D-Link®

Power — LAN — WLAN WPS USB DSL Internet

ADSL Router 1 2 3 4 **DSL-2650U**

DSL-2650U

3G/ADSL/Ethernet Router with Wi-Fi and Built-in Switch

July 2012

Contents

CHAPTER 1. INTRODUCTION

Contents and Audience

This manual describes the router DSL-2650U and explains how to configure and operate it.

This manual is intended for users familiar with basic networking concepts, who create an in-home local area network, and system administrators, who install and configure networks in offices.

Conventions

Example	Description
text	The body text of the manual.
Before You Begin	A reference to a chapter or section of this manual.
"Quick Installation Guide"	A reference to a document.
Change	A name of a menu, menu item, control (field, checkbox, drop-down list, button, etc.).
`192.168.1.1`	Data that you should enter in the specified field.
! Information	An important note.

Document Structure

Chapter 1 describes the purpose and structure of the document.

Chapter 2 gives an overview of the router's hardware and software features and describes its appearance and the package contents.

Chapter 3 explains how to install the router DSL-2650U and configure a PC in order to access its web-based interface.

Chapter 4 describes all pages of the web-based interface in detail.

Chapter 5 includes safety instructions, tips for networking and configuring the device, and the list of supported USB modems.

Chapter 6 introduces abbreviations and acronyms used in this manual.

CHAPTER 2.   OVERVIEW

General Information

DSL-2650U is a multifunction 3G/ADSL/Ethernet router with Wi-Fi and built-in switch. The router allows accessing the Internet via 3G GSM or CDMA network (with a 3G USB modem[1] connected). In addition, the device allows accessing the Internet via ADSL technology and via Ethernet technology.

The router is equipped with an ADSL port to connect to an ADSL line and 4 Ethernet ports to connect workstations. Due to this feature, DSL-2650U represents a moderate-priced solution for creating wired networks without an additional switch. In addition, any Ethernet port of the device can be used to connect to a private Ethernet line. Also the router has a USB port designed to connect a USB modem, printer, or USB storage.

The router supports reservation of an additional channel. The reservation function keeps the router connected to the Internet even when the main connection is not available.

DSL-2650U can operate as a base station for connecting wireless devices of the standards 802.11b, 802.11g, and 802.11n[2]. The router supports multiple functions for the wireless interface: several security standards (WEP, WPA/WPA2), MAC address filtering, and the WPS function.

The wireless router DSL-2650U includes a built-in firewall. The advanced security functions minimize threats of hacker attacks, prevent unwanted intrusions to your network, and block access to unwanted websites for users of your LAN.

You can configure and manage the settings of DSL-2650U via the user-friendly web-based interface (the interface is available in several languages).

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1   Not included in the delivery package. D-Link does not guarantee compatibility with all USB modems. Please, refer to the ***Supported USB Modems*** section, page 133.

2   The maximum speed of the wireless connection is limited by the chipset up to 65Mbps.

Specifications[*]

Interfaces:

- ADSL: 1 RJ-11 port

- LAN: 4 RJ-45 10/100BASE-TX Fast Ethernet ports with auto-MDI/MDIX

- WLAN: built-in 802.11b, g, and n draft wireless interface

- USB: USB 2.0 type A port.

Wireless Network:

- IEEE 802.11n draft standard[3], IEEE 802.11b/g compliant

- Support of guest wireless network

- WEP data encryption

- WPA/WPA2 security supporting TKIP, AES and TKIP+AES

- MAC-based access to wireless network

- PIN and PBC methods of WPS

- Advanced settings.

ADSL Standards:

- ADSL:

  - multi-mode, ANSI T1.413 Issue 2, ITU-T G.992.1 (G.dmt) Annex A, ITU-T G.992.2 (G.lite) Annex A, ITU-T G.994.1 (G.hs).

- ADSL2:

  - ITU-T G.992.3 (G.dmt.bis) Annex A/L/M, ITU-T G.992.4 (G.lite.bis) Annex A.

- ADSL2+:

  - ITU-T G.992.5 Annex A/L/M.

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[*] The device features are subject to change without notice. For the latest versions of the firmware and relevant documentation, visit www.dlink.ru.

3 The maximum speed of the wireless connection is limited by the chipset up to 65Mbps.

WAN Connection Types:

- 3G

- ADSL:

  - PPPoE

  - PPPoA

  - IPoA

  - Static IP

  - Dynamic IP

  - Bridge.

- Ethernet:

  - PPPoE

  - Static IP

  - Dynamic IP

  - Bridge.

ATM/PPP Protocols:

- Bridged and routed Ethernet encapsulation

- VC-based or LLC-based multiplexing

- ATM Forum UNI3.1/4.0 PVC (up to 8 PVCs)

- ATM Adaptation Layer Type 5 (AAL5)

- ITU-T I.610 OAM F4/F5 loopback

- ATM QoS

- PPP over ATM (RFC 2364)

- PPP over Ethernet (PPPoE)

- Keep-alive for PPP connections.

Network Protocols and Functions:

- Static IP routing

- NAT (*Network Address Translation*)

- DHCP server/client/relay

- DNS relay

- DDNS

- UPnP

- Support of VLAN

- IGMP proxy

- IGMP snooping

- RIP

- Channel reservation.

Firewall and Access Management Functions:

- Network Address Translation (NAT)

- Stateful Packet Inspection (SPI)

- MAC filtering based on time of day and day of week

- URL filter

- Packet filtering (IP/ICMP/TCP/UDP)

- Virtual servers

- Prevention of DoS attacks

- Intrusion detection system

- DMZ

- Port Triggering.

QoS:

- Interface grouping

- 3 priority queues.

USB Modem[4]:

- Auto connection to available type of supported network (3G/2G)

- Enabling/disabling PIN code check, changing PIN code.

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4   The listed functions are available for GSM USB modems only.

USB Storage:

- File browser

- Print server

- Shared access to USB storage (Samba).

Configuration and Management:

- Multilingual web-based interface for configuration and management

- Access via TELNET

- Firmware update via web-based interface

- Saving/restoring configuration to/from file

- Support of remote logging

- SNMP agent

- Automatic synchronization of system time with NTP server

- Ping function.

LEDs:

- Power

- LAN 1-4

- WLAN

- WPS

- USB

- DSL

- Internet.

Power:

- External power adapter DC 12V/1A

- ON/OFF power switch

- ON/OFF Wi-Fi switch

- Reset to Factory Defaults button

- WPS button.

Dimensions:

- 164 mm x 112 mm x 35 mm.

Weight:

- 240 g.

Operating Temperature:

- from 0 to 40 ^{0}C (from 32 to 104 ^{0}F).

Storage Temperature:

- from -20 to 65 ^{0}C (from -4 to 149 ^{0}F).

Humidity:

- from 5% to 95% non-condensing.

Product Appearance

Front Panel

Figure 1. Front panel view.

LED	Mode	Description
Power	*Solid green*	The router is powered on.
	No light	The router is powered off.
	Solid red	A malfunction of the router.
LAN 1-4	*Solid green*	A device is connected to the port of the router (for the LAN port configured as the WAN port: the router is connected to an Ethernet line).
	Blinking green	The relevant LAN port is active (upstream or downstream traffic).
WLAN	*Solid green*	The router's WLAN is on.
	Blinking green	The WLAN interface is active (upstream or downstream traffic).
WPS	*Solid green*	A wireless device is connected to the router's WLAN (lights for several minutes).
	Blinking green	Attempting to add a wireless device via the WPS function.
USB	*Solid green*	A USB device is connected to the router's USB port.
	No light	No USB device.
DSL	*Solid green*	DSL has been synchronized.
	Blinking green	Detecting a carrier signal and synchronizing DSL.
	No light	No carrier signal.
Internet	*Solid green*	A WAN connection (ADSL and/or Ethernet) is established.
	Blinking green	The WAN interface is active (upstream or downstream traffic).
	Solid red	An authorization failure.
	No light	The router is in the bridge mode or no WAN connection (neither Ethernet nor ADSL) is established.

Back Panel
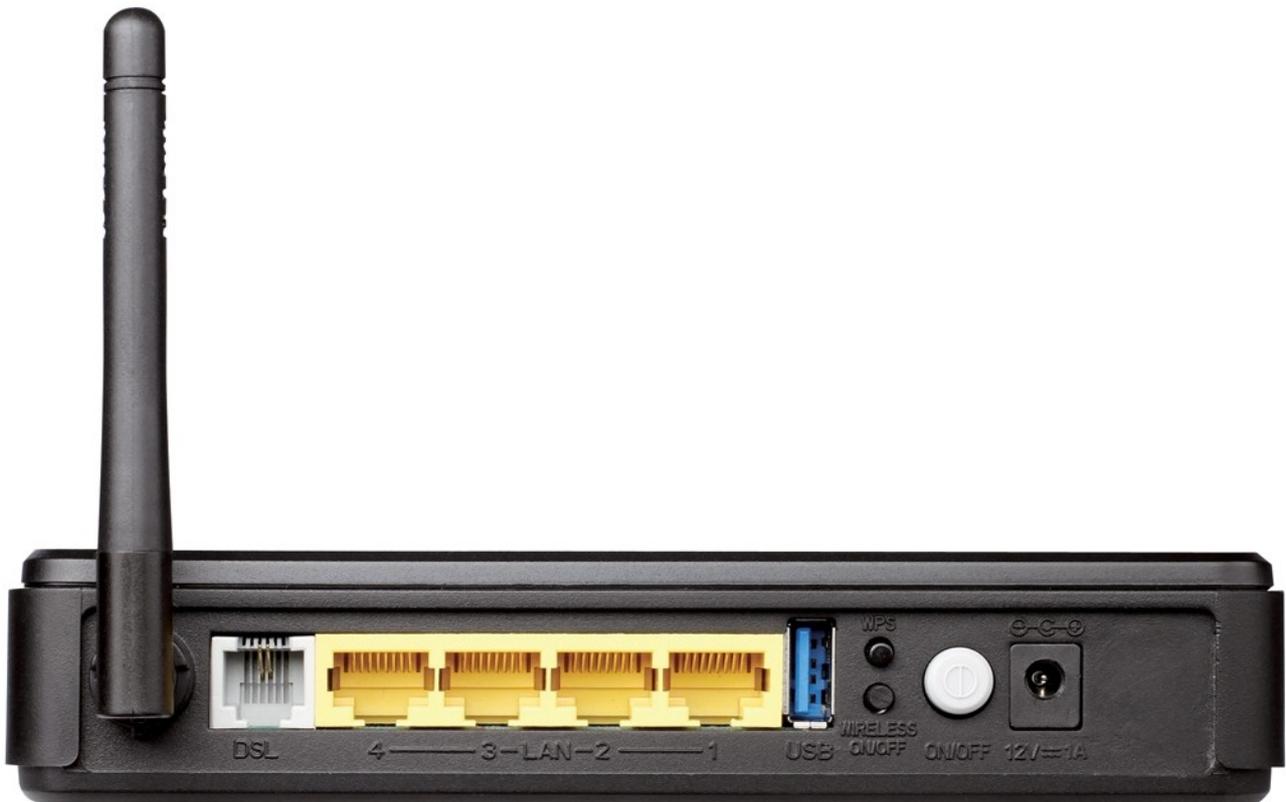
Figure 2. Back panel view.

Port	Description
DSL	A DSL port to connect the router to the telephone line.
LAN 1-4	4 Ethernet ports to connect Ethernet devices. One port can be used to connect to a private Ethernet line.
USB	A USB port to connect a USB modem, printer, or storage.
WPS	A button to quickly add wireless devices to the router's WLAN.
WIRELESS ON/OFF	A button to turn the router's wireless interface on/off.
ON/OFF	A button to turn the router on/off.
12V=1A	Power connector.

Delivery Package

The following should be included:

- Router DSL-2650U

- Power adapter DC 12V/1A

- RJ-11 telephone cable

- Ethernet cable (CAT 5E)

- Splitter

- "*Quick Installation Guide*" (brochure).

The "*User Manual*" and "*Quick Installation Guide*" documents in Russian and English are available on D-Link website (see ftp.dlink.ru/pub/ADSL/DSL-2650U/Description/).

> **!** Using a power supply with a different voltage rating than the one included will cause damage and void the warranty for this product.

CHAPTER 3. INSTALLATION AND CONNECTION

Before You Begin

Please, read this manual prior to installing the device. Make sure that you have all the necessary information and equipment.

Operating System

Configuration of the multifunction 3G/ADSL/Ethernet router DSL-2650U (hereinafter referred to as "the router") is performed via the built-in web-based interface. The web-based interface is available from any operating system that supports a web browser.

Web Browser

The following web browsers are recommended: Windows Internet Explorer, Mozilla Firefox, or Opera.

For successful operation, JavaScript should be enabled on the web browser. Make sure that JavaScript has not been disabled by other software (such as virus protection or web user security packages) running on your computer.

Wired or Wireless NIC (Ethernet or Wi-Fi Adapter)

Any computer that uses the router should be equipped with an Ethernet or Wi-Fi adapter (NIC). If your computer is not equipped with such a device, install an Ethernet or Wi-Fi adapter prior to using the router.

Wireless Connection

Wireless workstations from your network should be equipped with a wireless 802.11b, g, or n NIC (Wi-Fi adapter). In addition, you should specify the values of SSID, channel number and security settings defined in the web-based interface of the router for all these wireless workstations.

USB Modem

To connect to the 3G GSM or CDMA network, you should use a 3G USB modem. Connect it to the USB port of the router, then access the web-based interface of the router, and you will be able to configure connection to the Internet[5].

> **!** Your USB modem should be equipped with an active identification card (SIM or R-UIM) of your operator.
>
> For CDMA USB modems, it is required to disable the PIN code check on the identification card prior to connecting the USB modem to the router.

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5   Contact your operator to get information on the service coverage and fees.

Connecting to PC

PC with Ethernet Adapter

1. Make sure that your PC is powered off.

2. Connect an Ethernet cable between any of four Ethernet ports located on the back panel of the router and the Ethernet port of your PC.

3. *To connect via 3G network:* connect your USB modem to the USB port[6] located on the back panel of the router.

! If you need to connect or change a USB modem to another one when the router is powered on, power off the device, connect the modem to the USB port, and power on the router.

4. *To connect the router to a DSL line:* connect a phone cable between the DSL port of the router and the **ADSL OUT** port of the splitter. Connect your phone to the **PHONE** port of the splitter. Then connect another phone cable between a phone jack and the **ADSL IN** port of the splitter.

5. *To connect the router to an Ethernet line:* connect the Ethernet cable between any of four Ethernet ports located on the back panel of the router and the Ethernet line.

6. Connect the power cord to the power connector port on the back panel of the router, then plug the power adapter into an electrical outlet or power strip.

7. Turn on the router by pressing the **ON/OFF** button on its back panel.

8. Turn on your PC and wait until your operating system is completely loaded.

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6   It is recommended to use a USB extension cable to connect a USB modem to the router.

Obtaining IP Address Automatically in OS Windows XP

1. Click the **Start** button and proceed to the **Control Panel > Network and Internet Connections > Network Connections** window.

2. In the **Network Connections** window, right-click the relevant **Local Area Connection** icon and select the **Properties** line in the menu displayed.
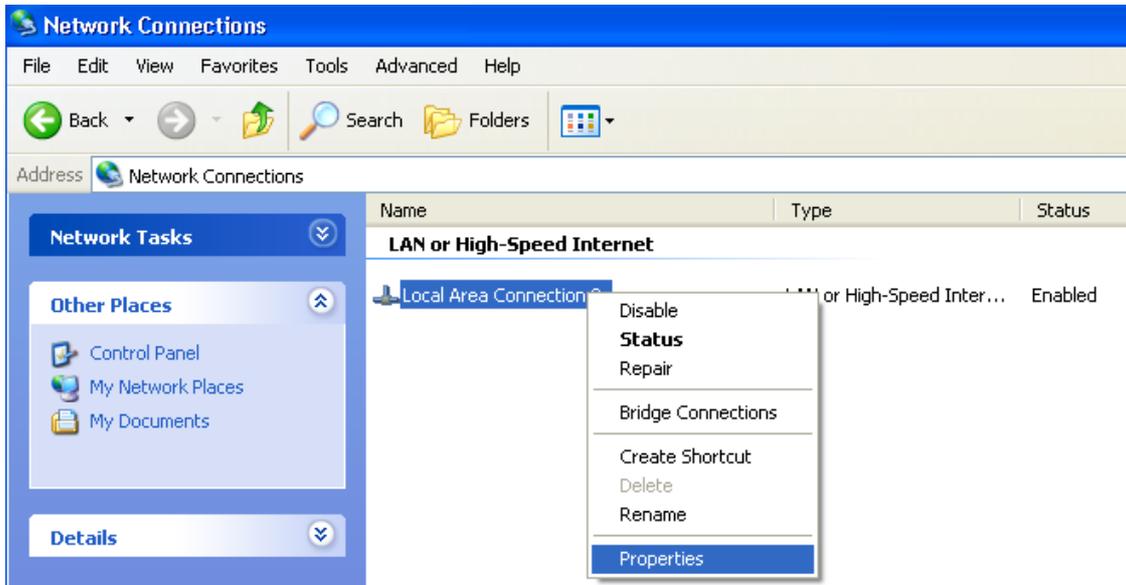

*Figure 3. The **Network Connections** window.*

3. In the **Local Area Connection Properties** window, on the **General** tab, select the **Internet Protocol (TCP/IP)** line. Click the **Properties** button.
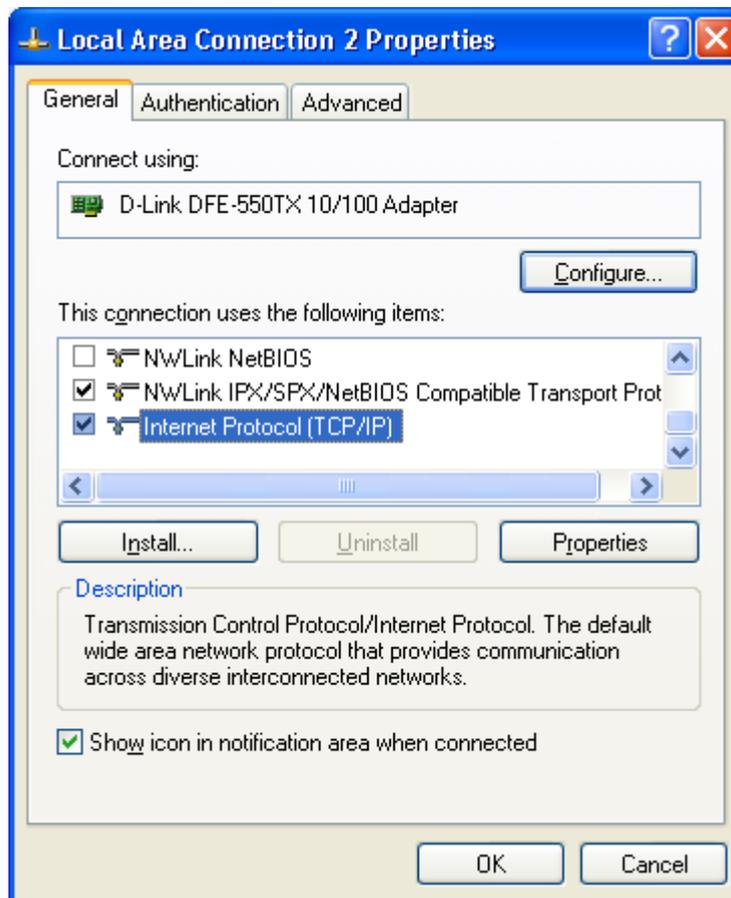

*Figure 4. The **Local Area Connection Properties** window.*

4. Select the **Obtain an IP address automatically** and **Obtain DNS server address automatically** radio buttons. Click the **OK** button.
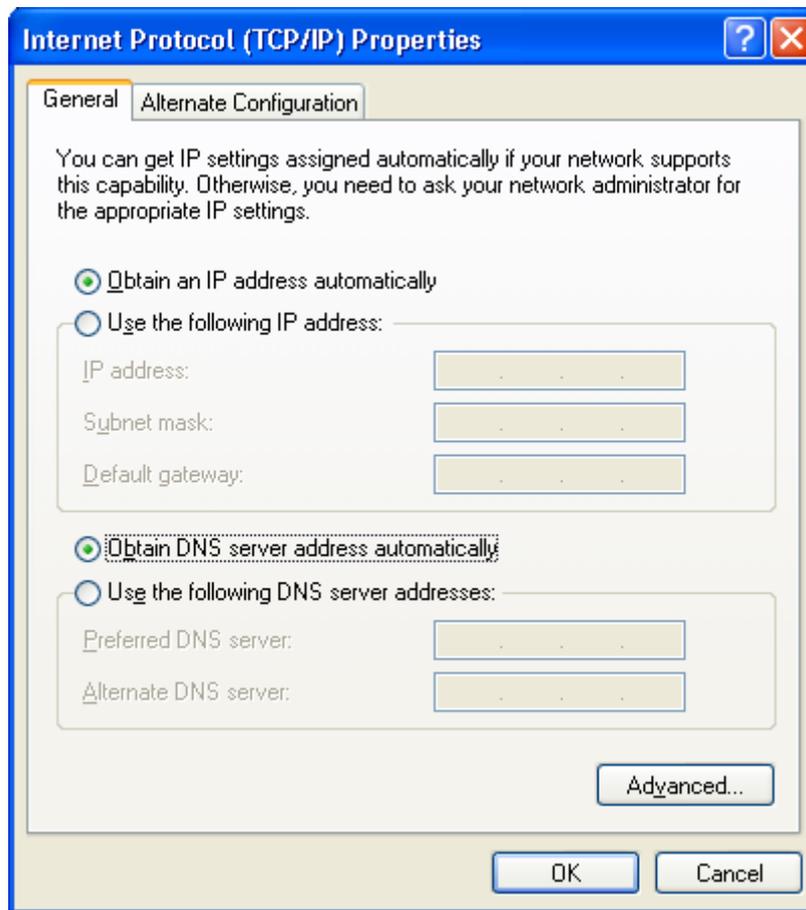

*Figure 5. The **Internet Protocol (TCP/IP) Properties** window.*

5. Click the **OK** button in the connection properties window.

Now your computer is configured to obtain an IP address automatically.

Obtaining IP Address Automatically in OS Windows 7

1. Click the **Start** button and proceed to the **Control Panel** window.
2. Select the **Network and Sharing Center** section. (If the Control Panel has the category view (the **Category** value is selected from the **View by** drop-down list in the top right corner of the window), choose the **View network status and tasks** line under the **Network and Internet** section.)
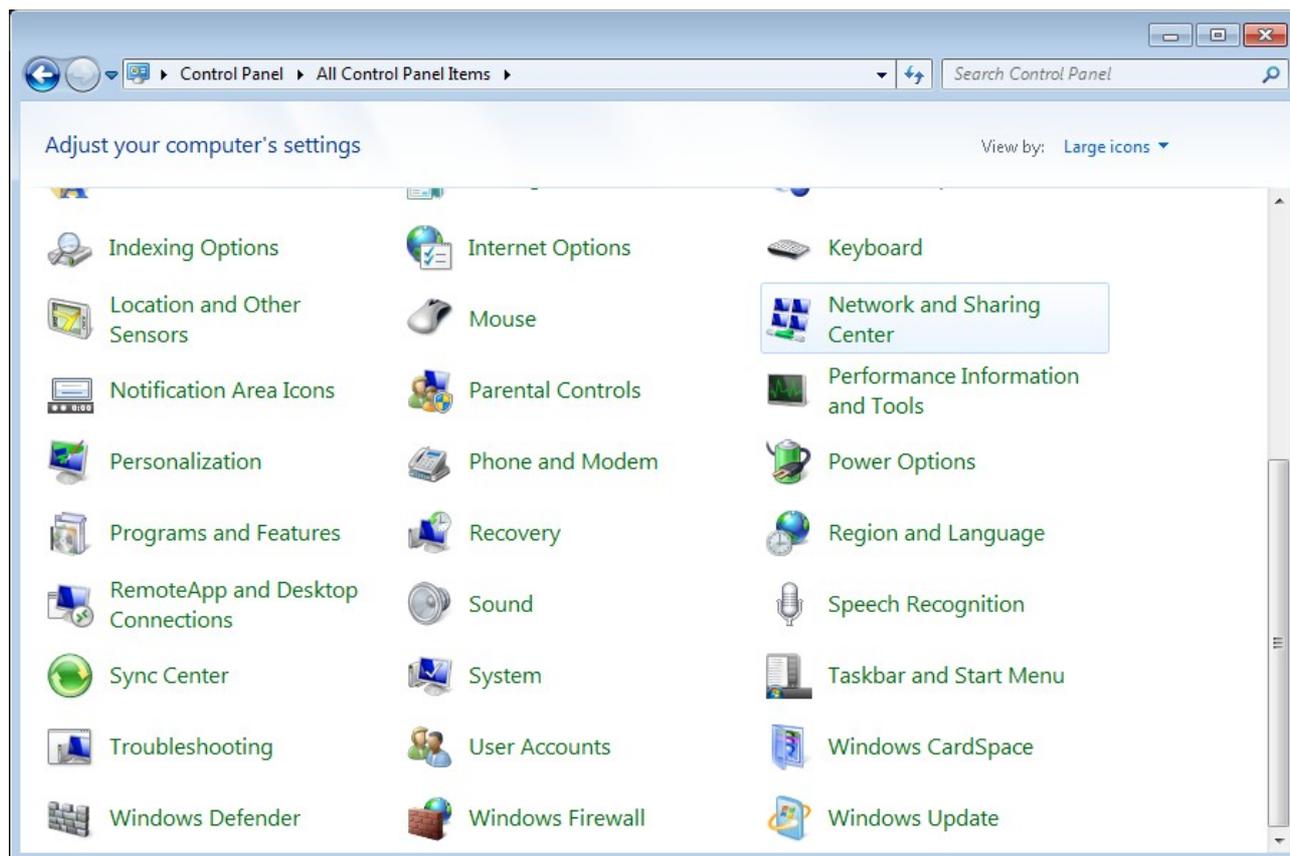

*Figure 6. The **Control Panel** window.*

3. In the menu located on the left part of the window, select the **Change adapter settings** line.
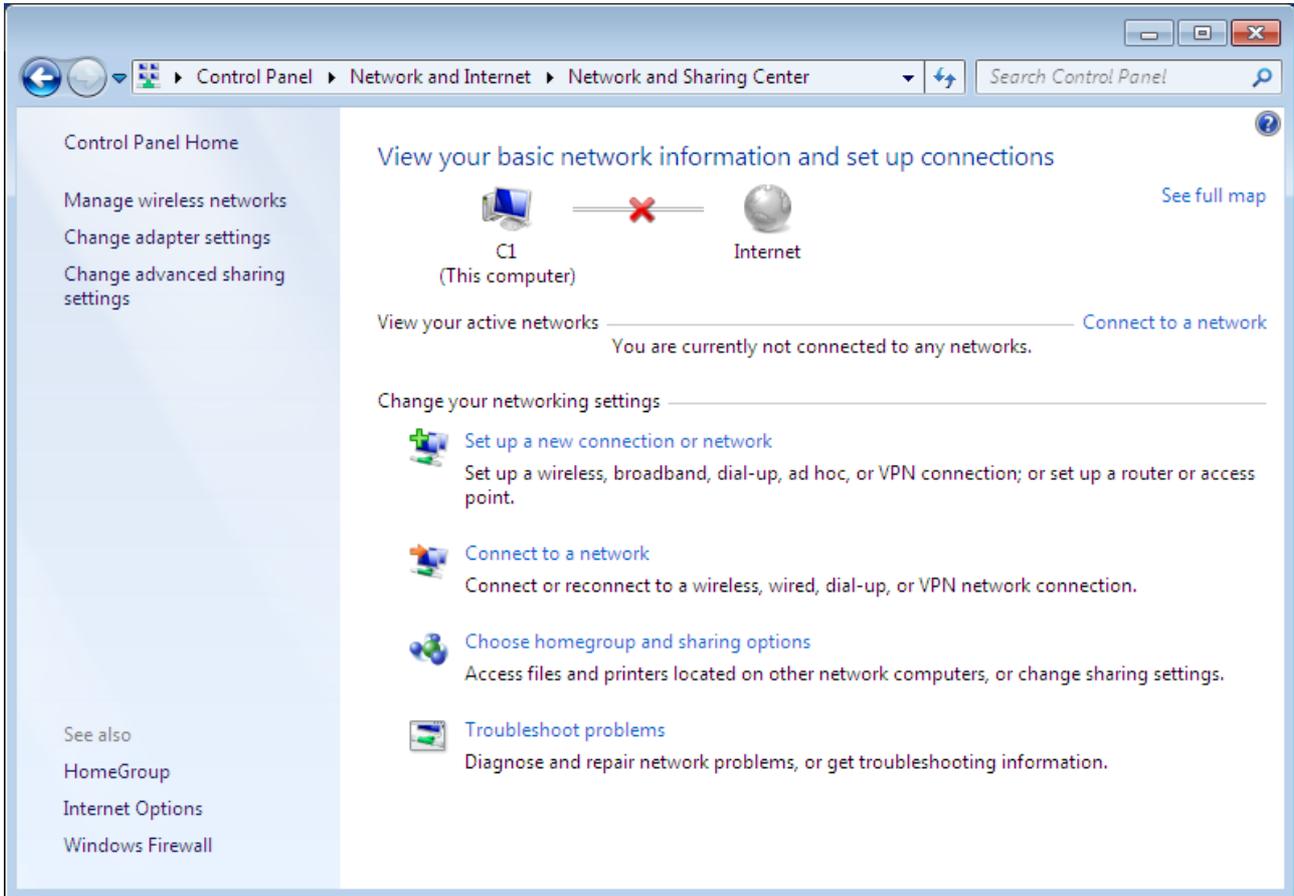
Figure 7. The **Network and Sharing Center** *window.*

4. In the opened window, right-click the relevant **Local Area Connection** icon and select the **Properties** line in the menu displayed.
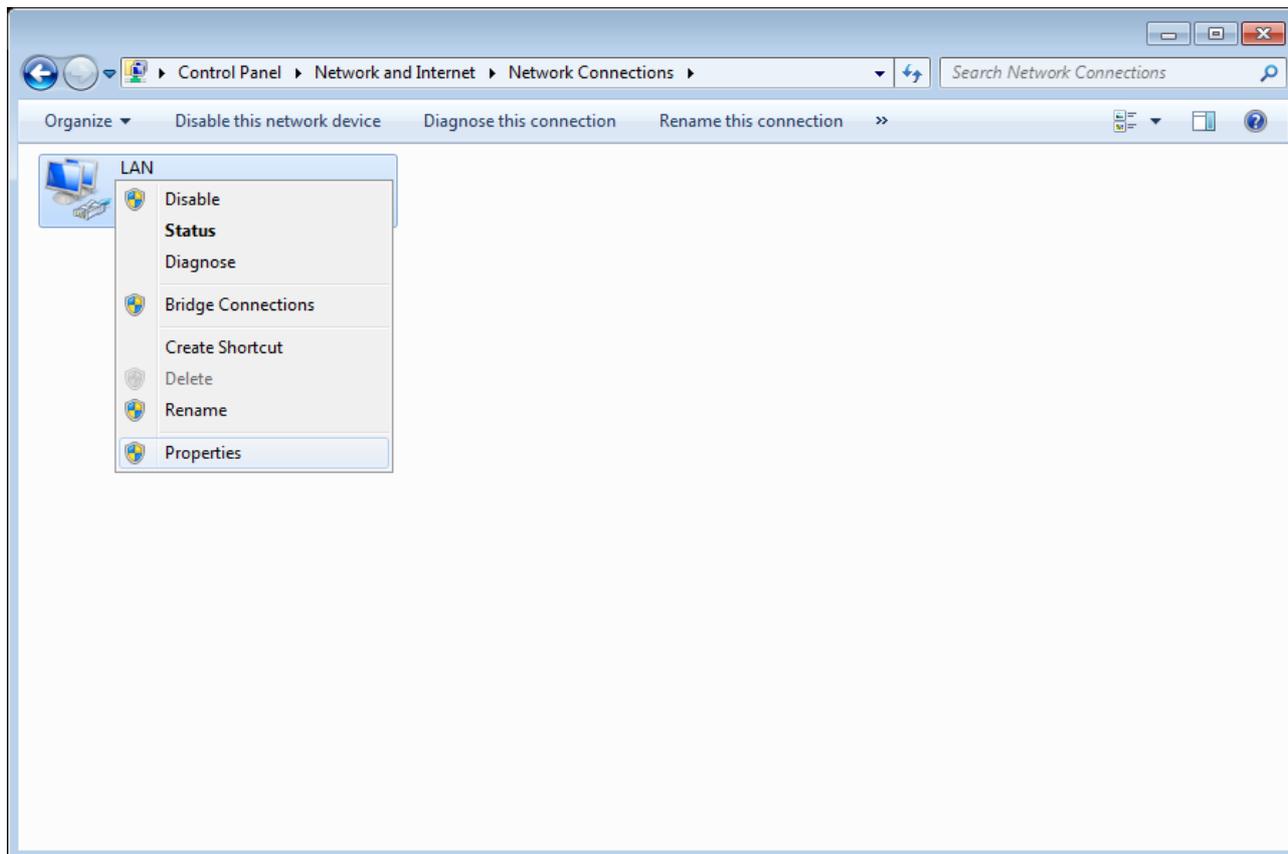
*Figure 8. The **Network Connections** window.*

5. In the **Local Area Connection Properties** window, on the **Networking** tab, select the **Internet Protocol Version 4 (TCP/IPv4)** line. Click the **Properties** button.

*Figure 9. The **Local Area Connection Properties** window.*

6. Select the **Obtain an IP address automatically** and **Obtain DNS server address automatically** radio buttons. Click the **OK** button.

*Figure 10. The **Internet Protocol Version 4 (TCP/IPv4) Properties** window.*

7. Click the **OK** button in the connection properties window.

Now your computer is configured to obtain an IP address automatically.

PC with Wi-Fi Adapter

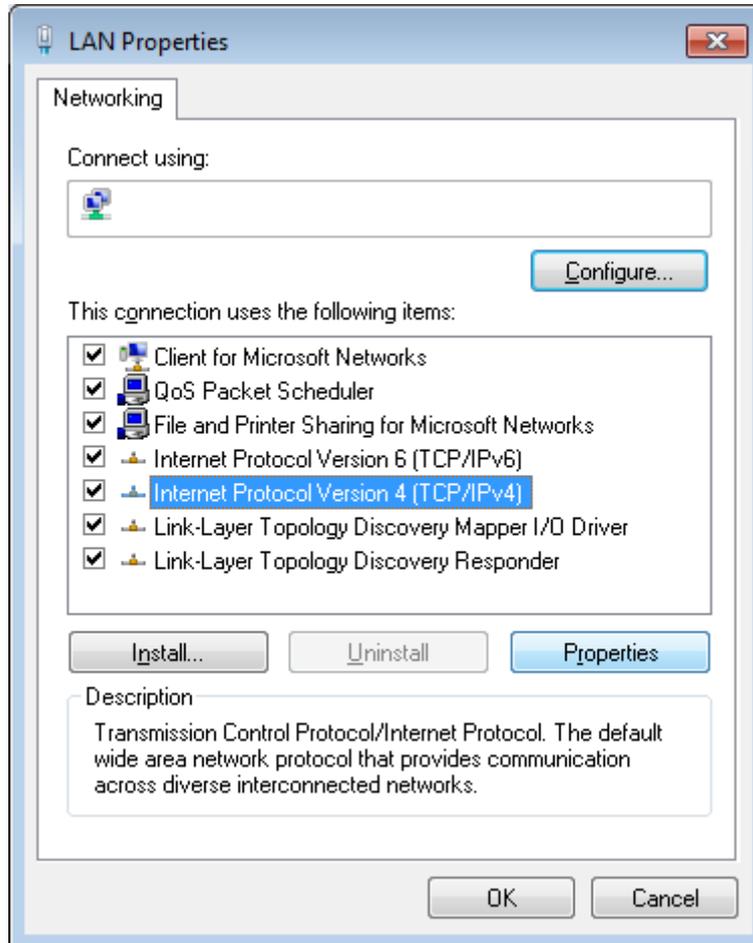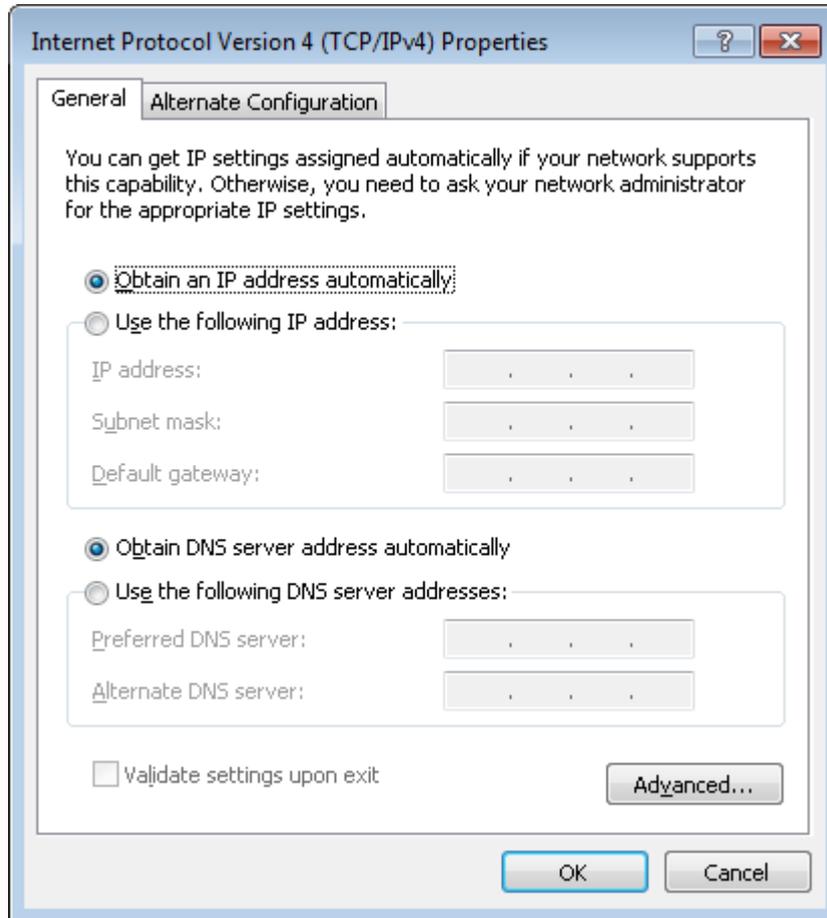1. *To connect via 3G network:* connect your USB modem to the USB port[7] located on the back panel of the router.

   ❗ If you need to connect or change a USB modem to another one when the router is powered on, power off the device, connect the modem to the USB port, and power on the router.

2. *To connect the router to a DSL line:* connect a phone cable between the DSL port of the router and the **ADSL OUT** port of the splitter. Connect your phone to the **PHONE** port of the splitter. Then connect another phone cable between a phone jack and the **ADSL IN** port of the splitter.

3. *To connect the router to an Ethernet line:* connect the Ethernet cable between any of four Ethernet ports located on the back panel of the router and the Ethernet line.

4. Connect the power cord to the power connector port on the back panel of the router, then plug the power adapter into an electrical outlet or power strip.

5. Turn on the router by pressing the **ON/OFF** button on its back panel.

6. Turn on Wi-Fi by pressing the relevant button on the back panel of the router.

7. Turn on your PC and wait until your operating system is completely loaded.

8. Turn on your Wi-Fi adapter. As a rule, modern notebooks with built-in wireless NICs are equipped with a button or switch that turns on/off the wireless adapter (refer to your PC documents). If your PC is equipped with a pluggable wireless NIC, install the software provided with your Wi-Fi adapter.

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7   It is recommended to use a USB extension cable to connect a USB modem to the router.

Configuring Wi-Fi Adapter in OS Windows XP

1. Click the **Start** button and proceed to the **Control Panel > Network and Internet Connections > Network Connections** window.

2. Select the icon of the wireless network connection and make sure that your Wi-Fi adapter is on.
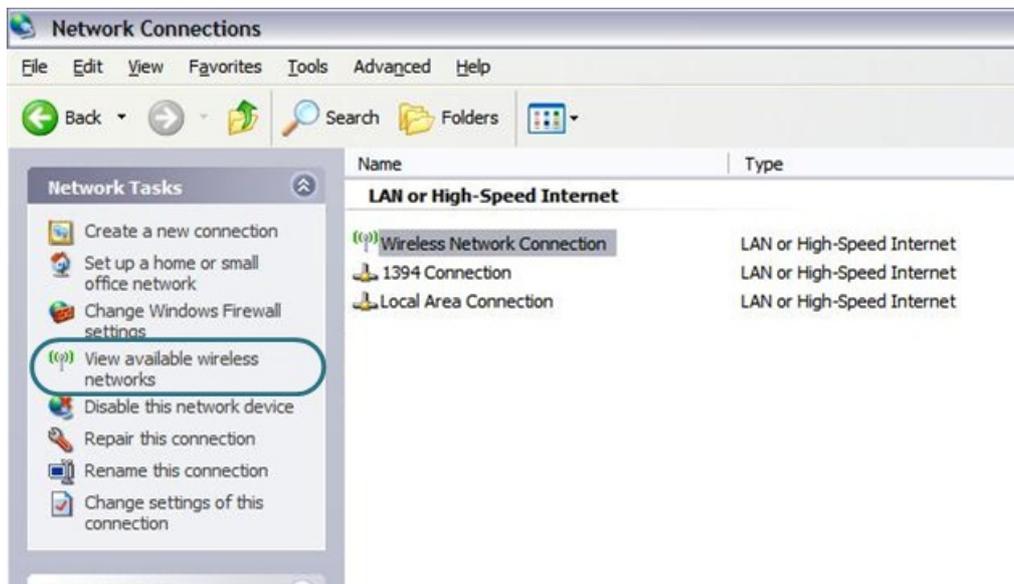
*Figure 11. The **Network Connections** window.*

3. Search for available wireless networks.

4. In the opened **Wireless Network Connection** window, select the wireless network `DSL-2650U` and click the **Connect** button.

After that the **Wireless Network Connection Status** window appears.

> ! If you perform initial configuration of the router via Wi-Fi connection, note that immediately after changing the wireless default settings of the router you will need to reconfigure the wireless connection using the newly specified settings.

Configuring Wi-Fi Adapter in OS Windows 7

1. Click the **Start** button and proceed to the **Control Panel** window.

2. Select the **Network and Sharing Center** section. (If the Control Panel has the category view (the **Category** value is selected from the **View by** drop-down list in the top right corner of the window), choose the **View network status and tasks** line under the **Network and Internet** section.)
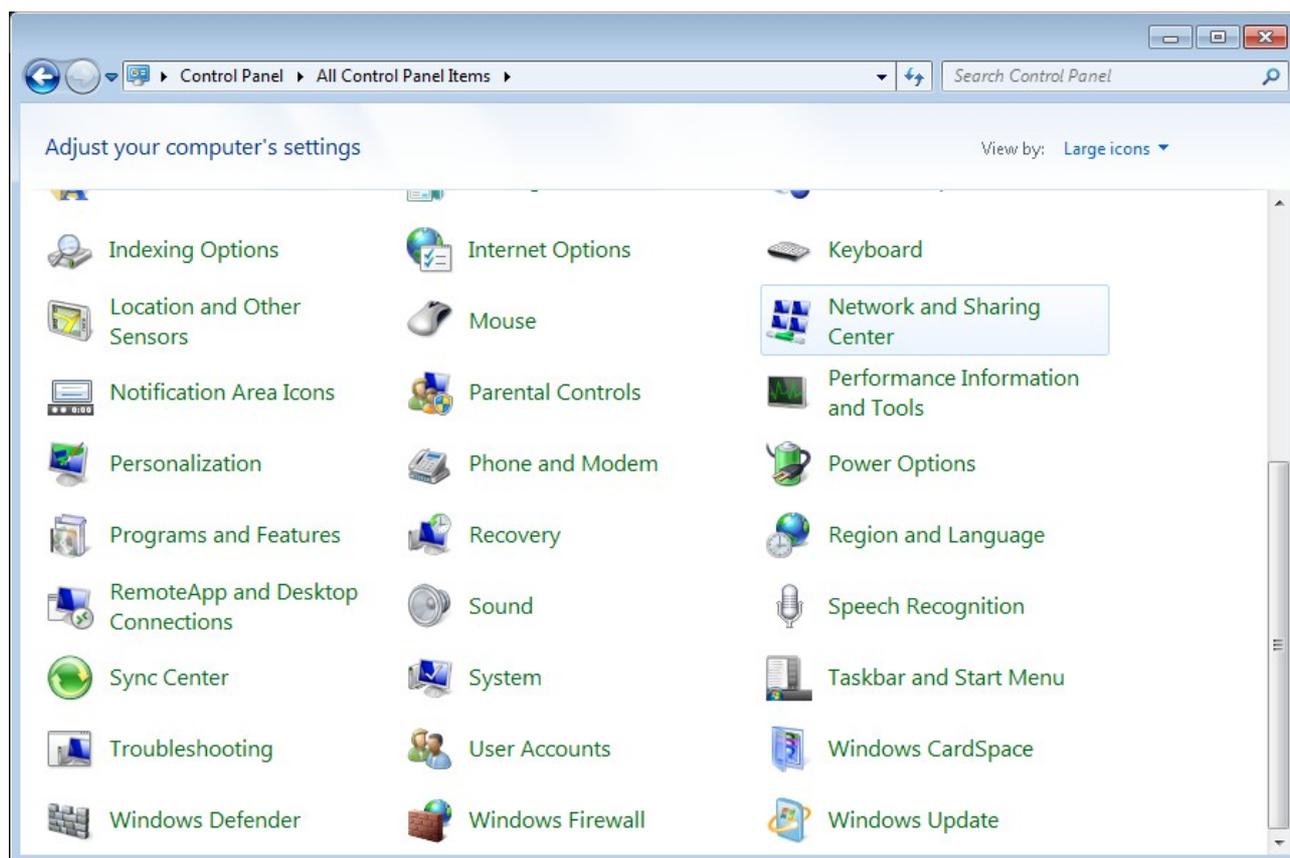
*Figure 12. The **Control Panel** window.*

3. In the menu located on the left part of the window, select the **Change adapter settings** line.

4. In the opened window, select the icon of the wireless network connection and make sure that your Wi-Fi adapter is on.

5. To open the list of available wireless networks, select the icon of the wireless network connection and click the **Connect To** button or left-click the network icon in the notification area located on the right side of the taskbar.

Figure 13. The notification area of the taskbar.

6. In the opened window, in the list of available wireless networks, select the wireless network `DSL-2650U` and click the **Connect** button.

Figure 14. The list of available networks.
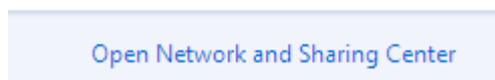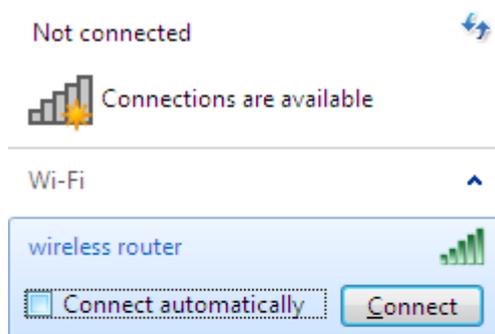
7. Wait for about 20-30 seconds. After the connection is established, the network icon will be displayed as the signal level scale.

> **!** If you perform initial configuration of the router via Wi-Fi connection, note that immediately after changing the wireless default settings of the router you will need to reconfigure the wireless connection using the newly specified settings.

Connecting to Web-based Interface

When you have configured your computer, you can access the web-based interface and configure needed parameters (for example, create an interface to connect to the Internet, change the parameters of the wireless network, specify the settings of the firewall, edit the password for the administrator account, etc.)

1. Start a web browser (see the ***Before You Begin*** section, page 15).

2. In the address bar of the web browser, enter the IP address of the router (by default, the following IP address is specified: `192.168.1.1`). Press the **Enter** key.

Figure 15. Connecting to the web-based interface of the DSL-2650U device.

3. On the opened page, enter the username (login) and password for the administrator account (by default, the following username and password are specified: `admin`, `admin`). Then click the **Enter** link.

Figure 16. The login page.

! If the error "*The page cannot be displayed*" (or "*Unable to display the page*"/"*Could not connect to remote server*") occurs upon connecting to the web-based interface of the router, make sure that you have properly connected the router to your computer.

! For security reasons, it is strongly recommended to change the administrator password upon initial configuration of the router. To do this, click the **Configure manually** button and proceed to the **System / Administrator password** page.

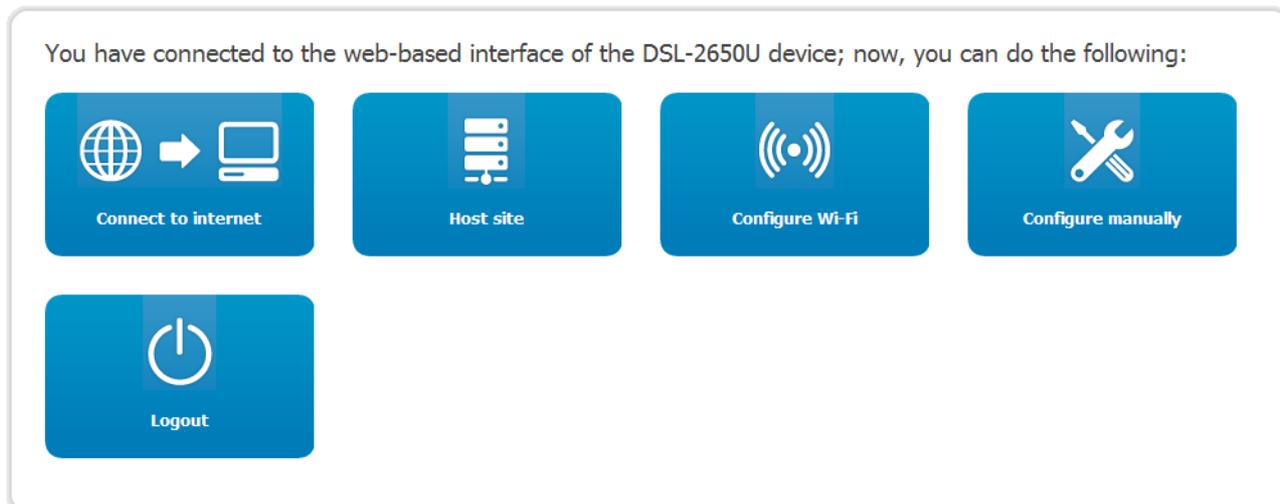After successful registration the router's quick settings page opens.

Figure 17. The quick settings page.

To configure connection to the Internet, click the **Connect to internet** button. After clicking the button, the Internet Setup Wizard opens (see the *Internet Setup Wizard* section, page 34).

To configure access from the Internet to a web server located in your LAN, click the **Host site** button. After clicking the button, the Site Setup Wizard opens (see the *Site Setup Wizard* section, page 51).

To configure the router's wireless network, click the **Configure Wi-Fi** button. After clicking the button, the Wi-Fi Setup Wizard opens (see the *Wi-Fi Setup Wizard* section, page 52).

To get back to the quick settings page from any Wizard or web-based interface menu section, left-click the D-Link logo in the top left corner of the page.

To configure all parameters of the router independently without the Wizards, click the **Configure manually** button.

After clicking the button the system statistics page opens. The page displays general information on the router and its software (the version and the date of the firmware, the IP address of the device, the name of the WLAN, etc.), and data on the DSL connection state.
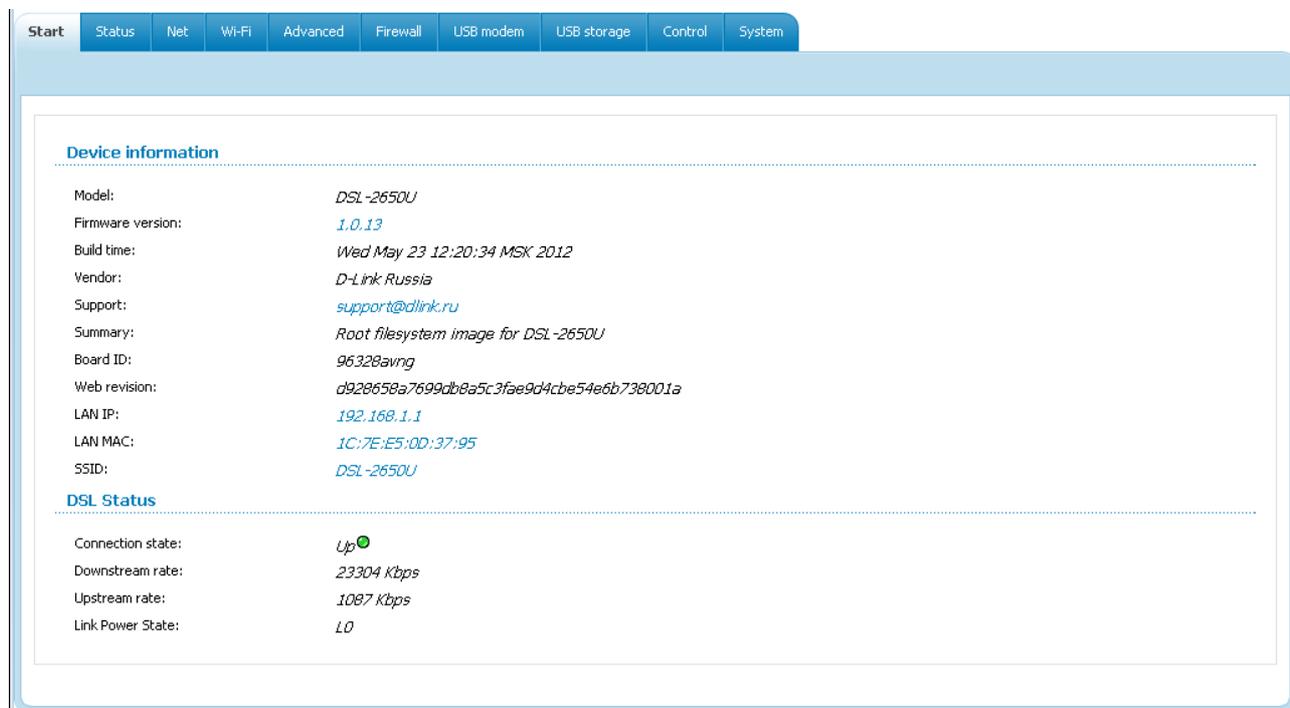

Figure 18. The system statistics page.

From the system statistics page you can proceed to the page for upgrading the router's firmware, contact the technical support group, and proceed to the settings of the local interface or the device's WLAN.

To upgrade the firmware of the router, left-click the current firmware version (the right column of the **Firmware version** line). After clicking the line, the **System / Firmware upgrade** page opens (see the *Firmware Upgrade* section, page 130).

To contact the technical support group (to send an e-mail), left-click the support e-mail address (the right column of the **Support** line). After clicking the line, the e-mail client window for sending a new letter to the specified address opens.

To edit the router's local interface parameters, left-click the IP or MAC address of the local interface (the right column of the **LAN IP** line or **LAN MAC** line correspondingly). After clicking the line, the page for editing the LAN interface opens (see the *LAN* section, page 76).

To configure the router's WLAN parameters, left-click the SSID of the WLAN (the right column of the **SSID** line). After clicking the line, the **Wi-Fi / Basic settings** page opens (see the *Basic Settings* section, page 81).

The web-based interface of the router is multilingual. Select a needed language from the menu displayed when the mouse pointer is over the **Language** caption. You can change the language of the web-based interface in any menu item.

Figure 19. Changing the language of the web-based interface.

After selecting the language, the notification on unsaved changes will be displayed. Click the **Save** button to save the current language of the web-based interface as the default language.

Saving and Restoring Settings

! Note that you should regularly save the changes of the router's settings to the non-volatile memory.

The router's web-based interface displays the notification on unsaved changes at the top of the page.
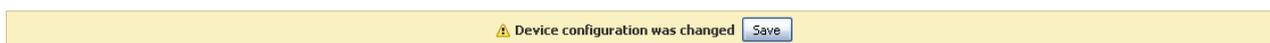
⚠ Device configuration was changed Save

Figure 20. The notification on unsaved changes.

You can save the router's settings via the top-page menu displayed when the mouse pointer is over the **System** caption.

Figure 21. The top-page menu.

Click the **Reboot** line if you have already saved the router's settings.

Click the **Save&Reboot** line to save new settings and immediately reboot the router.

Click the **Save** line to save new settings to the non-volatile memory and continue configuring the device. Also you can save the device's parameters via the **Save** button on the **System / Configuration** page.

Click the **Backup** line and follow the dialog box appeared to save the configuration (all settings of the router) to your PC. Also you can save the router's configuration to your PC via the **Backup** button on the **System / Configuration** page.

Click the **Factory** line to restore the factory default settings. Also you can restore the factory defaults via the **Factory** button on the **System / Configuration** page.

Also you can restore the factory default settings via the hardware **RESET** button located on the bottom panel of the router. Use a small paperclip to activate the button; insert it into the hole (with the device turned on), push, and hold for 10 seconds. Release the button and wait until the router is rebooted (about a minute). Now you can access the web-based interface of the router using the default IP address, username and password.

When you have configured all needed settings, click the **Logout** line.

CHAPTER 4.   CONFIGURING   VIA   WEB-BASED   INTERFACE

Wizards

Internet Setup Wizard

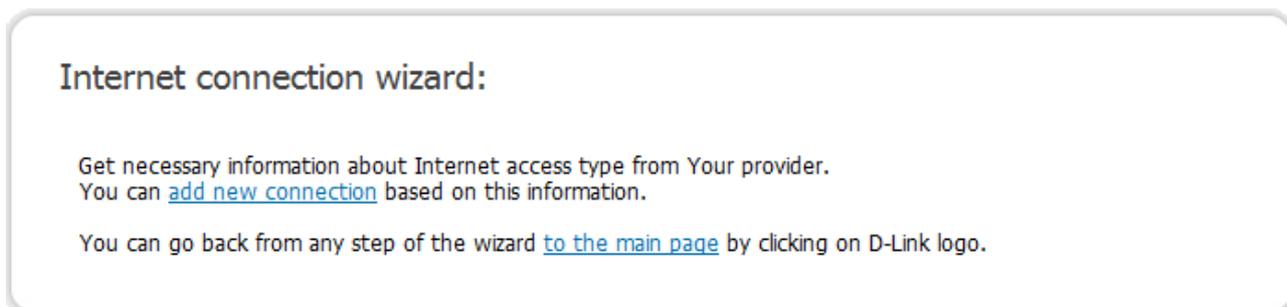To configure connection to the Internet, click the **Connect to internet** button.

Internet connection wizard:

Get necessary information about Internet access type from Your provider.
You can add new connection based on this information.

You can go back from any step of the wizard to the main page by clicking on D-Link logo.

Figure 22. Configuring connection to the Internet.

To create a new WAN connection, click the **add new connection** link.

Internet connection wizard:

Choose Your provider

From the Provider drop-down list, select your country and operator if you are going to configure a 3G network connection, or leave the Manual value, if you are going to configure a WAN connection of another type or you want to specify all settings for your 3G WAN connection independently.

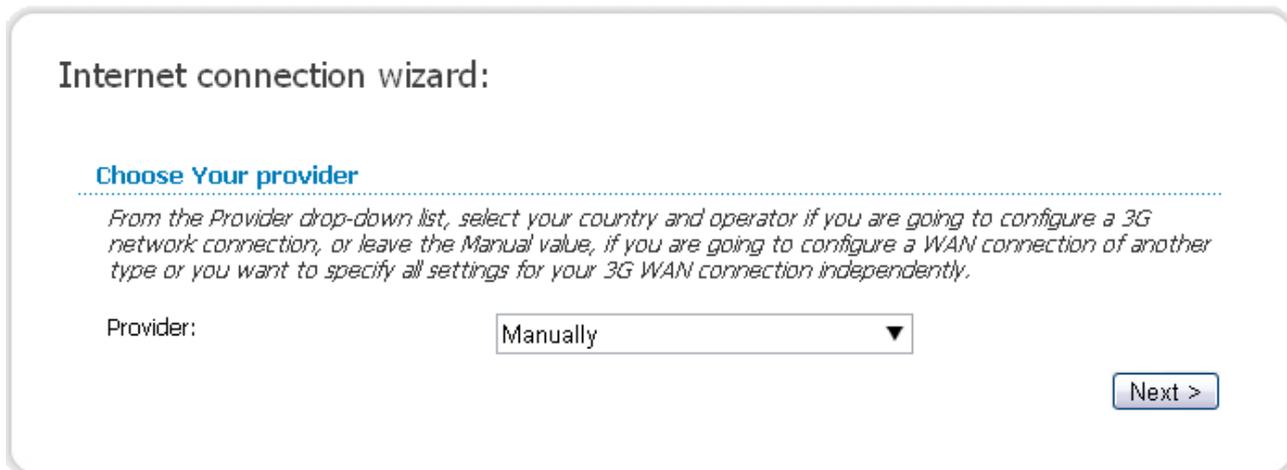Provider: Manually ▼

Next >

Figure 23. The page for selecting a 3G network operator.

On the opened page, from the **Provider** drop-down list, select your country and operator if you are going to configure a 3G network connection, or leave the **Manually** value, if you are going to configure a wired WAN connection or you want to specify all settings for your 3G WAN connection independently.

Click the **Next** button to continue.

Figure 24. The page for selecting the connection type.

On the opened page, select the needed choice of the radio button and click the **Next** button.
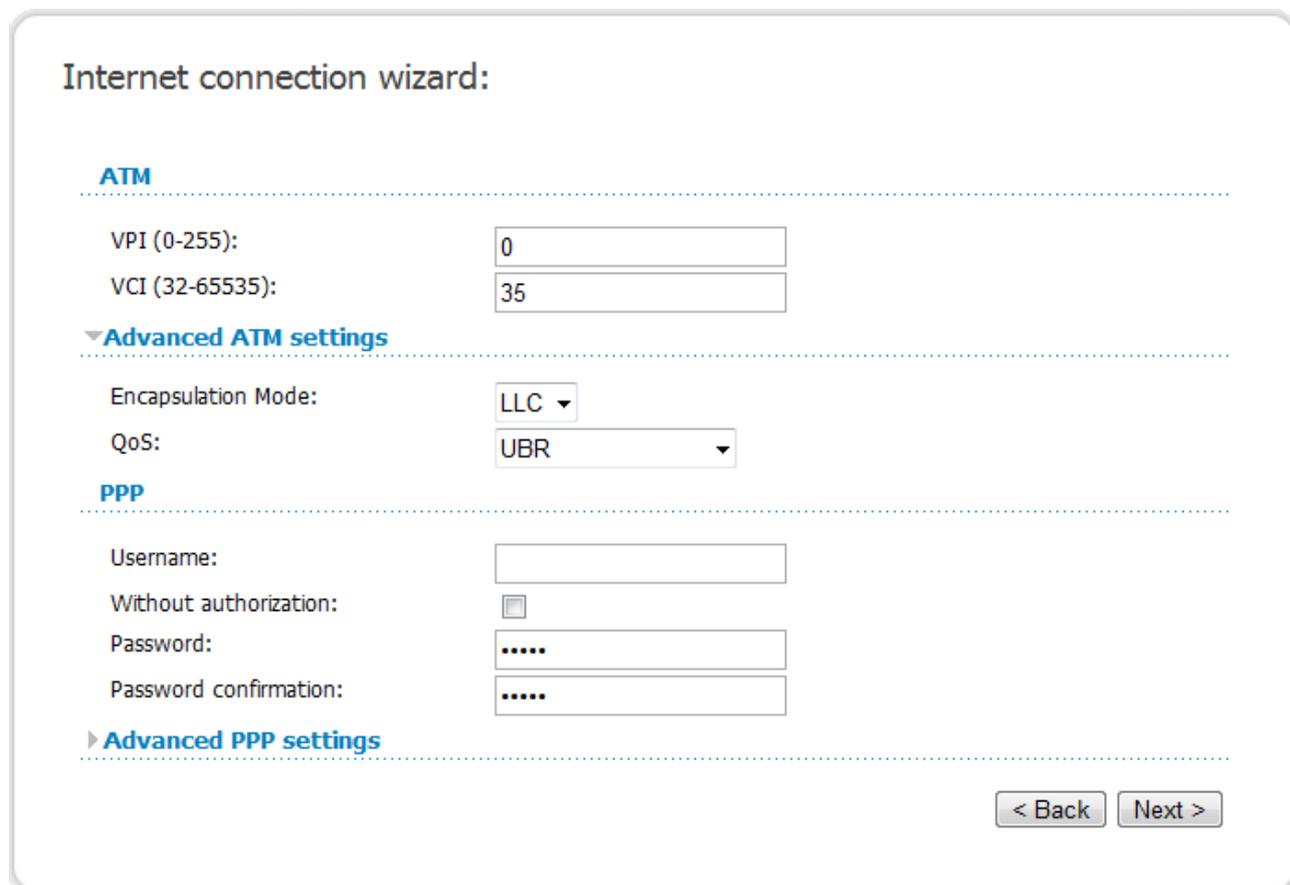
PPPoE or PPPoA Connection

Figure 25. Configuring PPPoE WAN connection.

In the **Name** field, specify a name for the connection for easier identification and click the **Next** button.

Figure 26. Configuring PPPoE WAN connection.

In the **VPI** field, specify the VPI. In the **VCI** field, specify the VCI.

From the **Encapsulation Mode** drop-down list, select a method of encapsulation.

In the **Username** field, enter your login, and in the **Password** and **Password confirmation** fields – the password provided by your ISP.

If authorization is not required, select the **Without authorization** checkbox.

If needed, specify additional settings for your PPPoE or PPPoA WAN connection.

Figure 27. Configuring PPPoE WAN connection.

Parameter	Description
Service name	*Displayed for the **PPPoE** type only.* The name of the PPPoE authentication server.
Authentication algorithm	Select a required authentication method from the drop-down list or leave the **AUTO** value.
MTU	The maximum size of units transmitted by the interface.

Parameter	Description
Keep Alive	Select the checkbox if you want the router to keep you connected to your ISP even when the connection has been inactive for a specified period of time. When the checkbox is selected, the **LCP interval** and **LCP fails** fields are available. Specify the required values.
Dial on demand	Select the checkbox if you want the router to establish connection to the Internet on demand. In the **Maximum idle time** field, specify a period of inactivity (in seconds) after which the connection should be terminated.
PPP IP extension	This option is used by some ISPs. Contact your ISP to clarify if this checkbox needs to be enabled.
Use Static IP Address	Select the checkbox if you want to use a static IP address to access the Internet. In the **Static IP Address** field displayed when the checkbox is selected, specify a static IP address.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.
PPPoE pass through	*Displayed for the **PPPoE** type only.* Select the checkbox if you want to allow PPPoE clients of computers from your LAN to connect to the Internet through this PPPoE connection of the router.

Click the **Next** button to continue.

If needed, change the connection settings available in the **Miscellaneous** section.

Figure 28. Configuring PPPoE WAN connection.

Parameter	Description
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all computers of your LAN.
Firewall	Select the checkbox to enable protection against ARP and DDoS attacks.

Click the **Next** button to continue.

If needed, change the connection settings available in the **VLAN** section (the page is displayed for the **PPPoE** type only).

Figure 29. Configuring PPPoE WAN connection.

Parameter	Description
Allow to create several connections assigned to this port	Select the checkbox to allow the router to use several untagged connections.
Use VLAN	Select the checkbox to allow the router to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** checkbox is selected.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** checkbox is selected.

Click the **Next** button to continue.

After that the page displaying all specified settings opens. Click the **Save** button to create the connection or the **Back** button to specify other settings.

After clicking the **Save** button, the quick settings page opens.

IPoA or Static IP Connection

Figure 30. Configuring Static IP WAN connection.

In the **Name** field, specify a name for the connection for easier identification and click the **Next** button.
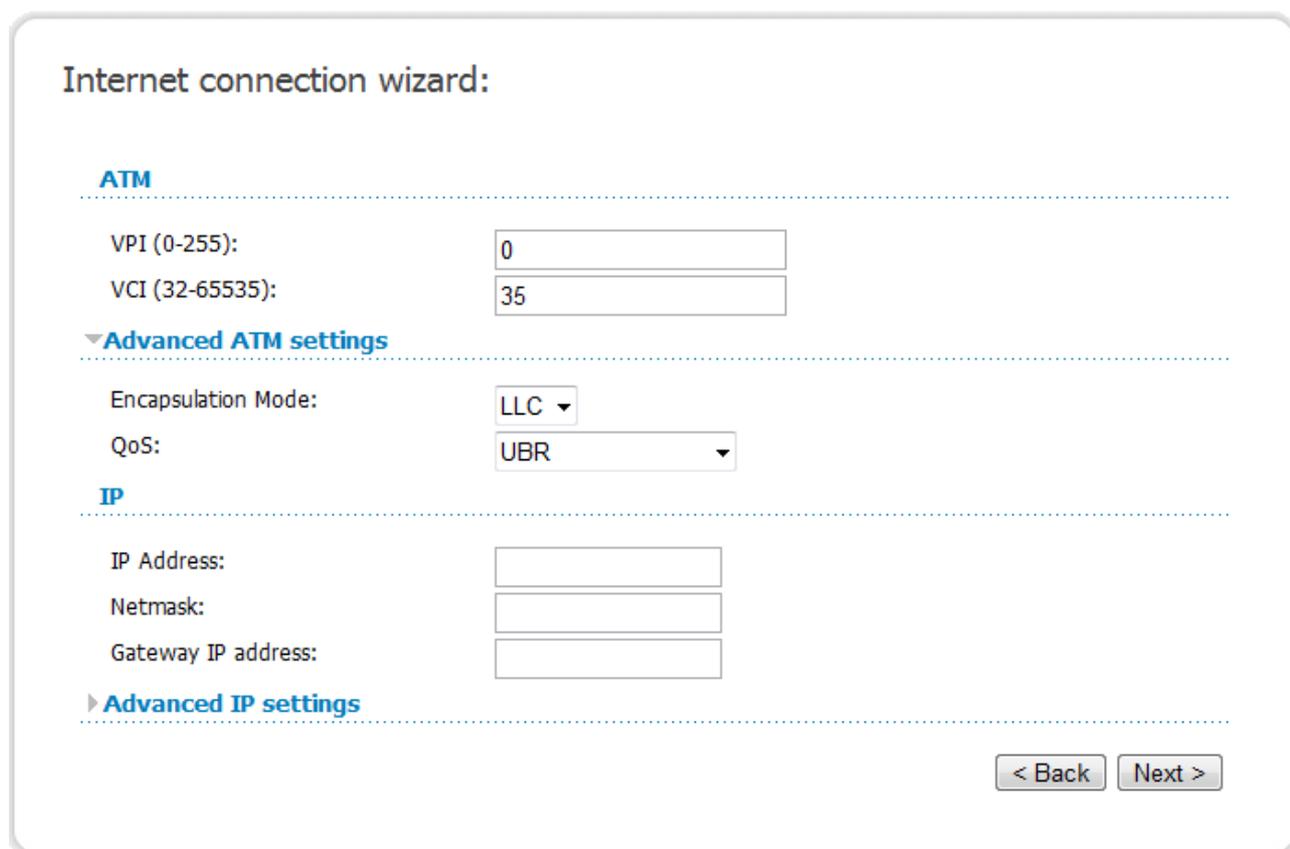
Figure 31. Configuring Static IP WAN connection.

In the **VPI** field, specify the VPI. In the **VCI** field, specify the VCI.

From the **Encapsulation Mode** drop-down list, select a method of encapsulation.

Fill in the **IP address** and **Netmask** fields.

In the **Gateway IP address** field, enter the IP address of the gateway used by this WAN connection.

Click the **Next** button to continue.

If needed, change the connection settings available in the **Miscellaneous** section.

Figure 32. Configuring Static IP WAN connection.

Parameter	Description
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all computers of your LAN.
Firewall	Select the checkbox to enable protection against ARP and DDoS attacks.

Click the **Next** button to continue.

If needed, change the connection settings available in the **VLAN** section (the page is displayed for the **Static IP** type only).

Figure 33. Configuring Static IP WAN connection.

Parameter	Description
Allow to create several connections assigned to this port	Select the checkbox to allow the router to use several untagged connections.
Use VLAN	Select the checkbox to allow the router to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** checkbox is selected.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** checkbox is selected.

Click the **Next** button to continue.

After that the page displaying all specified settings opens. Click the **Save** button to create the connection or the **Back** button to specify other settings.

After clicking the **Save** button, the quick settings page opens.

Dynamic IP Connection

Figure 34. Configuring Dynamic IP WAN connection.

In the **Name** field, specify a name for the connection for easier identification and click the **Next** button.
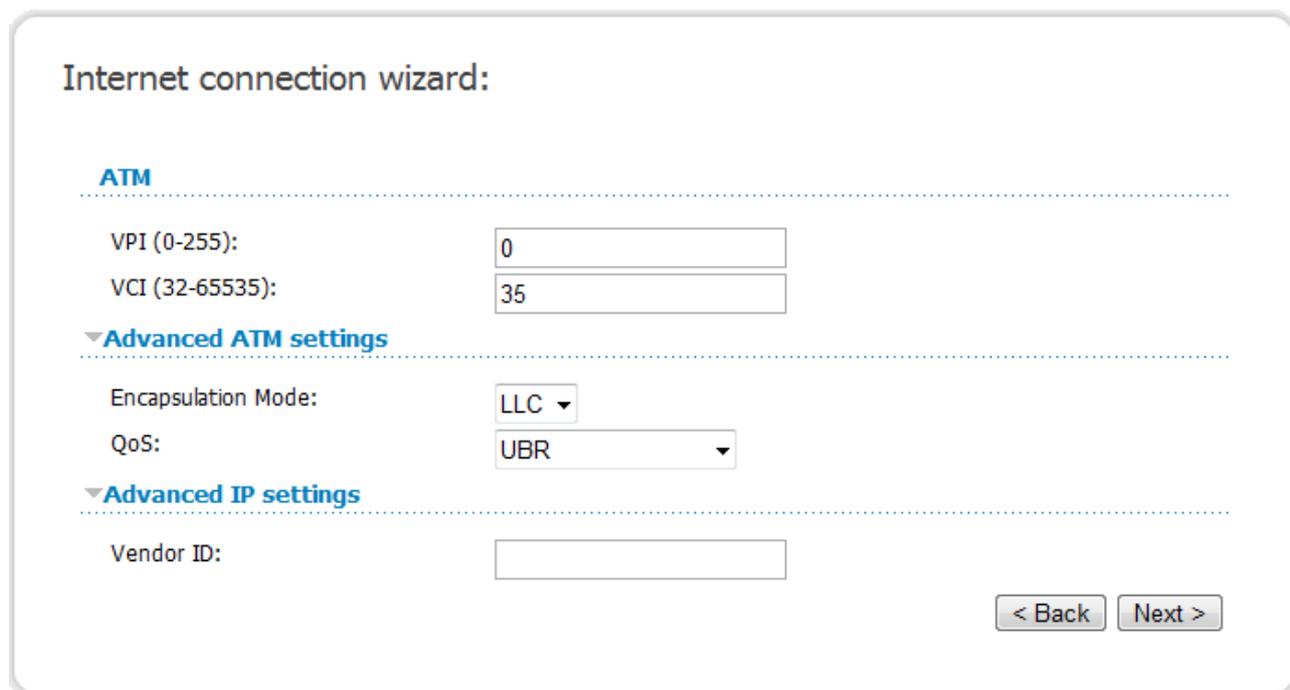
Figure 35. Configuring Dynamic IP WAN connection.

In the **VPI**, specify the VPI. In the **VCI** field, specify the VCI.

From the **Encapsulation Mode** drop-down list, select a method of encapsulation.

If your ISP has provided its identifier, fill in the **Vendor ID** field.

Click the **Next** button to continue.

If needed, change the connection settings available in the **Miscellaneous** section.

Figure 36. Configuring Dynamic IP WAN connection.

Parameter	Description
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all computers of your LAN.
Firewall	Select the checkbox to enable protection against ARP and DDoS attacks.

Click the **Next** button to continue.

If needed, change the connection settings available in the **VLAN** section.

Figure 37. Configuring Dynamic IP WAN connection.

Parameter	Description
Allow to create several connections assigned to this port	Select the checkbox to allow the router to use several untagged connections.
Use VLAN	Select the checkbox to allow the router to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** checkbox is selected.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** checkbox is selected.

Click the **Next** button to continue.

After that the page displaying all specified settings opens. Click the **Save** button to create the connection or the **Back** button to specify other settings.

After clicking the **Save** button, the quick settings page opens.

Bridge Connection

Figure 38. Configuring Bridge WAN connection.

In the **Name** field, specify a name for the connection for easier identification and click the **Next** button.

Figure 39. Configuring Bridge WAN connection.

In the **VPI** field, specify the VPI. In the **VCI** field, specify the VCI.

From the **Encapsulation Mode** drop-down list, select a method of encapsulation.

Click the **Next** button to continue.

If needed, change the connection settings available in the **VLAN** section.

Figure 40. Configuring Bridge WAN connection.

Parameter	Description
Allow to create several connections assigned to this port	Select the checkbox to allow the router to use several untagged connections.
Use VLAN	Select the checkbox to allow the router to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** checkbox is selected.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** checkbox is selected.

Click the **Next** button to continue.

After that the page displaying all specified settings opens. Click the **Save** button to create the connection or the **Back** button to specify other settings.

After clicking the **Save** button, the quick settings page opens.
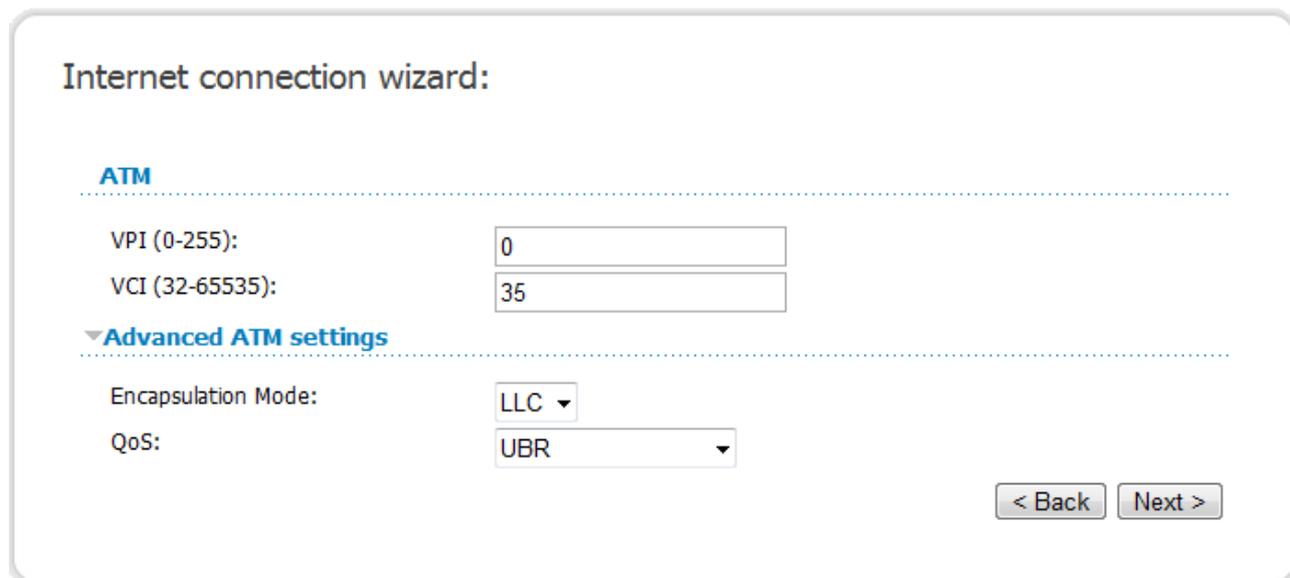
3G Connection

Figure 41. Configuring 3G WAN connection.

In the **Name** field, specify a name for the connection for easier identification and click the **Next** button.

Figure 42. Configuring 3G WAN connection.

In the **Mode** drop-down list, leave the **auto** value in order to let the router connect automatically to an available type of network, or select a needed value from the drop-down list. *For GSM USB modems only.*

In the **Username** field, enter your login, and in the **Password** and **Password confirmation** fields – the password provided by your 3G operator.

If authorization is not required, select the **Without authorization** checkbox.

In the **APN** field, enter the access point name, and in the **Dial number** field, enter the number dialed to connect to the authorization server of the operator.

If needed, specify additional settings for your 3G WAN connection.

Parameter	Description
Authentication algorithm	Select a required authentication method from the drop-down list or leave the **AUTO** value.
MTU	The maximum size of units transmitted by the interface. *Optional*.
Keep Alive	Select the checkbox if you want the router to keep you connected to the network of your operator even when the connection has been inactive for a specified period of time. When the checkbox is selected, the **LCP interval** and **LCP fails** fields are available. Specify the required values.
Dial on demand	Select the checkbox if you want the router to establish connection to the Internet on demand. In the **Maximum idle time** field, specify a period of inactivity (in seconds) after which the connection should be terminated.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.

Click the **Next** button to continue.

Figure 43. Configuring 3G WAN connection.

If needed, change the connection settings available in the **Miscellaneous** section.

Parameter	Description
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all computers of your LAN.
Firewall	Select the checkbox to enable protection against ARP and DDoS attacks.

Click the **Next** button to continue.

After that the page displaying all specified settings opens. Click the **Save** button to create the connection or the **Back** button to specify other settings.

After clicking the **Save** button, the quick settings page opens.

Site Setup Wizard

To create a virtual server for redirecting incoming Internet traffic to a specified IP address in the LAN, click the **Host site** button.
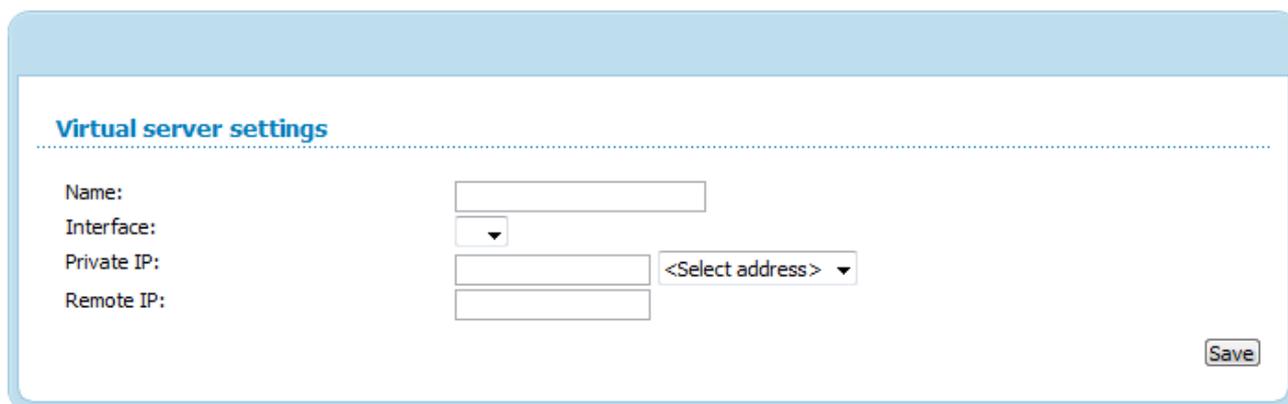
Figure 44. The page for adding a virtual server.

On the opened page, you can specify the following parameters:

Parameter	Description
Name	Enter a name for the virtual server for easier identification. You can specify any name.
Interface	Select a WAN connection to which this virtual server will be assigned.
Private IP	Enter the IP address of the server from the local area network. To choose a device connected to the router's LAN at the moment, select the relevant value from the drop-down list located to the right of the **Private IP** field (the field will be filled in automatically).
Remote IP	Enter the IP address of the server from the external network.

When needed settings are configured, click the **Save** button. After that you get to the quick settings page.

Wi-Fi Setup Wizard

To specify all needed settings for your wireless network, click the **Configure Wi-Fi** button.

Figure 45. The page for enabling/disabling the wireless LAN.

On the opened page, in the **Common settings** section, select the **Enable Wireless** checkbox (if it was deselected before) to enable Wi-Fi connections.

Click the **Next** button to continue.

In the **Basic settings** section, you can change the basic parameters of your router's WLAN: "hide" your wireless network (**Hide Access Point**), specify a name for the network (**SSID**), select your location (**Country**) and the wireless channel number (**Channel**), isolate users of your WLAN from each other (**Clients Isolation**), and enable the guest part of your WLAN (**Enable Wireless Guest Network**) and change its name (**Guest SSID**).

Figure 46. Basic settings of the wireless LAN.

Click the **Next** button to continue.

On the next page, you can modify security settings of the WLAN. By default, the **Open** network authentication type with no encryption is specified for the WLAN.

Figure 47. The default security settings.

> **!** The default security settings do not provide sufficient protection for the WLAN. Please, specify your own security settings.

The router supports the following authentication types:

Authentication type	Description
Open	Open authentication (with or without WEP encryption).
WPA-PSK	WPA-based authentication using a PSK.
WPA2-PSK	WPA2-based authentication using a PSK.

When the **Open** value is selected, the **WEP Encryption settings** section is displayed:

*Figure 48. The **Open** value is selected from the **Network Authentication** drop-down list.*

Parameter	Description
Enable Encryption WEP	The checkbox activating WEP encryption. When the checkbox is selected, the **Encryption Key WEP (1)** field and the **Encryption Key WEP as HEX** checkbox are displayed.
Encryption Key WEP as HEX	Select the checkbox to set a hexadecimal number as a key for encryption.
Encryption Key WEP (1)	The key for WEP encryption. You can specify keys containing 5 or 13 symbols (use digits and/or Latin characters). If the **Encryption Key WEP as HEX** checkbox is selected, you can specify only keys containing 10 symbols (the digits 0-9 and the characters A-F).

When the **WPA-PSK** or **WPA2-PSK** value is selected, the **WPA Encryption settings** section is displayed:

*Figure 49. The **WPA2-PSK** value is selected from the **Network Authentication** drop-down list.*

Parameter	Description
Encryption Key PSK	A key for WPA encryption. The key can contain digits and/or Latin characters.
WPA2 Pre-authentication	The checkbox activating preliminary authentication (displayed only for the **WPA2-PSK** authentication type).
WPA Encryption	An encryption method: **TKIP**, **AES**, or **TKIP+AES**.
WPA renewal	The time period (in seconds), at the end of which a new key for WPA encryption is generated. When the value **0** is specified for this field, the key is not renewed.

Click the **Next** button to continue.

When all the steps of configuring the WLAN are completed, the specified settings are displayed on the page. Check their correctness and then click the **Save** button. After that you get to the quick settings page.

Status

The pages of this section display data on the current state of the router:

- network statistics

- DSL connection status

- active WAN connections

- IP addresses leased by the DHCP server

- the routing table

- data on devices connected to the router's network and its web-based interface.

Network Statistics

On the **Status / Network statistics** page, you can view statistics for all interfaces (connections) existing in the system. For each connection the following data are displayed: state, IP address, subnet mask and gateway (if the connection is established), MAC address, MTU value, and volume of data received and transmitted (with increase of the volume the units of measurement are changed automatically: byte, Kbyte, Mbyte, Gbyte).

Name	Type	Status	IP	Mask	Gateway	MAC	MTU	Rx/Tx
bridge_1_91_2	bridge	Up	-	-	-	02:10:18:01:00:04	1500	0.0000 byte/248.00 byte
LAN	ipoe	Up	192.168.1.108	255.255.255.0	-	02:10:18:01:00:01	1500	2.0067 Mbyte/19.338 Mbyte
pppoe_1_50_1	pppoe	Down	-	-	-	-	-	0.0000 byte/0.0000 byte
bridge_1_92_3	bridge	Up	-	-	-	02:10:18:01:00:05	1500	0.0000 byte/124.00 byte

*Figure 50. The **Status / Network statistics** page.*

DSL Status

The information shown on the tabs of the **Status / DSL status** page can be used for troubleshooting and diagnosing connection problems.
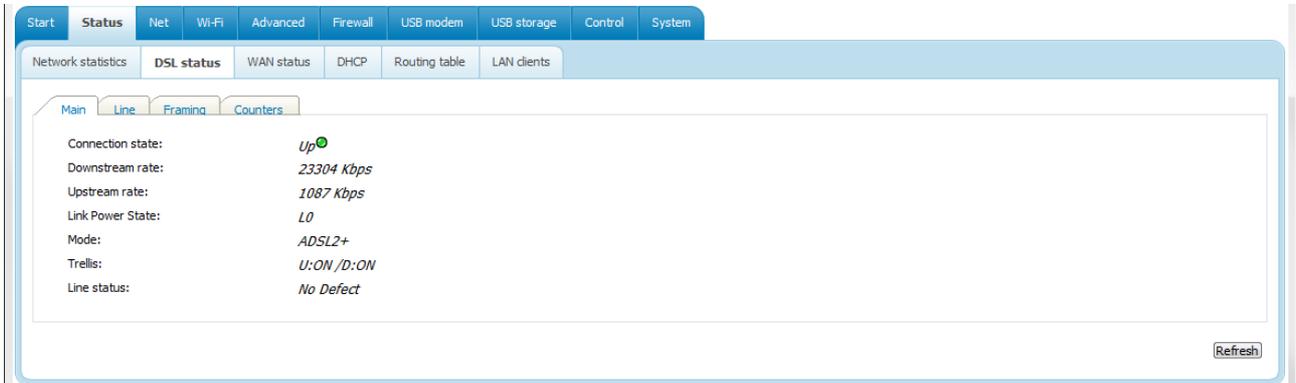
*Figure 51. The **Status / DSL status** page.*

WAN Status

The **Status / WAN status** page displays active WAN connections.

*Figure 52. The **Status / WAN status** page.*

DHCP

The **Status / DHCP** page displays the information on computers that have been identified by hostnames and MAC addresses and have got IP addresses from the DHCP server of the device, as well as the IP address expiration periods (the lease time).
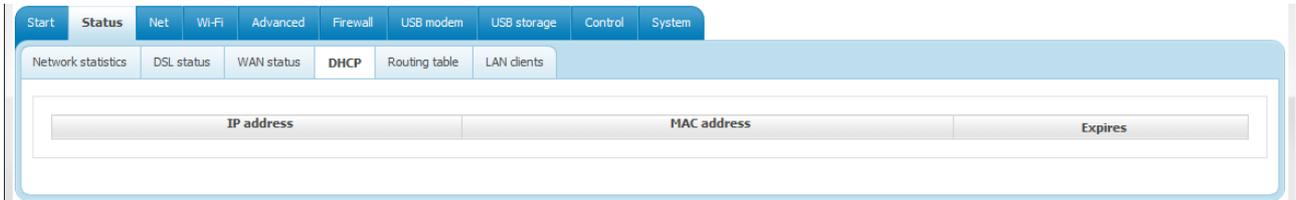
*Figure 53. The **Status / DHCP** page.*

Routing Table

The **Status / Routing table** page displays the information on routes. The table contains destination IP addresses, gateways, subnet masks, and other data.

Interface	Destination	Gateway	Mask	Flags	Metric
br1	192.168.2.0	0.0.0.0	255.255.255.0	U	0
LAN	192.168.1.0	0.0.0.0	255.255.255.0	U	0

*Figure 54. The **Status / Routing table** page.*

LAN Clients

On the **Status / LAN clients** page, you can view data on network devices connected to the router. The page displays devices connected to the wireless network of the router, devices connected to the built-in switch of the router, and devices accessing the web-based interface of the router.

*Figure 55. The **Status / LAN clients** page.*

For each device the following data are displayed: the IP address, the MAC address, and the interface to which the device is connected.

Net

In this menu you can configure basic parameters of the router's local area network and configure connection to the Internet (a WAN connection).

WAN

On the **Net / WAN** page, you can create and edit connections used by the router.
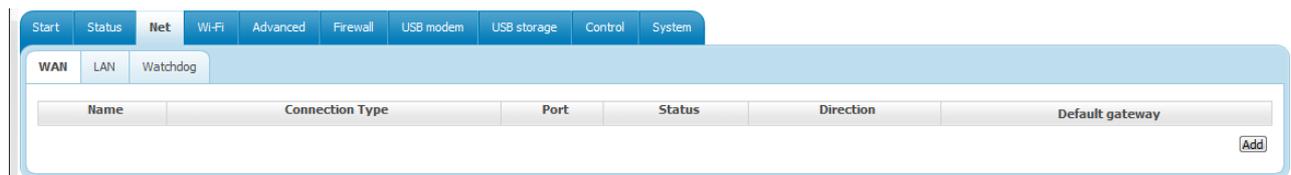
*Figure 56. The **Net / WAN** page.*

To create a new connection, click the **Add** button. On the page displayed, specify the relevant values.

To edit an existing connection, left-click the relevant line in the table. On the page displayed, change the parameters and click the **Save** button.

To delete an existing connection, left-click the relevant line in the table. On the page displayed, click the **Delete** button.

To use one of existing WAN connections as a default gateway, select the choice of the **Default gateway** radio button located in the line corresponding to this connection.

See an example of creating several connections in the *Creating Two Connections on One Channel* section, page 136.

Creating ADSL WAN Connection

General settings

Provider:	Manually
Connection Type:	Bridge
Port:	DSL(new)
Name:	bridge_0_35_2
Enable:	☑
Direction:	*WAN*

ATM

VPI (0-255):	0
VCI (32-65535):	35
Encapsulation Mode:	LLC
QoS:	UBR

VLAN

Allow to create several connections assigned to this port:	☐
Use VLAN:	☐

*Figure 57. The page for creating a new connection. The **General settings**, **ATM** and **VLAN** sections.*

Parameter	Description
General settings	
Provider	Leave the **Manually** value.
Connection Type	A type of network protocol to be used by the connection. Available values: • **PPPoE** • **PPPoA** • **IPoA** • **Static IP** • **Dynamic IP** • **Bridge.**
Port	A physical interface to which the new connection will be assigned. Leave the **DSL(new)** value to create a new interface at the physical layer.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
ATM	
VPI	Virtual Path Identifier. The valid range is from 0 to 250.
VCI	Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation Mode	Select **LLC** or **VC** from the drop-down list.
QoS	A class of traffic for this connection. **UBR** (*Unspecified Bit Rate*): The UBR service is used for applications that allow various delays and losses of packets. It is appropriate to use the UBR service for text/data/image transfer applications, as well as messaging, distribution, retrieval, and remote terminal applications. **UBR With PCR** (*Unspecified Bit Rate with Peak Cell Rate*): The UBR service is used for applications that allow various delays and losses of packets. The Peak Cell Rate is a determining factor in how often cells are

Parameter	Description
	sent in an effort to minimize lag or jitter caused by traffic inconsistencies. When you select this value from the drop-down list, the **Peak Cell Rate** field is displayed. Specify a required value (in cells per second).
	CBR
	(*Constant Bit Rate*): This service is used for applications that require a constant data rate. It is mostly used for transferring uncompressed audio and video, e.g. videoconferencing, interactive audio (telephony), audio/video distribution (television, distance education, e-shops), and retrieval (video-on demand, audio libraries). When you select this value from the drop-down list, the **Peak Cell Rate** field is displayed. Specify a required value (in cells per second).
	Non Realtime VBR
	(*Non-Real-time Variable Bit Rate*): This service can be used for transferring data that have critical response-time requirements, e.g. air ticket booking, bank transactions, and process monitoring. When you select this value from the drop-down list, the **Peak Cell Rate**, **Sustainable Cell Rate**, and **Maximum Burst Size** fields are displayed. Specify required values.
	Realtime VBR
	(*Real-time Variable Bit Rate*): This service is used for delay-sensitive applications such as real time video. The Rt-VBR provides higher network flexibility than the CBR service. When you select this value from the drop-down list, the **Peak Cell Rate**, **Sustainable Cell Rate**, and **Maximum Burst Size** fields are displayed. Specify required values.

The **VLAN** section is displayed for the **PPPoE**, **Static IP**, **Dynamic IP,** and **Bridge** connection types.

Parameter	Description
VLAN	
Allow to create several connections assigned to this port	Select the checkbox to allow the router to use several untagged connections.
Use VLAN	Select the checkbox to allow the router to use tagged VLAN connections.

Parameter	Description
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** checkbox is selected.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** checkbox is selected.

The **Miscellaneous** section is displayed for all connection types except for **Bridge**.

*Figure 58. The page for creating a new connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all computers of your LAN.
Firewall	Select the checkbox to enable protection against ARP and DDoS attacks.

The **PPP** section is displayed for the **PPPoE** and **PPPoA** connection types.

*Figure 59. The page for creating a new connection. The **PPP** section.*

Parameter	Description
PPP	
Username	A username (login) to access the Internet.
Without authorization	Select the checkbox if you don't need to enter a username and password to access the Internet.
Password	A password to access the Internet.
Password confirmation	The confirmation of the entered password (to avoid mistypes).
Service name	*Displayed for the **PPPoE** type only.* The name of the PPPoE authentication server.
Authentication algorithm	Select a required authentication method from the drop-down list or leave the **AUTO** value.
MTU	The maximum size of units transmitted by the interface.
Keep Alive	Select the checkbox if you want the router to keep you connected to your ISP even when the connection has been inactive for a specified period of time. When the checkbox is selected, the **LCP interval** and **LCP fails** fields are available. Specify the required values.

Parameter	Description
Dial on demand	Select the checkbox if you want the router to establish connection to the Internet on demand. In the **Maximum idle time** field, specify a period of inactivity (in seconds) after which the connection should be terminated.
PPP IP extension	This option is used by some ISPs. Contact your ISP to clarify if this checkbox needs to be enabled.
Use Static IP Address	Select the checkbox if you want to use a static IP address to access the Internet. In the **Static IP Address** field displayed when the checkbox is selected, specify a static IP address.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.
PPPoE pass through	*Displayed for the **PPPoE** type only.* Select the checkbox if you want to allow PPPoE clients of computers from your LAN to connect to the Internet through this PPPoE connection of the router.

The **IP** section is displayed for the **Static IP**, **Dynamic IP** and **IPoA** connection types.

IP
_____

IP Address: [   ]
Netmask: [   ]
Gateway IP address: [   ]

*Figure 60. The page for creating a new connection. The **IP** section.*

Parameter	Description
IP	
IP Address	*Displayed for the **Static IP** and **IPoA** types only.* Enter an IP address for this WAN connection.
Netmask	*Displayed for the **Static IP** and **IPoA** types only.* Enter a subnet mask for this WAN connection.
Gateway IP Address	*Displayed for the **Static IP** and **IPoA** types only.* Enter an IP address of the gateway used by this WAN connection.
Vendor ID	*Displayed for the **Dynamic IP** type only.* The identifier of your ISP. *Optional*.

When all needed settings are configured, click the **Save** button.

Creating Ethernet WAN Connection

Prior to creating an Ethernet WAN connection, specify a LAN port that will be used as the WAN port (see the *Interface Grouping* section, page 96).

*Figure 61. The page for creating a new connection. The **General settings** and **Ethernet** sections.*

Parameter	Description
General settings	
Provider	Leave the **Manually** value.
Connection Type	A type of network protocol to be used by the connection. Available values: • **PPPoE** • **Static IP** • **Dynamic IP** • **Bridge**.
Port	Select the value corresponding to the LAN port specified as the WAN port.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
Ethernet	
MTU	The maximum size of units transmitted by the interface.
MAC	A MAC address assigned to the interface.

Parameter	Description
VLAN (The section is displayed, if the **VLAN MUX Mode** choice of the **Ethernet WAN type** radio button is selected on the **Advanced / Interface grouping** page.)	
Allow to create several connections assigned to this port	If the checkbox is selected, the router is able to use several untagged connections.
Use VLAN	If the checkbox selected, the router is able to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** checkbox is selected.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** checkbox is selected.

The **Miscellaneous** section is displayed for all connection types except for **Bridge**.

*Figure 62. The page for creating a new connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all computers of your LAN.
Firewall	Select the checkbox to enable protection against ARP and DDoS attacks.

The **PPP** section is displayed for the **PPPoE** connection type.

*Figure 63. The page for creating a new connection. The **PPP** section.*

Parameter	Description
PPP	
Username	A username (login) to access the Internet.
Without authorization	Select the checkbox if you don't need to enter a username and password to access the Internet.
Password	A password to access the Internet.
Password confirmation	The confirmation of the entered password (to avoid mistypes).
Service name	The name of the PPPoE authentication server.
Authentication algorithm	Select a required authentication method from the drop-down list or leave the **AUTO** value.
MTU	The maximum size of units transmitted by the interface.
Keep Alive	Select the checkbox if you want the router to keep you connected to your ISP even when the connection has been inactive for a specified period of time. When the checkbox is selected, the **LCP interval** and **LCP fails** fields are available. Specify the required values.

Parameter	Description
Dial on demand	Select the checkbox if you want the router to establish connection to the Internet on demand. In the **Maximum idle time** field, specify a period of inactivity (in seconds) after which the connection should be terminated.
PPP IP extension	This option is used by some ISPs. Contact your ISP to clarify if this checkbox needs to be enabled.
Use Static IP Address	Select the checkbox if you want to use a static IP address to access the Internet. In the **Static IP Address** field displayed when the checkbox is selected, specify a static IP address.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.
PPPoE pass through	Select the checkbox if you want to allow PPPoE clients of computers from your LAN to connect to the Internet through this PPPoE connection of the router.

The **IP** section is displayed for the **Static IP** and **Dynamic IP** connection types.

*Figure 64. The page for creating a new connection. The **IP** section.*

Parameter	Description
IP	
IP Address	*Displayed for the **Static IP** type only.* Enter an IP address for this WAN connection.
Netmask	*Displayed for the **Static IP** type only.* Enter a subnet mask for this WAN connection.
Gateway IP Address	*Displayed for the **Static IP** type only.* Enter an IP address of the gateway used by this WAN connection.
Vendor ID	*Displayed for the **Dynamic IP** type only.* The identifier of your ISP. *Optional*.

When all needed settings are configured, click the **Save** button.

Creating 3G WAN Connection

If the PIN code check is enabled for the SIM card inserted into your USB modem, then prior to creating a 3G WAN connection, proceed to the **USB modem** menu and enter the PIN code on the page displayed (see the *USB Modem* section, page 116). Then proceed to the **Net / WAN** page, click the **Add** button, and select the **3G** value from the **Connection Type** drop-down list.

*Figure 65. The page for creating a new connection. The **General settings** and **3G** sections.*

Parameter	Description
General settings	
Provider	To automatically specify all settings required to connect to the Internet, select your country and operator from the drop-down list. To specify all settings independently, leave the **Manually** value.
Port	Select the **usb** value.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
3G	
Mode	The value of the field specifies the type of the network to which the router connects. Leave the **auto** value to let the router connect automatically to an available type of network, or select a needed value from the drop-down list. *For GSM USB modems only.*

*Figure 66. The page for creating a new connection. The **PPP** and **Miscellaneous** sections.*

Parameter	Description
PPP	
Username	A username (login) to connect to the network of the operator.
Without authorization	Select the checkbox if your operator does not require authorization.
Password	A password to connect to the network of the operator.
Password confirmation	The confirmation of the entered password (to avoid mistypes).
APN	An access point name.
Dial number	A number dialed to connect to the authorization server of the operator.
Authentication algorithm	Select a required authentication method from the drop-down list or leave the **AUTO** value.
MTU	The maximum size of units transmitted by the interface. *Optional*.

Parameter	Description
Keep Alive	Select the checkbox if you want the router to keep you connected to the network of your operator even when the connection has been inactive for a specified period of time. When the checkbox is selected, the **LCP interval** and **LCP fails** fields are available. Specify the required values.
Dial on demand	Select the checkbox if you want the router to establish connection to the Internet on demand. In the **Maximum idle time** field, specify a period of inactivity (in seconds) after which the connection should be terminated.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.
Miscellaneous	
Enable IGMP Multicast	Select the checkbox to allow multicast traffic from the external network (e.g. video streaming) to be received.
NAT	Select the checkbox if you want one WAN IP address to be used for all computers of your LAN.
Firewall	Select the checkbox to enable protection against ARP and DDoS attacks.

When all needed settings are configured, click the **Save** button.

LAN

To configure the router's local interface, proceed to the **Net / LAN** page.

Figure 67. The page for configuring the local interface.

If needed, edit the basic parameters of the local interface.

Parameter	Description
IP Address	The IP address of the router in the local subnet. By default, the following value is specified: `192.168.1.1`.
Netmask	The mask of the local subnet. By default, the following value is specified: `255.255.255.0`.
IGMP snooping	The IGMP snooping function provides management of multicast traffic in the LAN. Select the needed choice of the radio button: **Blocking**: the router does not let multicast traffic pass to the LAN. **Standard**: the router lets multicast traffic pass to the LAN devices which request such traffic. *Recommended for better performance of the LAN.* **Off**: the router lets multicast traffic pass to all devices from the LAN. *Default value.*

When needed settings are configured, click the **Save** button.

In the **Static DHCP** section, you can specify MAC address and IP address pairs (set a fixed IP address in the local area network for a device with a certain MAC address). The router assigns IP addresses in accordance with the specified pairs only when the DHCP server is enabled (in the **DHCP server** section, in the **Mode** drop-down list, the **Enable** value is selected).

To create a MAC-IP pair, click the **Add** button and specify the following parameters:

Parameter	Description
IP address	An IP address which will be assigned to the device with the specified MAC address.
MAC address	The MAC address of the device from the LAN.

When all needed MAC-IP pairs are specified, click the **Save** button.

Existing MAC-IP pairs are displayed in the table of the **Static DHCP** section. To remove a pair, select the relevant line in the table and click the **Remove** button. Then click the **Save** button.

In the **DHCP server** section, you can configure the built-in DHCP sever of the router.

Parameter	Description
Mode	An operating mode of the router's DHCP server. **Enable**: the router assigns IP addresses to clients automatically in accordance with the specified parameters. When this value is selected, the **Start IP**, **End IP**, and the **Lease time** fields are displayed on the page. **Disable**: the router's DHCP server is disabled, clients' IP addresses are assigned manually. **Relay**: an external DHCP server is used to assign IP addresses to clients. When this value is selected, the **External DHCP server IP** field is displayed on the page.
Start IP	The start IP address of the address pool used by the DHCP server to distribute IP addresses to clients.
End IP	The end IP address of the address pool used by the DHCP server to distribute IP addresses to clients.
Lease time	The lifetime of IP addresses leased by the DHCP server. At the end of this period the leased IP address is revoked and can be distributed to another device, unless the previous device has confirmed the need to keep the address.
External DHCP server IP	The IP address of the external DHCP server which assigns IP addresses to the router's clients.

When all needed settings are configured, click the **Save** button.

Watchdog

On the **Net / Watchdog** page, you can enable the WAN backup function, which provides you with uninterrupted access to the Internet. When your main connection breaks down, the router activates the backup connection; and when the main channel is recovered, the router switches to it and disconnects the reserve one.
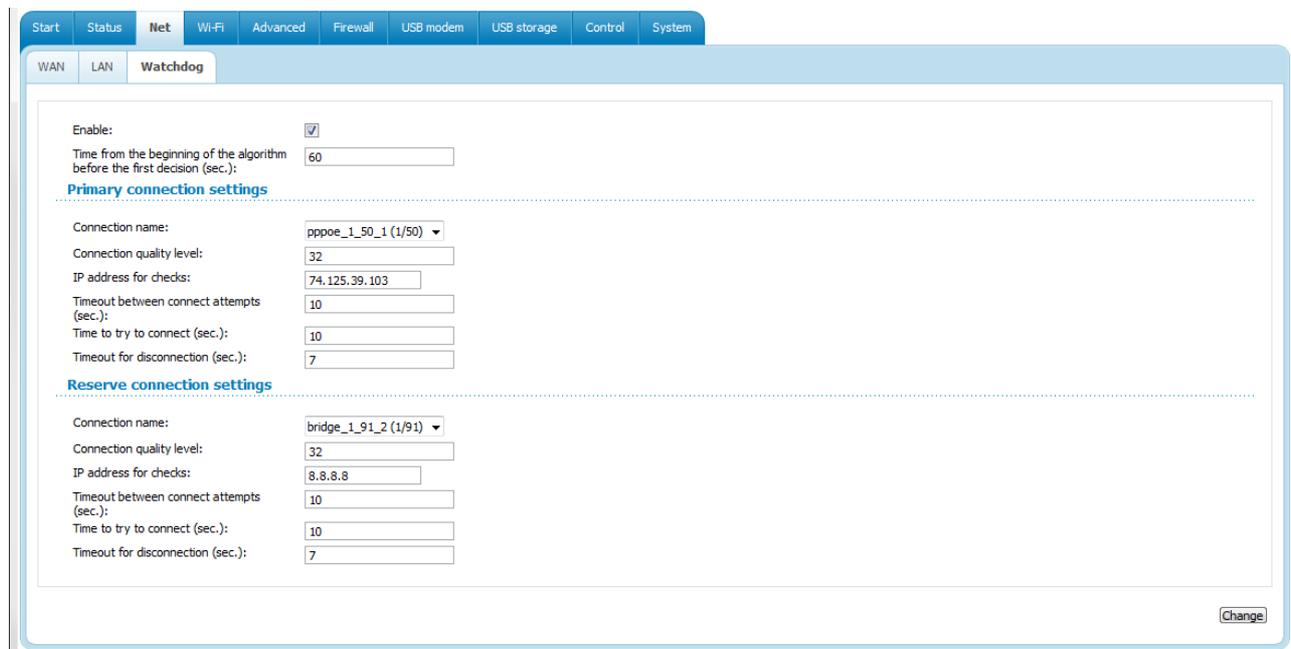
*Figure 68. The **Net / Watchdog** page.*

To activate the backup function, on the **Net / WAN** page, create the main WAN connection and enable it (select the **Enable** checkbox on the page for creating the connection). Then create the reserve WAN connection and disable it (deselect the **Enable** checkbox on the page for creating the connection). After that proceed to the **Net / Watchdog** page, select the **Enable** checkbox and specify the needed values in the fields displayed on the page.

Parameter	Description
Time from the beginning of the algorithm before the first decision	A time period (in seconds) during which the router's internal system analyzes the main connection and makes a decision to enable/disable the reserve channel. By default, the value `60` is specified.
Primary connection settings	
Connection name	From the drop-down list, select a WAN connection which will be used as the main one.
Connection quality level	The minimum quality of the main connection when the router considers the connection as active. Possible values are from `0` to `255`. By default, the value `32` is specified.

Parameter	Description
IP address for checks	An IP address that the router will check for availability via ICMP ping mechanism.
Timeout between connect attempts	A time period (in seconds) between attempts to establish the main connection. By default, the value `10` is specified.
Time to try to connect	A time period (in seconds) for an attempt to establish the main connection. By default, the value `10` is specified.
Timeout for disconnection	A time period (in seconds) for an attempt to break the main connection. By default, the value `7` is specified.
Reserve connection settings	
Connection name	From the drop-down list, select a WAN connection which will be used as the reserve one.
Connection quality level	The minimum quality of the reserve connection when the router considers the connection as active. Possible values are from `0` to `255`. By default, the value `32` is specified.
IP address for checks	An IP address that the router will check for availability via ICMP ping mechanism.
Timeout between connect attempts	A time period (in seconds) between attempts to establish the reserve connection. By default, the value `10` is specified.
Time to try to connect	A time period (in seconds) for an attempt to establish the reserve connection. By default, the value `10` is specified.
Timeout for disconnection	A time period (in seconds) for an attempt to break the reserve connection. By default, the value `7` is specified.

When all needed settings are configured, click the **Change** button.

Wi-Fi

In this menu you can specify all needed settings for your wireless network.

Common settings

On the **Wi-Fi / Common settings** page, you can enable your wireless local area network (WLAN).
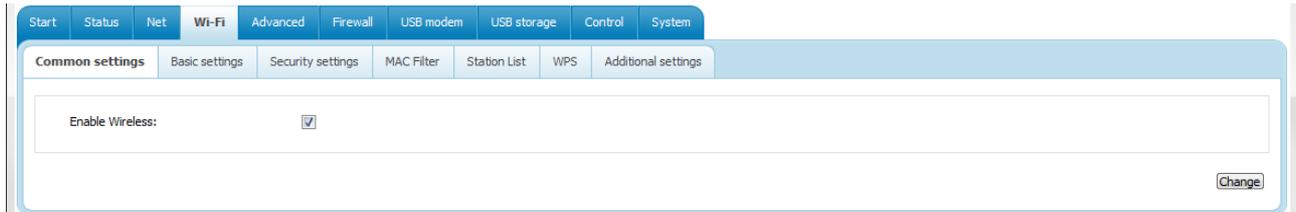
Figure 69. The page for enabling/disabling the wireless LAN.

The **Enable Wireless** checkbox enables Wi-Fi connections. By default, the checkbox is selected. If you want to disable your WLAN, deselect the **Enable Wireless** checkbox and click the **Change** button.

Basic Settings

On the **Wi-Fi / Basic settings** page, you can configure basic parameters of the router's WLAN.
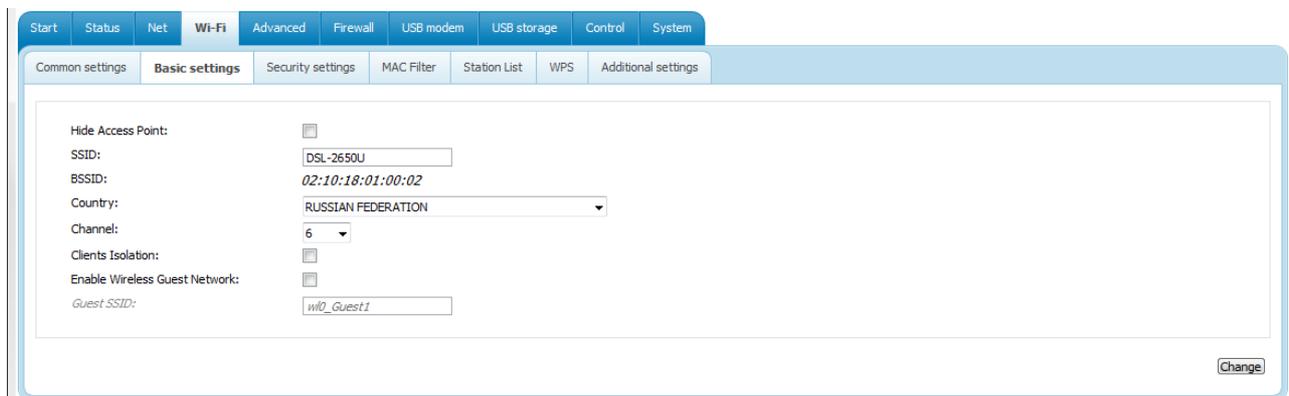
Figure 70. Basic settings of the wireless LAN.

Parameter	Description
Hide Access Point	If the checkbox is selected, other users cannot see your Wi-Fi network. (It is recommended not to select this checkbox in order to simplify initial configuration of your WLAN.)
SSID	A name for the WLAN. By default, the value `DSL-2650U` is specified. It is recommended to specify another name for the network upon initial configuration (use digits and Latin characters).
BSSID	The parameter that uniquely identifies your wireless network. You cannot change the value of this parameter.
Country	The country you are in. Select a value from the drop-down list.
Channel	The wireless channel number. By default, channel 6 is specified. If you want to use another channel, select a value from the drop-down list. When the **auto** value is selected, the router itself chooses the channel with the least interference.
Clients Isolation	Select the checkbox to isolate the users of your WLAN (to forbid wireless clients to communicate to each other).
Enable Wireless Guest Network	Select the checkbox to create a separate part of your WLAN with open authentication type and with no password. Wireless devices connected to this network can access the Internet, but are isolated from the router's LAN.
Guest SSID	A name for the guest part of your WLAN.

When you have configured the parameters, click the **Change** button.

Security Settings

On the **Wi-Fi / Security settings** page, you can modify security settings of the WLAN.
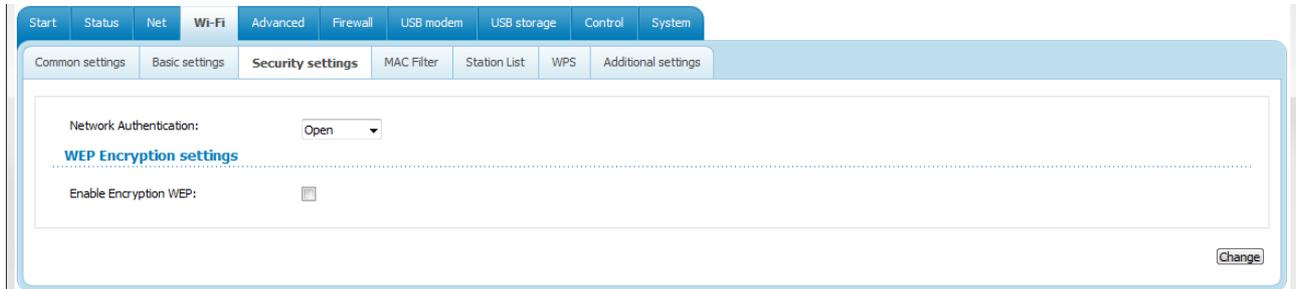
Figure 71. The default security settings.

By default, the **Open** network authentication type with no encryption is specified for the WLAN.

> ! The default security settings do not provide sufficient protection for the WLAN. Please, specify your own security settings.

The router supports the following authentication types:

Authentication type	Description
Open	Open authentication (with or without WEP encryption).
WPA-PSK	WPA-based authentication using a PSK.
WPA2-PSK	WPA2-based authentication using a PSK.

When the **Open** value is selected, the **WEP Encryption settings** section is displayed:

*Figure 72. The **Open** value is selected from the **Network Authentication** drop-down list.*

Parameter	Description
Enable Encryption WEP	The checkbox activating WEP encryption. When the checkbox is selected, the **Encryption Key WEP (1)** field and the **Encryption Key WEP as HEX** checkbox are displayed.
Encryption Key WEP as HEX	Select the checkbox to set a hexadecimal number as a key for encryption.
Encryption Key WEP (1)	The key for WEP encryption. You can specify keys containing 5 or 13 symbols (use digits and/or Latin characters). If the **Encryption Key WEP as HEX** checkbox is selected, you can specify only keys containing 10 symbols (the digits 0-9 and the characters A-F).

When the **WPA-PSK** or **WPA2-PSK** value is selected, the **WPA Encryption settings** section is displayed:

*Figure 73. The **WPA2-PSK** value is selected from the **Network Authentication** drop-down list.*

Parameter	Description
Encryption Key PSK	A key for WPA encryption. The key can contain digits and/or Latin characters.
WPA2 Pre-authentication	The checkbox activating preliminary authentication (displayed only for the **WPA2-PSK** authentication type).
WPA Encryption	An encryption method: **TKIP**, **AES**, or **TKIP+AES**.
WPA renewal	The time period (in seconds), at the end of which a new key for WPA encryption is generated. When the value **0** is specified for this field, the key is not renewed.

When you have configured the parameters, click the **Change** button.

MAC Filter

On the **Wi-Fi / MAC Filter** page, you can define a set of MAC addresses of devices which will be allowed to access the WLAN, or define MAC addresses of devices which will not be allowed to access the WLAN.
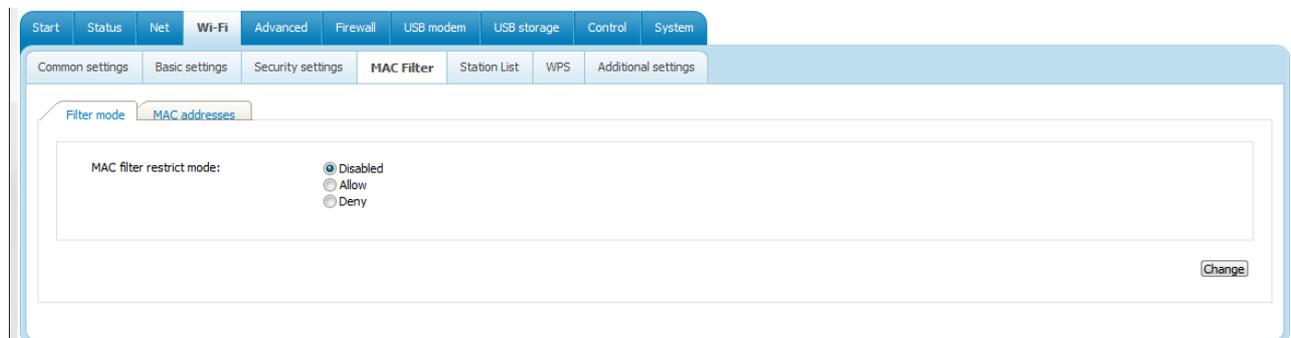
Figure 74. The MAC filter for the wireless network.

By default, MAC filtering is not active (the **Disabled** choice of the **MAC filter restrict mode** radio button is selected).

To open your wireless network for the devices which MAC addresses are specified on the **MAC addresses** tab and to close the wireless network for all other devices, select the **Allow** choice of the **MAC filter restrict mode** radio button and click the **Change** button.

To close your wireless network for the devices which MAC addresses are specified on the **MAC addresses** tab, select the **Deny** choice of the **MAC filter restrict mode** radio button and click the **Change** button.

To add a MAC address to which the selected filtering mode will be applied, proceed to the **MAC addresses** tab.
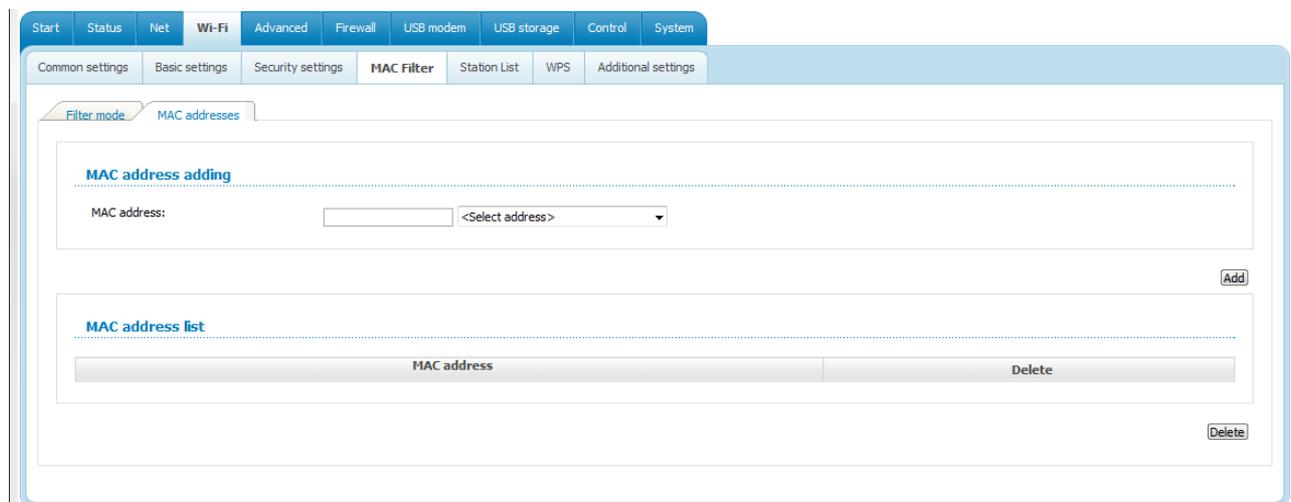
Figure 75. The tab for adding a MAC address.

Enter an address in the **MAC address** field of the **MAC address adding** section, and click the **Add** button.

To add the MAC address of a device connected to the router's LAN at the moment, select the value containing the MAC and IP address of this device from the drop-down list located to the right of the **MAC address** field (the field will be filled in automatically) and click the **Add** button.

To remove a MAC address from the list of MAC addresses, select the checkbox located to the right of the relevant MAC address in the MAC address list section and click the **Delete** button.

Station List

On the **Wi-Fi / Station List** page, you can view the list of wireless devices connected to the router.
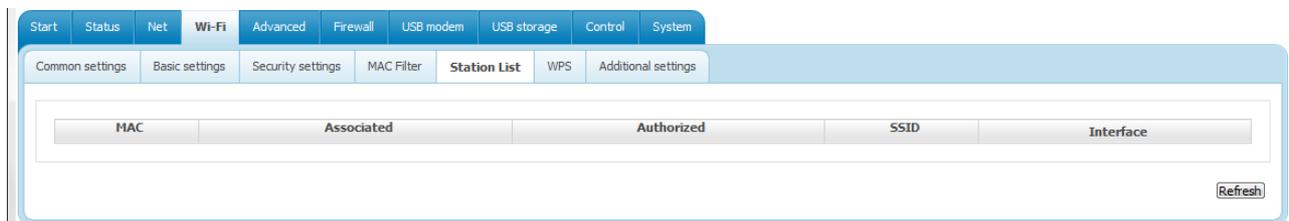
Figure 76. The list of the router's wireless clients.

To view the latest data on the devices connected to the WLAN, click the **Refresh** button.

WPS

On the **Wi-Fi / WPS** page, you can enable the function for secure configuration of the WLAN and select a method used to easily add wireless devices to the WLAN.

The WPS function helps to configure the protected wireless network automatically. Devices connecting to the wireless network via the WPS function must support the WPS function.

! Before using the function you need to configure one of the following authentication types: **Open** with no encryption, **WPA-PSK** or **WPA2-PSK** with the **AES** or **TKIP+AES** encryption method (on the **Wi-Fi / Security settings** page).

Figure 77. The page for configuring the WPS function.

To activate the WPS function, select the **WPS Enable** checkbox and click the **Change** button. When the checkbox is selected, the **Information** and **Connection** sections are available on the page.

Parameter	Description
WPS Status	The state of the WPS function: • **Configured** (all needed settings are specified) • **Unconfigured** (you need to specify the relevant settings).
SSID	The name of the router's WLAN.
Network Authentication	The network authentication type specified for the WLAN.
Encryption	The encryption type specified for the WLAN.
Device PIN	The PIN code of the router. This parameter is used when connecting the router to a registrar to set the parameters of the WPS function.
Client PIN	The PIN code of the device newly connected to the router via the WPS function.
WPS Method	A method of the WPS function. Select a value from the drop-down list. **PIN**: Connecting the device via the PIN code. **PBC**: Connecting the device via the push button (actual or virtual).
PIN Code	The PIN code of the WPS-enabled device that needs to be connected to the wireless network of the router. The field is displayed only when the **PIN** value is selected from the **WPS Method** drop-down list.
Connect	Click the button to connect the wireless device to the router's WLAN via the WPS function.

Using WPS Function via Web-based Interface

To add a wireless device via the PIN method of the WPS function, follow the next steps:

1. Select the **WPS Enable** checkbox.

2. Click the **Change** button.

3. Select the **PIN** value from the **WPS Method** drop-down list.

4. Select the PIN method in the software of the wireless device that you want to connect to the router's WLAN.

5. Click the relevant button in the software of the wireless device that you want to connect to the WLAN.

6. Right after that, enter the PIN code specified on the cover of the wireless device or in its software in the **PIN Code** field.

7. Click the **Connect** button in the web-based interface of the router.

To add a wireless device via the PBC method of the WPS function, follow the next steps:

1. Select the **WPS Enable** checkbox.

2. Click the **Change** button.

3. Select the **PBC** value from the **WPS Method** drop-down list.

4. Select the PBC method in the software of the wireless device that you want to connect to the router's WLAN.

5. Click the relevant button in the software or press the WPS button on the cover of the wireless device that you want to connect to the WLAN.

6. Click the **Connect** button in the web-based interface of the router.

Using WPS Function without Web-based Interface

You can add a wireless device to the router's WLAN without accessing the web-based interface of the router. To do this, you need to configure the following router's settings:

1. Specify corresponding security settings for the wireless network of the router.

2. Select the **WPS Enable** checkbox.

3. Click the **Change** button.

4. Save the settings and close the web-based interface (click the **Save** line in the top-page menu displayed when the mouse pointer is over the **System** caption, then click the **Logout** line).

Later you will be able to add wireless devices to the WLAN by pressing the **WPS** button of the router.

1. Select the PBC method in the software of the wireless device that you want to connect to the router's WLAN.

2. Click the relevant button in the software or press the WPS button on the cover of the wireless device that you want to connect to the WLAN.

3. Press the **WPS** button of the router.

After clicking the button the **WPS** LED blinks. If the wireless device has been successfully connected to the WLAN, the LED stops blinking and lights green for several minutes.

Additional Settings

On the **Wi-Fi / Additional settings** page, you can define additional parameters for the router's WLAN.

> ❗ Changing parameters presented on this page may negatively affect your WLAN!

Figure 78. Additional settings of the WLAN.

The following fields are available on the page:

Parameter	Description
Beacon Period	The time interval (in milliseconds) between packets sent to synchronize the wireless network.
RTS Threshold	The minimum size (in bites) of a packet for which an RTS frame is transmitted.
Frag Threshold	The maximum size (in bites) of a non-fragmented packet. Larger packets are fragmented (divided).
DTIM Period	The time period (in seconds) between sending a DTIM (a message notifying on broadcast or multicast transmission) and data transmission.
TX Power	The router's transmit power (in percentage terms).
Bandwidth	Channel bandwidth for 802.11n devices. *DSL-2650U supports 20MHz channels only*.
TX Preamble	This parameter defines the length of the CRC block sent by the router when communicating to wireless devices. Select a value from the drop-down list. **Long Preamble**. **Short Preamble** (this value is recommended for networks with high-volume traffic).

When you have configured the parameters, click the **Change** button.

Advanced

In this menu you can configure advanced settings of the router:

- enable and configure the SNMP agent

- enable the UPnP function

- define interface groups and allow the router to connect to a private Ethernet line

- configure a DDNS service

- add name servers

- define static routes

- allow the router to use RIP

- edit the ADSL connection parameters

- create rules for remote access to the web-based interface.

SNMP

On the **Advanced / SNMP page**, you can enable and configure the SNMP agent. The agent is used to collect data on the state of the router and manage the device via the SNMP protocol.

*Figure 79. The **Advanced / SNMP** page.*

To allow the router to use the SNMP agent, select the **Enable/Disable SNMP** checkbox and set the needed values in the fields on the page.

Parameter	Description
Read-only access community name	The name of the group of accounts which have read-only access to the router.
Read-write access community name	The name of the group of accounts which have read/write access to the router.
System name	A name of the router for the SNMP manager.
System location	Additional information on the router's location.
The contact information for the administrator	Additional information on the contact of the router's administrator.
IP address	The IP address of the host on which the SNMP manager is located.

When you have specified the needed settings, click the **Change** button.

To disable the SNMP agent, deselect the **Enable/Disable SNMP** checkbox.

UPnP

On the **Advanced / UPnP** page, you can enable and disable the UPnP function.

UPnP is a set of networking protocols designed for automatic configuration of network devices. The UPnP function performs automatic configuration of the device's parameters for network applications requiring an incoming connection to the router.
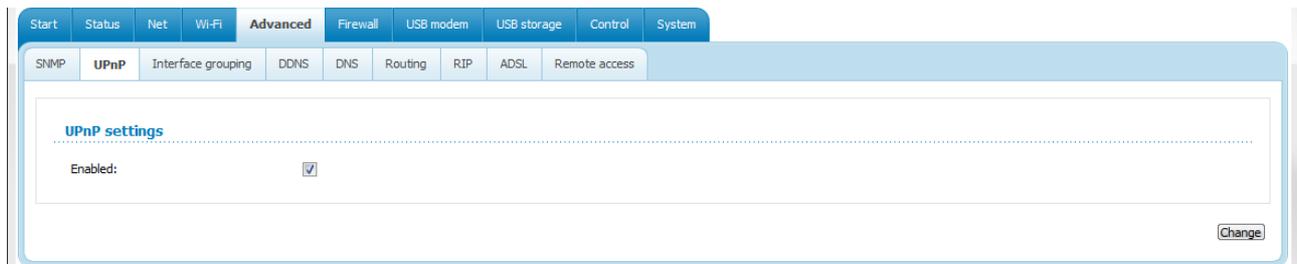
*Figure 80. The **Advanced / UPnP** page.*

If you want to manually specify all parameters needed for network applications, deselect the **Enabled** checkbox and click the **Change** button.

If you want to enable the UPnP function in the router, select the **Enabled** checkbox and click the **Change** button.

Interface Grouping

On the **Advanced / Interface grouping** page, you can assign virtual PVC connections to the router's ports (create groups of interfaces), which allows distinguishing different types of traffic. This function is mostly used in Triple-play networks. Also on the page you can configure the router to connect to a private Ethernet line.

> ❗ The Ethernet WAN function allows using any Ethernet port of the router to access the Internet via Ethernet technology. When the function is enabled, the router is still able to access the Internet via ADSL technology.
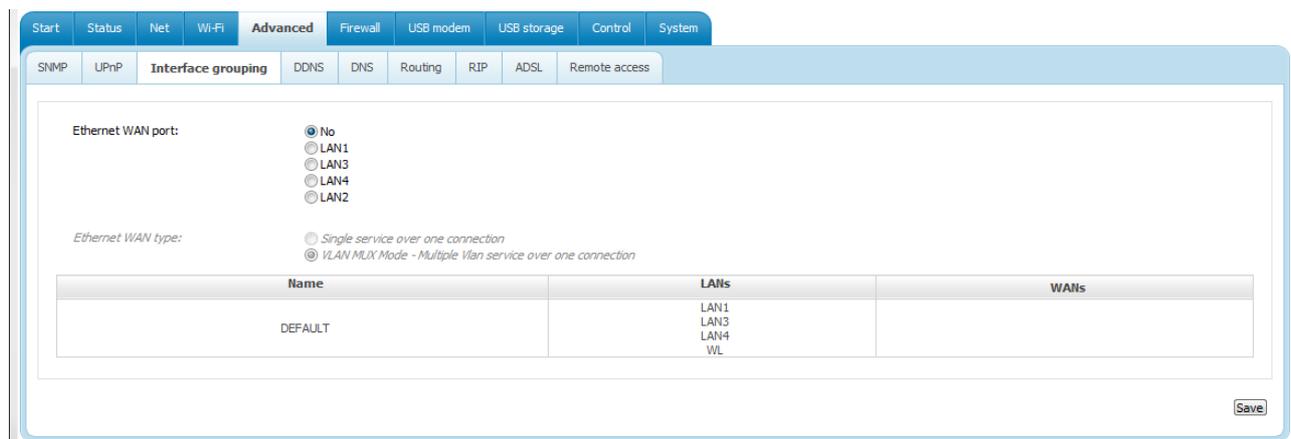
*Figure 81. The **Advanced / Interface grouping** page.*

To enable the Ethernet WAN function, follow the steps below.

1. Select the choice corresponding to the LAN port that will be used as the WAN port of the **Ethernet WAN port** radio button.

2. If you need to assign one or more tagged VLAN connections or several untagged connections to the created Ethernet WAN interface, select the **VLAN MUX Mode** choice of the **Ethernet WAN type** radio button.

3. Click the **Save** button.

To create a new rule for interface grouping (a group of ports), click the **Add group** button (the button is not displayed if there is no WAN connection in the system).
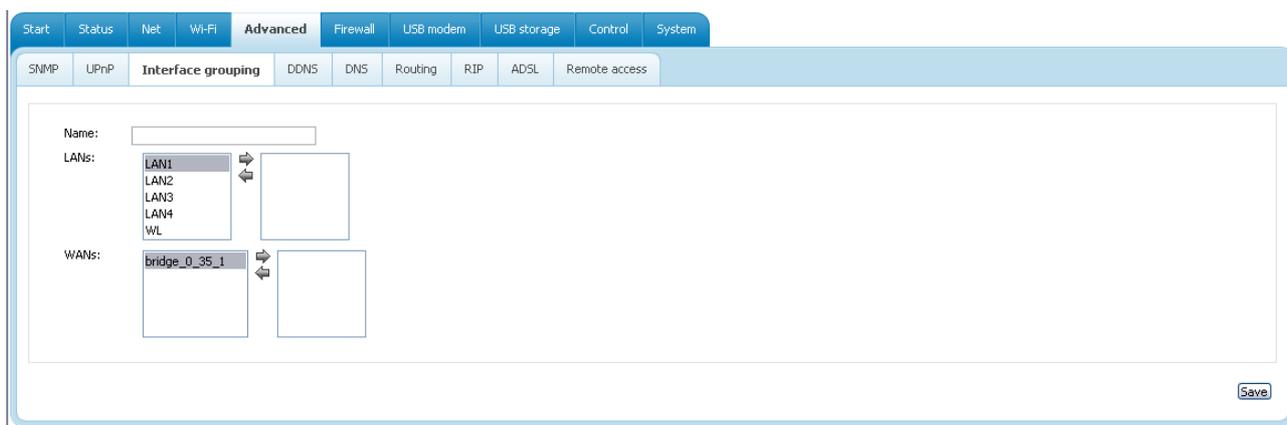
Figure 82. The page for adding a new group of ports.

You can specify the following parameters:

Parameter	Description
Name	A name for the group for easier identification. You can specify any name.
LANs	The list of available internal interfaces is displayed in the left column of the line. Use the button ==> to select interfaces. The selected interfaces will be displayed in the right column of the field.
WANs	WAN connections to which the new group will be assigned. *WAN connections of PPPoA and IPoA type cannot be added to groups.* Use the button ==> to select WAN connections. The selected connections will be displayed in the right column of the field.

Click the **Save** button.

> **!** When you add an interface to the new group, it is excluded from the group to which it has been assigned before.

To edit or remove an existing group, select the relevant group on the **Advanced / Interface grouping** page. On the page displayed, change the parameters and click the **Save** button, or click the **Delete** button. When you delete a group, interfaces assigned to it are reassigned to the **DEFAULT** group.

DDNS

On the **Advanced / DDNS** page, you can define parameters of the DDNS service, which allows associating a domain name with dynamic IP addresses.

*Figure 83. The **Advanced / DDNS** page.*

To add a new DDNS service, click the **Add** button.
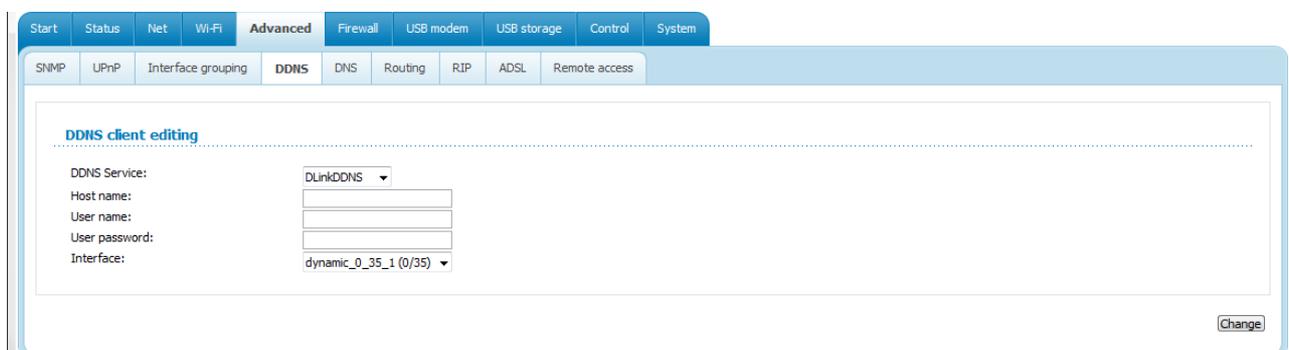
Figure 84. The page for editing a DDNS service.

You can specify the following parameters:

Parameter	Description
DDNS Service	Select a DDNS provider from the drop-down list.
Host name	The domain name registered at your DDNS provider.
User name	The username to authorize for your DDNS provider.
User password	The password to authorize for your DDNS provider.
Interface	Select a WAN connection which IP address will be used to access the DDNS service.

Click the **Change** button.

To edit parameters of the existing DDNS service, click the relevant service link. On the opened page, change the needed parameters and click the **Change** button.

To remove an existing DDNS service, click the relevant service link. On the opened page, click the **Delete** button.

DNS

On the **Advanced / DNS** page, you can add DNS servers to the system.
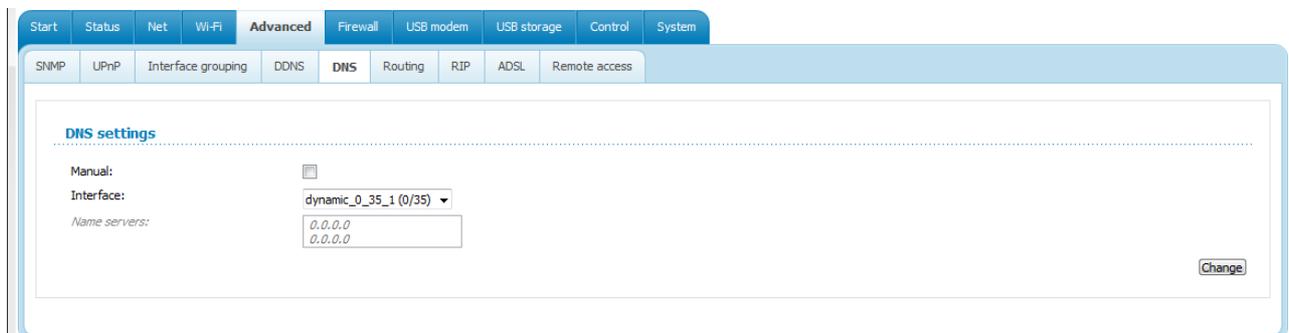
*Figure 85. The **Advanced / DNS** page.*

DNS servers are used to determine the IP address from the name of a server in Intranets or the Internet (as a rule, they are specified by an ISP or assigned by a network administrator).

The device performs the DNS relay function, i.e., it redirects the DNS requests of users to external DNS servers. You can specify the addresses of DNS servers manually on this page, or configure the router to obtain DNS servers addresses automatically from your ISP upon installing a connection.

> **!** When you use the built-in DHCP server, the network parameters (including DNS servers) are distributed to clients automatically.

If you want to configure automatic obtainment of DNS servers addresses, deselect the **Manual** checkbox, select a WAN connection which will be used to obtain addresses of DNS servers automatically from the **Interface** drop-down list, and click the **Change** button.

If you want to specify the DNS server manually, select the **Manual** checkbox and enter a DNS server address in the **Name servers** list. To specify several addresses, press the **Enter** key and enter a needed address in the next line. Then click the **Change** button.

To remove a DNS server from the system, remove the relevant line from the **Name servers** field and click the **Change** button.

Routing

On the **Advanced / Routing** page, you can add static routes (routes for networks that are not connected directly to the device but are available through the interfaces of the device) into the system.
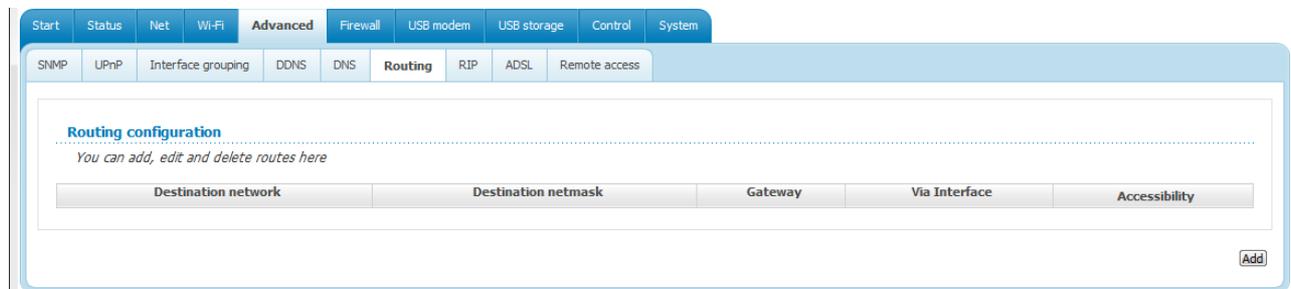
*Figure 86. The **Advanced / Routing** page.*

To create a new route, click the **Add** button.

Figure 87. The page for adding a static route.

You can specify the following parameters:

Parameter	Description
Destination network	A destination network to which this route is assigned.
Destination netmask	The destination network mask.
Gateway	An IP address through which the destination network can be accessed. The field is displayed when the **<Auto>** value is selected from the **Via Interface** drop-down list.
Metric	A metric for the route. The lower the value, the higher is the route priority. *Optional*.
Via Interface	Select an interface (connection) through which the destination network can be accessed from the drop-down list. If you have selected the **<Auto>** value of this drop-down list, the router itself sets the interface on the basis of data on connected networks.

Click the **Save** button.

To edit an existing route, select the needed route in the table. On the opened page, change the needed parameters and click the **Save** button.

To remove an existing route, select the needed route in the table. On the opened page, click the **Delete** button.

If you need to specify a host from the LAN as the default route, select the **<Auto>** value from the **Via Interface** drop-down list, enter `0.0.0.0` in the **Destination network** and **Destination netmask** fields, enter the IP address of the host from the LAN in the **Gateway** field, and then click the **Save** button.

RIP

On the **Advanced / RIP** page, you can enable RIP.

RIP is a routing protocol designed for automatic update of the routing table on the basis of the network status information.

You can allow the router to apply RIP for the local interface and WAN connections available on this page and specify a version of the protocol and an operating mode of the router.
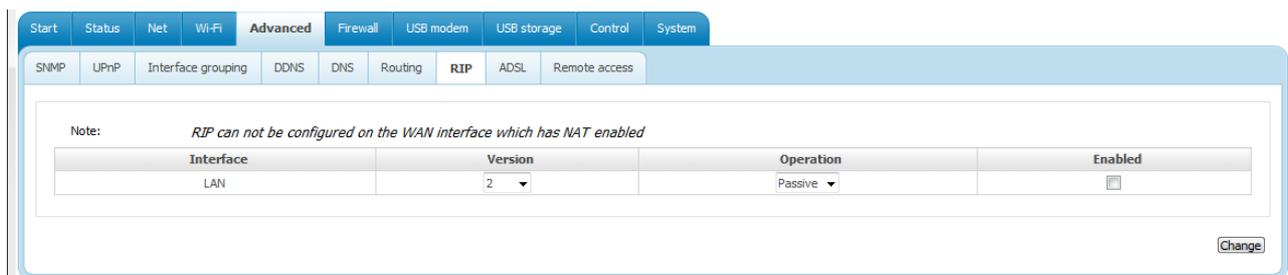
*Figure 88. The **Advanced / RIP** page.*

To configure application of RIP for the local interface (the **LAN** connection) or a specific WAN connection, in the line corresponding to this connection, specify the following parameters.

1. In the **Version** drop-down list, select a version of RIP which is used by the devices or your network. Select the **Both** value to allow the router to use both the first and the second versions of RIP.

2. In the **Operation** drop-down list, select an operating mode for the router: **Active** (the router provides data on routes to other devices in the network, receives such data, and updates its routing table) or **Passive** (the router only receives data on routes and updates its routing table).

3. Select the **Enabled** checkbox.

4. Click the **Change** button.

To disallow application of RIP for a specific connection, in the line corresponding to this connection, deselect the **Enabled** checkbox and click the **Change** button.

ADSL

The **Advanced / ADSL** page includes the set of ADSL standards that should be defined by an ISP. Contact your ISP to set proper parameters. Select the relevant options and click the **Change** button.
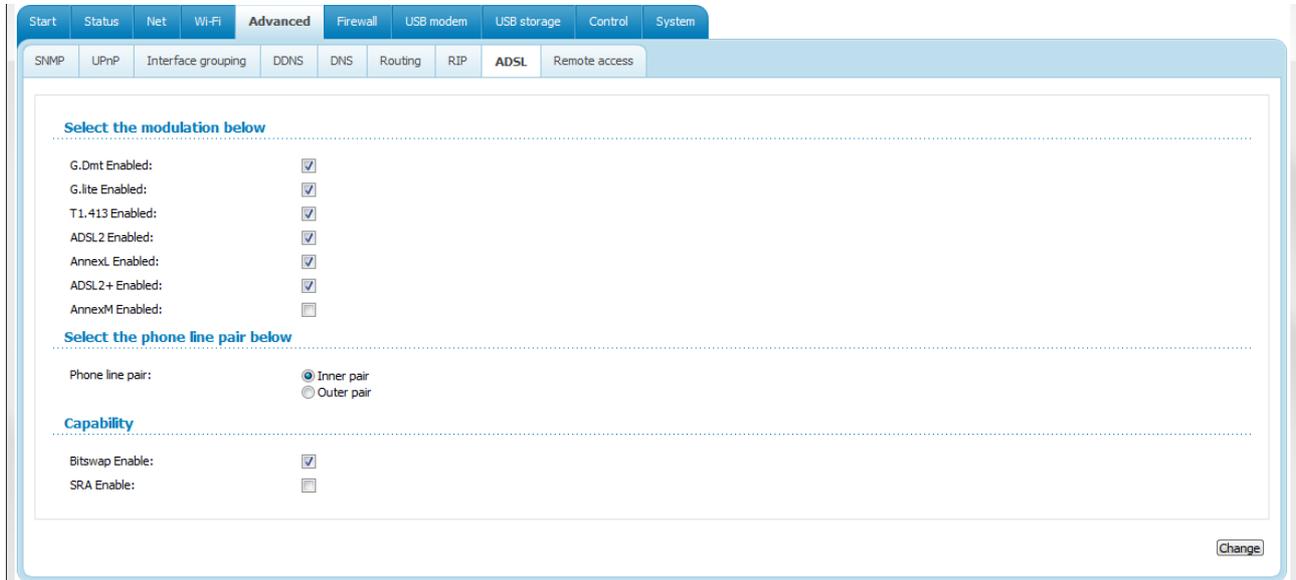
*Figure 89. The **Advanced / ADSL** page.*

Remote Access

On the **Advanced / Remote access** page, you can configure remote access to the web-based interface of the router. By default, the access from external networks to the router is closed. If you need to allow access to the router from the external network, create relevant rules.

*Figure 90. The **Advanced / Remote access** page.*

To create a new rule, click the **Add** button.
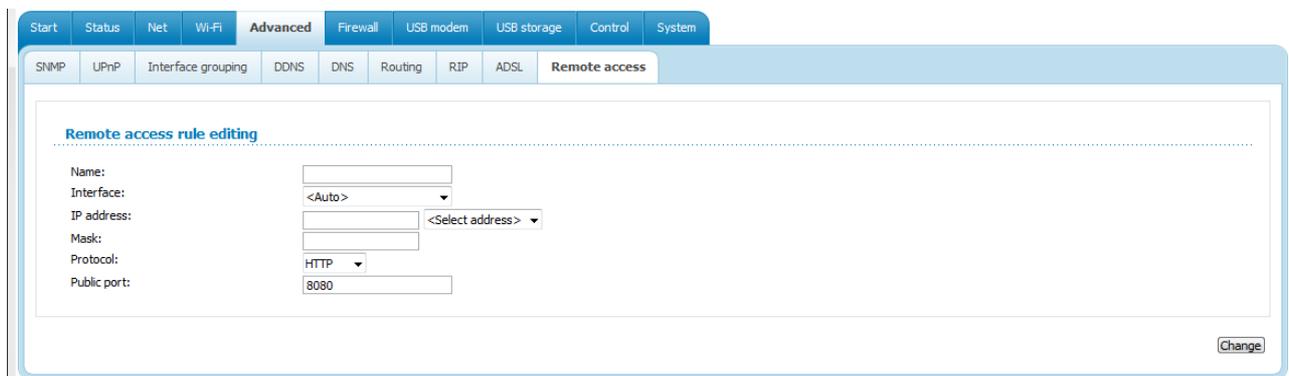
Figure 91. The page for adding a rule for remote management.

You can specify the following parameters:

Parameter	Description
Name	A name for the rule for easier identification. You can specify any name.
Interface	A connection through which the web-based interface of the router is accessed.
IP address	A host or a subnet to which the rule is applied. To choose a device connected to the router's LAN at the moment, select the relevant value from the drop-down list located to the right of the field (the field will be filled in automatically).
Mask	The mask of the subnet.
Protocol	The protocol available for remote management of the router.

Parameter	Description
Public port	An external port of the router. You can specify only one port. The field is displayed when the **HTTP** value is selected from the **Protocol** drop-down list.

Click the **Change** button.

To edit a rule for remote access, click the relevant link. On the opened page, change the needed parameters and click the **Change** button.

To remove a rule for remote access, click the relevant link. On the opened page, click the **Delete** button.

Firewall

In this menu you can configure the firewall of the router:

- add rules for IP filtering

- create virtual servers

- define a DMZ

- configure the Port Triggering function

- configure the MAC filter.

IP Filters

On the **Firewall / IP filters** page, you can create new rules for filtering IP packets and edit or remove existing rules.

*Figure 92. The **Firewall / IP filters** page.*

To create a new rule, click the **Add** button.
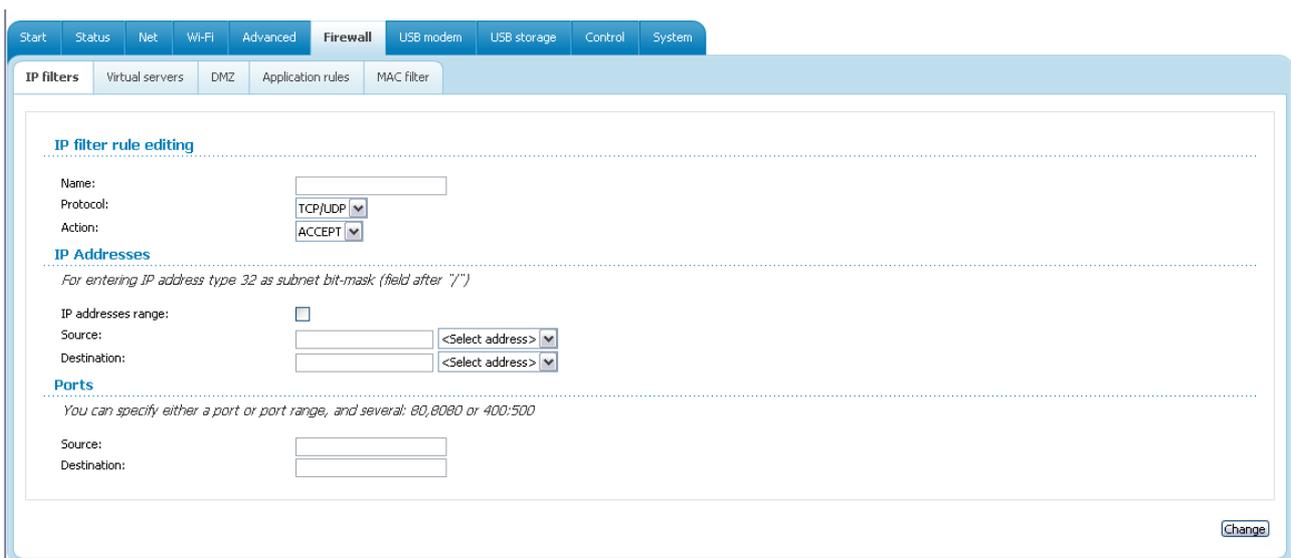
Figure 93. The page for adding a rule for IP filtering.

You can specify the following parameters:

Parameter	Description
IP filter rule editing	
Name	A name for the rule for easier identification.
Protocol	A protocol for network packet transmission. Select a value from the drop-down list. To apply the rule to all protocols from the list, select the **<All>** value (when this value is selected, the **Ports** section is not displayed).
Action	Select an action for the rule. **ACCEPT**: Allows packet transmission in accordance with the criteria specified by the rule. **DROP**: Denies packet transmission in accordance with the criteria specified by the rule.
IP Addresses	
IP address range	Select the checkbox if you want to specify a range of IP addresses as the source or destination IP address.
Source	The source host/subnet IP address. If the **IP address range** checkbox is selected, specify the starting IP address of the range in the **Source (first)** field and the ending IP address in the **Source (last)** field. If the **IP address range** checkbox is not selected, specify the IP address of the host or subnet in the **Source** field. To specify an IP address add `/32`. To choose a device connected to the router's LAN at the moment, select the relevant IP address from the drop-down list located to the right of the field (the field will be filled in automatically).
Destination	The destination host/subnet IP address. If the **IP address range** checkbox is selected, specify the starting IP address of the range in the **Destination (first)** field and the ending IP address in the **Destination (last)** field. If the **IP address range** checkbox is not selected, specify the starting IP address of the host or subnet in the **Destination** field. To specify an IP address add `/32`. To choose a device connected to the router's LAN at the moment, select the relevant IP address from the drop-down list located to the right of the field (the field will be filled in automatically).

Parameter	Description
Ports	
Source	A port of the source IP address. You can specify one port, several ports separated by a comma, or a range of ports separated by a colon.
Destination	A port of the destination IP address. You can specify one port, several ports separated by a comma, or a range of ports separated by a colon.

Click the **Change** button.

To edit a rule for IP filtering, select the relevant rule in the table. On the opened page, change the needed parameters and click the **Change** button.

To remove a rule for IP filtering, select the relevant rule in the table. On the opened page, click the **Delete** button.

Virtual Servers

On the **Firewall / Virtual servers** page, you can create virtual servers for redirecting incoming Internet traffic to a specified IP address in the local area network.

*Figure 94. The **Firewall / Virtual servers** page.*

To create a new virtual server, click the **Add** button.
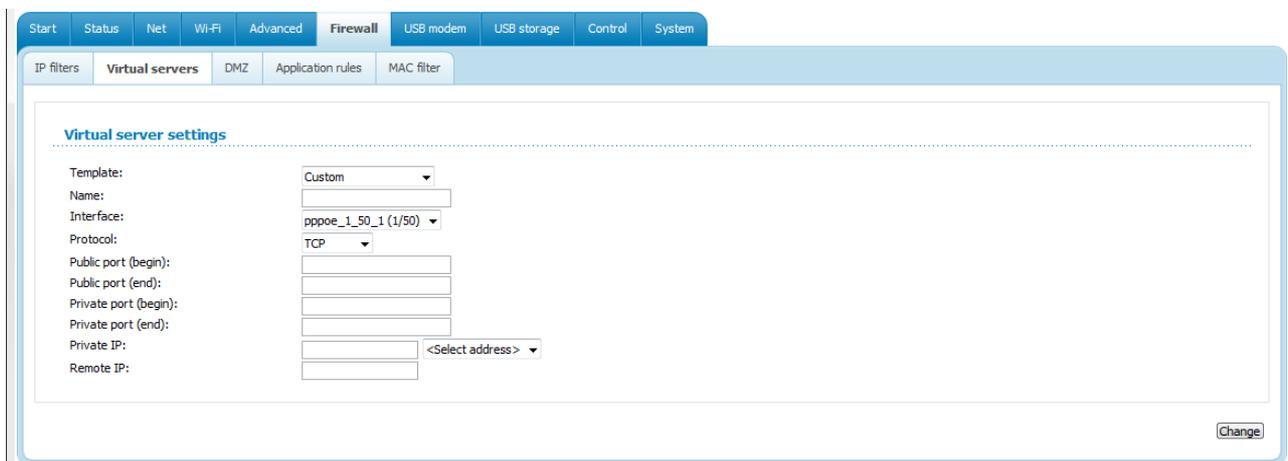
Figure 95. The page for adding a virtual server.

You can specify the following parameters:

Parameter	Description
Template	Select a virtual server template from the drop-down list, or select **Custom** to specify all parameters of the new virtual server manually.
Name	A name for the virtual server for easier identification. You can specify any name.
Interface	A WAN connection to which this virtual server will be assigned.
Protocol	A protocol that will be used by the new virtual server. Select a value from the drop-down list.

Parameter	Description
Public port (begin)/ **Public port (end)**	A port of the router from which traffic is directed to the IP address specified in the **Private IP** field. Specify the start and the end value for the port range. If you need to specify one port, enter the needed value in the **Public port (begin)** field and leave the **Public port (end)** field blank.
Private port (begin)/ **Private port (end)**	A port of the IP address specified in the **Private IP** field to which traffic is directed from the **Public port**. Specify the start and the end value for the port range. If you need to specify one port, enter the needed value in the **Private port (begin)** field and leave the **Private port (end)** field blank.
Private IP	The IP address of the server from the local area network. To choose a device connected to the router's LAN at the moment, select the relevant value from the drop-down list located to the right of the **Private IP** field (the field will be filled in automatically).
Remote IP	The IP address of the server from the external network.

Click the **Change** button.

To edit the parameters of an existing server, select the relevant server in the table. On the opened page, change the needed parameters and click the **Change** button.

To remove an existing server, select the relevant server in the table. On the opened page, click the **Delete** button.

DMZ

A DMZ is a host or network segment located "between" internal (local) and external (global) networks. In the router, the DMZ implements the capability to transfer a request coming to a port of the DSL router from the external network to a specified host of the internal network.

On the **Firewall / DMZ** page you can specify the IP address of the DMZ host.
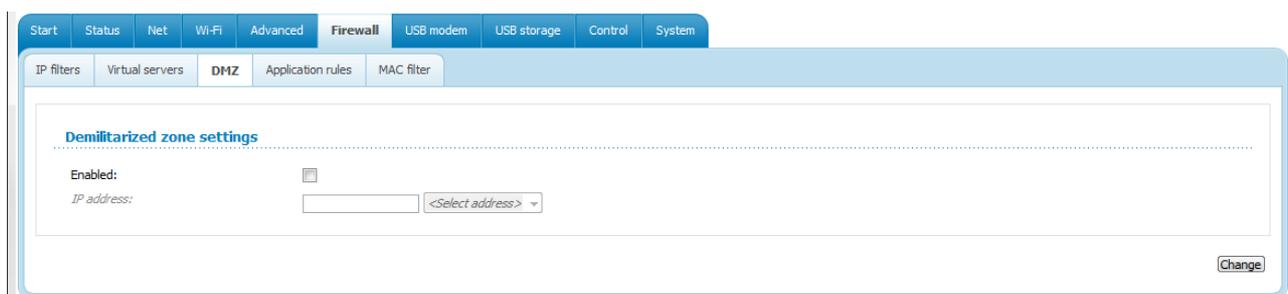
*Figure 96. The **Firewall / DMZ** page.*

To enable the DMZ, select the **Enabled** checkbox, enter the IP address of a host from your network in the **IP address** field. To choose a device connected to the router's LAN at the moment, select the relevant value from the drop-down list located to the right of the field (the field will be filled in automatically) and click the **Change** button.

Note that when the DMZ is enabled, all traffic coming to a port of the WAN interface of the router is directed to the same port of the specified IP address. Also note that virtual servers have higher priority than the DMZ host. In other words, if there has been created a virtual server that directs traffic from external port 80 to a port of the device from the router's local network, then entering `http://router_WAN_IP` in the address bar, users of the external network are directed to the specified port and IP address configured for the virtual server, but not to port 80 of the device with the IP address specified on the **Firewall / DMZ** page.

To disable the DMZ, deselect the **Enabled** checkbox and click the **Change** button.

Application Rules

On the **Firewall / Application rules** page, you can define rules for the Port Triggering function.

*Figure 97. The **Firewall / Application rules** page.*

To add a new rule for the Port Triggering function, click the **Add** button.
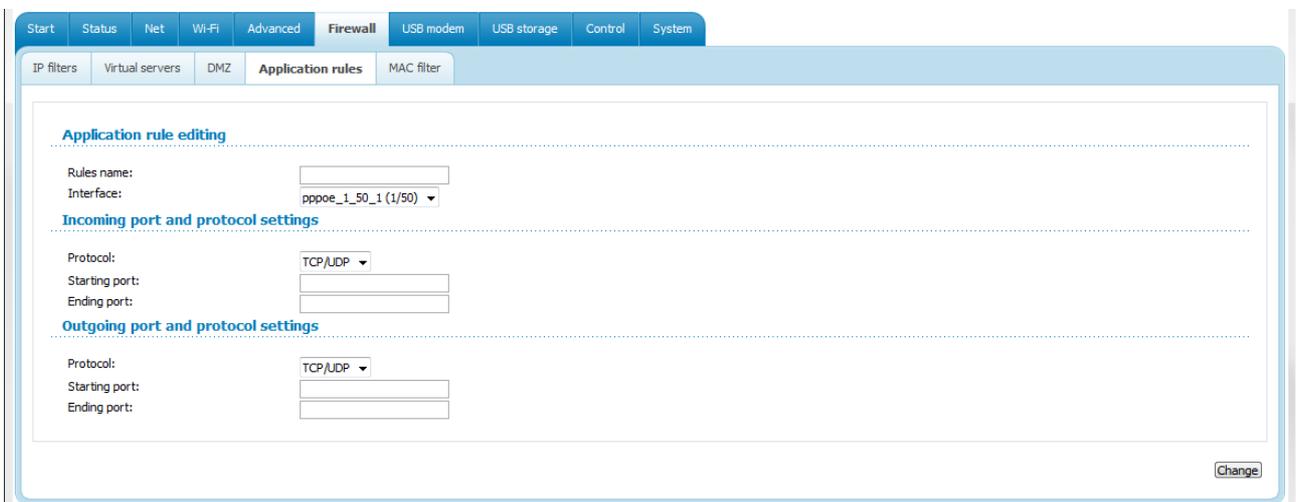
Figure 98. The page for adding a rule for the Port Triggering function.

You can specify the following parameters:

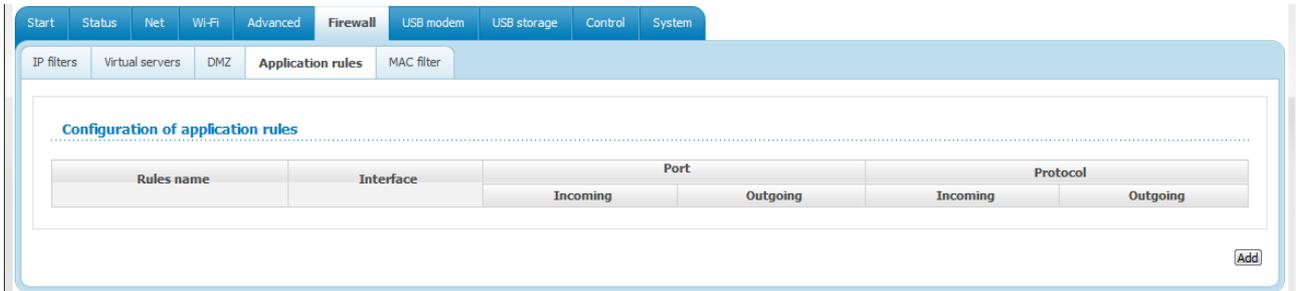| Parameter	Description
Application rule editing	
Rules name	A name for the rule for easier identification.
Interface	A WAN connection to which this rule will be assigned.
Incoming port and protocol settings	
Protocol	A protocol to which this rule will be applied upon receiving data to the specified port or port range.
Starting port/ **Ending port**	A range of the router's ports which will be open to receive data from the external network (incoming traffic). Specify the start and the end value for the port range. If you need to specify one port, enter the needed value in the **Starting port** field and leave the **Ending port** field blank.
Outgoing port and protocol settings	
Protocol	A protocol to which this rule will be applied upon transferring data from the specified port or port range.
Starting port/ **Ending port**	A range of the router's ports from which data are transferred to the external network (outgoing traffic). Specify the start and the end value for the port range. If you need to specify one port, enter the needed value in the **Starting port** field and leave the **Ending port** field blank.

Click the **Change** button.

To edit an existing rule for the Port Triggering function, select the relevant rule in the table. On the opened page, change the needed parameters and click the **Change** button.

To remove an existing rule for the Port Triggering function, select the relevant rule in the table. On the opened page, click the **Delete** button.

MAC Filter

The MAC-address-based filtering allows forwarding and blocking traffic subject to the source and destination MAC addresses.

> **!** MAC-address-based filtering is active only when the device is configured as a transparent bridge (the Bridge mode).

On the **Configuration** tab, you can select the operating mode of the MAC filter. Select the **Allow** value from the **Action** drop-down list to allow traffic affected by the rules from the **MAC addresses** tab and block the other traffic. Select the **Deny** value from the drop-down list to block only traffic affected by the rules from the **MAC addresses** tab.

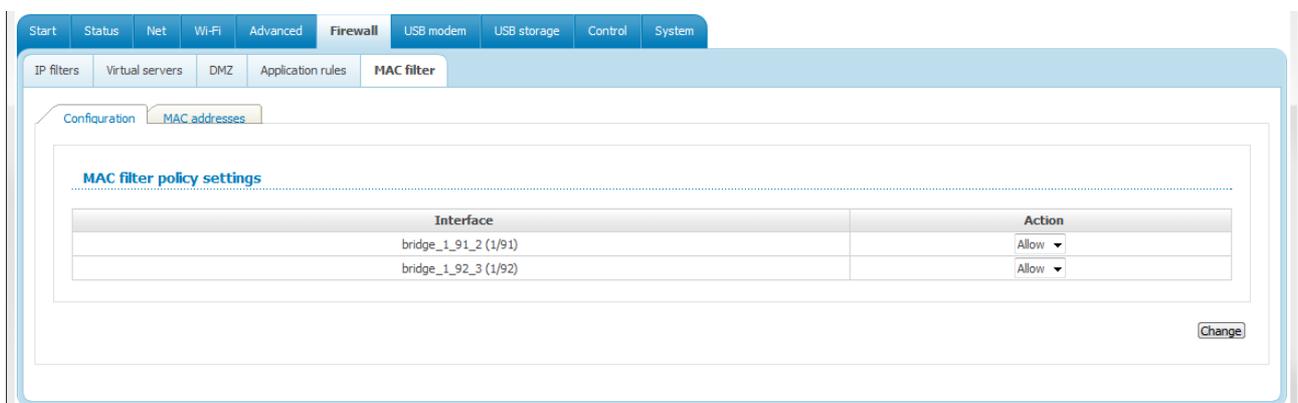

*Figure 99. The **Firewall / MAC filter** page. The **Configuration** tab.*

To create a new rule, proceed to the **MAC addresses** tab and click the **Add** button.
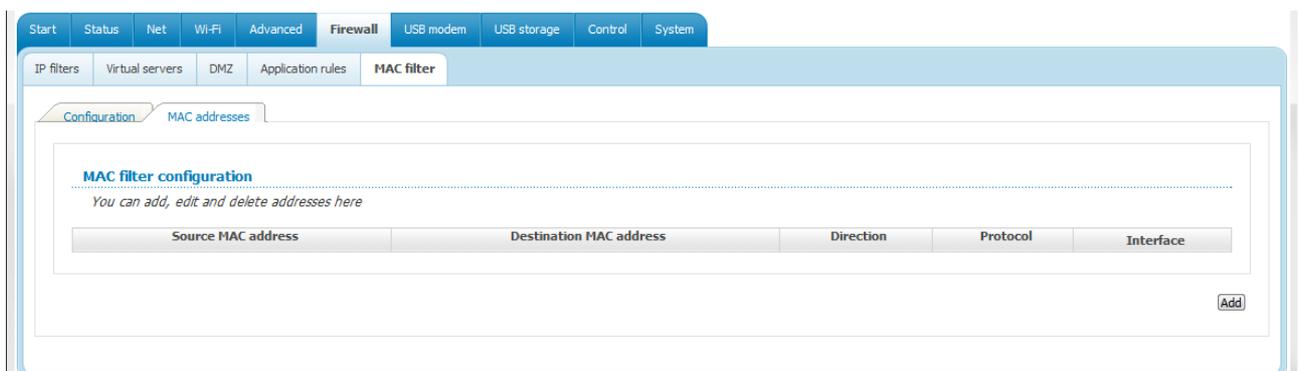
*Figure 100. The **Firewall / MAC filter** page. The **MAC addresses** tab.*

On the opened page, specify the needed parameters.
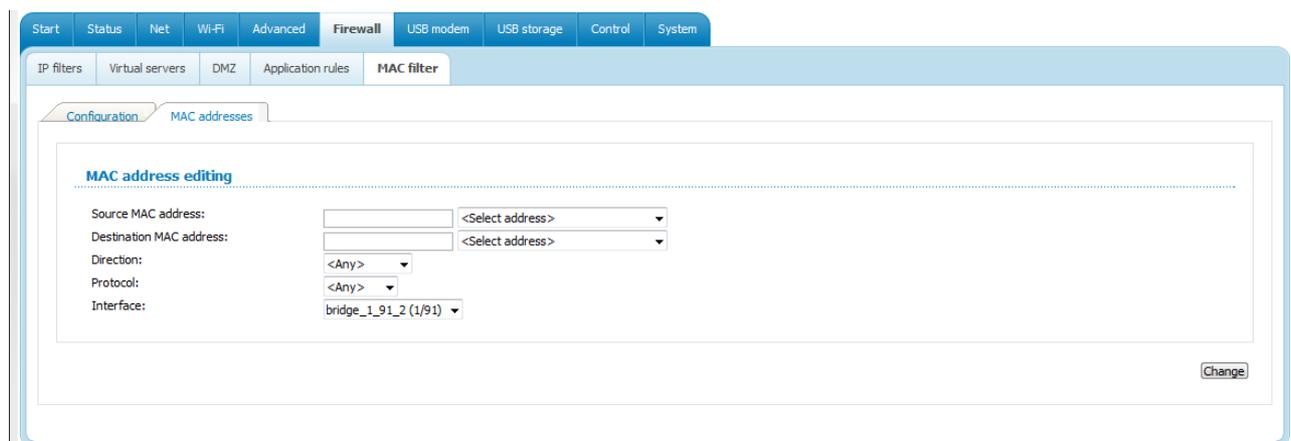
Figure 101. The page for adding a rule for MAC-address-based filtering.

Parameter	Description
Source MAC address	The MAC address of the source host. To choose a device connected to the router's LAN at the moment, select the relevant value from the drop-down list located to the right of the field (the field will be filled in automatically).
Destination MAC address	The MAC address of the destination host. To choose a device connected to the router's LAN at the moment, select the relevant value from the drop-down list located to the right of the field (the field will be filled in automatically).
Direction	Select a direction for which the rule will be applied.
Protocol	Select a protocol for which the rule will be applied. The **<Any>** value means any protocol from those displayed in the list.
Interface	Select a WAN connection (with the **Bridge** connection type only) for which the rule will be applied.

Click the **Change** button.

To edit a rule for filtering, select the relevant rule on the **MAC addresses** tab. On the opened page, change the needed parameters and click the **Change** button.

To remove a rule for filtering, select the relevant rule on the **MAC addresses** tab. On the opened page, click the **Delete** button.

USB Modem

This menu is designed to operate USB modems.

If the PIN code check for the SIM card inserted into your USB modem is not disabled, then upon the first access to the pages of the **USB modem** menu (under the current web-interface session) the page for checking the PIN code is displayed[8]. Enter the PIN code in the relevant field and click the **Enter** button.

Information

On the **USB modem / Information** page, you can view data on the USB modem connected to the router.

*Figure 102. The **USB modem / Information** page.*

When a USB modem is connected to the router, the following data are displayed on the page:

Parameter	Description
Vendor	The manufacturer of your USB modem.
Model	The alphanumeric code of the model of your USB modem.
Revision	The revision of the firmware of your USB modem.
IMSI	The code stored in the SIM card inserted to your USB modem.
IMEI	The code stored in the memory of the USB modem.
Signal level	The signal level at the input of the modem's receiver. The zero signal level shows that you are out of the coverage area of the selected operator's network.
Operator name	When the needed network is available, the name of the operator is displayed in this field.
Mode	A type of the network to which the USB modem is connected (2G or 3G).

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8 For GSM USB modems only. For CDMA USB modems, it is required to disable the PIN code check on the identification card prior to connecting the USB modem to the router.

PIN

On the **USB modem / PIN** page, you can change the PIN code of the identification card inserted into your USB modem, disable or enable the check of the PIN code.

> ❗ The operations presented on this page are not available for CDMA USB modems.

*Figure 103. The **USB modem / PIN** page.*

To disable the PIN code check, select the **Disable PIN check** checkbox, enter the current PIN code in the **PIN code** field and click the **Enter** button.

To enable the PIN code check, deselect the **Disable PIN check** checkbox, enter the PIN code, used before disabling the check, in the **PIN code** field and click the **Enter** button.

To change the PIN code, enable the PIN code check, enter the current code in the **PIN code** field, then enter a new code in **New PIN code** and **New PIN code confirmation** fields and click the **Enter** button.

If upon one of the operations described above you have entered an incorrect value in the **PIN code** field three times (the number of remaining attempts is displayed in the **Attempts left** field), the identification card inserted into your USB modem is blocked.

Figure 104. Entering the PUK code.

For further use of the card, enter the PUK code in the relevant field, and then specify a new PIN code for your SIM card in the **New PIN code** and **New PIN code confirmation** fields. Click the **Enter** button.

USB Storage

Information

On the **USB storage / Information** page, you can view data on the USB storage connected to the router.

*Figure 105. The **USB storage / Information** page.*

The following data are presented on the page: the name, total and free space of the storage, and the type of its file system.

If the USB storage is divided into volumes, several values are displayed in the **USB storage** drop-down list. Select the needed value to view data on the volume (partition) of the USB storage.

To safely disconnect the USB storage, click the **Unmount storage** button. When the **No** value is displayed in the **USB storage** drop-down list, remove the storage from the router.

To disconnect one volume of the storage, select the needed value from the **USB storage** drop-down list and click the **Unmount volume** button.

Filebrowser

On the **USB storage / Filebrowser** page, you can view the content of your USB storage connected to the router and remove separate folders and files from the USB storage.
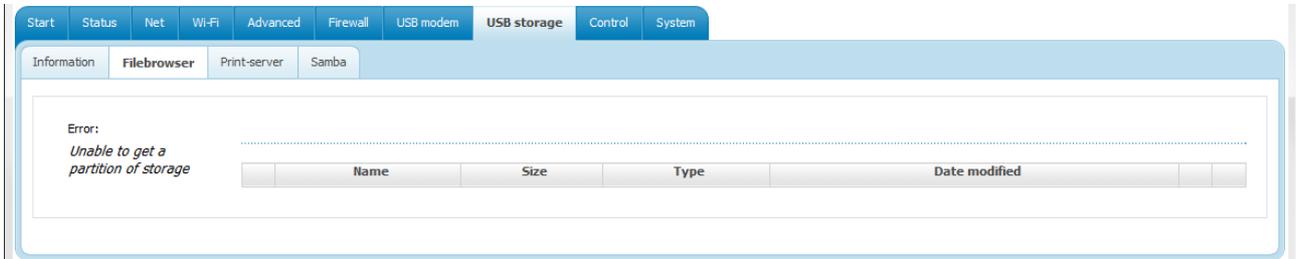
*Figure 106. The **USB storage / Filebrowser** page.*

To view the content of the USB storage, click the link with the name of the storage or storage partition. The list of folders and files will be displayed on the page.

To proceed to a folder, select it in the directory structure on the left part of the page.

To remove a folder or file, click the **delete** link in the line corresponding to this folder or file.

Print Server

On the **USB storage / Print-server** page, you can configure the router as a print server. Being configured in this way, the router will allow your LAN users to share the printer connected to the USB port of the router.

To connect a printer to the router, power off both devices. Connect printer to the USB port of the router, power on the printer, then power on the router.

*Figure 107. The **USB storage / Print-server** page.*

To configure the router as a print server, select the **Enable/Disable print-server** checkbox. Enter the make and the model of your printer in the **Make and model** field and a name for the printer in the **Printer name** field. Then click the **Change** button.

If you don't want to use the router as a print server, deselect the **Enable/Disable print-server** checkbox and click the **Change** button.

Samba

On the **USB storage / Samba** page, you can create accounts used to access the USB storage connected to the router.
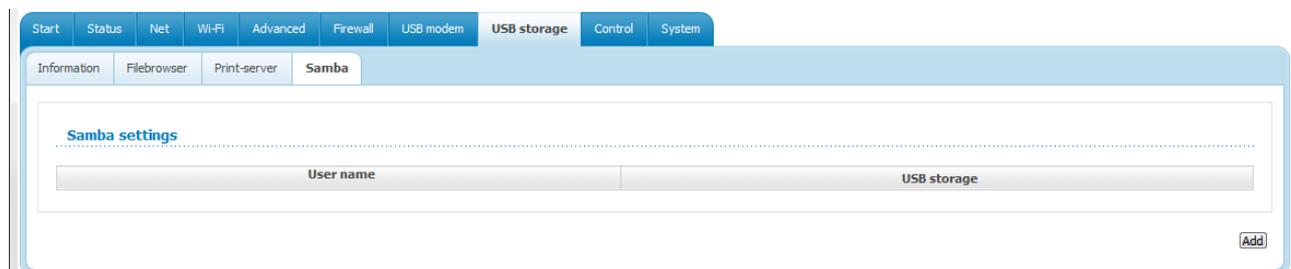
*Figure 108. The **USB storage / Samba** page.*

To create a new account, click the **Add** button.

Figure 109. The page for adding an account used to access the USB storage.

On the opened page, specify a username and password for the new account. Use Latin characters and/or digits.

> **!** You cannot create accounts with the following usernames: `admin`, `support`, `user`, `nobody`.

Then select the USB storage which will be accessed via this account from the **USB storage** drop-down list. Click the **Save** button.

To edit an account, select the relevant account in the table. On the opened page, change the parameters and click the **Save** button.

To delete an account, select a relevant account in the table. On the opened page, click the **Delete** button.

Control

This menu is designed to create restrictions on access to the Internet for users of your LAN: forbid access for specified computers and limit access to certain web sites.

Parent Control

On the **Control / Parent control** page, you can create rules restricting access to the Internet for computers with specified MAC addresses during particular time periods on particular days.
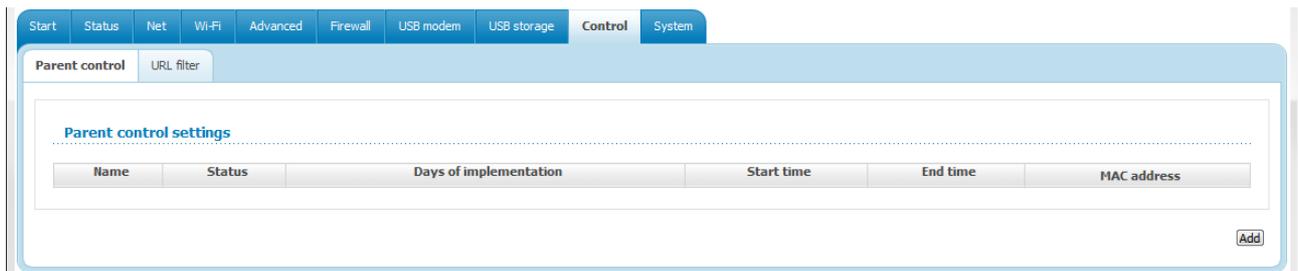
*Figure 110. The **Control / Parent control** page.*

Rules restricting access for computers with specified MAC addresses are presented as a table. To create a new rule, click the **Add** button.
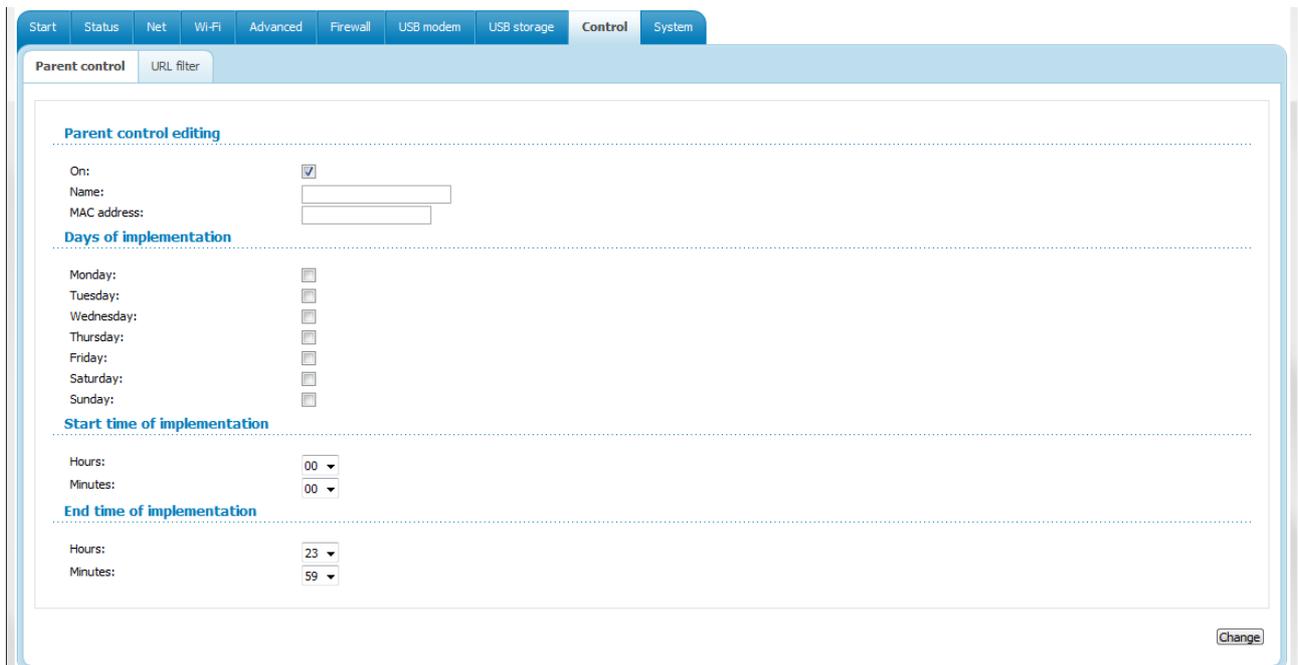
Figure 111. The page for adding a new parental control rule.

You can specify the following parameters:

Parameter	Description
Parent control editing	
On	Select the checkbox to enable the rule.
Name	A name for the rule for easier identification. You can specify any name.
MAC address	The MAC address of the computer to which this rule will be applied.
Days of implementation	
Select checkboxes corresponding to the needed days of the week.	
Start time of implementation	
Hours **Minutes**	Start time of the rule application.
End time of implementation	
Hours **Minutes**	End time of the rule application.

Click the **Change** button.

To edit an existing rule, select the relevant rule in the table. On the opened page, change the needed parameters and click the **Change** button.

To delete an existing rule, select the relevant rule in the table. On the opened page, click the **Delete** button.

URL Filter

On the **Control / URL filter** page, you can specify restrictions on access to certain web sites.
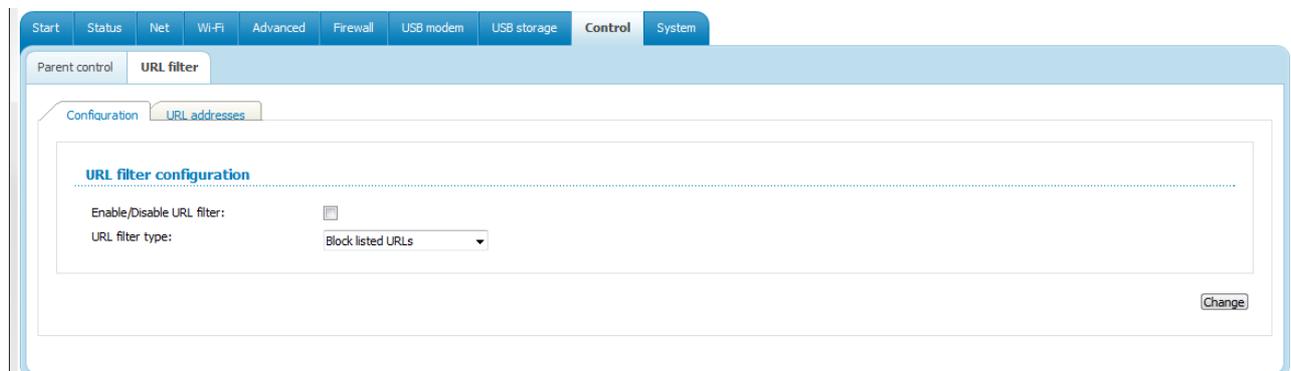
*Figure 112. The **Control / URL filter** page. The **Configuration** tab.*

To enable the URL filter, select the **Enable/Disable URL filter** checkbox on the **Configuration** tab, then select a needed mode from the **URL filter type** drop-down list:

- **Block listed URLs**: when this value is selected, the router blocks access to all addresses specified on the **URL addresses** tab;

- **Block all URLs except listed**: when this value is selected, the router allows access to addresses specified on the **URL addresses** tab and blocks access to all other web sites.

Click the **Change** button.

To specify URL addresses to which the selected filtering will be applied, go to the **URL addresses** tab and click the **Add** button.
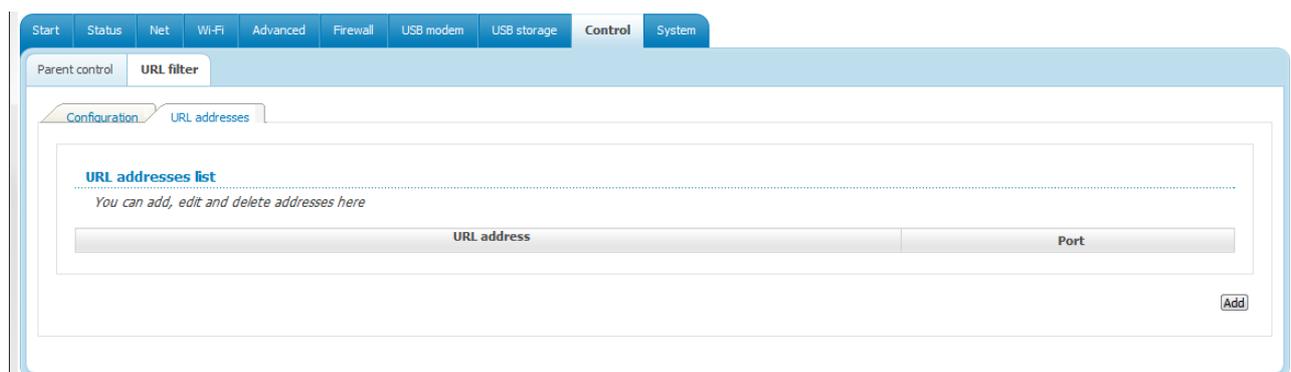
*Figure 113. The **Control / URL filter** page. The **URL addresses** tab.*

On the opened page, specify the needed parameters.
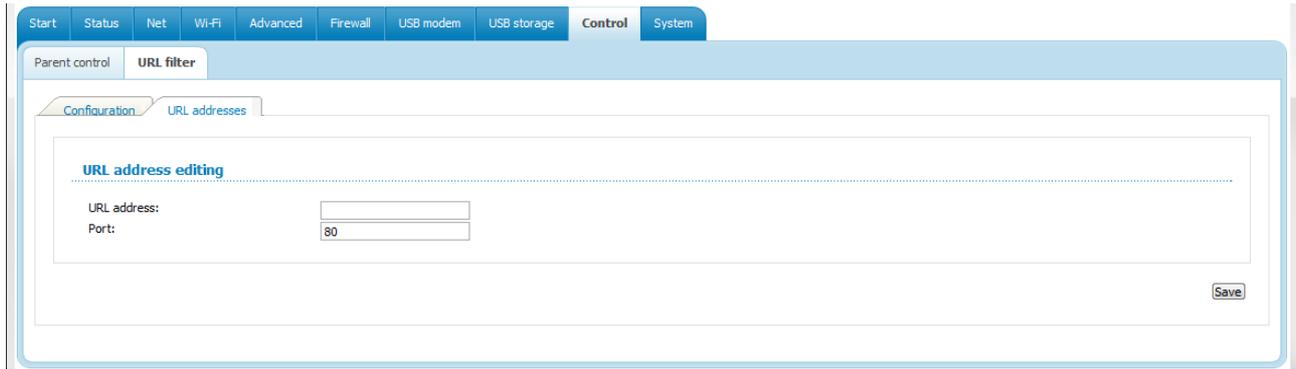
Figure 114. The page for adding an address for the URL filter.

Enter a URL address in the **URL address** field, specify a port (as usual, you need to specify port 80 for HTTP), then click the **Save** button.

To remove an address from the list of URL addresses, select the relevant address in the table on the **URL addresses** tab and click the **Delete** button.

To disable the URL filter, deselect the **Enable/Disable URL filter** checkbox on the **Configuration** tab, then click the **Change** button.

System

In this menu you can do the following:

- change the password used to access the router's settings

- save the current settings to the non-volatile memory

- create a backup of the router's configuration

- restore the router's configuration from a previously saved file

- restore the factory default settings

- view the system log

- update the firmware of the router

- configure automatic synchronization of the system time

- check availability of a host on the Internet through the web-based interface of the router.

Administrator Password

On the **System / Administrator password** page, you can change the password for the administrator account used to access the web-based interface of the router and to access the device via TELNET.

> **!** For security reasons, it is strongly recommended to change the administrator password upon initial configuration of the router.
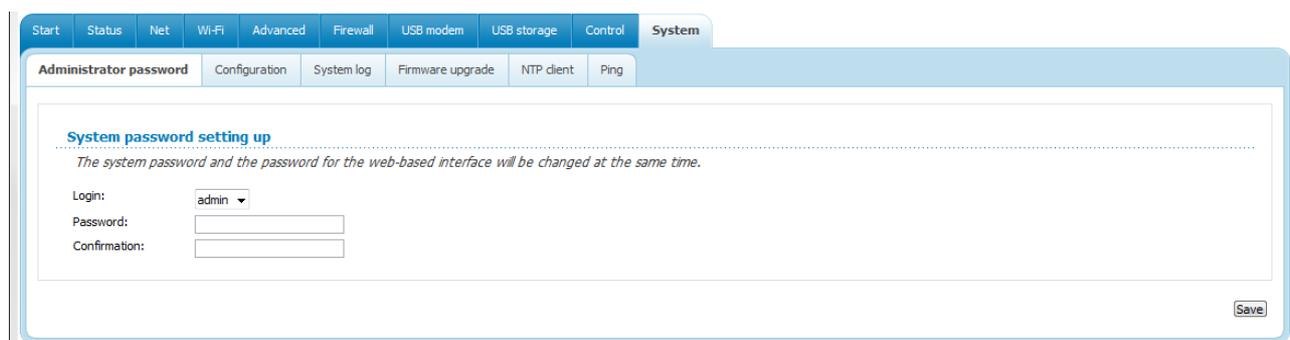
*Figure 115. The **System / Administrator password** page.*

Enter the new password in the **Password** and **Confirmation** fields and click the **Save** button.

Configuration

On the **System / Configuration** page, you can save the changed settings to the non-volatile memory, restore the factory defaults, backup the current configuration, or restore the router's configuration from a previously created file.
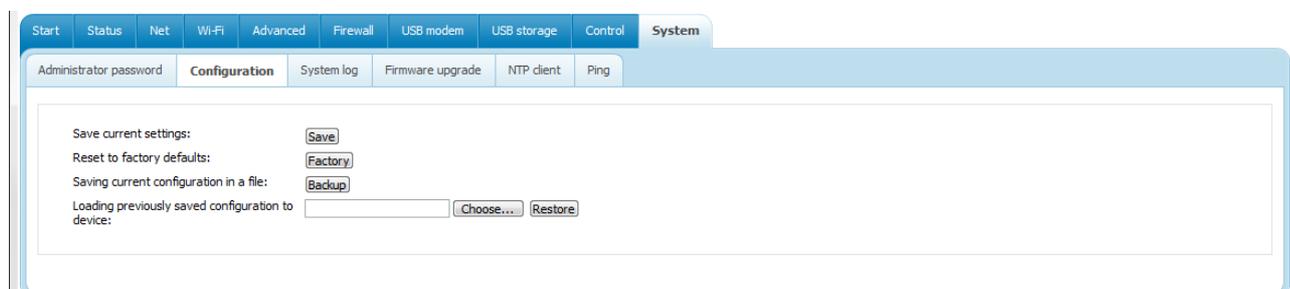
*Figure 116. The **System / Configuration** page.*

The following buttons are available on the page:

Control	Description
Save	Click the button to save settings to the non-volatile memory. Please, save settings every time you change the router's parameters. Otherwise the changes will be lost upon reboot of the router.
Factory	Click the button to restore the factory default settings. Also you can restore the factory defaults via the hardware **RESET** button (see the *Saving and Restoring Settings* section, page 33).
Backup	Click the button and follow the dialog box appeared to save the configuration (all settings of the router) to your PC.
Restore	Click the button to upload a previously saved configuration (all settings of the router) from a file on your PC. Click the **Choose/Browse**[9] button to select a previously saved configuration file located on your PC.

Actions of the **Save**, **Factory**, and **Backup** buttons also can be performed via the top-page menu displayed when the mouse pointer is over the **System** caption.

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9   The name of the button depends upon the web browser that you use.

System Log

On the **System / System log** page, you can set the system log options and configure sending the system log to a remote host.
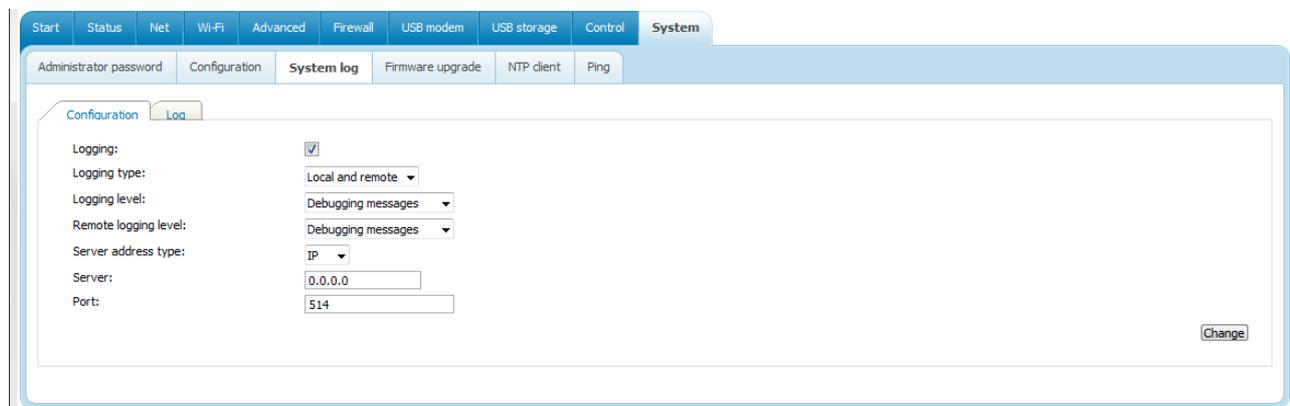
Figure 117. The *System / System log* page. The *Configuration* tab.

To enable logging of the system events, select the **Logging** checkbox on the **Configuration** tab. Then specify the needed parameters.

Control	Description
Logging type	Select a type of logging from the drop-down list. • **Local**: the system log is stored in the router's memory (and displayed on the **Log** tab). When this value is selected, the **Server address type**, **Server**, and **Port** fields are not displayed. • **Remote**: the system log is sent to the remote host specified in the **Server** field. • **Local and remote**: the system log is stored in the router's memory (and displayed on the **Log** tab) and sent to the remote host specified in the **Server** field.
Logging level	Select a type of messages and alerts/notifications to be stored locally in the router's memory. The field is available, when the **Local** or **Local and remote** value is selected from the **Logging type** drop-down list.
Remote logging level	Select a type of messages and alerts/notifications to be sent to the remote host specified in the **Server** field. The field is available, when the **Remote** or **Local and remote** value is selected from the **Logging type** drop-down list.
Server address type	From the drop-down list, select the **IP** value to specify an IP address of a host from the local or global network, or the **URL** value to specify a URL address of a remote server.

Control	Description
Server	The IP or URL address of the host from the local or global network, to which the system log will be sent.
Port	A port of the host specified in the **Server** field. By default, the value `514` is specified.

After specifying the needed parameters, click the **Change** button.

To disable logging of the system events, deselect the **Logging** checkbox and click the **Change** button.

On the **Log** tab, the events specified in the **Logging level** list are displayed.
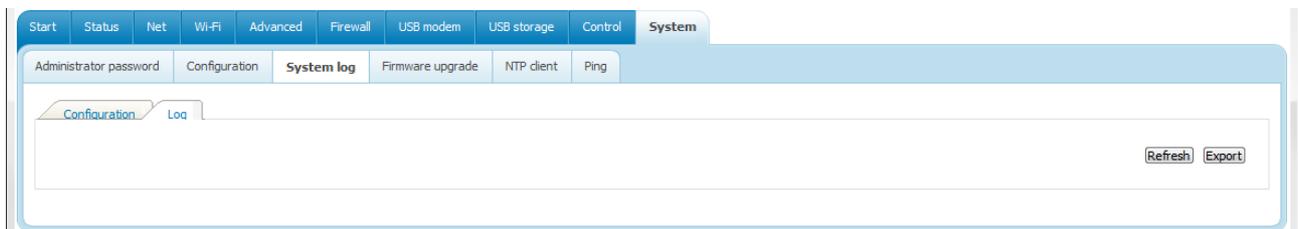
*Figure 118. The **System / System log** page. The **Log** tab.*

To view the latest system events, click the **Refresh** button.

To save the system log to your PC, click the **Export** button and follow the dialog box appeared.

Firmware Upgrade

On the **System / Firmware upgrade** page, you can upgrade the firmware of the router.

> **!** Upgrade the firmware only when the router is connected to your PC via a wired connection.
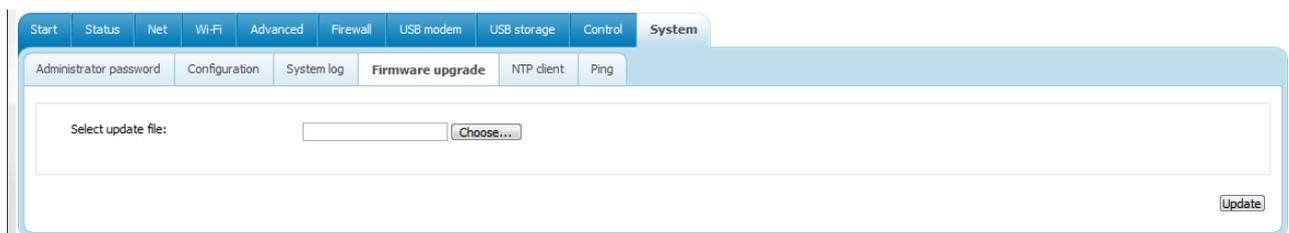
*Figure 119. The **System / Firmware upgrade** page.*

The current version of the router's firmware is displayed in the **Firmware version** field on the **Start** page. If you need to install a newer version of the firmware, follow the next steps:

> **!** Attention! Do not turn off the router before the firmware upgrade is completed. This may cause the device breakdown.

1. Download a new version of the firmware from www.dlink.ru.

2. Click the **Choose/Browse**[10] button on the **System / Firmware upgrade** page to locate the new firmware file.

3. Click the **Update** button to upgrade the firmware of the router.

4. Wait until the router is rebooted (about one and a half or two minutes).

5. Log into the web-based interface using the login (`admin`) and the current password.

6. Select the **Factory** line in the top-page menu displayed when the mouse pointer is over the **System** caption.

7. Wait until the router is rebooted. Log into the web-based interface, using the default IP address, login and password (`192.168.1.1`, `admin`, `admin`).

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10 The name of the button depends upon the web browser that you use.

NTP Client

On the **System / NTP client** page, you can configure automatic synchronization of the system time with a time server on the Internet.
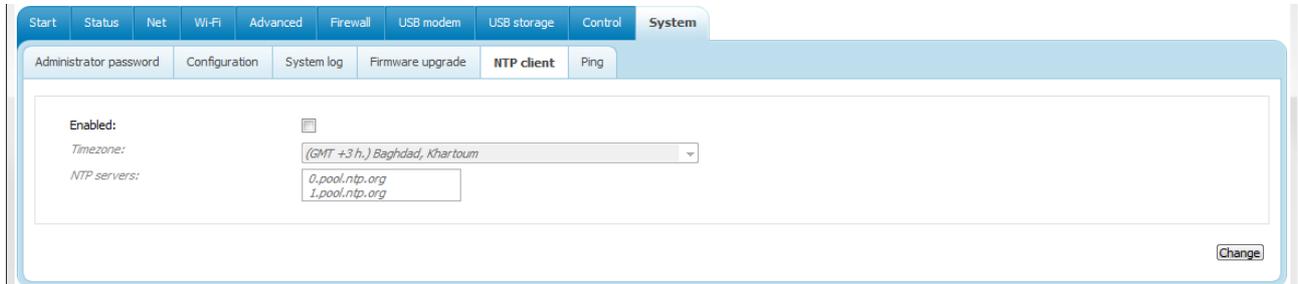
*Figure 120. The **System / NTP client** page.*

To enable automatic synchronization with a time server:

1. Select the **Enabled** checkbox.

2. Select your time zone.

3. Specify the needed NTP server in the **NTP servers** field or leave the server specified by default.

4. Click the **Change** button.

> **!** When the router is powered off or rebooted, the system time is reset to the default value. If you have set automatic synchronization for the system time, the internal clock of the device will be configured after connecting to the Internet.

Ping

On the **System / Ping** page, you can check availability of a host from the local or global network via the Ping utility.

The Ping utility sends echo requests to a specified host and receives echo replies.
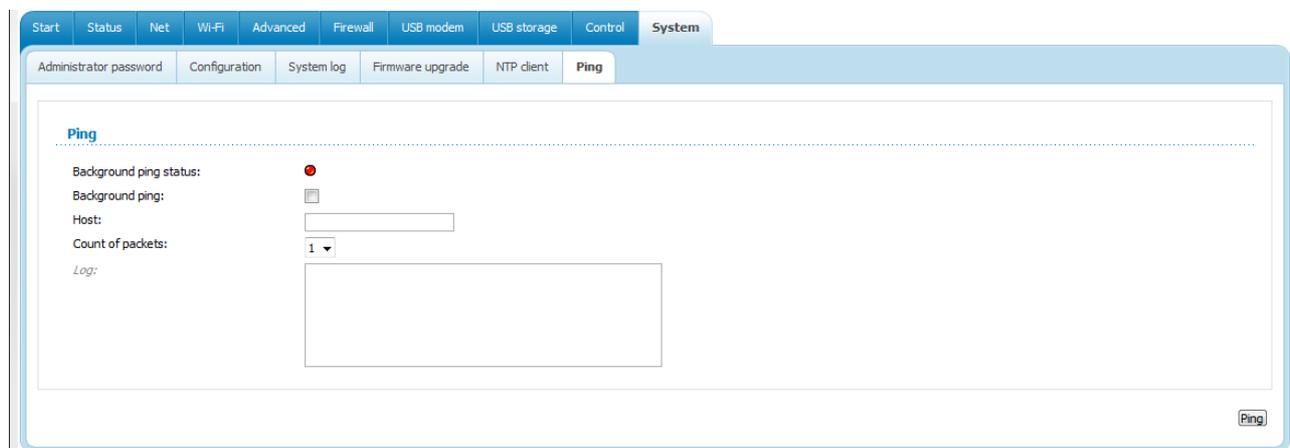
*Figure 121. The **System / Ping** page.*

To check availability of a host, enter the IP address or name of this host in the **Host** field, and select a number of requests that will be sent in order to check its availability from the **Count of packets** drop-down list. Click the **Ping** button. The check results will be displayed in the **Log** field.

Also you can run the Ping function in the background mode. To do this, select the **Background ping** checkbox. Then enter the IP address or name of a host in the **Host** field and click the **Ping** button. When this mode is selected, the **Count of packets** and **Log** fields are not displayed.

In the background mode, the Ping utility sends requests to the host specified in the **Host** field every 40 seconds. The **Background ping status** light shows the status of the Ping function (green light: the function is running, red light: the function is not running).

To stop running the Ping function in the background mode, deselect the **Background ping** checkbox, enter the IP address or name of a host in the **Host** field, and click the **Ping** button.

CHAPTER 5.   OPERATION GUIDELINES

Supported USB Modems

GSM modems:

- Huawei E150

- Huawei E1550

- Huawei E160G

- Huawei E169G

- Huawei E220

- ZTE MF112

- ZTE MF626

- ZTE MF627.

CDMA modems[11]:

- Airplus MCD-650

- Airplus MCD-800

- AnyDATA ADU-300A

- AnyDATA ADU-310A.

> **!** The manufacturer does not guarantee proper operation of the router with every modification of the firmware of USB modems.

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11 Performance of CDMA USB modems is not tested for the current firmware version.

Safety Instructions

Place your router on a flat horizontal surface or mount the router on the wall (the mounting holes are located on the bottom panel of the device). Make sure that the router is provided with sufficient ventilation.

To prevent overheating, do not obstruct the ventilation openings of the router.

Plug the router into a surge protector to reduce the risk of damage from power surges and lightning strikes.

Operate the router only from an electrical outlet with the correct power source as indicated on the adapter.

Do not open the cover of the router. Otherwise any warranty will be invalidated.

Unplug the equipment before dusting and cleaning. Use a damp cloth to clean the equipment. Do not use liquid/aerosol cleaners or magnetic/static cleaning devices.

Wireless Installation Considerations

The DSL-2650U device lets you access your network using a wireless connection from virtually anywhere within the operating range of your wireless network. Keep in mind, however, that the number, thickness and location of walls, ceilings, or other objects that the wireless signals must pass through, may limit the range. Typical ranges vary depending on the types of materials and background RF noise in your home or office. To maximize your wireless range, follow the guidelines below.

1. Keep the number of walls and ceilings between the DSL-2650U device and other network devices to a minimum – each wall or ceiling can reduce your wireless network range by 3-90 feet (1-30 meters).

2. Be aware of the direct line between network devices. Place your devices so that the signal travels straight through a wall or ceiling (instead of at an angle) for better reception.

3. Building materials make a difference. A solid metal door or aluminum studs may have a negative effect on your wireless range. Try to position your router, access points, and computers so that the signal passes through drywalls or open doorways. Materials and objects such as glass, steel, metal, walls with insulation, water (fish tanks), mirrors, file cabinets, brick, and concrete will degrade your wireless signal.

4. Keep your router away (at least 3-6 feet or 1-2 meters) from electrical devices or appliances that generate RF noise.

5. If you are using 2.4 GHz cordless phones or X-10 equipment (wireless devices such as ceiling fans, lights, and home security systems), your wireless connection may degrade dramatically or drop completely. Make sure your 2.4 GHz phone base is as far away from your wireless devices as possible. Note, that the base transmits a signal even if the phone in not in use.

Creating Two Connections on One Channel

ADSL WAN Connections

In some cases, it is necessary to assign two WAN connections (of the Bridge/Static IP/Dynamic IP type) to one virtual channel (that is, to specify the same values of the VPI/VCI).

For example, your ISP provides the IPTV service (VPI = 0, VCI = 35). You need to configure a WAN connection of the Bridge type for the set-top-box connected to the LAN 2 port of the router and a WAN connection of Dynamic IP type for the computer connected to the LAN 3 port of the router and the laptop connected to the wireless interface of the router.

To configure the router, follow the steps below:

1. Go to the **Net / WAN** page and click the **Add** button.

2. Select the **Bridge** value from the **Connection Type** drop-down list.

3. Fill in the **VPI** and **VCI** fields.

4. In the **VLAN** section, select the **Allow to create several connections assigned to this port** checkbox.

5. Click the **Save** button.

6. Click the **Add** button again.

7. Select the **Dynamic IP** value from the **Connection Type** drop-down list.

8. Select the **atm0(0/35)** value from the **Port** drop-down list.

9. Click the **Save** button.

Name	Connection Type	Port
bridge_0_35_1	Bridge	atm0(0/35)
dynamic_0_35_2	Dynamic IP	atm0(0/35)

Figure 122. Two WAN connections with the same values of the VPI and VCI.

10. Go to the **Advanced / Interface grouping** page.

11. Create a group containing the WAN connection of the Bridge type and the LAN 2 port.

12. Create another group containing the WAN connection of the Dynamic IP type, the LAN 3 port, and the wireless interface.

Name	LANs	WANs
1	LAN2	bridge_0_35_1
2	WL LAN3	dynamic_0_35_2
DEFAULT	LAN1 LAN4	

Figure 123. Groups of ports for the created WAN connections.

13. Save the router's settings.

Ethernet WAN Connections

In some cases, it is necessary to assign two WAN connections to one physical interface.

For example, your private Ethernet line is connected to the LAN 3 port of the router. The ISP provides the IPTV service. You need to configure a WAN connection of the Bridge type for the set-top-box connected to the LAN 2 port of the router and a WAN connection of Dynamic IP type for the computer connected to the LAN 4 port of the router and the laptop connected to the wireless interface of the router.

To configure the router, follow the steps below:

1. Go to the **Advanced / Interface grouping** page.

2. Select the **LAN 3** choice of the **Ethernet WAN port** radio button.

3. Select the **VLAN MUX Mode** of the **Ethernet WAN type** radio button.

4. Click the **Save** button.

5. Go to the **Net / WAN** page and click the **Add** button.

6. Select the **Bridge** value from the **Connection Type** drop-down list.

7. Select the **LAN 3** value from the **Port** drop-down list.

8. Click the **Save** button.

9. Click the **Add** button again.

10. Select the **Dynamic IP** value from the **Connection Type** drop-down list.

11. Select the **LAN 3** value from the **Port** drop-down list.

12. Click the **Save** button.

Name	Connection Type	Port
bridge_LAN3_1	Bridge	LAN3
dynamic_LAN3_2	Dynamic IP	LAN3

Figure 124. Two WAN connections for one physical interface.

13. Go to the **Advanced / Interface grouping** page.

14. Create a group containing the WAN connection of the Bridge type and the LAN 2 port.

15. Create another group containing the WAN connection of the Dynamic IP type, the LAN 4 port, and the wireless interface.

Name	LANs	WANs
1	LAN2	bridge_LAN3_1
2	LAN4 WL	dynamic_LAN3_2
DEFAULT	LAN1	

Figure 125. Groups of ports for the created WAN connections.

16. Save the router's settings.

CHAPTER 6.   ABBREVIATIONS AND ACRONYMS

3G	Third Generation
AES	Advanced Encryption Standard
ARP	Address Resolution Protocol
BSSID	Basic Service Set Identifier
CDMA	Code Division Multiple Access
CRC	Cyclic Redundancy Check
DDNS	Dynamic Domain Name System
DDoS	Distributed Denial of Service
DHCP	Dynamic Host Configuration Protocol
DMZ	DeMilitarized Zone
DNS	Domain Name System
DTIM	Delivery Traffic Indication Message
GMT	Greenwich Mean Time
GSM	Global System for Mobile Communications
IGMP	Internet Group Management Protocol
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IPoA	Internet Protocol over ATM
ISP	Internet Service Provider
LAN	Local Area Network
LCC	Logical Link Control
LCP	Link Control Protocol
MAC	Media Access Control
MTU	Maximum Transmission Unit
NAT	Network Address Translation
NTP	Network Time Protocol
PBC	Push Button Configuration

PIN	Personal Identification Number
PPPoA	Point-to-Point Protocol over ATM
PPPoE	Point-to-point protocol over Ethernet
PSK	Pre-shared key
PUK	PIN Unlock Key
QoS	Quality of Service
R-UIM	Removable User Identity Module
RIP	Routing Information Protocol
RTS	Request To Send
SIM	Subscriber Identification Module
SNMP	Simple Network Management Protocol
SSID	Service Set Identifier
TKIP	Temporal Key Integrity Protocol
UPnP	Universal Plug and Play
URL	Uniform Resource Locator
USB	Universal Serial Bus
VC	Virtual Circuit
VCI	Virtual Circuit Identifier
VLAN	Virtual Local Area Network
VPI	Virtual Path Identifier
WAN	Wide Area Network
WEP	Wired Equivalent Privacy
Wi-Fi	Wireless Fidelity
WLAN	Wireless Local Area Network
WPA	Wi-Fi Protected Access
WPS	Wi-Fi Protected Setup