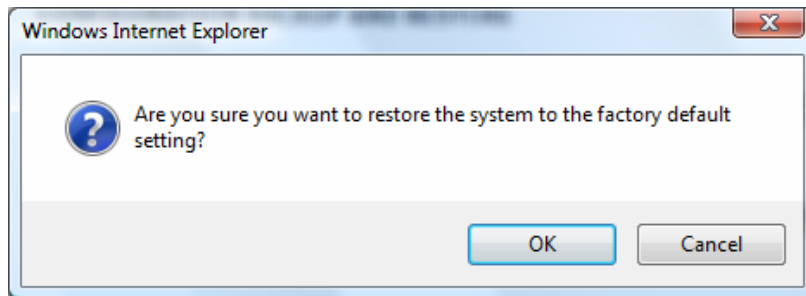
The Ericsson W3x configuration can be reset to its factory default settings from the **System** page.

**Note:** If the WUI is not accessible, a reset to factory default settings can also be done using the Reset button on the unit. See section 7.2 – *Reset to Factory Default Settings*.

To reset the configuration to factory default settings, click **Reset** in the “FACTORY RESET” section on the **System** page.

**Note:** This procedure resets ALL configurable values back to default settings, including the login password (**user**).

Before the reset starts, you will get the following question:



Click **OK** to start the reset or **Cancel** to abort the reset and return to the **System** page.

### 3.10 Event Log

On the **Event Log** page, a list of the events that has been sent to the log on the Ericsson W3x is displayed:

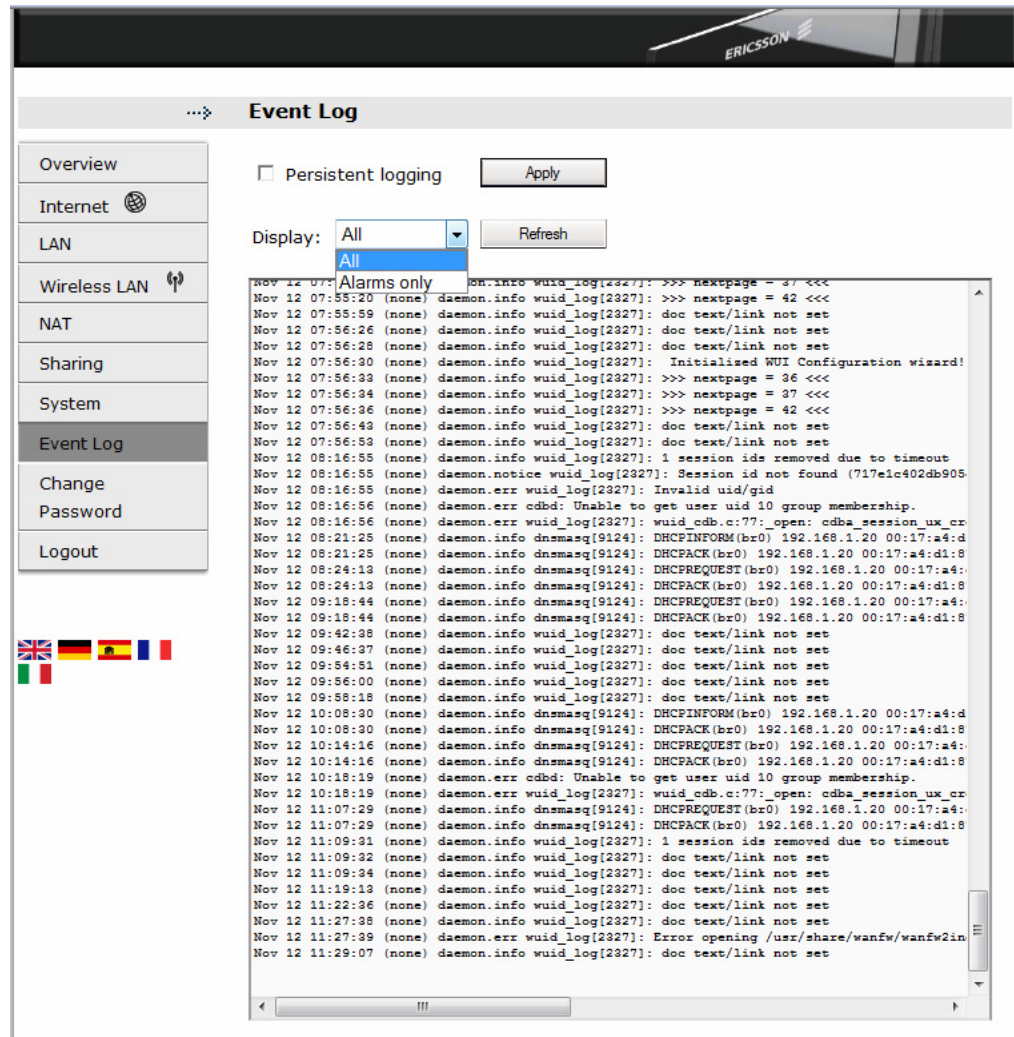



Figure 48 - Event Log page

Each row in the log list displays the time and date when an event was reported to the log, the type of the event, and a brief statement indicating its cause.

**Note:** If the actual time is not available, the timestamp is set to “Jan 1 00:00:00” when the Ericsson W3x is restarted. This will change to actual time when available.

The system logging information is written to 3 files in the system and these files are rotated in a circular fashion. The files are not saved to flash memory and will be lost when rebooting the system or when power is disconnected.

To view only a selection of the log events in the list, select a filter level from the “Display” list. Available log levels are “Alarms only” and “All”. The

“Alarms only” log level corresponds to the **Alarm**  indicator on the Ericsson W3x and the information in the “ALARMS” section on the **Overview** page.

Click **Refresh** to update the list with new information. The most recent log events are listed at the bottom of the list.

### 3.10.1 Persistent Logging

If persistent logging is enabled, the log files are written to flash memory in two alternating files meaning they will remain after a system restart or power failure.

**Note:** Persistent logging should only be used for debugging purposes since it consumes flash memory.

To enable this feature, select the “Persistent logging” check box on the **Event Log** page and click **Apply** to save the setting.

## 3.11 Change Password

On the **Change Password** page the password used for logging in to the web pages can be changed. For security reasons you are recommended to change the preconfigured password.

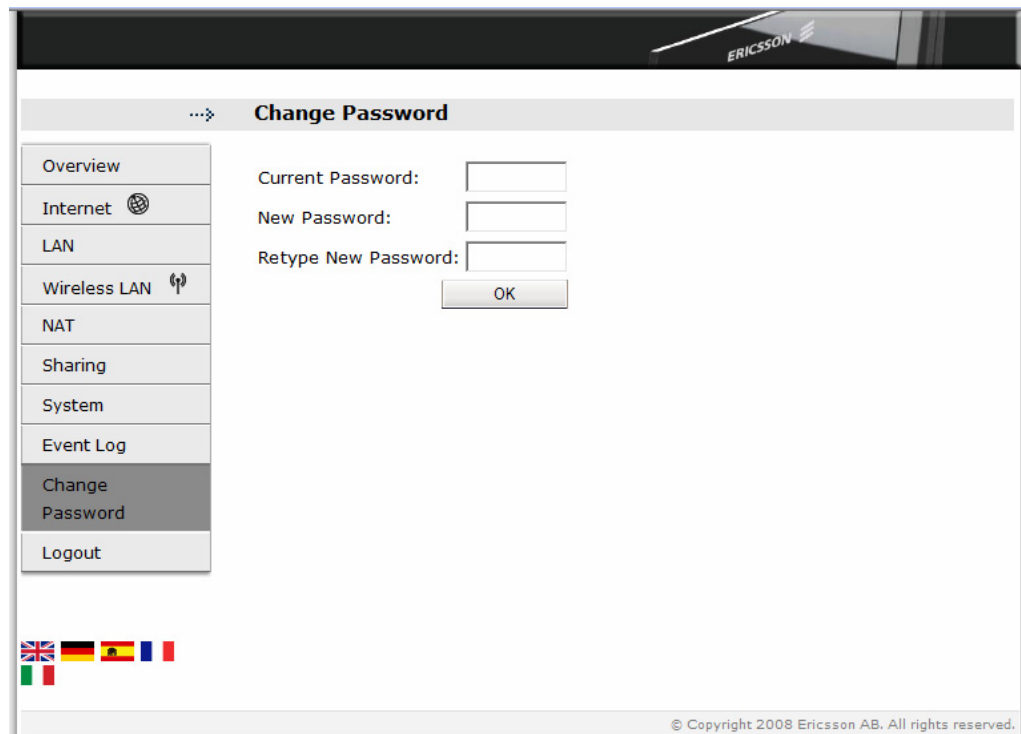


Figure 49 - Change Password page

Type the current password in the “Current Password” field. If it is the first time you change the password, the password is **user**.

Type a new password in the “New Password” and “Retype New Password” fields. A password can include up to 64 characters (letters and/or numbers).

**Note:** The password is case-sensitive (distinguish between uppercase and lowercase letters).

Save the new password by clicking **OK** .

### 3.12 Logout

To logout from the Ericsson W3x web pages, click **Logout** in the left-hand menu. When the logout is completed, the **Enter password** page is displayed.

## 4 Telephony and Fax (W35 only)

A telephone and/or a fax machine can be connected to the Ericsson W35 via the “Phone” and/or “Phone/Fax” connectors.

**Note:** A telephone must be connected to the “Phone” connector and a fax machine to the “Phone/Fax” connector.

The telephony and the fax services will work without any further configurations but must be supported by the subscription/network in order to work.

If you experience problems see the trouble shooting section 7.7 – *Telephony and Fax Service*.

### 4.1 SIM Authentication

It is possible to enter the PIN code for SIM authentication via a telephone connected to the Ericsson W35 (instead of the WUI). See section 3.1.1 – *Enter PIN Code*.

**Note:** Emergency calls (i.e. 112 or 911) can always be made, even without a SIM card or the correct PIN code.

Follow the steps below to enter the PIN code using a telephone connected to the Ericsson W35. The “PIN required” and “PUK required” tones are described in Table 24 – *Information Tones* on the next page.

1. Pick up the telephone handset. If you hear the dial tone, you do not need to enter any PIN. If you hear the specific “PIN required” tone, proceed to step 2.
2. Dial \* <PIN> #

If the PIN is correct, you will hear the normal dial tone, which indicates that the voice service is activated and that it is possible to make phone calls.

If the PIN is incorrect, you will hear the “PIN required” tone again. Repeat step 2.

**Note:** If three attempts have been made with an incorrect PIN, the SIM card is blocked and you will hear a new tone, indicating that the PUK is required to unblock the SIM card.

To unblock the SIM card, dial the following sequence:

\* <PUK> \* <new PIN> \* <new PIN> #

If the PUK is correct and the new PIN codes agree, you will hear the normal dial tone, which indicates that the voice service is activated and that it is possible to make phone calls. Remember the new PIN for future use.

If the PUK is incorrect or the new PIN codes do not agree, you will hear the “PUK required” tone again. Repeat the “unblock SIM card” sequence above.

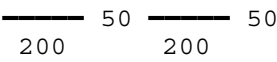
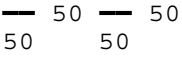
**Note:** If ten attempts have been made with an incorrect PUK, the SIM card is permanently blocked and a new SIM card is required. Contact your service provider.

## 4.2 Information Tones

The Ericsson W35 generates information tones in your telephone handset, thus providing the same characteristics as the one given by the traditional fixed line network.

The following table describes the nature of the unique information tones you will get when using the Ericsson W35.

Table 24 - Information Tones

Name	Nature	Description
<b>PIN required</b>	 Repeating 200 ms tone at regular 50 ms intervals.	SIM authentication is required to enable the voice service.
<b>PUK required</b>	 Repeating 50 ms tone at regular 50 ms intervals.	The SIM card is blocked. The PUK and a new PIN are required to unblock the SIM card.



## 5 Battery (W35 only)

The Ericsson W35 can be powered by a rechargeable battery pack to provide voice service redundancy in the event of a total mains power failure. When mains powered, the Ericsson W35 will keep the battery charged.

**Note:** The battery is not fully charged when delivered. The charging time for an empty battery is about 4 hours. The battery will not charge if the environment temperature is above 40 degrees Celsius, due to over heating protection.

### 5.1 Installation of the Battery

The battery is available as an accessory and is inserted between the AC/DC adapter and the Ericsson W35.

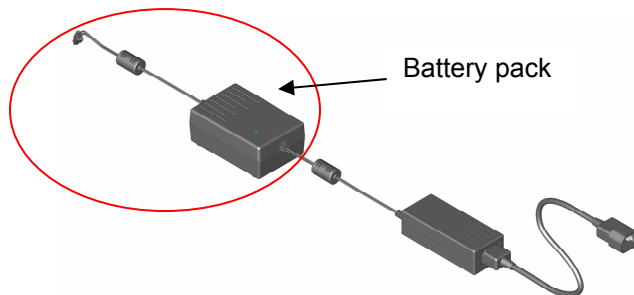



Figure 50 - Battery pack and power adapter

### 5.2 Battery Function

If a power failure occurs the Ericsson W35 automatically switches over to battery operation. In order to extend the battery time only voice services is available. Data services, such as USB, Ethernet and Wireless LAN functions will be unavailable.

The **Standby**  button on the front of the Ericsson W3x is red when powered by battery (or when the Standby button has been pressed).

The stand by time is up to 4 hours if no telephone calls are made. Talk time is typically 3 hours. Battery time depends on the mobile network signal quality, battery age, and environmental temperature.

## 6 PC Configuration

The connection to the Ericsson W3x may require specific PC configuration. This chapter includes instructions on how to configure Internet Protocol (IP) settings as well as establish wireless connection(s) with the Ericsson W3x. The descriptions include examples from Windows XP and 2000. If you use another operating system, please refer to the system documentation or online help.

### 6.1 IP Settings

The Ericsson W3x automatically assigns the IP settings to your PC(s). You only need to configure the PC(s) according to the instructions below to accept the information. In some cases however, you may want to configure IP settings manually. See section 6.1.2 – *Configuring Static IP Address*.

If you want to allow wireless PCs to access your device, you also have to follow the instructions in section 6.2 – *Wireless LAN Settings*.

#### 6.1.1 Obtain IP Settings Automatically

Follow the instructions that correspond to the operating system installed on your PC.

##### 6.1.1.1 Windows XP

1. In the Windows task bar, click the **Start** button, and then click **Control Panel**. The **Control Panel** window is displayed.
2. If you are using Category View, Click **Network and Internet Connections** and then **Network Connections**. If you are using Classic View, double-click **Network Connections**. The **Network Connections** window is displayed.
3. Double-click the icon corresponding to your network interface card (NIC). This icon is usually labeled **Local Area Connection**. The **Local Area Connection Properties** window is displayed with a list of currently installed network items.
4. Select Internet Protocol TCP/IP and ensure that the check box beside the text is selected. Click **Properties**.

5. In the **Internet Protocol (TCP/IP) Properties** window, select Obtain an IP address automatically and Obtain DNS server address automatically.
6. Click **OK** twice to confirm your changes and close the windows, and then close the **Control Panel** window.

### 6.1.1.2 Windows 2000

First, check for the IP protocol and, if necessary, install it:

1. In the Windows task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Double-click the **Network and Dial-up Connections** icon.
3. In the **Network and Dial-up Connections** window, right-click the **Local Area Connection** icon, and then click **Properties**.  
The **Local Area Connection Properties** dialog box is displayed with a list of currently installed network components. If the list includes **Internet Protocol (TCP/IP)**, then the protocol has already been enabled. Skip to step 11.
4. If **Internet Protocol (TCP/IP)** does not display as an installed component, click **Install...**.
5. In the **Select Network Component Type** dialog box, select **Protocol**, and then click **Add...**.
6. Select **Internet Protocol (TCP/IP)** in the **Network Protocols** list, and then click **OK**.  
You may be prompted to install files from your Windows 2000 installation CD or other media. Follow the instructions to install the files.
7. If prompted, click **OK** to restart your computer with the new settings.

Next, configure the PCs to accept IP information assigned by the Ericsson W3x:

8. In the Windows task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
9. Double-click the **Network and Dial-up Connections** icon.
10. In the **Network and Dial-up Connections** window, right-click the **Local Area Connection** icon, and then click **Properties**.

11. Select **Internet Protocol TCP/IP** and ensure that the check box beside the text is selected. Click **Properties**.
12. In the **Internet Protocol (TCP/IP) Properties** window, select **Obtain an IP address automatically** and **Obtain DNS server address automatically**.
13. Click **OK** twice to confirm your changes and close the windows, and then close the **Control Panel** window.

### 6.1.2 Configure Static IP Address

Most users do not need to configure static IP settings. Automatic configuration is appropriate in most cases.

For information about static IP configuration, see the operating system documentation or online help.

**Note:** Make sure that the IP address of the client is on the same subnet as the Ericsson W3x. The IP address range of the Ericsson W3x subnet is displayed on the **LAN** page (see section 3.5).

## 6.2 Wireless LAN Settings

This section provides a general description of what is required to make your wireless clients work with the Ericsson W3x.

Before you follow the instructions below, you need to configure the Wireless LAN settings in the Ericsson W3x as described in section 3.6 – *Wireless LAN*.

### 6.2.1 Prepare the Wireless Client(s)

The coverage of the Wireless LAN depends on a number of factors, including the distance between the Ericsson W3x and the PC and the occurrence of obstacles, such as walls and electrical equipment.

Guidelines on setting the hardware components of your wireless network are provided by your Wireless LAN interface provider.

### 6.2.2 Install the Wireless LAN Interface

Each PC on your Wireless LAN must be fitted with a Wireless LAN interface, such as a wireless network card. You also have to install the corresponding driver files for your particular Wireless LAN interface. The

driver files and instructions on how to install them are provided together with the interface.

### 6.2.3 Configure Access to the W3x WLAN

The configuration steps below will vary depending on both the operating system and the Wireless LAN interface installed on the PC. These steps provide a basic outline. For specific instructions, refer to the documentation provided with your Wireless LAN interface.

Configure the following wireless parameters on each of the wireless PCs:

- Set the Wireless LAN interface to use **infrastructure mode**. This configures the PCs to access each other and the Internet through the Ericsson W3x.
- Configure the **network name (SSID)** and **channel** to match the network name and channel configured on the Ericsson W3x. This information can usually be obtained through WLAN scanning. The network name is case sensitive.
- If you are using Wired Equivalent Privacy (WEP) security, configure the same **encryption key** that is configured on the Ericsson W3x.
- If you are using Wi-Fi Protected Access (WPA or WPA2) security, configure the same **passphrase** that is configured on the Ericsson W3x. The passphrase is case sensitive.
- Configure the IP settings using the procedure described in section 6.1–*IP Settings*.

## 6.3 USB Sharing Settings

When a storage device or printer is connected to the USB port on the Ericsson W3x, information about the device is displayed on the **Sharing** page.

To be able to use the shared device you also have to set up a connection to the shared device on your PC.

In some cases, you have to make sure that your PC belongs to the same workgroup as the Ericsson W3x. Follow the instructions in the next section to check the workgroup on your PC.

### 6.3.1 Check Workgroup Settings

The following sections include instructions on how to check the workgroup settings on a PC using Windows XP or 2000.

#### 6.3.1.1 Windows XP

Follow the steps below to check the workgroup settings on a PC using Windows XP:

1. In the Windows task bar, click the **Start** button, and then click **Control Panel**. The **Control Panel** window is displayed.
2. If you are using Category View, click **Performance and Maintenance** and then **See basic information about your computer**. If you are using Classic View, double-click **System**. The **System Properties** window is displayed.
3. Click the **Computer Name** tab.
4. Click **Change...**. The **Computer Name Changes** window is displayed.
5. Make sure that the **Workgroup** name is exactly the same as on the **Sharing** page. If not, you have to change the workgroup either on the PC or on the Ericsson W3x.
6. If you decide to change the workgroup on the PC, type the correct name in the **Workgroup** field and click **OK**. If you do not want to make any changes, click **Cancel**. The **Computer Name Changes** window is closed.
7. If you have changed the workgroup settings, follow the instructions on the screen to restart the PC.

#### 6.3.1.2 Windows 2000

Follow the steps below to check the workgroup settings on a PC using Windows 2000:

1. In the Windows task bar, click the **Start** button, and then click **Settings** and **Control Panel**. The **Control Panel** window is displayed.
2. Double-click the **System** icon. The **System Properties** window is displayed.
3. On the **Network Identification** tab, click **Properties**. The **Identification Changes** window is displayed.

4. Make sure that **Workgroup** is selected in the **Member of** section and that the name of the workgroup is exactly the same as the one on the **Sharing** page. If not, select the **Workgroup** option and type the name in the field. If there is already a workgroup name, although not the same as on the Ericsson W3x, you have to change it either on the PC or on the Ericsson W3x.
5. If you have made any changes, click **OK**. Otherwise, click **Cancel**. The **Identification Changes** window is closed.
6. If you have changed the workgroup settings, follow the instructions on the screen to restart the PC.

### 6.3.2 Access a Shared Storage Device

To access a USB storage device from a PC using Windows 2000 or XP, follow the steps below:

1. In the Windows task bar, click the **Start** button, and then click **Run....**
2. Type `\\<host_name>\<share_name>` in the **Open** field. The **Host name** and **Share name** are displayed on the **Sharing** page. Click **OK**.
3. The shared resource is displayed. Double-click on the shared file to open it.

### 6.3.3 Set Up a Connection to a Shared Storage Device

The following sections include instructions on how to set up a connection to a mass storage device from a PC using Windows XP or 2000.

The Storage device will be displayed in the **My Computer** window as a new partition.

#### 6.3.3.1 Windows XP

Follow the steps below to set up a connection to a shared storage device from a PC using Windows XP:

1. In the Windows task bar, click the **Start** button, and then click **My Computer**. The **My Computer** window is displayed.
2. From the **Tools** menu, select **Map Network Drive....** The **My Network Drive** window is displayed.
3. Select a drive that is not already used from the **Drive** drop-down menu.

4. In the **Folder** text field, type \\<host\_name>\<share\_name>. You find the host name and share name on the Ericsson W25 **Sharing** page.
5. Click **Finish**. The **Map Network Drive** window is closed. The device is displayed in the **My Computer** window as a new partition.

### 6.3.3.2 Windows 2000

Follow the steps below to set up a connection to a shared storage device from a PC using Windows 2000:

1. Right-click the **My Computer** icon and select **Map Network Drive...** The **Map Network Drive** window is displayed.
2. Select a drive that is not already used from the **Drive** drop-down menu.
3. In the **Folder** text field, type \\<host\_name>\<share\_name>. You find the host name and share name on the **Sharing** page.
4. Click **Finish**. The **Map Network Drive** window is closed. The device is displayed in the **My Computer** window as a new partition.

### 6.3.4 Access a Shared Printer

When a printer is connected to the USB port on the Ericsson W3x, information about the device is displayed on the **Sharing** page

If you connect a USB printer directly to your PC, the printer device type and brand will normally be automatically detected and a printer driver assigned and installed. This is not the case when using a network shared USB printer connected to your Ericsson W3x.

On the PCs that should use the printer, install the correct printer driver compatible with the PCs operating system. The printer driver is found either on the discs that were shipped with your printer or by downloading it from the manufacturers web page.

The Ericsson W3x supports two protocols for printing: Samba and RAW. The protocol that is used may vary depending on printer and manufacturer. It also affects how to access the printer via the Ericsson W3x.

The following sections include instructions on how to access a shared printer from a PC using Windows XP or 2000.



#### 6.3.4.1 Printer Supporting the Samba Protocol

Follow the steps below to set up a connection to a shared printer from a PC using Windows XP (similar interface in Windows 2000):

1. Connect the printer to the USB port on the Ericsson W3x.
2. In the Windows task bar, click the **Start** button, and select **Run....**
3. Type `\\<host_name>` in the **Open** field and press Enter. The shared printer is displayed.
4. Right click on the printer and select **Connect...**
5. If you don't have the correct printer drivers installed a pop up window appears. Click **OK** to install the drivers.
6. Select a manufacturer and a printer in the **Add Printer Wizard** window or click **Have disk...**.
7. Your computer now tries to connect to the shared printer. This could take a few minutes.
8. Print a test page to verify that your printer is connected properly. In the Windows task bar, click the **Start button**, and select **Printers and Faxes**. Your shared printer will be displayed as `<printer name> on <host_name>`. Right-click on the printer icon and select **Properties....** On the **General** tab, click on **Print Test Page**.

#### 6.3.4.2 Printer Supporting the RAW Protocol

Follow the steps below to set up a connection to a shared printer from a PC using Windows XP (similar interface in Windows 2000):

1. Connect the printer to the USB port on the Ericsson W3x.
2. In the Windows task bar, click the **Start** button and select **Settings** followed by **Printers and Faxes**. A new window appears including printers connected to the PC.
3. Select **Add a printer**. The **Add Printer Wizard** appears. Click **Next>** to proceed.
4. In the **Local or Network Printer** window, select **Local printer attached to this computer** and click **Next>**.
5. In the **Select a Printer Port** window, check **Create a new port** and from the **Type of port** drop-down list select **Standard TCP/IP Port**. Click **Next>**.

6. The **Add Standard TCP/IP Printer Port Wizard** opens. Click **Next>** to proceed.
7. In the **Add Port** window and **Printer Name or IP Address** field enter the IP address of the Ericsson W3x (preconfigured **192.168.1.1**) and a **Port Name**, for example **IP\_192.168.1.1**. Click **Next>**.
8. In the **Additional Port Information Required** window, select the **Custom** checkbox and click the **Settings...** button.
9. In the **Configure Standard TCP/IP Port Monitor** window, select **Raw** as **Protocol** and type **9100** as **Port Number** below **Raw Settings**.
10. Click **OK** to return to the wizard and click **Next>** to proceed.
11. In the **Completing the Add Standard TCP/IP Printer Port Wizard** window, verify your settings and click **Finish**.
12. The **Add Printer Wizard – Install Printer Software** window is displayed. Select the **Manufacturer** and **Printer** and click **Next>**.
13. Enter a name for your printer and click **Next>**.
14. Select **Do not share this printer** option and click **Next>**.
15. Print a test page to verify that your printer setup is working properly and then click **Next>** to proceed. It could take a minute or two for the test page to be printed.
16. Click **Finish** in the **Add Printer Wizard**.
17. Repeat these steps if you have further computers which should have access to the shared printer.

# 7 Troubleshooting

This chapter describes how to solve a number of issues that could occur during installation, configuration, and use of the Ericsson W3x. More information is available at [www.ericsson.com/fwt](http://www.ericsson.com/fwt).

If none of the suggested methods in this chapter solve your problem, you are recommended to:

1. Restart the Ericsson W3x (see section 7.1).
2. Reset the Ericsson W3x to factory default configuration (see section 7.2).
3. Contact your service provider.

## 7.1 Restart

To restart the Ericsson W3x, click the **Restart** button on the **System** web page.

If you cannot access the WUI, remove the power cable to disconnect the Ericsson W3x from power and wait a moment before reconnecting the cable.

## 7.2 Reset to Factory Default Settings

The factory default configuration contains the original settings of your Ericsson W3x.

To reset the configuration to factory default settings, click the **Reset** button in the “FACTORY RESET” section on the **System** web page.

If you cannot access the WUI, the following procedure resets all configurable values back to factory default settings:

1. Press the **Reset** button with the tip of a pen. The **Standby** button starts blinking.
2. Wait until the **Standby** button stops blinking which indicates that the reset is finished.

**Note:** A reset to factory default configuration cannot be undone. If you reset the Ericsson W3x to default configuration, all your previous configuration changes are replaced. If you have previously changed the password, the **Enter password** page will be displayed. You have to login to the web pages with the default password (**user**).

## 7.3 LAN Connections



Table 25 – LAN Connections

Indication/Symptom	What to do
<p>Cannot access the local network from a PC that is connected to one of the Ethernet ports on the Ericsson W3x.</p>	<p>Check the network cable and make sure that there is a physical connection between the PC and the Ericsson W3x and that at least one of the corresponding LAN connector indicators is lit. If not, make sure that the cable is properly connected or try with another Ethernet cable.</p> <p>Check that the PC is configured to obtain IP address automatically using DHCP. If not, change the PC TCP/IP settings. For instructions, see section 6.1.1 – <i>Obtaining IP Settings Automatically</i> or refer to the manual of your operating system.</p>
<p>Cannot access the WUI on the Ericsson W3x.</p>	<p>Make sure you are using the correct LAN IP address in the web browser. If the LAN IP address has been changed and you do not know the current IP address, use the <b>Reset</b> button to reset the Ericsson W3x to factory default configuration (see section 7.2). This will set the LAN IP address to 192.168.1.1 and the web page address to <b>http://mbr</b> or <b>http://192.168.1.1</b>.</p> <p>Make sure you are using the correct login password. If the default password has been changed and you do not know the</p>

Indication/Symptom	What to do
	current password, use the <b>Reset</b> button to reset the Ericsson W3x to factory default configuration (see section 7.2). This will reset the login password to the default value ( <b>user</b> ).

## 7.4 Internet Access

Table 26 – Internet access

Indication/Symptom	What to do
Cannot access the Internet from any of my local devices.	<p>Check the status of the Alarm  indicator. If it is blinking, see the information in the “ALARMS” section on the <b>Overview</b> page.</p> <p>On the <b>Internet</b> page, verify that the <b>Link status</b> is Up and that an <b>IP address</b> is defined.</p>
The Internet connection is unacceptable slow or regularly dropping.	<p>Check the signal quality indicator on the front of the Ericsson W3x.</p>  <p>The more segments displayed in the bar graph, the stronger the signal.</p> <p>Try to move the Ericsson W3x to another position or attach an external antenna (indoor window or outdoor roof mounted). External antennas are available as accessories to the Ericsson W3x.</p> <p>For optimizing the performance of the Internet connection, it might be necessary to change some TCP settings in the client PC as described in section 7.4.1 – <i>Change TCP Settings</i>.</p>
Cannot access a certain Internet	Check the <b>NAT</b> page to make sure

Indication/Symptom	What to do
application or specific type of data applications.	<p>that the ALG supporting the Internet application is enabled.</p> <p>If the application requires UPnP IGD, check that <b>UPnP IGD</b> is enabled on the <b>NAT</b> page.</p> <p>A port forwarding rule might be required for a specific application. See section 3.7.3 – <i>Port Forwarding</i>.</p>

### 7.4.1 Change TCP Settings

To achieve maximum performance on the Internet connection some parameters in the TCP/IP stack of the client PC can be changed. These kinds of settings are hidden in the Windows registry, but there are some tools that give user friendly access to them, for example “TCP Optimizer”, <http://www.speedguide.net/downloads.php>


The following TCP settings are recommended to optimize the performance:

- TCP Receive Window = 146000
- Selective ACK:s = Yes
- Max Duplicate ACK:s = 2
- RFC1323 TCP Window Scaling = Yes (enabled)

**Note:** Windows Vista and recent versions of Linux kernels have automatic window scaling enabled by default and should not need any TCP tweaking.

## 7.5 Wireless LAN Connection

Table 27 – Wireless LAN

Indication/Symptom	What to do
Cannot access the local network from a wireless device.	<p>Check that the WLAN  indicator on the front panel of the Ericsson W3x is on. If not, connect an Ethernet cable between the PC and the Ericsson W3x to establish a connection and enable the wireless LAN (disabled in the default</p>

Indication/Symptom	What to do
	<p>configuration).</p> <p>Verify that the Wireless LAN interface installed on the wireless client is active.</p> <p>Keep the Ericsson W3x away from electrical devices that disturb the radio signals, for example microwave ovens. Try to move the Ericsson W3x to another location, but make sure that the mobile network signal is still acceptable before finalizing the installation.</p> <p>Make sure that your Ericsson W3x network does not use the same radio channel as other wireless devices, for example security systems. The radio channel is displayed on the <b>Wireless LAN</b> page. To avoid interference, let the Ericsson W3x select a channel automatically (<b>Auto</b>).</p> <p>Verify that the network name (SSID) on the Ericsson W3x and the wireless client are the same. Note that the network name is case-sensitive.</p> <p>Verify that the operating system and Wireless LAN interface of the client supports the authentication and encryption method (WEP-64, WEP-128, WPA, or WPA2) configured on the Ericsson W3x. These settings are displayed on the <b>Wireless LAN</b> web page. If the security method is not supported in the client, configure the Ericsson W3x to use another method.</p> <p>For the configured security method, make sure that the same encryption key or passphrase is configured on both the Ericsson W3x and the client. Note that a passphrase is case sensitive.</p>

Indication/Symptom	What to do
	<p>If whitelist is enabled, verify that the wireless client is included on this list.</p> <p>If the wireless client uses a static IP address, make sure that this IP address is on the same subnet as the Ericsson W3x. The IP address and subnet mask for the Ericsson W3x is displayed on the <b>LAN</b> page.</p>

## 7.6 Access to Shared Files or Printer

If you cannot access a shared storage device or printer connected to the USB connector on the Ericsson W3x, take the following action to identify and solve the problem:

- Check that the USB device is detected by the system by looking on the **Event Log** web page. Connect the USB device, wait a few seconds and click the **Refresh** button. Make sure the “Display” list box is set to “All”. Move to the bottom of the log using the scroll bar on the right. If your USB device is recognized you will see some lines like the example below:

```
Jan 1 00:07:29 FWT user.info kernel: usb 1-3: new high speed
USB device using ehci_hcd and address 4
Jan 1 00:07:29 FWT user.info kernel: scsi0 : SCSI emulation for
USB Mass Storage devices
Jan 1 00:07:34 FWT user.notice kernel: Vendor:
Model: USB DISK Pro Rev: PMAP
Jan 1 00:07:34 FWT user.notice kernel: Type: Direct-Access
ANSI SCSI revision: 00
Jan 1 00:07:35 FWT user.notice kernel: SCSI device sda: 4013056
512-byte hdwr sectors (2055 MB)
Jan 1 00:07:35 FWT user.notice kernel: sda: assuming Write
Enabled
Jan 1 00:07:35 FWT user.err kernel: sda: assuming drive cache:
write through
Jan 1 00:07:35 FWT user.notice kernel: SCSI device sda: 4013056
512-byte hdwr sectors (2055 MB)
Jan 1 00:07:35 FWT user.notice kernel: sda: assuming Write
Enabled
Jan 1 00:07:35 FWT user.err kernel: sda: assuming drive cache:
write through
Jan 1 00:07:35 FWT user.info kernel: sda1
Jan 1 00:07:35 FWT user.notice kernel: Attached scsi removable
disk sda at scsi0, channel 0, id 0, lun 0
```

- Restart the Ericsson W3x.
- Disconnect the USB device from the Ericsson W3x, and then reconnect it.




- Make sure that the PC belongs to the same workgroup as the Ericsson W3x. For instructions, see section 6.3.1 – *Check Workgroup Settings*. The Ericsson W3x workgroup is displayed on the **Sharing** web page.
- If you have problems accessing a printer, make sure that the printer drivers are correctly installed on the PC.

## 7.7 Telephony and Fax Service (W35 only)

**Note:** The telephony and the fax services will work without any further configurations but must be supported by the subscription/network in order to work. If you are unsure, check with your service provider.

Table 28 – Telephony and Fax Service

Indication/Symptom	What to do
<p>Cannot make or receive a call from a telephone connected to the Ericsson W35.</p>	<p>Make sure that the phone is working, for example by connecting it to a fixed line telephone network (PSTN). The phone has to be of a standard touch tone type (with DTMF keypad support).</p> <p><b>Note:</b> Some old phones have a keypad, although they do not support DTMF. These phones are consequently not supported by the Ericsson W35.</p> <p>The phone must be connected to the <b>Phone</b> connector on the Ericsson W35. Verify that a dial tone is heard when picking up the handset. If not, replace the handset and restart the Ericsson W35. Allow some two minutes for the startup and then listen for the information tone again</p> <p>If an information tone other than the dial tone is heard when lifting the handset verify that the SIM card is correctly inserted, re-enter the PIN, or enter the PUK and a new PIN to unlock the SIM card. The method to use depends on the type of</p>

Indication/Symptom	What to do
	<p>information tone. For information about tones, see section 4.2 – <i>Information Tones</i>.</p>
<p>Cannot send or receive on a fax connected to the Ericsson W35</p>	<p>Make sure that the fax is connected to the <b>Phone/Fax</b> connector on the Ericsson W35.</p> <p>Check that the Internet  LED is on and on the LAN page that the Ericsson W35 has received an IP address. The data service is a prerequisite for the fax service, see section 7.4 – <i>Internet Access</i> for troubleshooting the data service.</p> <p>Make sure that the fax is working, for example by connecting it to a fixed line telephone network (PSTN).</p> <p>Messages regarding fax status and failures are shown on the fax.</p>

# Glossary

## **802.11b**

An IEEE standard for a wireless network that operates at 2.4 GHz with rates up to 11 Mbps.

## **802.11g**

An IEEE standard for a wireless network that operates at 2.4 GHz with rates up to 54 Mbps.

## **2G – Second Generation**

The second generation wireless communications technology, introducing digital voice encoding. Low speed data services are supported.

## **3G – Third Generation**

The third generation wireless communications technology. 3G includes enhanced voice, data, and video capabilities, improved availability, broad bandwidth and high speed.

## **ALG – Application Layer Gateway**

An ALG provides a translation and transportation service for an Internet application.

## **AES – Advanced Encryption Standard**

An encryption method used by WPA2. AES offers a high level of security and is approved for sensitive corporate and government data transmission.

## **AP – Access Point**

An Internet device that seamlessly connects wired and wireless networks. Access points attached to a wired network support the creation of multiple radio cells that enable roaming throughout a facility.

## **APN – Access Point Name**

A reference to the Internet access point of an Service provider.

## **Association**

Describes the establishment and maintenance of a wireless link between devices. (If security is enabled, the devices cannot do anything but exchange security credentials with this link). See *Authentication*.

## **Authentication**

The processthat occurs after association to verify the identity of the wireless device or end user and allow access to the network.

## **Broadcasting**

To simultaneously send the same message to multiple recipients.

## **CDMA – Code Division Multiple Access**

A general term describing mobile air interface technologies based on “spread spectrum” digital radio access methods, offering benefits including increased capacity, quality and security. CDMA is fundamental to 3G mobile systems.

## **Channel**

A channel determines the radio frequency used by an access point to pass data traffic to wireless clients. Available channels depend on region specific regulations.

## **CHAP – Challenge-Handshake Authentication Protocol**

CHAP is an authentication scheme used by PPP servers to validate the identity of remote clients. CHAP periodically verifies the identity of the client by using a three-way handshake. This happens at the time of establishing the initial link, and may happen again any time afterward. The verification is based on a shared secret (such as the client user’s password). See also *PAP*.

## **CIFS – Common Internet File System**

See *SMB*.

## **CLIP – Calling Line Identity Presentation**

A service that provides a called party the

calling line identity, for example the phone number, of the caller.

**DHCP – Dynamic Host Configuration Protocol**

A protocol used by networked computers (clients) to obtain IP addresses and other parameters such as the default gateway, subnet mask, and IP addresses of DNS servers from a DHCP server.

**DHCP server**

A configuration server, capable of configuring network devices with a variety of information, such as IP addresses, required for their operation.

**DNS – Domain Name System (or Service)**

The distributed name/address mechanism used in the Internet. It comprises distributed online databases that contain mappings between human-readable names and IP addresses, and servers, which provide translation services to client applications.

**DTMF – Dual Tone Multi Frequency**

The telephone signaling method used over the line in the voice-frequency band to the call switching center. The version of DTMF used for telephone “tone dialing” is known by the trademarked term “Touch-Tone”.

**EDGE – Enhanced Data rates for Global Evolution**

A technology that gives GSM the capacity to handle services for the third generation of mobile telephony. EDGE provides three times the data capacity of GPRS.

**Encryption**

Encryption is an effective way to achieve data security by translating data into a secret code.

**Encryption key**

A sequence of characters used for data encryption. The encrypted data can only be sent and received by users with access to the encryption key.

**Ethernet**

The most common LAN technology, used in wired networks.

**FTP – File Transfer Protocol**

A protocol for exchanging files over the Internet. FTP is most commonly used to download and upload files from and to servers.

**Gateway**

A network point that acts as an entrance to another network.

**GPRS – General Packet Radio Service**

A packet-based mobile communications system building on GSM. Advantages over standard GSM include higher data transmission speeds, more efficient use of radio resources and continuous connection to the network to facilitate more advanced non-voice services.

**GSM – Global System for Mobile Communication**

The second generation mobile system originally developed in Europe. GSM is oriented to voice and circuit mode data.

**Host**

A device (usually a computer) that is connected to a TCP/IP network, including the Internet. Each host has a unique IP address.

**Host name**

The DNS name of a device on a network, used to simplify the process of locating computers on a network.

**HSPA – High Speed Packet Access**

A mobile broadband technology that improves the performance of networks based on the Universal Mobile Telecommunications System (UMTS).

**IGD – Internet Gateway Device**

See *UPnP IGD*.

**IEEE – Institute of Electrical and**

### **Electronics Engineers**

IEEE (pronounced I-tripleE) is an organization composed of engineers, scientists, and students. The IEEE is best known for developing standards for the computer and electronics industry. In particular, the IEEE 802 standards for local area networks are widely followed.

### **IMEI – International Mobile Equipment Identity**

The IMEI number is a 15 digit number which includes information on the origin, model, and serial number unique to every mobile device. The IMEI number is used by the mobile network to identify valid devices.

### **IP – Internet Protocol**

A part of a suite of protocols that effectively defines the Internet as we know it. Specifies addressing and control information for routing data packets over networks.

### **IP address**

The address of a host on the Internet, consisting of four numbers, each from 0 to 255, separated by periods, for example 192.168.1.1. An IP address consists of a network ID that identifies the particular network the host belongs to, and a host ID uniquely identifying the host itself on that network. A network mask is used to define the network ID and the host ID. See also *Private IP Address* and *Public IP Address*.

### **LAN – Local Area Network**

A computer network limited to the immediate area, such as a home, office, or small building.

### **Lease time**

The amount of time that a dynamically assigned IP address will be valid for a specific device.

### **MAC address – Media Access Control address**

The permanent hardware address of a device

assigned by its manufacturer. MAC addresses are expressed as six pairs of hexadecimal characters (0-9 and a-f), with each pair separated by colons. For example: 1a:2b:23:5b:66:9a

### **Mass Storage**

Various techniques and devices used to store large amounts of data. An example of a mass storage device is a hard disk.

### **MBR – Mobile Broadband Router**

A router providing residential and small office users with broadband services like high-speed data, voice, and fax connectivity. Internet access is provided through the mobile communications network.

### **NAT – Network Address Translation**

A service performed by many routers that translates a network's IP address into a private IP address for each device on the LAN. Only the router and the LAN know these addresses; the outside world sees only the public IP address when talking to a computer on the LAN.

### **Network mask**

A sequence of bits applied to an IP address to select the network ID while ignoring the host ID. Bits set to 1 mean "select this bit" while bits set to 0 mean "ignore this bit". For example, if the network mask 255.255.255.0 is applied to the IP address 100.10.50.1, the network ID is 100.10.50, and the host ID is 1. See also *Subnet mask*.

### **Packet**

The units of data transmitted on a network. Each packet contains a payload (the data), plus overhead information such as where it came from (source address) and where it will go (destination address).

### **PAP – Password Authentication Protocol**

PAP is a simple authentication protocol used to authenticate a user to a remote access server or Internet Service Provider (ISP). PAP

is used by PPP and almost all network operating system remote servers support PAP. PAP transmits unencrypted ASCII passwords over the network and is therefore considered insecure, it is used as a last resort when the remote access server does not support a stronger authentication protocol, such as CHAP.

**Passphrase**

A secret password used for WPA and WPA2 wireless data encryption. The encryption is based on a WPA master key that is derived from the passphrase and the network name (SSID).

**PC – Personal Computer**

A computer designed for use by one person at a time.

**Port**

In TCP and UDP networks, an endpoint to a logical connection. The port number identifies what type of port it is. For example, port 80 is used for HTTP traffic.

**PIN – Personal Identification Number**

A secret code used for individual access to for example computer networks. Generally, a PIN is made up of 4 to 10 digits.

**PPP – Point-to-Point Protocol**

A protocol for serial data transmission that is used to carry IP (and other protocol) data between the service provider and your computer.

**Private IP Address**

A private IP Address is typically assigned to a client on a LAN and is not used outside the LAN. Private IP addresses are typically used when multiple computers share the same Internet connection.

**Protocol**

A set of rules governing the transmission of data. In order for a data transmission to work, both ends of the connection have to follow the rules of the protocol.

**PSTN – Public Switched Telephone Network**

The traditional, wired telephone network designed primarily for voice traffic.

**Public IP Address**

A public IP address is a globally unique number that identifies a device on the Internet. Anyone on the Internet can connect to the device using the public address.

**PUK – Personal Unblocking Key**

A secret code made up of 8 to 10 digits. The PUK is used to reactivate a SIM card that has been blocked.

**Roaming**

The movement between microcells in a radio network. Roaming service is used to provide network access independent of where the user resides and what service provider that is running the network.

**Routing**

The forwarding of data between a local network and the Internet on the most efficient route, based on the data's destination IP address and current network conditions. A device that performs routing is called a router.

**RSSI – Received Signal Strength Indicator**

The RSSI is an indicator of the strength of the received radio signal.

**SIM – Subscriber Identity Module**

The “smart card” required by all mobile customers to operate their phones. Carries authentication, billing and information about the individual subscriber, as well as address book and other personalized information.

**SMB – Server Message Block**

An application-level network protocol mainly applied to shared access to files, printers, serial ports, and miscellaneous communications between nodes on a network. SMB was later renamed to CIFS (Common Internet File System) with more

features added, including support for symbolic links, hard links, and larger file sizes.

**SSID – Service Set Identifier**

A unique network name, or identifier, that differentiates one wireless LAN from another. All access points and clients attempting to connect to a specific WLAN must use the same SSID.

**Subnet**

A portion of a network. The subnet is distinguished from the larger network by a subnet mask that selects some of the computers of the network and excludes all others. The subnet's devices remain physically connected to the rest of the network, but they are treated as though they were on a separate network.

**Subnet mask**

A mask that defines a subnet. See also *Network mask*.

**Switching**

Routing data traffic by setting up temporary connections between two or more network points. This will take the data toward its intended destination.

**TCP – Transmission Control Protocol**

See *TCP/IP*.

**TCP/IP – Transmission Control Protocol / Internet Protocol**

The basic protocols used on the Internet. TCP is responsible for dividing data up into packets for delivery and reassembling them at the destination. IP is responsible for delivering the packets from source to destination. When TCP and IP are bundled with higher-level applications such as HTTP, FTP, Telnet, and so on, TCP/IP refers to this whole suite of protocols.

**TFTP – Trivial File Transfer Protocol**

A TCP/IP protocol commonly used for software downloads.

**TKIP – Temporal Key Integrity Protocol**

A protocol used for WPA data encryption. It ensures that a unique master key is generated for each packet, supports message integrity and sequencing rules, and supports re-keying mechanisms. TKIP avoids the problems of WEP static keys by dynamically changing data encryption keys.

**UDP – User Datagram Protocol**

A connection-less transport service that dispenses with the reliability services provided by TCP. UDP gives applications a direct interface with IP and the ability to address a particular application process running on a host via a port number, without setting up a connection session.

**UPnP – Universal Plug and Play**

A networking architecture that provides compatibility among networking equipment, software, or between equipment and software.

**UPnP IGD – UPnP Internet Gateway Device**

A standard used by UPnP aware clients, such as MSN Messenger, to work properly from behind a NAT.

**UMTS – Universal Mobile Telecommunications Service**

A 3G wireless system that delivers high-bandwidth data and voice services to mobile users. UMTS has an air interface based on WCDMA and a core network based on the General Packet Radio Service (GPRS).

**URL – Uniform Resource Locator**

The address of a resource on the Internet, for example [www.ericsson.com](http://www.ericsson.com).

**USB – Universal Serial Bus**

An interface for connecting peripherals such as storage devices and printers to a host.

**WAN – Wide Area Network**

A network of computers that covers a large geographical distance. With respect to the Ericsson W25, WAN refers to the Internet.

**WCDMA – Wideband CDMA**

The radio access technology for wideband wireless access supporting 3G services. It allows very high speed multimedia services like wireless Internet access and videoconferencing. WCDMA is also known as CDMA DS (Direct Sequence).

**WEP – Wired Equivalent Privacy**

A method for data encryption on wireless networks. Data is encrypted into blocks of either 64 bits length or 128 bits length. The encrypted data can only be sent and received by users with access to a private encryption key.

**Wireless**

A common term used to describe telecommunications in which radio waves (rather than some form of wire) carry the signal over part or all of the communication path.

**WLAN – Wireless Local Area Network**

A WLAN is a network in which a mobile user can connect to a LAN through a wireless (radio) connection. The IEEE 802.11 standard specifies the technologies for Wireless LANs.

**WPA – Wi-Fi Protected Access**

An authentication and encryption standard for wireless networks. WPA addresses the security limitations of WEP, providing a stronger data encryption method; TKIP. WPA data encryption is based on a WPA master key. The master key is derived from the passphrase and the network name (SSID) of the device.

**WPA2 – Wi-Fi Protected Access 2.**

An enhanced version of WPA. For data encryption, WPA2 uses AES instead of TKIP.

**WUI – Web User Interface**

In Ericsson W3x the WUI refers to a built-in web based configuration tool with wizard support.





