

# Ericsson W21

## Fixed Wireless Terminal for WCDMA/HSDPA Mobile Networks

User's Guide



Software Release 1.4 (R10)



# Ericsson W21

## Fixed Wireless Terminal for WCDMA/HSDPA Mobile Networks

### User's Guide

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# 1 Introduction

This chapter describes the structure of this guide and gives a brief product overview.

## 1.1 Structure of this Guide

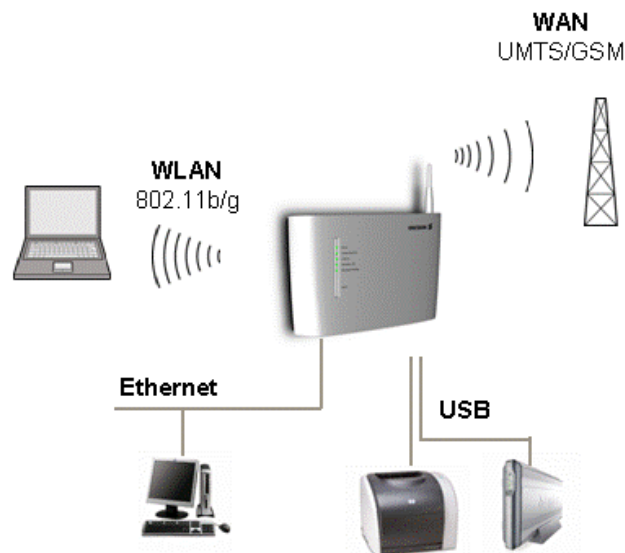
This User's Guide contains information that is needed to configure and manage the Ericsson W21 Fixed Wireless Terminal (FWT). The following chapters are included:

- **Chapter 1** – “Introduction” – provides information about this guide and gives a brief product overview.
- **Chapter 2** – “Configuration and Management” – provides detailed information about how to perform configuration and management of the Ericsson W21.
- **Chapter 3** – “PC Configuration” – gives instructions for configuring your computers to work with the Ericsson W21.
- **Chapter 4** – “Troubleshooting” – tells you how to solve a number of issues that could occur during installation, configuration, and use of the Ericsson W21.
- The **Glossary** includes abbreviations and explanations to technical terms used in this guide.

## 1.2 Product Overview

The Ericsson W21 is an advanced small office and home router with wireless Internet access. The key benefits of the product are:

- **Wireless Broadband Services at Reliable High Speed**  
The Ericsson W21 uses WCDMA/HSDPA radio access to provide high-speed data capabilities to the local network.
- **Advanced Networking**  
The Ericsson W21 supports an advanced local network setup. It provides 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 W21 is a WLAN access point for the wireless local network supporting WEP, WPA, and WPA2 with pre-shared keys for WLAN security.



*Figure 1 - Ericsson W21 Network Connections*

For more information about the Ericsson W21, see [www.ericsson.com/fwt](http://www.ericsson.com/fwt)

## 1.2.1 Indicators

The Ericsson W21 is equipped with five status indicators located on the front panel of the unit. A general description of each indicator is provided in the following table (from top to bottom):

*Table 1 Front Panel Indicators*

<b>Text</b>	<b>Status</b>	<b>Description</b>
<b>Power</b>	Green Unlit	Mains powered. Power is off.
<b>Mobile Network</b>	Green Red Flashing Unlit	Connection to a UMTS network. Connection to a GSM network. Searching for a connection. No connection to the mobile network.
<b>Internet</b>	Green Unlit	Connection to Internet established. No Internet connection.
<b>Wireless LAN</b>	Green Unlit	The Wireless LAN is active. The Wireless LAN is inactive.
<b>Alarm</b>	Red  Unlit	Various error conditions specified on the W21 <b>Overview</b> web page. No error.

The Ethernet LAN connectors (**LAN1- LAN4**) have two built-in indicators each.

The left indicator shows the speed of data traffic between the Ericsson W21 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 green when a LAN connection is established and flashes to show data traffic activity.



## 1.2.2 Connectors

The connectors on the Ericsson W21 are positioned as shown in the following illustration:

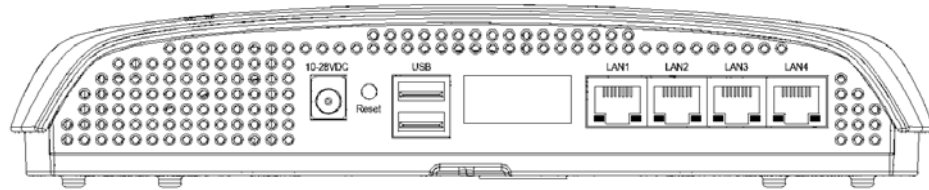


Figure 2 - Connectors' panel

A description of each connector is provided in the table below:

Table 2 Connectors

Label	Description
<b>10-28 VDC</b>	Power input for connecting the provided power supply adapter.
<b>Reset</b>	Button used to restore the Ericsson W21 configuration to factory default settings. The following procedure resets all configurable values back to factory default settings, including the Ericsson W21 login user name and password. <ol style="list-style-type: none"><li>1. Press the <b>Reset</b> button with the tip of a pen. The <b>Power</b> LED starts blinking.</li><li>2. Wait until the <b>Power</b> LED stops blinking which indicates that the reset is finished.</li></ol>
<b>USB</b>	USB connectors, for connecting USB device(s) to the Ericsson the W21 (for file and printer sharing).
<b>LAN 1 - 4</b>	Ethernet LAN connectors (RJ45), for connecting client PCs or Ethernet devices to the Ericsson W21.

## 2 Configuration and Management

When the physical installation of the Ericsson W21 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 and management of the Ericsson W21 using the WUI.

### 2.1 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.

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 W21 and type **http://192.168.1.1** in the **Address** (URL) field. The **User login** page is displayed.

**Note:** If you change the Ericsson W21 internal IP address, you have to use the new address to access the web pages.



Figure 3 - User login page

The WUI is available in five languages; English, German, Spanish, French and Italian. Click on corresponding country flag to change to the preferred language.

The preconfigured login “User name” and “Password” is both **user**. You are recommended to change the password, see section 2.2.1 – *Change Default Password*.

Type **user** in both the “User name” and “Password” fields and click the **Log In** button. After a successful login, the **Overview** page is displayed, see section 2.2 – *Overview*.

### 2.1.1 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:

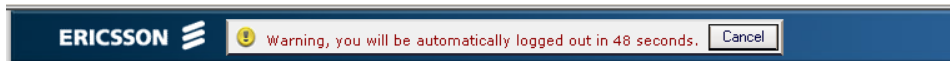


Figure 4 - Inactivity Timeout Warning

Click **Cancel** to abort the automatic logout.

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

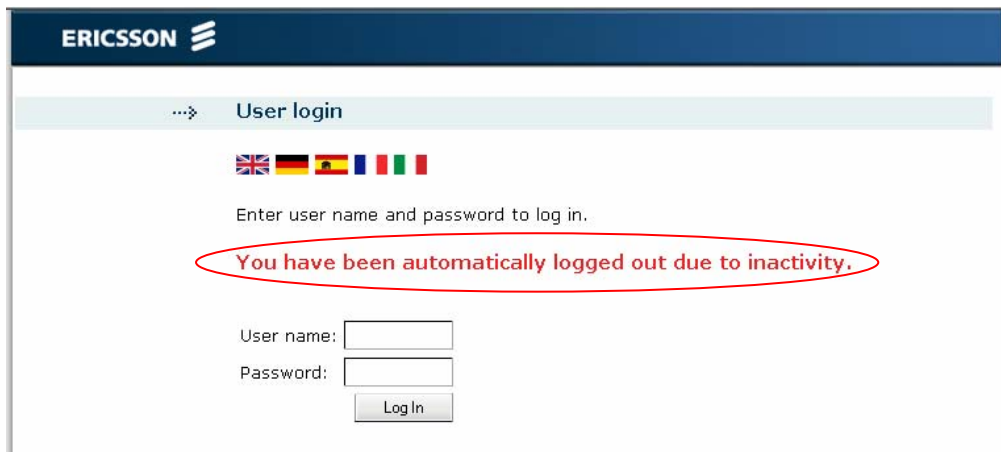


Figure 5 - User login page (after inactivity timeout)

Enter the “User name” and “Password” and click **Log In** to make a new login.

## 2.2 Overview

The **Overview** page gives an overview of the settings on the Ericsson W21 as described below.

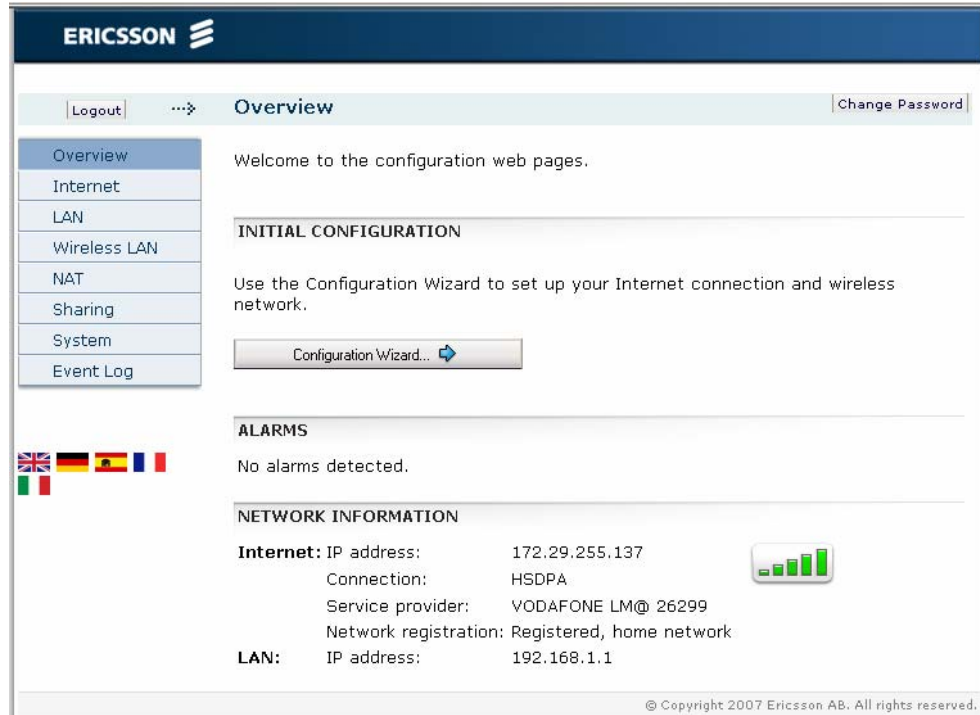


Figure 6 - Overview page

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

- The possibility to change password using the **Change Password** button in the upper right corner. See section 2.2.1 – *Change Default Password*.
- 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 first time settings. See section 2.3 – *Configuration Wizard*.
- The “ALARMS” section where detected error conditions are specified. See section 2.2.2 – *Alarms* for more information. If an alarm occurs, the **Alarm** indicator (on the front of the Ericsson W21) is red and a message is also sent to the Event log. See section 2.10 – *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.

Each page in the WUI also includes a **Logout** button (above the left-hand menu).

### 2.2.1 Change Default Password

For security reasons you are recommended to change the preconfigured password.

Follow the steps below to change the password:

1. Click the **Change Password** button on the **Overview** page. The **Change Password** page is displayed:

*Figure 7 - Change Password page*

2. Type the current password in the “Current Password” field. If it is the first time you change the password, the password is **user**.
3. Type a new password in the “New Password” and “Retype New Password” fields. A password can include up to eight (8) characters (letters and/or numbers).

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

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

### 2.2.2 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 W21 front panel is lit (red), and the corresponding cause is displayed according to the table below:

*Table 3 - 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 not valid
No PIN code entered	No PIN code has been entered to activate the Internet service.
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.
Alarm detection not working	The alarm detection function is currently not working.
Unknown alarm	An alarm that cannot be identified has occurred.

### 2.2.3 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 4 - Network information (Internet) description*

<b>Text/symbol</b>	<b>Description</b>
	The mobile network (UMTS or GSM) signal quality available at the Ericsson W21 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 W21 by the mobile network.
<b>Connection</b>	The radio access technique currently used to enable Internet access. It can be HSDPA, 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** (Local Area Network) section includes information about the following item:

*Table 5 - Network information (LAN) description*

<b>Text</b>	<b>Description</b>
<b>IP Address</b>	The LAN IP address of the Ericsson W21.

## 2.3 Configuration Wizard

The Configuration Wizard guides you step by step through the basic setup of the mobile network connection and optionally for the Wireless LAN access point.

**Note:** Throughout the wizard web-pages, only enter details that you have received from your service provider and leave other fields empty.

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

### 2.3.1 Internet Access

The first part of the Configuration Wizard includes Internet authentication details. Depending on the current Internet service setup, the requests on authentication may differ. The service provider provides the required authentication details.



Figure 8 - Internet Access: SIM Authentication page

#### 2.3.1.1 SIM Authentication

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



Normally, you have to enter the PIN to activate the Ericsson W21 data services. In some cases however, authentication is not required and it is possible to use the services without entering any PIN.

Type the PIN in the “PIN” field.

Thereafter, you can select the “Remember my PIN” check box. This makes SIM authentication automatic and you will not have to enter the PIN in case of a system restart.

Click **Next** to proceed.

### 2.3.1.2 APN

An APN (Access Point Name) is a reference to the Internet access point on the service provider’s network. It usually has the format <name.service\_provider.country>. Different APNs for the GSM (2G) and UMTS (3G) networks may be required.

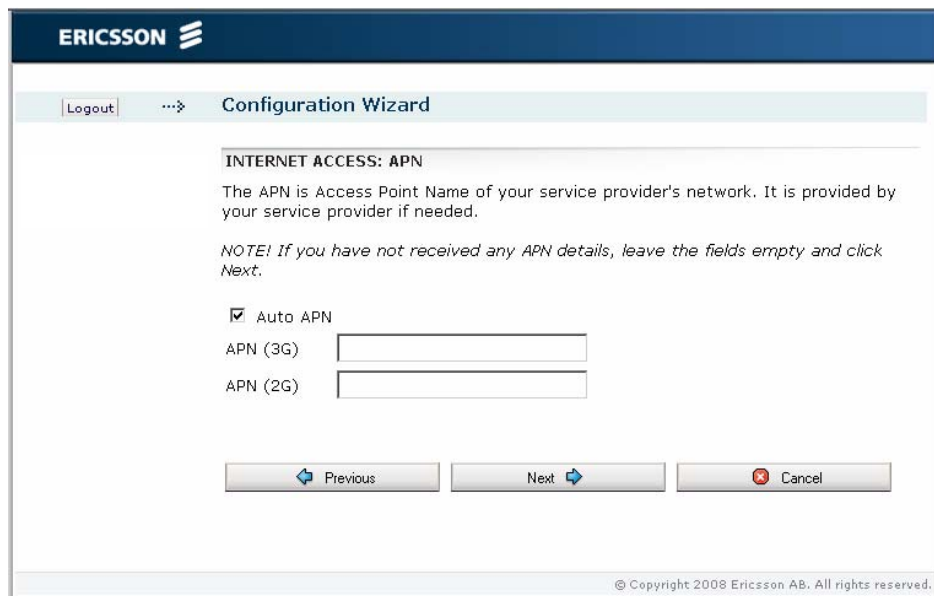


Figure 9 - Internet Access: APN page

Check the “Auto APN” option if you have not received any APN(s) from your service provider. In this case the APN is automatically configured based on information on the SIM card.

If you have received APN(s) from your service provider, type the information in the corresponding “APN (2G)” and “APN (3G)” fields.

Click **Next** to proceed.

### 2.3.1.3 PPP User Authentication

The PPP (Point-to-Point Protocol) Internet mode may require individual user authentication.

**Note:** If you have not received any PPP Authentication details from your service provider, leave the fields empty and click **Next**.

Figure 10 - Internet Access: PPP User Authentication page

Type the authentication details you have received in the “PPP user name” and “PPP password” fields and select the appropriate “Authentication Protocol”.

Click **Next** to proceed.

## 2.3.2 Wireless LAN Access

The second part of the Configuration Wizard includes configuration of the Wireless LAN (WLAN). A Wireless LAN is a local network that communicates through wireless connections.

**Note:** The wireless setup typically requires configuration of both the Ericsson W21 and the wireless clients. For more information about configuring wireless clients, see 3.2 – *Wireless LAN Settings*.

### 2.3.2.1 Enable the Wireless LAN

The Ericsson W21 is a WLAN Access Point (AP) for the local network providing the wireless client(s) with Internet and LAN access.

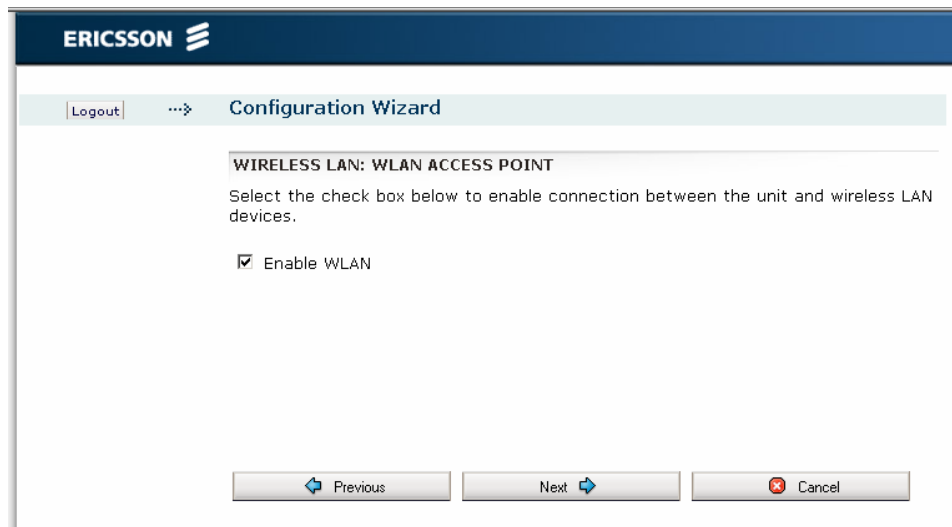


Figure 11 - Wireless LAN: WLAN Access Point page

To enable connection of one or more wireless devices to the Ericsson W21, 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.

If you are not going to set up any Wireless LAN, just leave the box unchecked and click **Next**. The last page of the wizard, where you can review and confirm your settings, is displayed:



Figure 12- 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.

### 2.3.2.2 Region

To make sure the Ericsson W21 operates on correct radio frequencies according to local regulations, you have to state in which region you reside.



Figure 13 - Wireless LAN: Region page

Select your country domain from the “Region” drop-down list.

Click **Next** to proceed.

### 2.3.2.3 Channel Selection

The maximum number of regulatory channels to use for wireless communication is 13. Available channels depend on which region that was selected in the previous step. You can select one of the available channels in the “Channel” drop-down list, or let the Ericsson W21 automatically select a channel (“Auto”). By selecting “Auto” the radio will automatically scan each valid channel and choose the one with least interference.

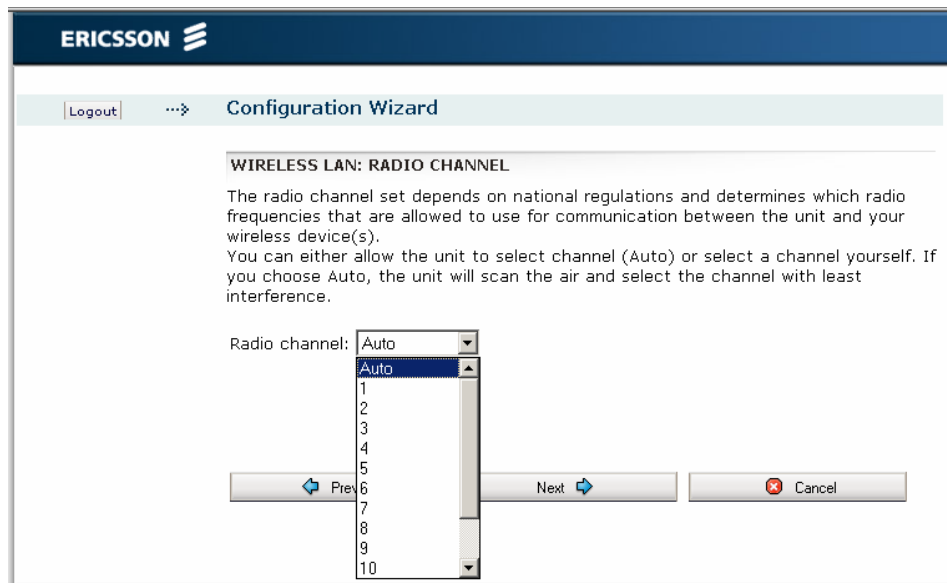


Figure 14 - Wireless LAN: Radio Channel page

Select either “Auto” (recommended) or a specific channel number from the “Radio channel” drop-down list.

Click **Next** to proceed.

#### 2.3.2.4 Network Name

All devices 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 W21 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 W21 can obtain access to it.

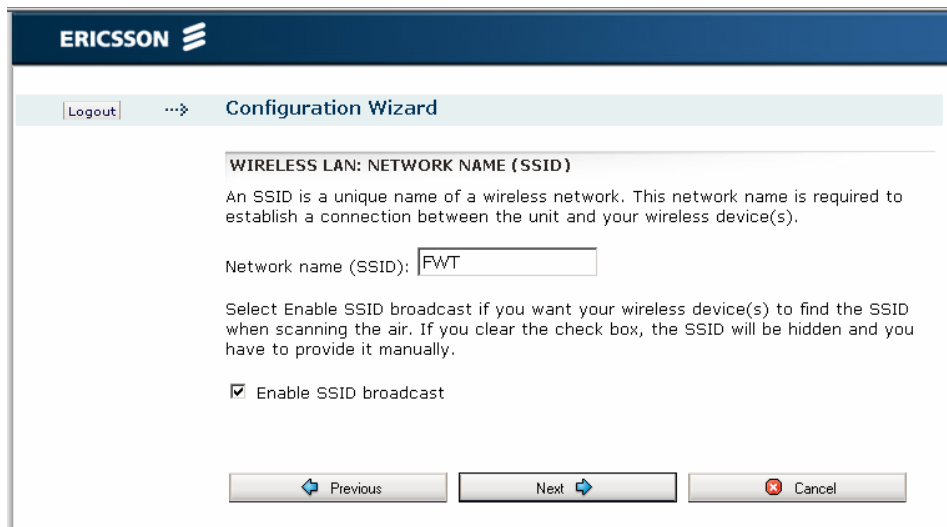


Figure 15 - Wireless LAN: Network Name (SSID) page

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 SSID broadcast option is enabled, your local wireless device(s) will find the network name when scanning the air. If the option is disabled, the network name is hidden and has to be manually provided to the wireless device(s).

If you want to change the preconfigured network name (FWT), 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.

### 2.3.3 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. 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.



Figure 16 - Wireless LAN: Authentication page

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

- **None;**  
If you select “None” 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 bit), WEP (128 bit);**  
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;**  
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.

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

Click **Next** to proceed.

**2.3.3.1 None**

If you select “None”, the last page of the wizard, where you can review and confirm your settings, is displayed:



Figure 17 - 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.

**2.3.3.2 WEP Encryption Key**

The WEP encrypted data can only be sent and received by users with access to a private encryption key. This means that each device on your wireless network has to be configured with the same key as the Ericsson W21 in order to allow encrypted data transmissions.

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.



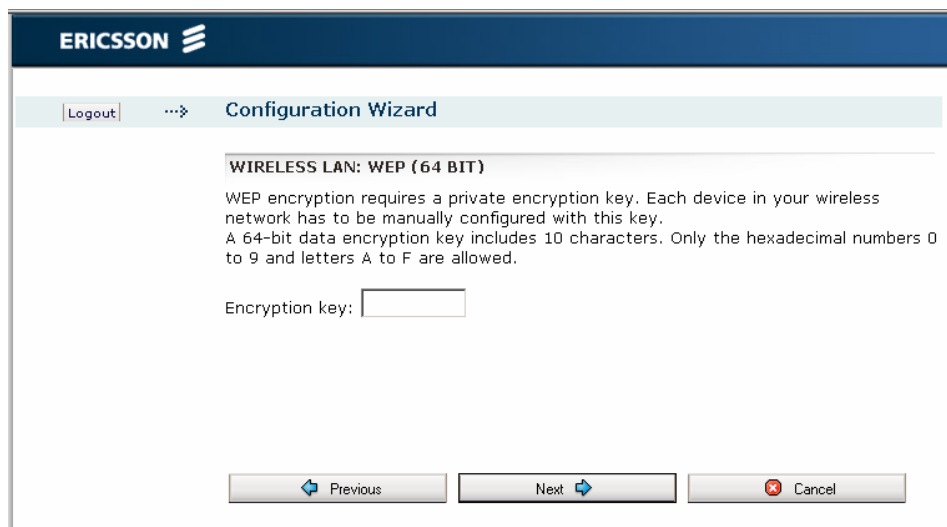


Figure 18 – Wireless LAN: WEP (64 BIT) page

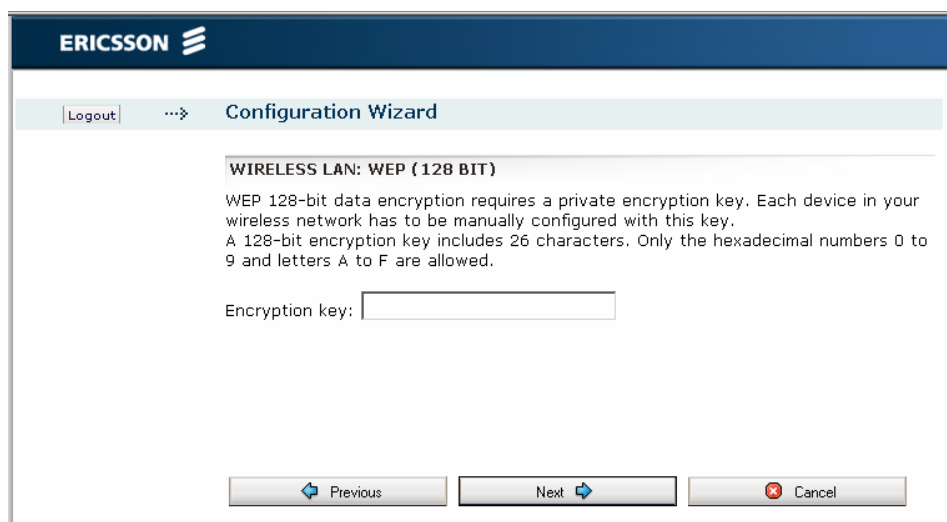


Figure 19 – Wireless LAN: WEP (128 BIT) page

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

Click **Next** to proceed.

### 2.3.3.3 WPA/WPA2 Passphrase

WPA and WPA2 authentication and encryption require a passphrase. Each device on your wireless network has to be configured with the same passphrase as the Ericsson W21. The encryption master key is derived from the passphrase and the network name (SSID) of the device.

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 20 – Wireless LAN: WPA page



Figure 21 – Wireless LAN: WPA2 page

Type a unique passphrase in the “Passphrase” field.

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

Click **Next** to proceed.

### 2.3.4 Configuration Wizard Confirmation

On the last page of the Configuration Wizard, the Internet and Wireless LAN settings are displayed:

ERICSSON

Logout ...> Configuration Wizard

Click Finish to confirm the following settings and establish the connections:

<b>Internet:</b>	APN (3G)	cpe.gsn.lkp
	APN (2G)	
	PPP user name	
	PPP password	
	Authentication Protocol	chap
<b>Wireless LAN:</b>	WLAN access point	Enabled
	Region	Europe
	Radio channel	Auto
	Network name (SSID)	FWT
	Authentication	WPA2
	Passphrase	mvvrvsecretnassphrase

Previous Finish Cancel

Figure 22 - 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.

## 2.4 Internet

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

**ERICSSON**

Logout ... Internet

Overview  
**Internet**  
 LAN  
 Wireless LAN  
 NAT  
 Sharing  
 System  
 Event Log

Link status: Up  
 Mode: PPP  
 Connection: HSDPA  
 Service provider: (26299)  
 APN: cpe.gsn.lkp

Network registration: Registered, home network  
 IP address: 172.29.255.142  
 DNS 1: 172.16.5.2  
 DNS 2: 172.16.5.3

**TRAFFIC STATISTICS**

Transmitted: 1.1 KiB (23 packets)  
 Received: 3.6 KiB (21 packets)  
 Error: 0 packets  
 Overruns: 0 packets  
 Dropped: 0 packets

Transmitted current month: 3587.4 KiB  
 Received current month: 44.5 MiB  
 Transmitted previous month: 14.5 KiB  
 Received previous month: 14.5 KiB

**AUTHENTICATION**

PIN: SIM requires no PIN authentication

Auto APN

APN (3G):   
 APN (2G):   
 PPP user name:   
 PPP password:

Authentication Protocol  PAP  CHAP

**CELLULAR BAND SELECTION**

Region:

**3G Settings:**

850  
 1900  
 2100

**2G Settings:**

850  
 900  
 1800  
 1900


Figure 23 - Internet page

### 2.4.1 Mobile Network Connection Details

The Ericsson W21 connects to the UMTS (3G) network when it is available and uses the GSM/GPRS/EDGE (2G) network as fall-back.

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

*Table 6 - Mobile Network connection details*

<b>Text/symbol</b>	<b>Description</b>
	The mobile network (UMTS or GSM) signal quality available at the Ericsson W21 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, 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 HSDPA, UMTS, EDGE, or GPRS.
<b>Service provider</b>	The name of, or other reference to, the mobile network operator.
<b>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 W21 by the mobile network.
<b>DNS 1</b>	The IP address to the primary DNS server.
<b>DNS 2</b>	The IP address to the secondary DNS server.

## 2.4.2 Traffic Statistics

The “TRAFFIC STATISTICS” section includes information about the following items:

*Table 7 - 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.

## 2.4.3 Authentication

Internet access requires authentication of the Ericsson W21. Depending on the current Internet service setup, the authentication requests may differ. Your service provider provides the Ericsson W21 SIM card and details needed for authentication.

The following authentication details may be required:

*Table 8 - Authentication details*

<b>Text</b>	<b>Description</b>
<b>PIN</b>	The Personal Identification Number, which is used for SIM authentication.
<b>Remember my PIN</b>	If enabled, SIM authentication is automatic and you will not have to enter the PIN in case of a system restart.

<b>Auto APN</b>	If enabled, the APN (Access Point Name) is automatically configured based on information on the SIM card.
<b>APN (3G)</b>	The 3G Access Point Name, which is a reference to the UMTS Internet access point on the service provider's network. The APN usually has the format <name.service_provider.country>.
<b>APN (2G)</b>	The 2G Access Point Name, which is a reference to the 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 (PAP or CHAP) to be used when PPP is used for authentication.

If you have not used the Configuration Wizard for configuration of Internet access, or 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.

### 2.4.3.1 Unblock SIM Card

If three attempts have been made with an incorrect PIN, the SIM card is blocked and the **Unblock SIM** button is displayed beside the "PIN" field. The PUK code is needed to unblock the SIM card. Click the **Unblock SIM** button to display the **Unblock SIM** page:

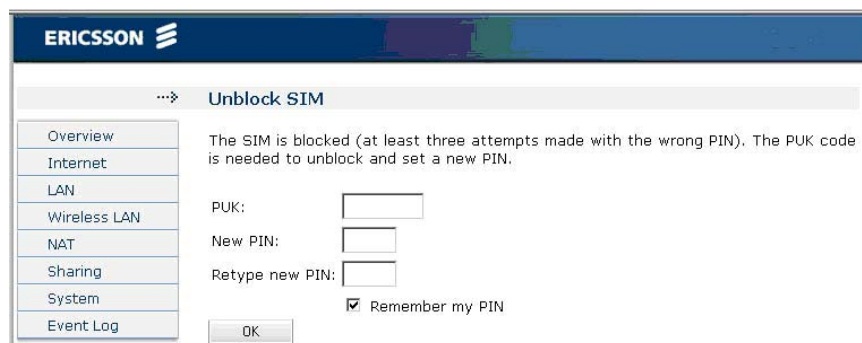


Figure 24 - Unblock SIM page

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

### 2.4.3.2 Unlock Operator Lock

If the SIM card used in the Ericsson W21 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:

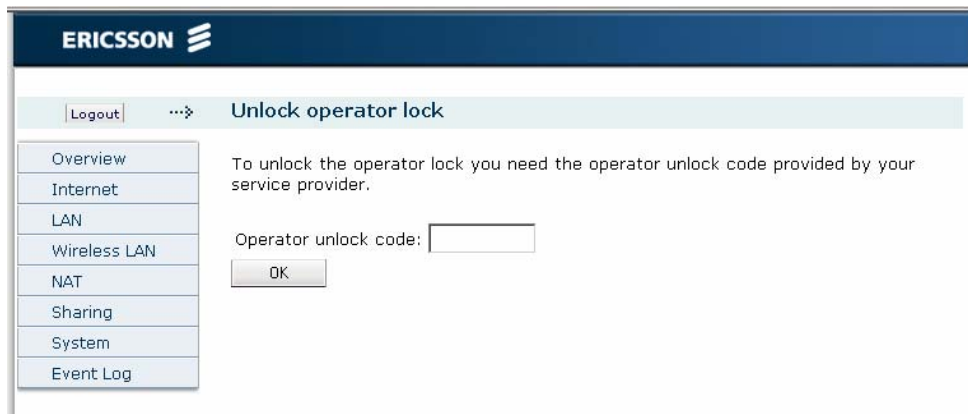


Figure 25 - Unlock operator lock page

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

### 2.4.3.3 Change PIN

If SIM authentication is verified, the “PIN” field cannot be edited. Instead the **Change PIN** button is displayed. To change the PIN, click **Change PIN** to display the **Change PIN** page:



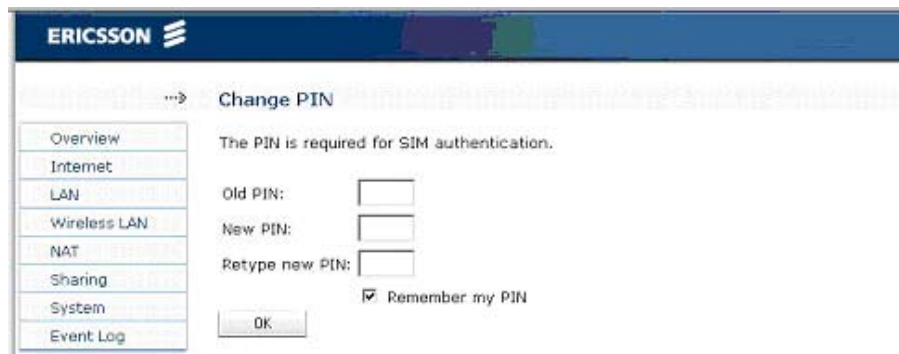


Figure 26 - Change PIN page

Type the current and new PIN in the corresponding fields and click **OK** to save the settings.

#### 2.4.4 Cellular Band Selection

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

Table 9 – Cellular band selection details

Text	Description
<b>Region</b>	<p>The drop-down list includes Preferred Roaming List (PRL) regions. The PRL contains information regarding allowed systems (GSM/UMTS) and bands. This information is used by the Ericsson W21 during the system selection and acquisition process, initially and when the Ericsson W21 is roaming.</p> <p>By setting a specific region, the Ericsson W21 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>	Select the frequency bands to be used for a 3G mobile connection; 850, 1900, 2100.
<b>2G Settings</b>	Select the frequency bands to be used for a 2G mobile connection; 850, 900, 1800, 1900.

## 2.5 LAN

The **LAN** (Local Area Network) page includes settings for the connection between the Ericsson W21 and other local devices, traffic statistics as well as status on the physical LAN ports.

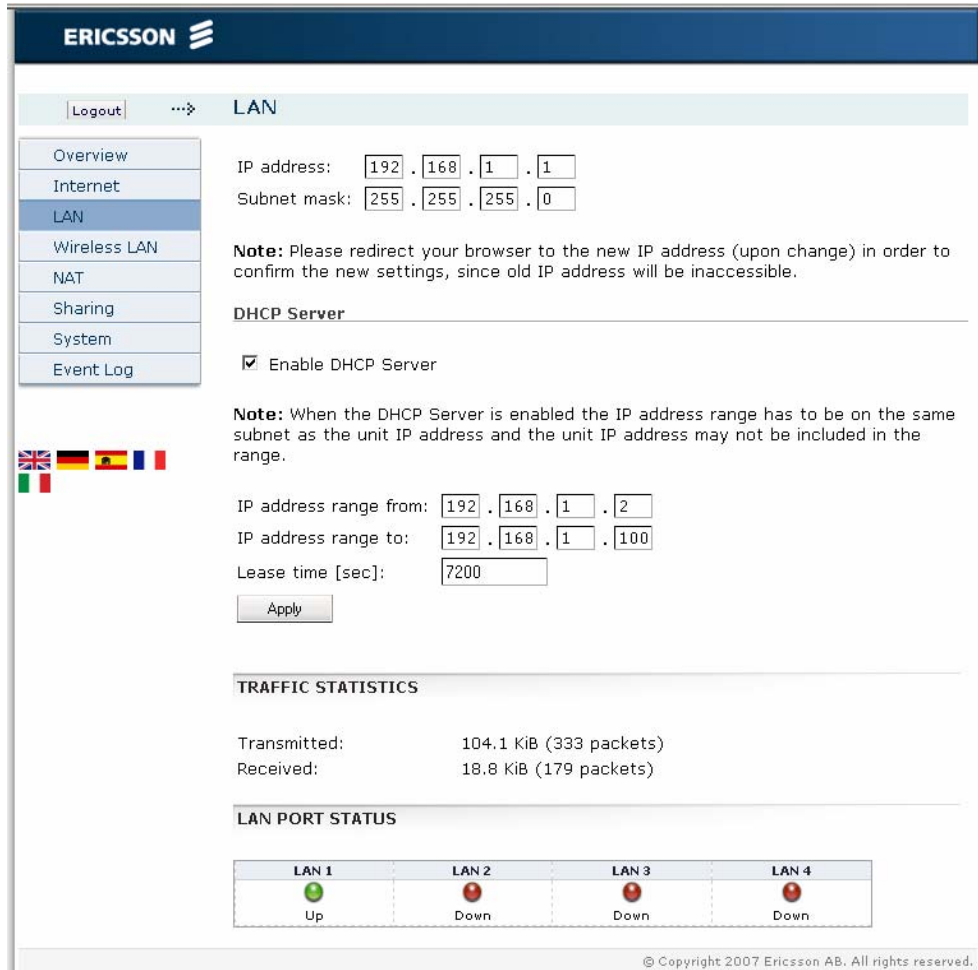


Figure 27 - LAN page

### 2.5.1 LAN IP Address

The LAN IP address and subnet mask of the Ericsson W21 is used for connections to clients on the LAN/WLAN.

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

Table 10 - LAN page description

Text	Description
<b>IP address</b>	The LAN IP address of the Ericsson W21.
<b>Subnet mask</b>	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 W21 IP address or subnet mask. For information, see section 2.7.3 – *Port Forwarding*.

To change the W21 IP address or subnet mask, 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 Ericsson W21 web pages through a web browser, 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.

## 2.5.2 DHCP Server

The Ericsson W21 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 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 11 - 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 W21.
<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 Ericsson W21 LAN IP address.
- The DHCP server IP address range must not include the Ericsson W21 LAN IP address.
- 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 2.7.3 – *Port Forwarding*.

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

### 2.5.3 Traffic Statistics

The following information is displayed in the “TRAFFIC STATISTICS” section on the **LAN** page:

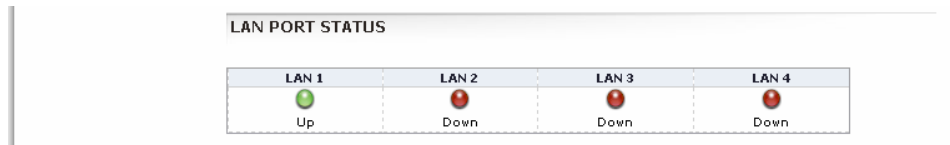
*Table 12 - LAN Traffic Statistics description*

Text	Description
<b>Transmitted</b>	The total size (and number) of transmitted data packets on the LAN.
<b>Received</b>	The total size (and number) of received data packets on the LAN.

**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.

### 2.5.4 LAN Port Status

The “LAN PORT STATUS” section shows the link status of each Ethernet LAN port (**LAN 1 - 4**) on the Ericsson W21 unit.



*Figure 28 - 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.

## 2.6 Wireless LAN

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

The Ericsson W21 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** web page. To ensure the security of your Wireless LAN, you are recommended to change the default settings for SSID and authentication.

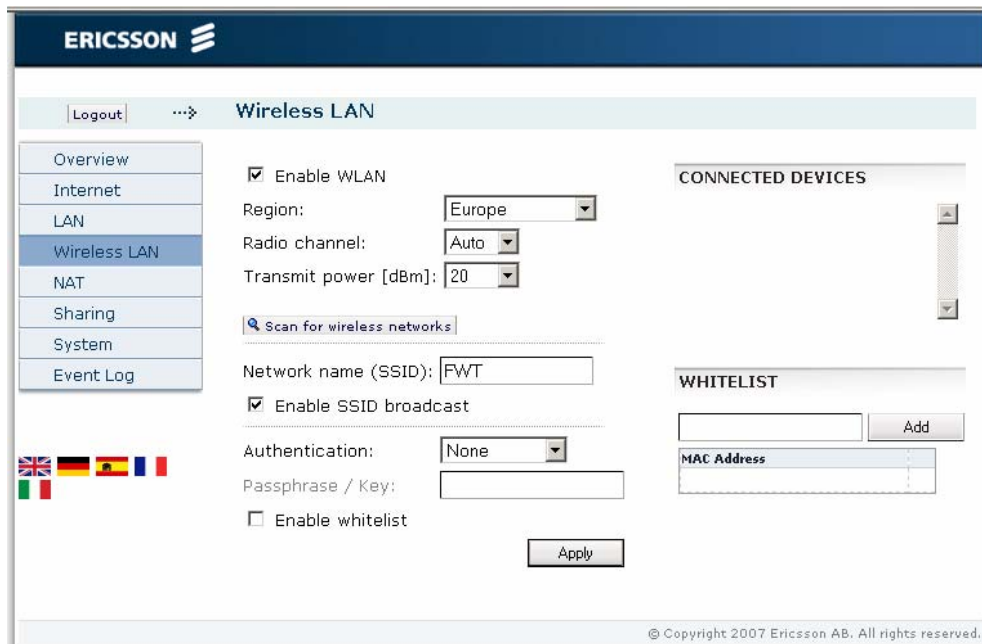


Figure 29 - Wireless LAN page

### 2.6.1 Enable WLAN

To enable the Ericsson W21 AP features providing the local wireless device(s) with Internet and LAN access, select the “Enable WLAN” check box on the **Wireless LAN** page and click **Apply** to save the setting.

**Note:** The wireless setup typically requires configuration of both the Ericsson W21 and the wireless client(s). For more information on configuration of wireless clients, see section 3.2 – *Wireless LAN Settings*.

## 2.6.2 Region

Wireless devices are thoroughly regulated and the countries have slightly different regulations. Therefore, the geographical region where the Ericsson W21 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.

## 2.6.3 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 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.

## 2.6.4 Transit 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.

## 2.6.5 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:

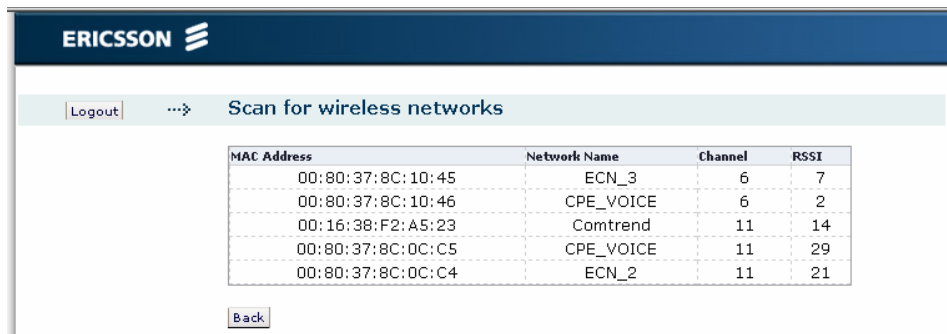


Figure 30 - Scan for wireless networks page

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

Table 13 - 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 for the Ericsson W21 WLAN. Click **Back** to return to the **Wireless LAN** page where you can select a desired channel.

### 2.6.6 Network Name (SSID)

All devices on the WLAN share a common network name or SSID (Service Set Identifier). This name is required to establish connection between the Ericsson W21 and other wireless device(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 (SSID) as the one set on the Ericsson W21 can obtain access to it. It is recommended to change the preconfigured network name "FWT" 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 14 - Network name description*

Text	Description
<b>Network name (SSID)</b>	<p>The network name (SSID) of the WLAN.</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 AP (Ericsson W21) continuously broadcasts the network name and any nearby wireless device(s) will find it when scanning the air.</p> <p>If the checkbox is cleared, the network name will be hidden and in this case the name has to be provided manually to every wireless device 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.

### 2.6.7 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 device must be configured to use exactly the same security mode and key/passphrase as the Ericsson W21 or they will not be able to connect.

In the “Authentication method” 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 W21.

### 2.6.7.1 **None**

If you select “None” 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 W21 at any time and having access to both your home network and Internet connection.

### 2.6.7.2 **WEP and WEP Encryption Key**

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 device on your WLAN has to be manually configured with the same key as the Ericsson W21 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.

### 2.6.7.3 **WPA/WPA2 and Passphrase**

**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 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 device on your wireless network has to be configured with exactly the same passphrase as the Ericsson W21 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.

## 2.6.8 Connected Devices

The “CONNECTED DEVICES” list includes the MAC (Media Access Control) addresses of all wireless devices currently connected to the Ericsson W21.

## 2.6.9 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 Ericsson W21 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.

### 2.6.9.1 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.

The MAC address now appears in the list. 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.

### 2.6.9.2 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:

```
Ethernet adapter Local Area Connection 2:  
Media State . . . . . : Cable Disconnected  
Description . . . . . : Intel(R) PRO/Wireless  
3945ABG Network Connection  
Physical Address. . . . . : 00-19-D2-39-14-54
```

## 2.7 NAT

The Ericsson W21 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 original private IP address to be able to find 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.

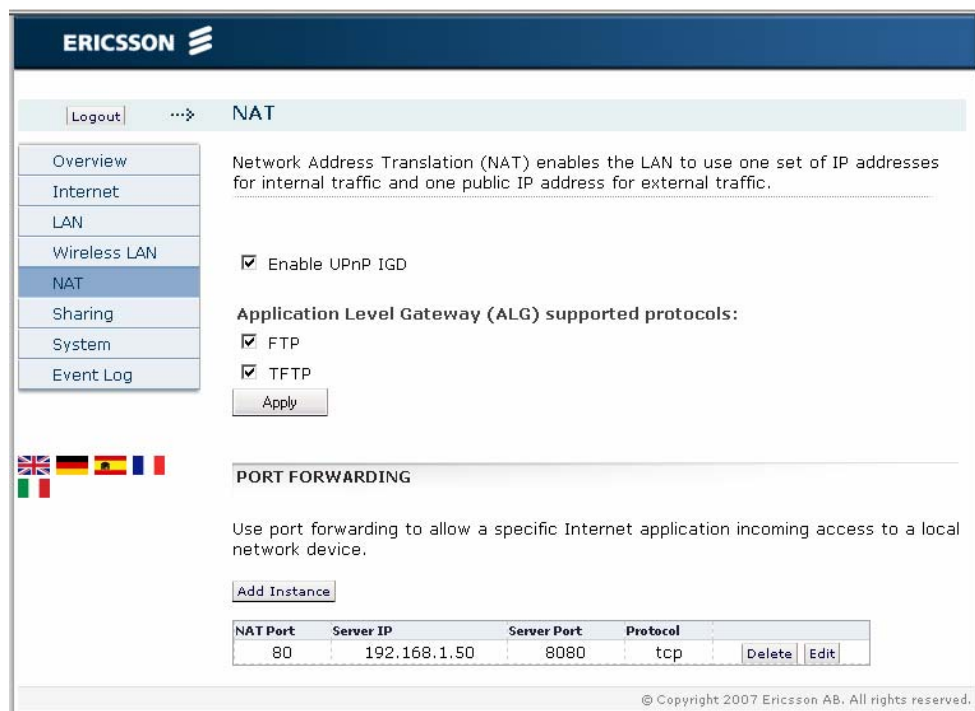


Figure 31 - NAT page

### 2.7.1 UPnP IGD

The Ericsson W21 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 setting.

### 2.7.2 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 W21 includes ALG support for the following applications:

*Table 15 - ALG Supported applications*

Application	Protocol	Port number
File Transfer Protocol (FTP)	TCP	21
Trivial File Transfer Protocol (TFTP)	UDP	69

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.

### 2.7.3 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 a public IP address** of the Ericsson W21. 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 Ericsson W21, it needs to know what to do with the data. A port forwarding rule tells the Ericsson W21 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 16 - 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.

### 2.7.3.1 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 32 - 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 settings.

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 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 17 - Common applications server ports*

<b>Application</b>	<b>Server Port</b>
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.

### 2.7.3.2 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 W21 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.



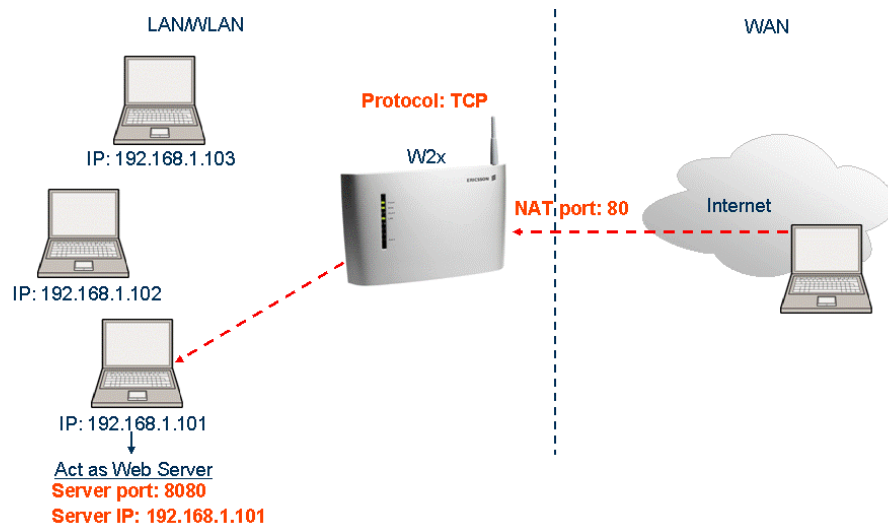


Figure 33 - Port forwarding example

### 2.7.3.3 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 34 - 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.

### 2.7.3.4 Delete Port Forwarding Rule

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

## 2.8 File and Printer Sharing

The Ericsson W21 supports local network storage and printer sharing. It is possible to have two USB storage devices or one USB storage device and one USB printer connected to the Ericsson W21 at the same time. If an external hub is connected, the Ericsson W21 supports connection of up to two storage devices and one printer at the same time.

The **Sharing** page displays information about USB devices connected to the Ericsson W21:

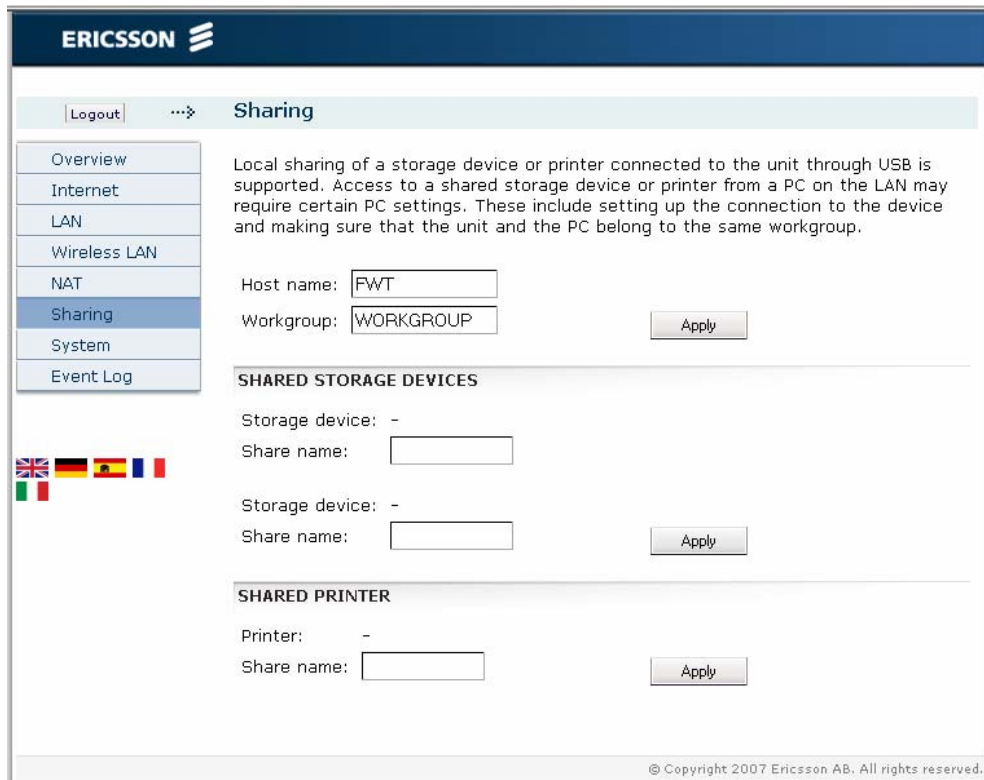


Figure 35 - Sharing page

### 2.8.1 How it Works

The Ericsson W21 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 W21.

- 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 W21

automatically creates configuration files for Samba containing the new device. The Ericsson W21 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 not configuration parameters that can be set, other than renaming the shared resources.

The Ericsson W21 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 shared storage device mounted on the Ericsson W21. Don't expect to have full performance on all simultaneous tasks.

### 2.8.2 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 W21.

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

Text	Description
<b>Host name</b>	The name of the Ericsson W21 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 3.3.3 – *Set Up a Connection to a Storage Device* or section 3.3.4 – *Access a Shared Printer*.

### 2.8.3 File Sharing

The Ericsson W21 supports USB connection of up to two shared storage devices at the same time. 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 Ericsson W21, 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 18 - 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” has more than 12 characters or has embedded spaces, the share will not be visible to Windows 95, 98 or ME (Windows Millennium) clients.

To access shared files from a PC using Windows 2000 or XP, follow the instructions in section 3.3.2 – *Access a Shared USB Storage Device*.

## 2.8.4 Printer Sharing

The Ericsson W21 automatically creates a local UNIX printer that is 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 a USB port on the Ericsson W21, information about the device 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 19 - Shared printer description*

<b>Text</b>	<b>Description</b>
<b>Printer</b>	The manufacturer's name of the printer.
<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" has more than 12 characters or has embedded spaces, the share will not be visible to Windows 95, 98 or ME clients.

To access a shared printer from a PC using Windows 2000 or XP, follow the instructions in section 3.3.4 – *Access a Shared Printer*.

## 2.9 System

The **System** page includes system information and management functions, used to update and restore the Ericsson W21.

The screenshot shows the 'System' page of the Ericsson W21. The page has a blue header with the Ericsson logo and a 'Logout' button. A navigation menu on the left includes 'Overview', 'Internet', 'LAN', 'Wireless LAN', 'NAT', 'Sharing', 'System' (selected), and 'Event Log'. Below the menu are flags for the United Kingdom, Germany, Spain, France, and Italy.

The main content area is titled 'System' and contains the following sections:

- System Information:** A table listing device details:
 

Product:	Ericsson W25 Data & Voice Terminal
Product Id:	KRC 101 1460 R1A
Serial Number:	T710111902
Boot Loader:	CXC 172 1003 R3A (Nov 16 2006)
Application Software:	CXC 172 3158/001 R10A (Feb 8 2008)
UMTS Boot Loader:	H2_0_3_1MCBT
UMTS Application Software:	H2_0_7_1MCP
Ethernet MAC Address:	00:80:37:8d:81:90
WLAN MAC Address:	00:80:37:8d:81:91
IMEI:	352679010034366
- CONFIGURATION BACKUP AND RESTORE:**
  - Back up the current configuration.
  - Restore to previous settings from a configuration backup:
- RESTART:**
  - Restart the unit.
- SOFTWARE UPDATE:**
  - Enable automatic software update
  - Update poll interval [days]:
  - Check for updates now:
  - Update the system with new software:
  - Note: WLAN must be disabled before software upgrade.
- FACTORY RESET:**
  - Reset the system to its factory default settings.

Figure 36 - System page

## 2.9.1 Basic System Information

The table on top of the page includes basic system information about the Ericsson W21. The following information is displayed:

*Table 20 – 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.

## 2.9.2 Configuration Backup and Restore

The current running configuration of the Ericsson W21 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.

### 2.9.2.1 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.

### 2.9.2.2 Restore from Backup File

If you wish to revert to previous settings, you can perform a configuration restore from a previously stored backup file.

To restore from a configuration 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:

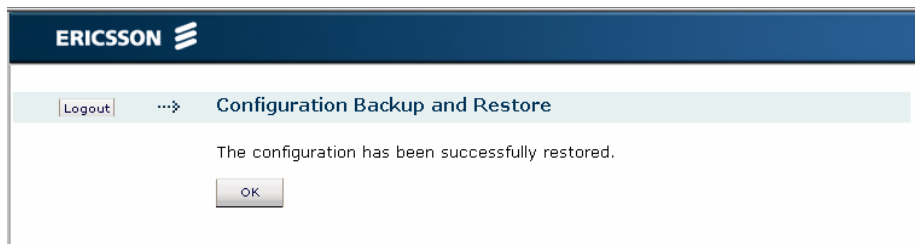


Figure 37 - Configuration Restore Confirmation

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

### 2.9.3 System Restart

You can at any time restart the Ericsson W21. The restart does not result in any configuration changes.

To restart the Ericsson W21, click **Restart** in the “RESTART” section on the **System** page.

The Ericsson W21 is restarted and during this process the following information is displayed:



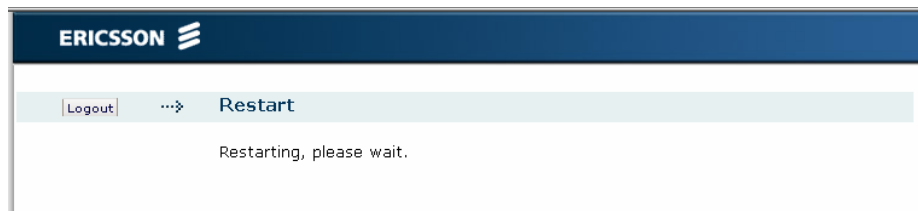


Figure 38 - Restart Progress Message

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 **User login** page.

## 2.9.4 Software Update

New Ericsson W21 software versions can be either automatically or manually installed.

### 2.9.4.1 Automatic Software Installation

If your service provider supports the feature for Automatic software update, this is enabled in the “SOFTWARE UPDATE” section on the **System** page.

When “Enable automatic software update” is checked, the Ericsson W21 will at regular intervals (set in the “Update poll interval [days]” field) poll an update server for updates. If there is a software image or configuration file available for download, the upgrade process is initiated.

To enable automatic software update, check the “Enable automatic software update” check box and select an appropriate interval from the “Update poll interval [days]” drop-down list.

Click **Apply** to save the settings.

### 2.9.4.2 Manual Software Update

To manually check for new software versions, click the **Check** button in the “SOFTWARE UPDATE” section on the **System** page.

If no new software versions are available, the message “There were no available software updates” is displayed.

If there are software updates available, the following page is displayed:

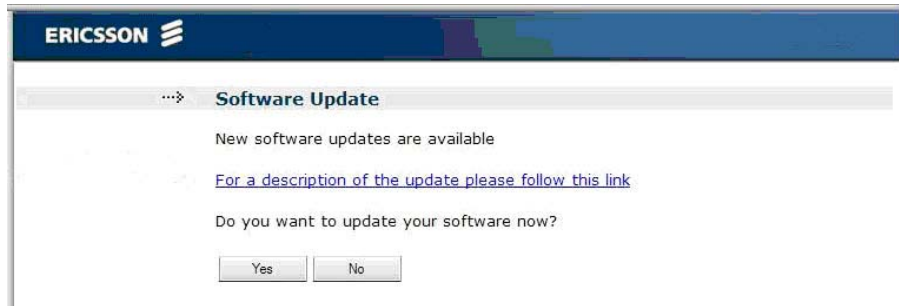


Figure 39 - Software update check

Click [For a description of the update please follow this link](#) to get information about the available software version or click **Yes** to install the new version.

When you click **Yes** the update process is initiated and the following page is displayed:

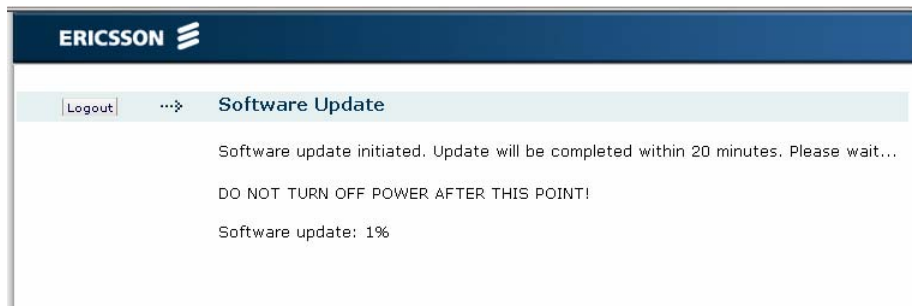


Figure 40 - Software Update initiated page

The information on this page is updated every tenth second. When the upgrade is finished, click **Restart** to restart the Ericsson W21.

### 2.9.4.3 Install new Software from a Local File

To install new software from a local file, make sure that the new software file is available on your PC.

**Note:** WLAN must be disabled before a software upgrade.

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 **Upgrade** to start the installation. During the installation process, the **Software Update Initiated** page is displayed:

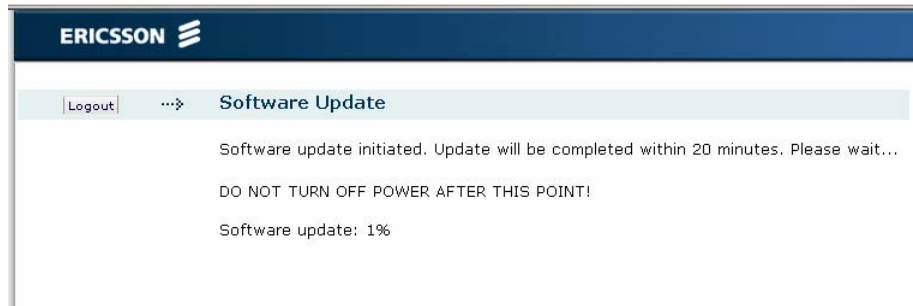


Figure 41 - Software update initiated page

Wait until the following page is displayed:

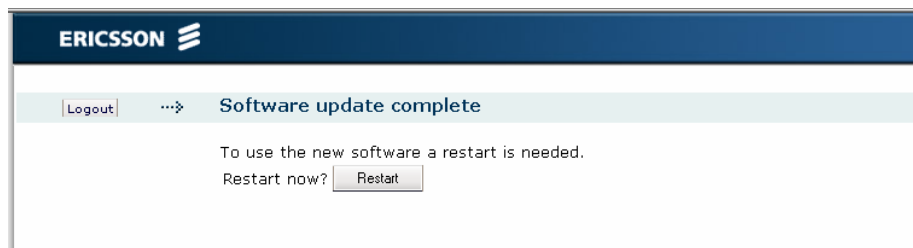


Figure 42 - Software update complete page

Click the **Restart** button

## 2.9.5 Factory Reset

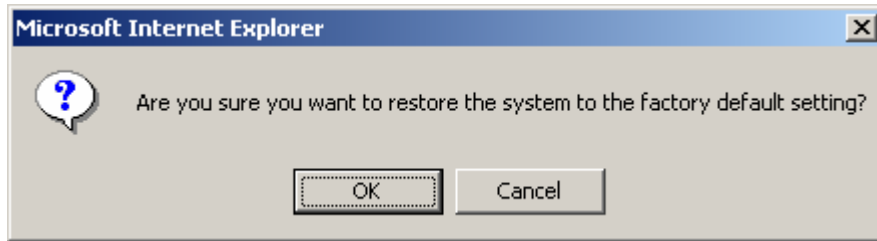
The Ericsson W21 configuration can be reset to its factory default settings from the **System** page.

**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 4.2 – *Reset the Ericsson W21 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 Ericsson W21 login “User name” and “Password”.

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.

When a reset has been performed, the following confirmation window is displayed:



*Figure 43 - Factory Reset Confirmation*

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

## 2.10 Event Log

On the **Event Log** page, a list of the events that has been sent to the Ericsson W21 log is displayed:

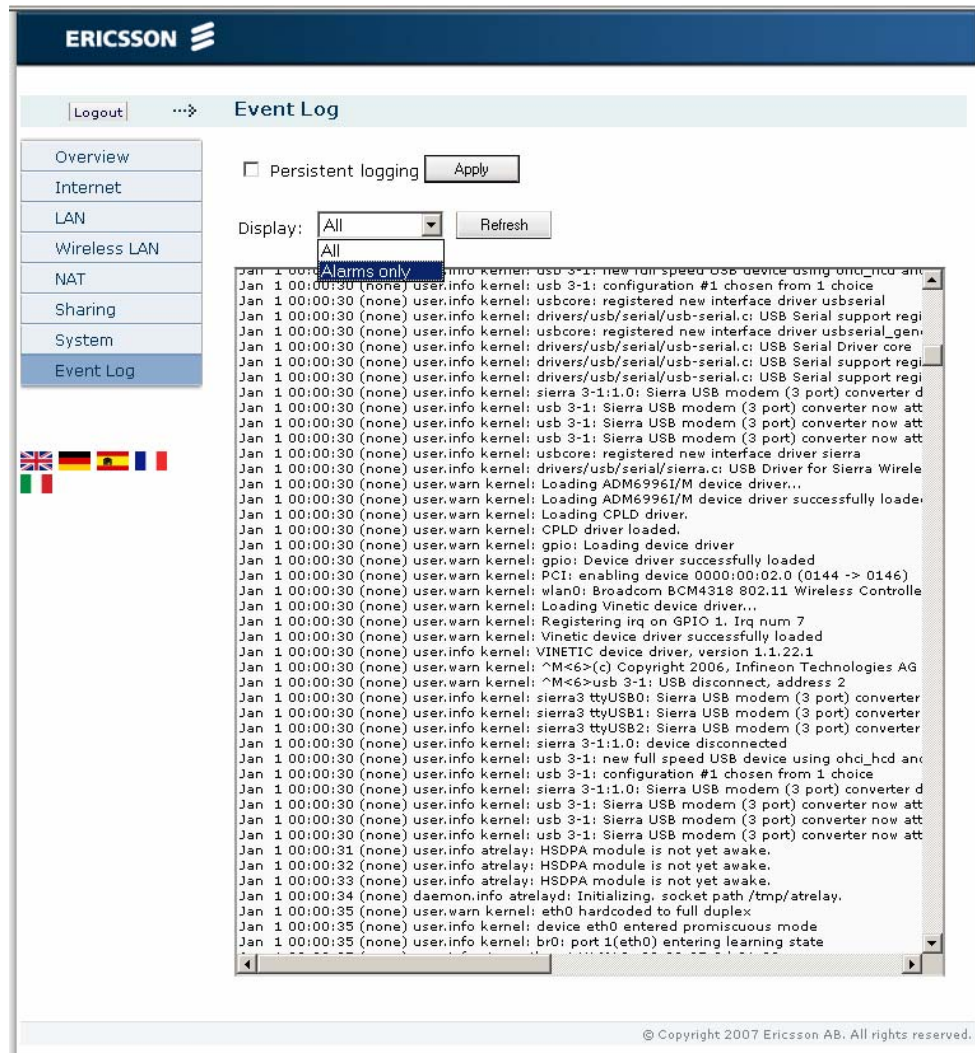


Figure 44 - Event Log page

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 W21 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 W21 unit and the information in the “ALARMS” section on the **Overview** page.

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

### 2.10.1 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 PC Configuration

The connection to the Ericsson W21 may require specific PC configuration. This chapter includes instructions on how to configure Internet Protocol (IP) settings, establish wireless connection(s) with the Ericsson W21 and access a shared network printer. The descriptions include examples from Windows XP and 2000. If you use another operating system, please refer to the system documentation or online help.

### 3.1 IP Settings

The Ericsson W21 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 3.1.2 – *Configure Static IP Address*.

If you have connected your LAN PC(s) to the Ericsson W21, follow the instructions that correspond to the operating system installed on your PC in the following sub-sections.

If you want to allow wireless PCs to access your device, you also have to follow the instructions in section 3.2 – *Wireless LAN Settings*.

#### 3.1.1 Obtain IP Settings Automatically

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

##### 3.1.1.1 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.

### 3.1.1.2 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 W21:

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.

### 3.1.2 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 W21. The IP address range of the Ericsson W21 subnet is displayed on the Ericsson W21 **LAN** page (see section 2.5).

## 3.2 Wireless LAN Settings

This section provides a general description of what is required to make your wireless devices work with the Ericsson W21.

Before you follow the instructions below, you need to configure the Ericsson W21 Wireless LAN settings, see section 2.6 – *Wireless LAN*.

### 3.2.1 Prepare the Wireless Client(s)

The coverage of the Wireless LAN depends on a number of factors, including the distance between the Ericsson W21 and the PC and the occurrence of obstacles, such as walls and electrical equipment.

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

### 3.2.2 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 on your PC. The driver files and instructions on how to install them are provided together with the interface.

### 3.2.3 Configure Access to the Ericsson W21

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 W21.
- Configure the **network name (SSID)** and **channel** to match the network name and channel configured on the Ericsson W21. 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 W21.
- If you are using Wi-Fi Protected Access (WPA or WPA2) security, configure the same **passphrase** that is configured on the Ericsson W21. The passphrase is case sensitive.

**Note:** Windows 2000<sup>®</sup> Service Pack 1, 2 & 3 does not support WPA/WPA2.

- Configure the IP settings using the procedure described in section 3.1 – *IP Settings*.

## 3.3 Sharing Settings

When a shared storage device or printer is connected to the Ericsson W21 USB interface, information about the device is displayed on the Ericsson W21 **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 W21. Follow the instructions in the next section to check the workgroup on your PC.

### 3.3.1 Check Workgroup Settings

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

#### 3.3.1.1 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 Ericsson W21 **Sharing** page. If not, you have to change the workgroup either on the PC or on the Ericsson W21.
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.

#### 3.3.1.2 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 on the Ericsson W21 **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 W21, you have to change the workgroup either on the PC or on the Ericsson W21.
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.

### 3.3.2 Access a Shared Storage Device

To access a 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 Ericsson W21 **Sharing** page. Click **OK**.
3. The shared resource is displayed. Double-click on the shared file to open it.

### 3.3.3 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.

#### 3.3.3.1 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** field, type \\<host\_name>\<share\_name> or click the **Browse...** button to locate the device. You find the host name and share name on the Ericsson W21 **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.

### 3.3.3.2 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** list.
3. In the **Folder** field, type \\<host\_name>\<share\_name> or click the **Browse...** button to locate the device. You find the host name and share name on the Ericsson W21 **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.

### 3.3.4 Access a Shared Printer

When a printer is connected to the Ericsson W21 USB interface, information about the device is displayed on the **Sharing** page.

When 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 W21.

On the PCs that should use the printer, install the correct printer driver compatible with the corresponding 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 W21 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 W21.

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

#### 3.3.4.1 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 a USB port on the Ericsson W21.
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**.

#### 3.3.4.2 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 a USB port on the Ericsson W21.
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 your Ericsson W21 (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.

## 4 Troubleshooting

This chapter describes how to solve a number of issues that could occur during installation, configuration, and use of the Ericsson W21. More information is available at [www.ericsson.com/fwt](http://www.ericsson.com/fwt).

Before you try any of the methods described in this chapter, make sure that the connected cables are securely inserted and that the **Power** indicator on the Ericsson W21 is green.

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

1. Restart the Ericsson W21 (see section 4.1).
2. Reset the Ericsson W21 to factory default configuration (see section 4.2).
3. Contact your service provider.

### 4.1 Restart the Ericsson W21

To restart the Ericsson W21, click **Restart** on the **System** web page.

If you cannot access the Ericsson W21 web pages, remove the power cable to disconnect the Ericsson W21 from power and wait a moment before reconnecting the cable.

### 4.2 Reset the Ericsson W21 to Factory Default Settings

The factory default configuration contains the original settings of your Ericsson W21. When you install your Ericsson W21 and access the web pages for the first time, the unit has a factory default configuration.

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 Ericsson W21 web pages, the following procedure resets all configurable values back to factory default settings:

1. Press the **Reset** button with the tip of a pen. The **Power** LED starts blinking.



2. Wait until the **Power** LED stops blinking which indicates that the reset is finished.

**Note:** A reset to factory default configuration cannot be undone. If you reset the Ericsson W21 to default configuration, all your previous configuration changes are replaced. If you have previously changed the user name and password, the **User Login** page will be displayed. You have to login to the web pages with the default user name and password (**user** in both fields).

### 4.3 LAN Connections

Table 21 – LAN connections

Indication/Symptom	What to do
<p>Cannot access the local network from a PC that is connected to one of the LAN ports on the Ericsson W21, or to an Ethernet switch or hub that is connected to the Ericsson W21</p>	<p>Check the network cable and make sure that there is a physical connection between the PC and the Ericsson W21 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 3.1.1 – <i>Obtaining IP Settings Automatically</i> or refer to the manual of your operating system.</p>
<p>Cannot access the Ericsson W21 internal web pages.</p>	<p>Make sure you are using the correct Ericsson W21 LAN IP address. 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 W21 to factory default configuration (see section 4.2). This will set the IP address to 192.168.1.1 and the web page address to <b>http://192.168.1.1</b>.</p>

Indication/Symptom	What to do
	<p>Make sure you are using the correct login details. If the default password has been changed and you do not know the current password, use the <b>Reset</b> button to reset the Ericsson W21 to factory default configuration (see section 4.2). This will reset the login details to default values (“User name” <b>user</b> and “Password” <b>user</b>).</p>

## 4.4 Internet Access

Table 22 Internet access

Indication/Symptom	What to do
<p>Cannot access the Internet from any of my local devices.</p>	<p>Make sure that the GSM/UMTS antenna is properly connected and tightened to the Ericsson W21 antenna connector.</p> <p>Check the <b>Alarm</b> indicator on the front panel of the Ericsson W21 unit. If it is red, see the information in the <b>Alarms</b> section on the <b>Overview</b> page.</p> <p>On the <b>Internet</b> page, verify that the mobile network signal quality indicator displays at least one bar. If not, move the Ericsson W21 or attach an external antenna (indoor window or outdoor roof mounted). External antennas are available as accessories to the Ericsson W21.</p> <p>On the <b>Internet</b> page, make sure that the <b>Link status</b> is <math>\overline{U}</math> and that an <b>IP address</b> is defined.</p> <p>Use the Configuration Wizard and check that all authentication details are entered according to information from the service provider.</p>

Indication/Symptom	What to do
<p>The Internet connection is unacceptable slow or regularly dropping.</p>	<p>On the <b>Internet</b> page, verify that the mobile network signal quality indicator displays at least two bars. If not, try to move the Ericsson W21 or attach an external antenna.</p> <p>On the <b>Internet</b> page, verify that the <b>Connection</b> is HSDPA or UMTS. If not, move the Ericsson W21 or attach an external antenna (indoor window or outdoor roof mounted). External antennas are available as accessories to the Ericsson W21. Verify with your operator that HSDPA is available.</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 4.4.1 – <i>Change TCP Settings</i>.</p>
<p>Cannot access a certain Internet application or specific type of data applications.</p>	<p>If the application uses FTP or TFTP, check the <b>NAT</b> page to make sure that the ALG supporting the Internet application is enabled.</p> <p>If the application requires UPnP IDG, check that <b>UPnP IDG</b> is enabled on the <b>NAT</b> page.</p> <p>A port forwarding rule might be required for a specific application. See section 2.7.3 – <i>Port Forwarding</i>.</p>

#### 4.4.1 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

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

## 4.5 Wireless LAN Connection

Table 23 Wireless LAN

Indication/Symptom	What to do
<p>Cannot access the local network from a wireless device.</p>	<p>Check that the <b>Wireless LAN</b> indicator on front panel of the Ericsson W21 unit is lit. If not, connect an Ethernet cable between the PC and the Ericsson W21 to establish a connection. The wired connection is required for the initial Wireless LAN configuration of the Ericsson W21.</p> <p>Verify that the Wireless LAN interface installed on the wireless client is active.</p> <p>Make sure that your Ericsson W21 network does not use the same radio channel as other wireless devices in the premises, for example security systems. The radio channel is displayed on the <b>Wireless LAN</b> page. To avoid interference, let the Ericsson W21 select a channel automatically (Auto) or manually change the radio channel currently used.</p> <p>Keep the Ericsson W21 away from electrical devices that disturb the radio signals, for example microwave ovens.</p> <p>Verify that the network name (SSID) on the Ericsson W21 and</p>

Indication/Symptom	What to do
	<p>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-bit, WEP 128-bit, WPA, or WPA2) configured on the Ericsson W21. These settings are displayed on the <b>Wireless LAN</b> web page. If the security method is not supported, configure the Ericsson W21 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 W21 and the client device. Note that a passphrase is case sensitive.</p> <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 W21. For instructions on how to check the client's IP address, see the operating system documentation or online help. The Ericsson W21 IP address and subnet mask is displayed on the <b>LAN</b> page.</p>
<p>The wireless connections to the local network are unacceptable slow or regularly dropping.</p>	<p>Move the Ericsson W21 to another location. Make sure that the mobile network signal is still acceptable before finalizing the installation.</p> <p>Keep the Ericsson W21 away from electrical devices that disturb the radio frequency signals, for example microwave ovens.</p> <p>Make sure that your Ericsson W21</p>

Indication/Symptom	What to do
	network does not use the same radio channel as other wireless devices in the premises, for example security systems. The radio channel is displayed on the <b>Wireless LAN</b> page. To avoid interference, let the Ericsson W21 select a channel automatically (Auto) or manually change the radio channel currently used.

## 4.6 Access to Shared Files or Printer

If you cannot access a shared storage device or printer connected to the one of the USB connectors of the Ericsson W21, 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 W21.
- Disconnect the USB device from the Ericsson W21, and then reconnect it.

- Make sure that the PC belongs to the same workgroup as the Ericsson W21. For instructions, see section 3.3.1 – *Check Workgroup Settings*. The Ericsson W21 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.

# 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.

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

See *SMB*.

## **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.

**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.

**FWT – Fixed Wireless Terminal**

A terminal 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.

**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.

**HSDPA – High Speed Downlink Packet Access**

The new standardized evolution of WCDMA that will enable downlink speeds of up to 14 Mbps.

**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 an 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.

### **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).

### **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 (Local Area Network) 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.

### **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 that differentiates one wireless device from another. Wireless PCs configured with the same SSID can access the same network.

### **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 W21, 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 W21 the WUI refers to a built-in web based configuration tool with wizard support.



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