D-Link®

DIR-632

Multifunction Wireless Router
Supporting WiMAX, 3G GSM/CDMA
with Built-in 8-port Switch

August 2012

Contents

CHAPTER 1.   INTRODUCTION

Contents and Audience

This manual describes the router DIR-632 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.).
`192.168.0.1`	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, describes its appearance and the package contents.

Chapter 3 explains how to install the router DIR-632 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 and tips for networking and connecting additional equipment.

Chapter 6 introduces abbreviations and acronyms used in this manual.

CHAPTER 2.   OVERVIEW

General Information

The DIR-632 device is a multifunction wireless router supporting WiMAX, 3G GSM and CDMA with a built-in switch. It provides a fast and simple way to create a wireless and wired network at home or in an office.

The router is equipped with a USB port for connecting a USB modem[1], which can be used to establish connection to the Internet. In addition, to the USB port of the router you can connect a USB storage device, which will be used as a network drive, or a printer.

Also you are able to connect the multifunction wireless router DIR-632 to a cable or DSL modem or to a private Ethernet line and use a high-speed Internet connection to successfully fulfill a wide range of professional tasks. The built-in 8-port switch enables you to connect Ethernet-enabled computers, game consoles, and other devices to your network.

Using the DIR-632 device, you are able to quickly create a wireless network at home or in your office, which lets your relatives or employees connect to your wireless network virtually anywhere (within the operational range of your wireless network). The router can operate as a base station for connecting wireless devices of the standards 802.11b, 802.11g, and 802.11n (at the rate up to 300Mbps).

The router supports multiple functions for the wireless interface: several security standards (WEP, WPA/WPA2), MAC address filtering, WPS.

The multifunction wireless router DIR-632 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 the multifunction wireless router DIR-632 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 193.

Specifications*

WAN Interface:

- 1 10/100BASE-TX Ethernet port for cable or DSL modem or private Ethernet line.

LAN Interface:

- 8 10/100BASE-TX Ethernet ports.

WLAN Interface:

- IEEE 802.11b/g/n.

USB Interface:

- USB 2.0 type A port for USB modem, storage, or printer.

Network Functions:

- WAN connection types:

  - 3G

  - PPPoE

  - Static IP

  - Dynamic IP

  - PPTP/L2TP

  - PPTP/L2TP + Static IP

  - PPTP/L2TP + Dynamic IP

- Support of IEEE 802.1X for Internet connection

- DHCP server and client

- DNS relay

- VPN pass-through (PPTP/L2TP)

- Dynamic DNS

- Static IP routing

- Remote management

- Network statistics for each interface

- IGMP Proxy

- RIP

- UPnP

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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.

- Support of VLAN

- WAN ping respond.

USB Modem[2]:

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

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

USB Storage:

- Built-in FTP server

- Print server

- Access to storage via accounts

- Access control (for ext2/3 file systems).

Wireless Connection:

- Supported security settings:

   ○ WEP

   ○ WPA/WPA2 Personal

- MAC filter

- PIN and PBC methods of WPS

- WMM (Wi-Fi QoS)

- Advanced settings.

Frequency Range:

- 802.11b: 2400 ~ 2497MHz ISM band

- 802.11g: 2400 ~ 2497MHz ISM band

- 802.11n: 2400 ~ 2483.5MHz ISM band.

Data Rate:

- 802.11b:

   ○ 11, 5.5, 2, and 1Mbps

- 802.11g:

   ○ 54, 48, 36, 24, 18, 12, 9, and 6Mbps

- 802.11n:

   ○ 6.5~300Mbps.

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

Transmitter Output Power:

- 802.11b:
  - typical 18dBm +/-1.5 dB at 11, 5.5, 2, and 1Mbps at 25 °C
- 802.11g:
  - typical 17dBm +/-1.5dB at 6~18Mbps at 25 °C
  - typical 16dBm +/-1.5dB at 24~36Mbps at 25 °C
  - typical 14dBm +/-1.5dB at 48~54Mbps at 25 °C
- 802.11n:
  - typical 16dBm +/-1.5dB at MCS 0~4, 8~10 at 25 °C
  - typical 14.5dBm +/-1.5dB at MCS 5, 13 at 25 °C
  - typical 12.5dBm +/-1.5dB at MCS 6, 14 at 25 °C
  - typical 8.5dBm +/-1.5dB at MCS 7, 15 at 25 °C.

EIRP (Effective Isotropic Radiated Power):

- 802.11b:
  - 18dBm (typical)
- 802.11g:
  - 16dBm (typical)
- 802.11n:
  - 16dBm for MCS 7 (typical)
  - 8.5dBm for MCS 15 (typical).

Receiver Sensitivity:

- 802.11b (typical at PER = 8%):
  - −83dBm at 11Mbps
  - −89dBm at 2Mbps

- 802.11g (typical at PER = 10% (1000-byte PDUs)):
  - −82dBm at 6Mbps
  - −81dBm at 9Mbps
  - −79dBm at 12Mbps
  - −77dBm at 18Mbps
  - −74dBm at 24Mbps
  - −70dBm at 36Mbps
  - −66dBm at 48Mbps
  - −65dBm at 54Mbps
- 802.11n (typical at PER = 10% (1000-byte PDUs)):
  - **HT20:**
  - −82dBm at BPSK, coding rate 1/2 (MCS-0)
  - −79dBm at QPSK, coding rate 1/2 (MCS-1)
  - −77dBm at QPSK, coding rate 3/4 (MCS-2)
  - −74dBm at 16-QAM, coding rate 1/2 (MCS-3)
  - −70dBm at 16-QAM, coding rate 3/4 (MCS-4)
  - −66dBm at 64-QAM, coding rate 2/3 (MCS-5)
  - −65dBm at 64-QAM, coding rate 3/4 (MCS-6)
  - −64dBm at 64-QAM, coding rate 5/6 (MCS-7)
  - **HT40:**
  - −79dBm at BPSK, coding rate 1/2 (MCS-8)
  - −76dBm at QPSK, coding rate 1/2 (MCS-9)
  - −74dBm at QPSK, coding rate 3/4 (MCS-10)
  - −71dBm at 16-QAM, coding rate 1/2 (MCS-11)
  - −67dBm at 16-QAM, coding rate 3/4 (MCS-12)
  - −63dBm at 64-QAM, coding rate 2/3 (MCS-13)
  - −62dBm at 64-QAM, coding rate 3/4 (MCS-14)
  - −61dBm at 64-QAM, coding rate 5/6 (MCS-15).

Firewall Functions:

- Network Address Translation (NAT)

- Stateful Packet Inspection (SPI)

- IP filters

- URL filter

- MAC filter

- DMZ

- Prevention of ARP and DDoS attacks

- Virtual servers.

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

- Automatic synchronization of system time with NTP server

- Traceroute utility.

LEDs:

- Power

- Internet

- WLAN

- USB

- 8 LAN LEDs

- WPS.

Power:

- External power adapter DC 5V/2.5A

- Reset to Factory Defaults button.

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).

Operating Humidity:

• from 10% to 90% non-condensing.

Storage Humidity:

• from 5% to 95% non-condensing.

Product Appearance

Top Panel and Right Side Panel
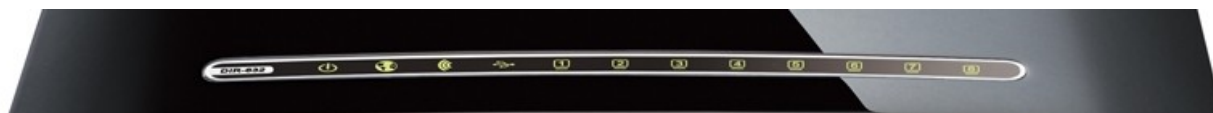
Figure 1. Top panel view.

LED	Mode	Description
Power	Solid green	The router is powered on.
	Solid yellow	When powered on: the router is being loaded; when loaded: a malfunction of the router.
	No light	The router is powered off.
Internet	Solid green	The Internet connection is on.
	Blinking green	The WAN interface is active (upstream or downstream traffic).
	Solid orange	The Internet connection is being established.
	No light	The Internet connection is off.
WLAN	Solid green	The router's WLAN is on.
	Blinking green	The WLAN interface is active (upstream or downstream traffic).
	No light	The router's WLAN is off.
USB	Solid green	A USB device is connected to the router's USB port.
	No light	No USB device.
LAN 1-8	Solid green	A device (computer) is connected to the relevant port, the connection is on.
	Blinking green	The LAN port is active (upstream or downstream traffic).
	No light	The connection is off.

The **WPS** button located on the right side panel of the router is designed to quickly add wireless devices to the router's WLAN. A separate LED is located on the **WPS** button.

Mode	Description
Blinking blue	Attempting to add a wireless device via the WPS function.
Solid blue	The wireless device is connected to the router's WLAN (lights for several minutes).
No light	The WPS function is not in use.

Back Panel

Figure 2. Back panel view.

Port	Description
LAN 1-8	8 Ethernet ports to connect computers or network devices.
INTERNET	A port to connect to a cable or DSL modem or to a private Ethernet line (it is recommended to use the cable included in the delivery package).
USB	A port for connecting a USB modem, a USB storage, or a printer.
RESET	A button to restore the factory default settings. To restore the factory defaults, push the button (with the device turned on), hold it for 10 seconds, and then release the button.
5V=2.5A	Power connector.

The router is also equipped with two detachable antennas with RP-SMA connector.

Delivery Package

The following should be included:

- Wireless router DIR-632

- Power adapter DC 5V/2.5A

- Ethernet cable (CAT 5E)

- Two detachable antennas

- "*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/Router/DIR-632/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 wireless router DIR-632 supporting WiMAX, 3G GSM and CDMA with a built-in switch (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 a WiMAX, 3G GSM or CDMA network, you should use a 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 a connection to the Internet[3].

> **WiMAX USB modem**
>
> Some WiMAX operators require subscribers to activate their WiMAX USB modems prior to using them. Please, refer to connection guidelines provided by your operator when concluding the agreement or placed on its website.

> ❗ **3G USB modem**
>
> 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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3   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 LAN ports located on the back panel of the router and the Ethernet port of your PC.

3. To connect via a WiMAX, 3G GSM or CDMA network: connect your USB modem to the USB port[4] 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 router, connect the modem to the USB port, and power on the router.

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 your PC and wait until your operating system is completely loaded.

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.
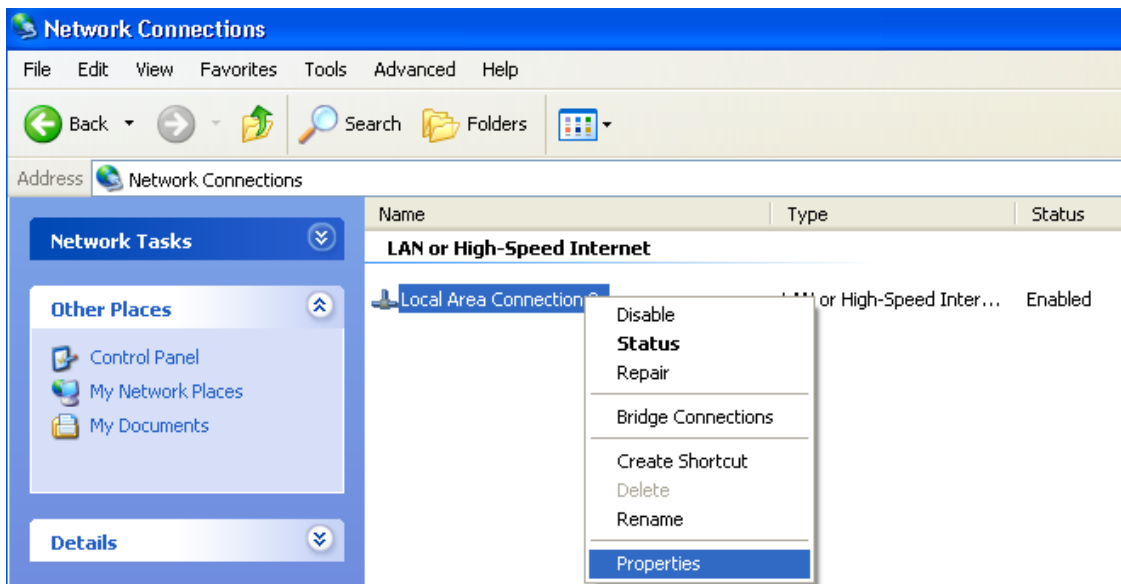

*Figure 3. The **Network Connections** window.*

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

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

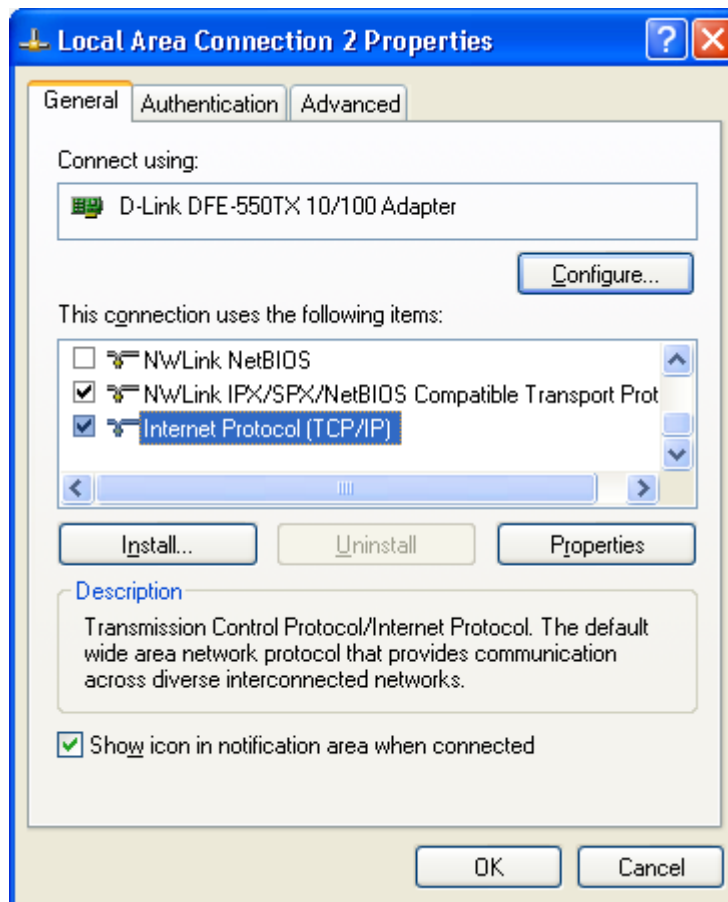*Figure 4. The **Local Area Connection Properties** window.*

4. Select the **Obtain an IP address automatically** and **Obtain DNS server address automatically** radio buttons. Click the **OK** button.
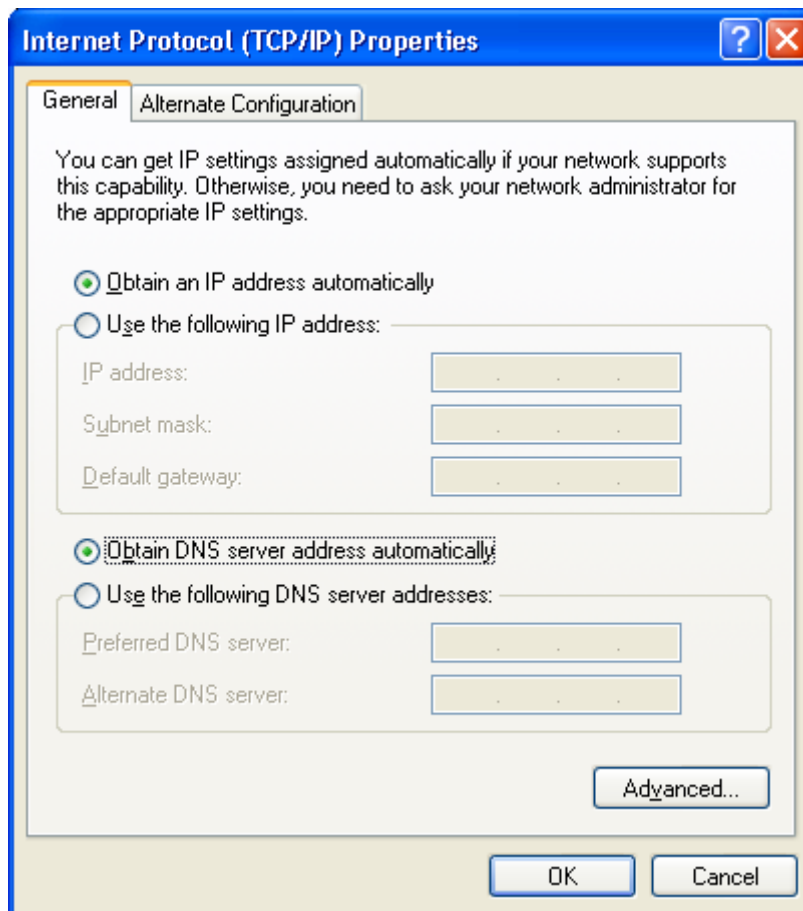
Figure 5. The Internet Protocol (TCP/IP) Properties window.

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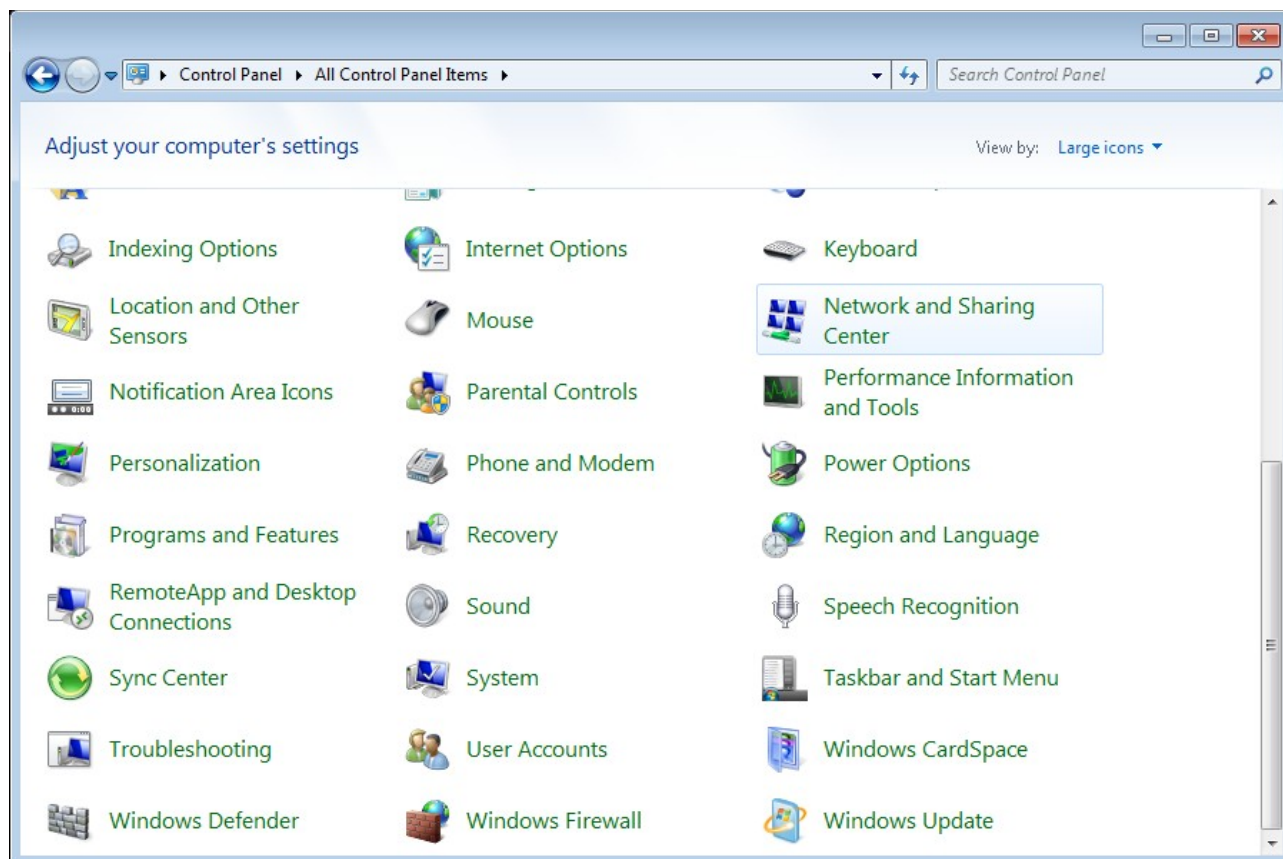
*Figure 6. The **Control Panel** window.*

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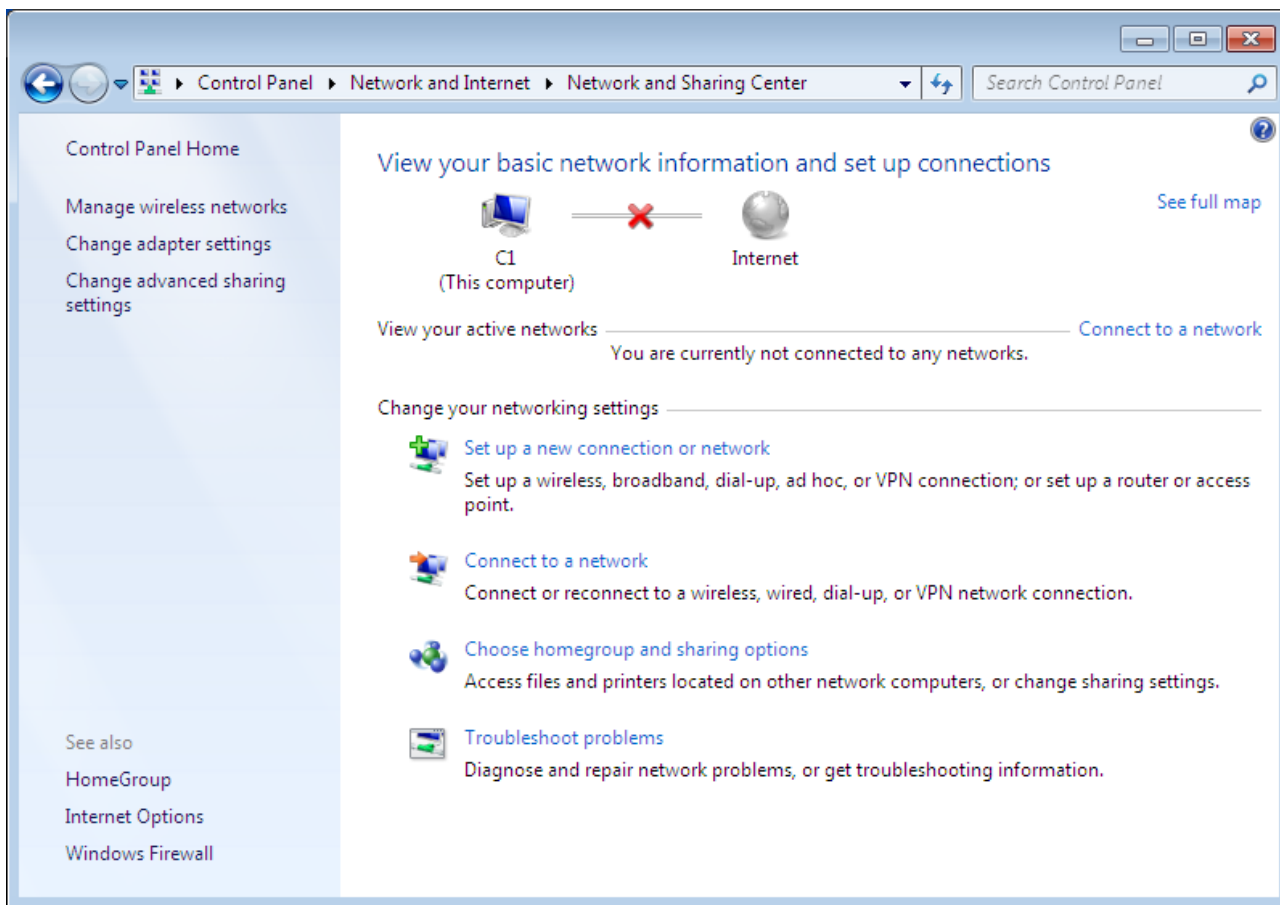
*Figure 7. The **Network and Sharing Center** window.*

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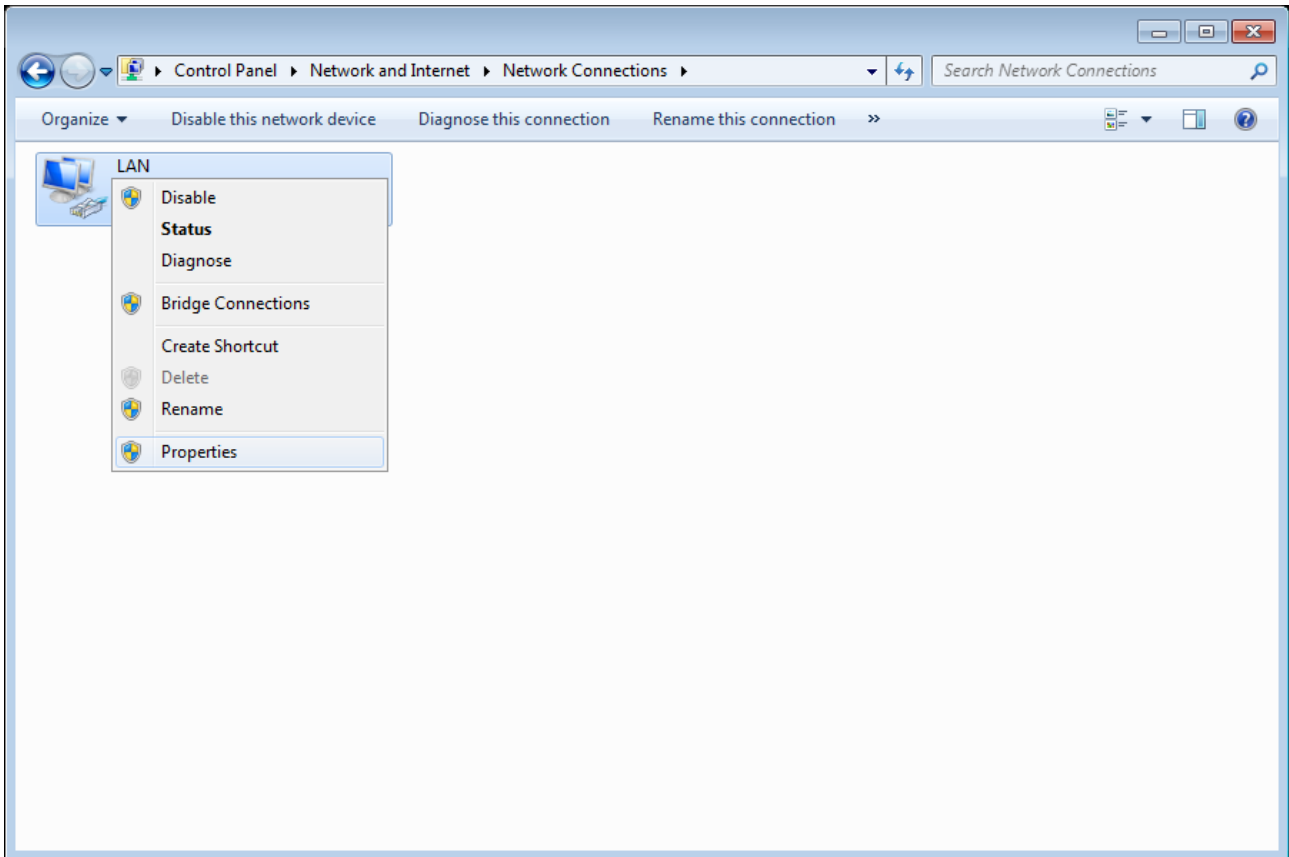
*Figure 8. The **Network Connections** window.*

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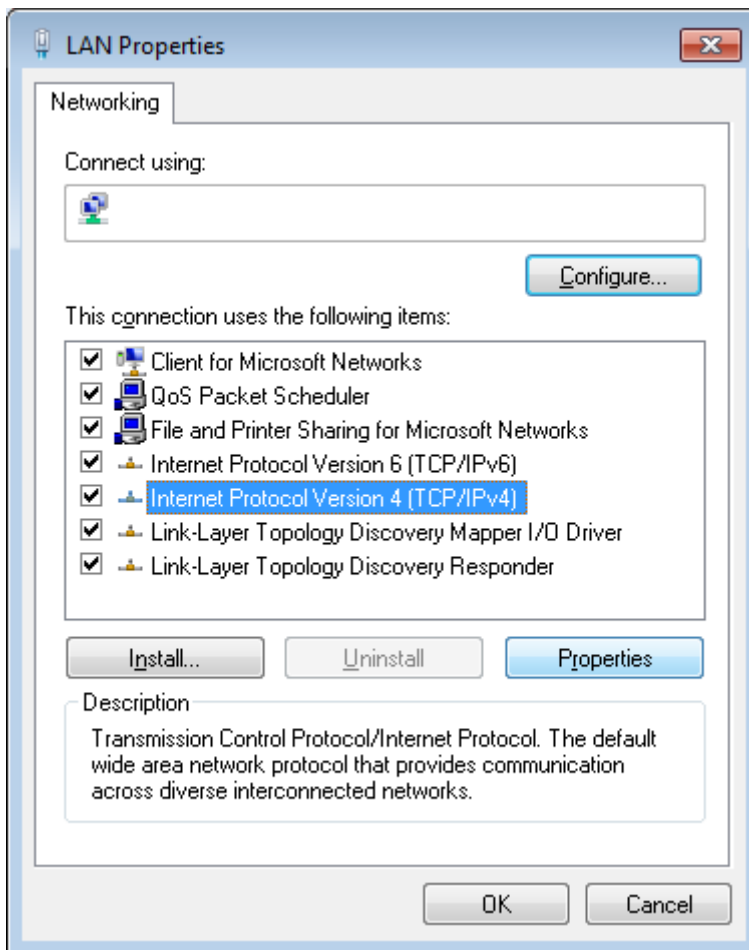
*Figure 9. The **Local Area Connection Properties** window.*

6. Select the **Obtain an IP address automatically** and **Obtain DNS server address automatically** radio buttons. Click the **OK** button.
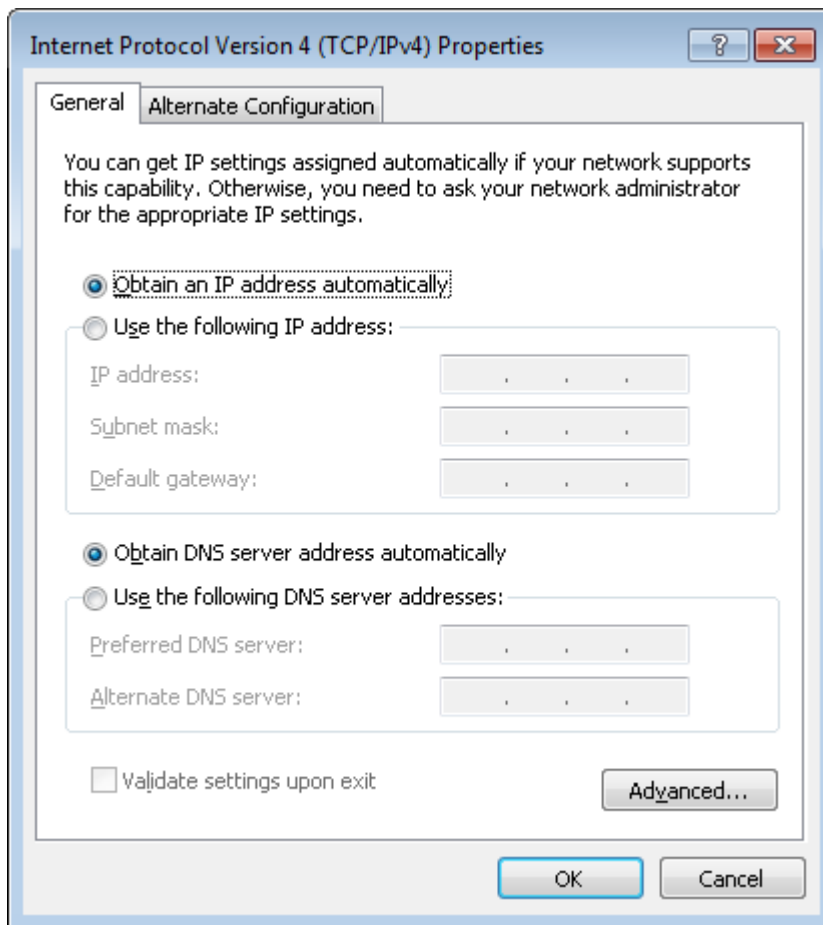
*Figure 10. The **Internet Protocol Version 4 (TCP/IPv4) Properties** window.*

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 a WiMAX, 3G GSM or CDMA network: connect your USB modem to the USB port[5] located on the back panel of the router.

! <u>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.</u>

2. 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.

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

4. 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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5   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.
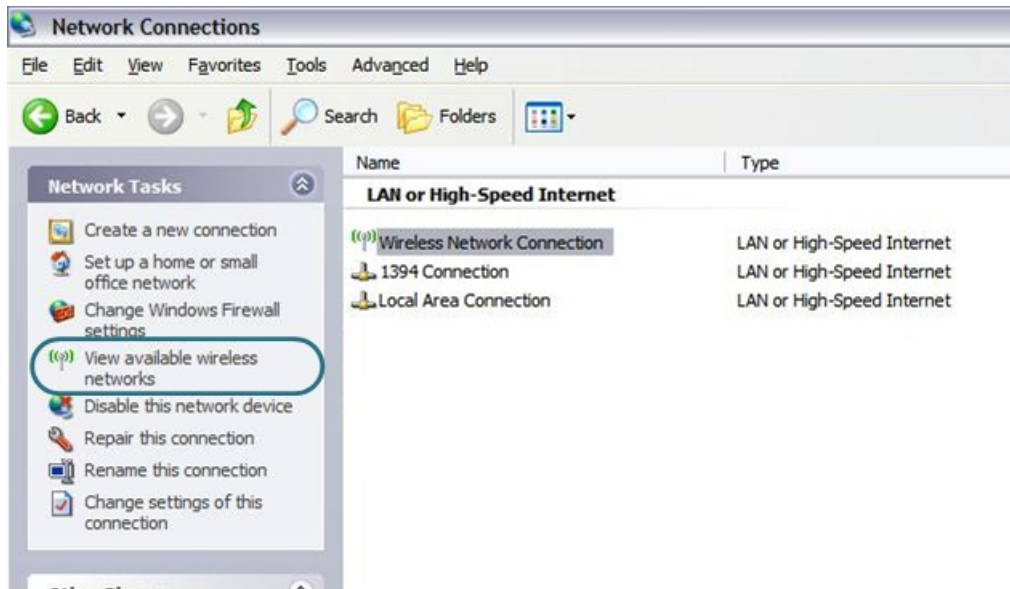
*Figure 11. The **Network Connections** window.*

3. Search for available wireless networks.

4. In the opened **Wireless Network Connection** window, select the wireless network `DIR-632` 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.)
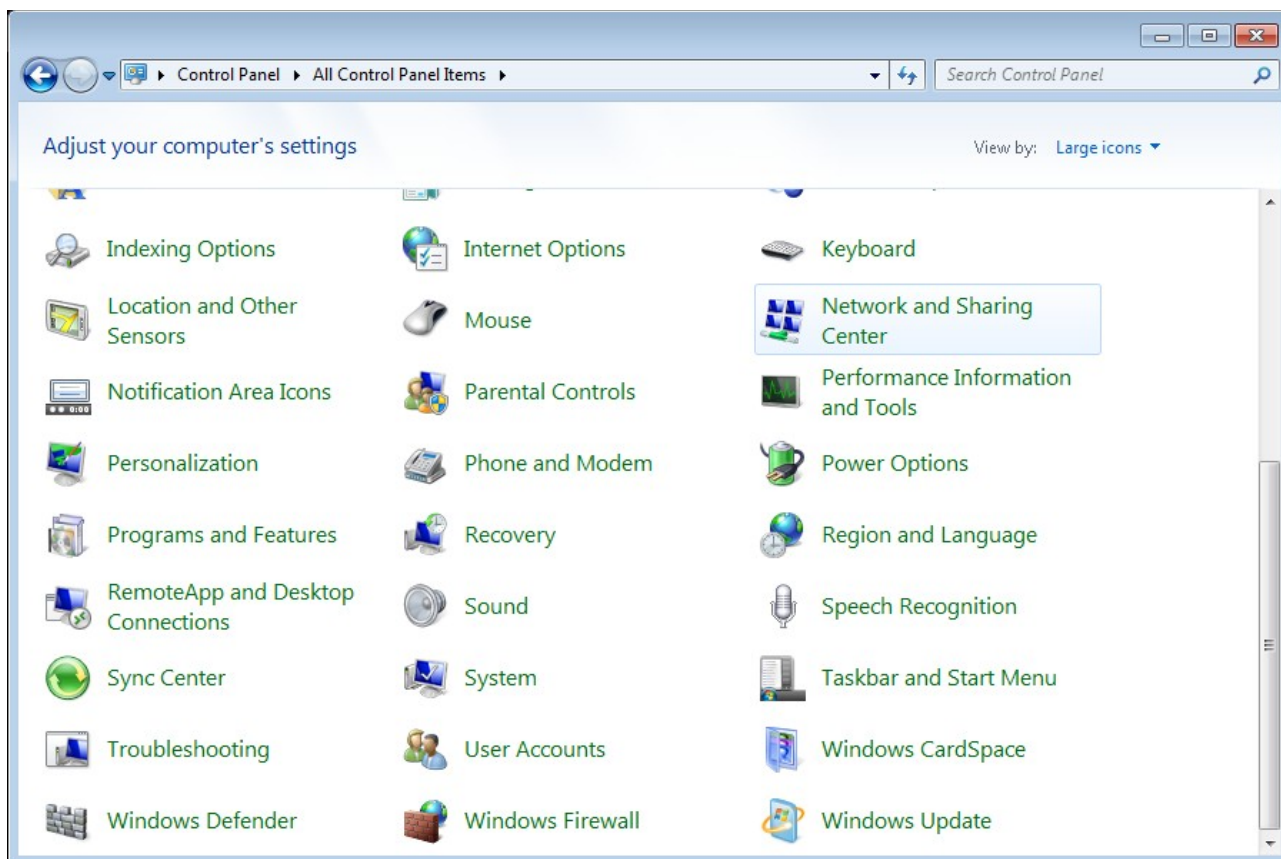
*Figure 12. The **Control Panel** window.*

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.
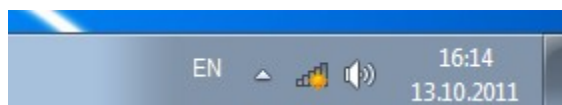
Figure 13. The notification area of the taskbar.

6. In the opened window, in the list of available wireless networks, select the wireless network `DIR-632` and click the **Connect** button.
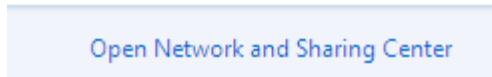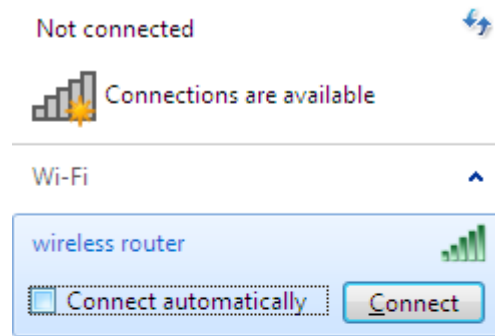
Figure 14. The list of available networks.

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 (create a WAN connection, change the parameters of the wireless network, specify the settings of the firewall, etc.).

1. Start a web browser (see the ***Before You Begin*** section, page 16).

2. In the address bar of the web browser, enter the IP address of the router (by default, the following IP address is specified: `192.168.0.1`). Press the **Enter** key.


Figure 15. Connecting to the web-based interface of the DIR-632 device.

3. On the opened page, enter the username and password for the administrator account in the **Login** and **Password** fields correspondingly (by default, the following username and password are specified: `admin`, `admin`). Then click the **Enter** link.
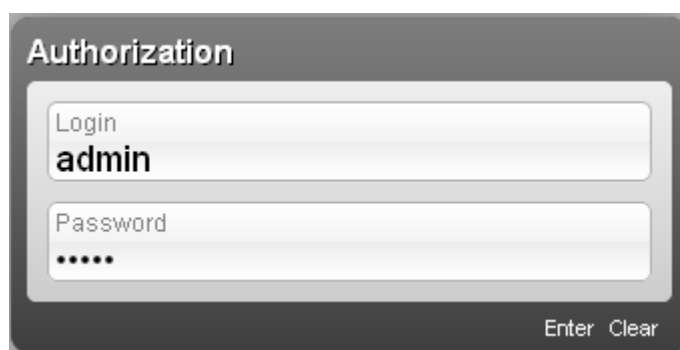
Figure 16. The login page.

❗ 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.

Right after the first access to the web-based interface you are forwarded to the page for changing the administrator password specified by default.
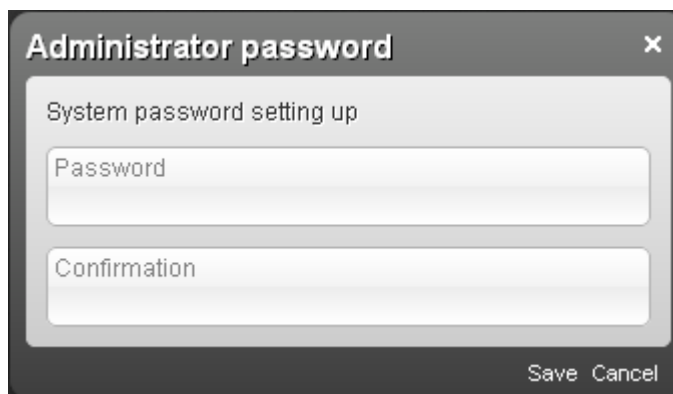
Figure 17. The page for changing the default administrator password.

Enter a new password in the **Password** and **Confirmation** fields (you may use digits, Latin letters (uppercase and/or lowercase), and characters available on the keyboard), then click the **Save** link.

!   Remember or write down the new password for the administrator account. In case of losing the new password, you can access the settings of the router only after restoring the factory default settings via the hardware **RESET** button. This procedure wipes out all settings that you have configured for your router.

Web-based Interface Structure

After successful registration the router's quick settings page opens.
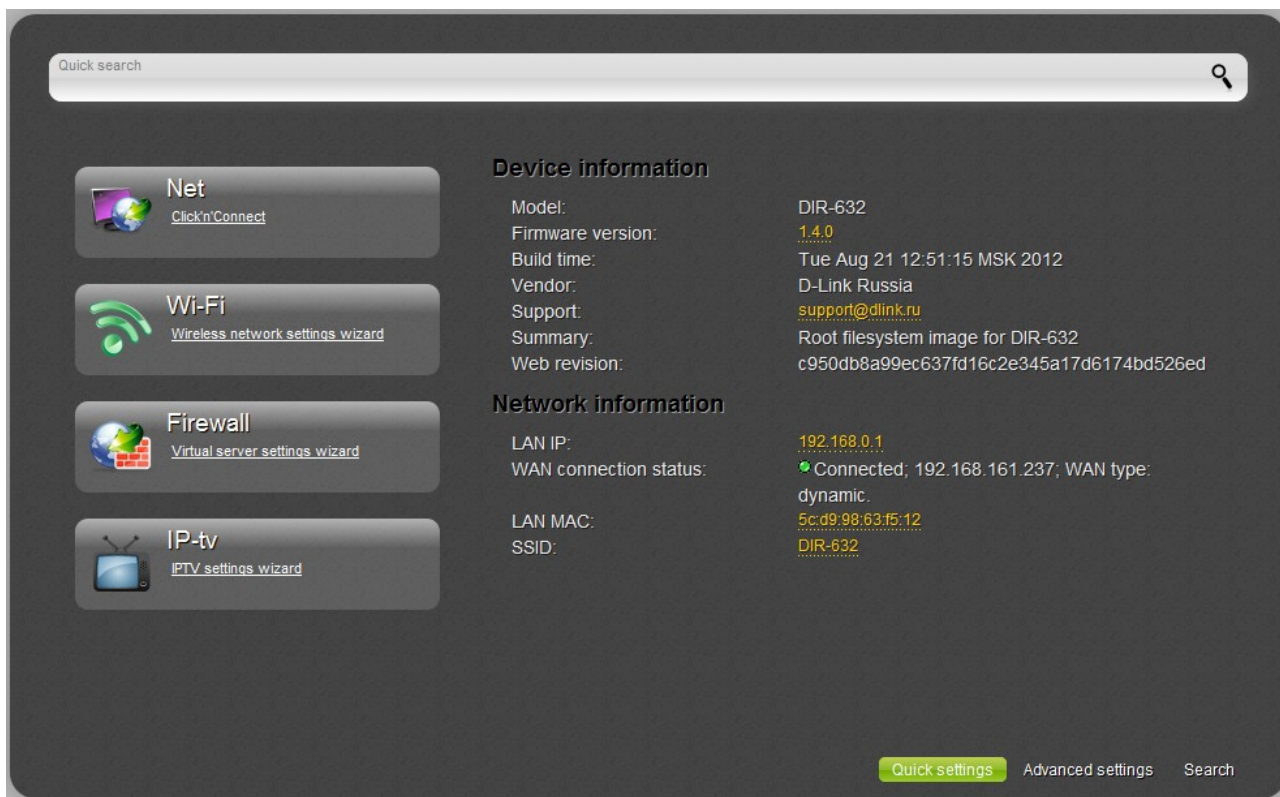
Figure 18. The quick settings page.

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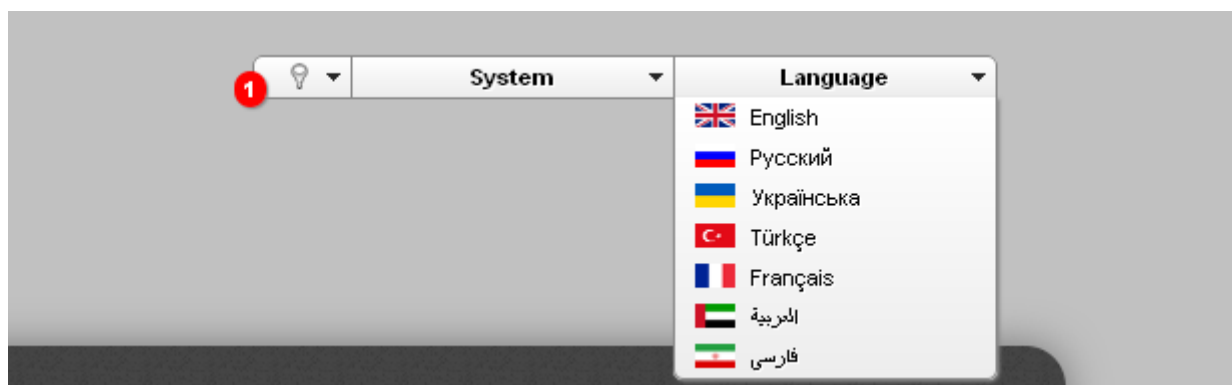
Figure 19. Changing the language of the web-based interface.

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

The quick settings 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.).

On the quick settings page you can run a needed Wizard, quickly get to some pages of the web-based interface, search for a specific page, or switch to the advanced settings section.

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 (for the detailed description of the page, see the *Firmware Upgrade* section, page 186).

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 (for the detailed description of the page, see the *LAN* section, page 125).

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 (for the detailed description of the page, see the *Basic Settings* section, page 129).

To configure connection to the Internet, click the **Click'n'Connect** link in the **Net** section (for the detailed description of the Wizard, see the *Click'n'Connect* section, page 38).

To configure the router's wireless network, click the **Wireless network settings wizard** link in the **Wi-Fi** section (for the detailed description of the Wizard, see the *Wireless Network Settings Wizard* section, page 82).

To configure access from the Internet to a web server located in your LAN, click the **Virtual server settings wizard** link in the **Firewall** section (for the detailed description of the Wizard, see the *Virtual Server Settings Wizard* section, page 88).

To configure the router to use an IPTV set-top box, click the **IPTV settings wizard** link in the **IP-tv** section (for the detailed description of the Wizard, see the *IPTV Settings Wizard* section, page 90).

To configure all parameters of the router independently without the Wizards, click the **Advanced settings** link in the bottom right corner of the page.

Figure 20. The advanced settings page.

The pages of the **Status** section display data on the current state of the router (for the description of the pages, see the *Status* section, page 91).

The pages of the **Net** section are designed for configuring basic parameters of the LAN interface of the router and creating a connection to the Internet (for the description of the pages, see the *Net* section, page 95).

The pages of the **Wi-Fi** section are designed for specifying all needed settings of the router's wireless network (for the description of the pages, see the *Wi-Fi* section, page 128). Also you can enable or disable the device's WLAN directly from the advanced settings page. To enable the WLAN, select the **On** position ( ) of the **Enable/Disable Wi-Fi** switch. To disable the WLAN, select the **Off** position ( ) of the **Enable/Disable Wi-Fi** switch.

The pages of the **Advanced** section are designed for configuring additional parameters of the router (for the description of the pages, see the *Advanced* section, page 146).

The pages of the **Firewall** section are designed for configuring the firewall of the router (for the description of the pages, see the *Firewall* section, page 159).

The pages of the **USB modem** section are designed to operate the connected 3G USB modem (for the description of the pages, see the *USB Modem* section, page 168).

The **WiMAX** section provides data on the connected WiMAX USB modem (for the description of the page, see the *WiMAX* section, page 171).

The pages of the **USB storage** section are designed to operate the connected USB storage (for the description of the pages, see the *USB Storage* section, page 173).

The pages of the **Control** section are designed for creating restrictions on access to the Internet (for the description of the page, see the *Control* section, page 177).

The pages of the **System** section provide functions for managing the internal system of the router (for the description of the pages, see the *System* section, page 180).

Also you can find a specific page via search. To do this, enter the name of the page, wholly or partly, in the search bar in the top part of the web-based interface page, and then select a needed link in the search results.

Figure 21. The page displaying the search results.

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.
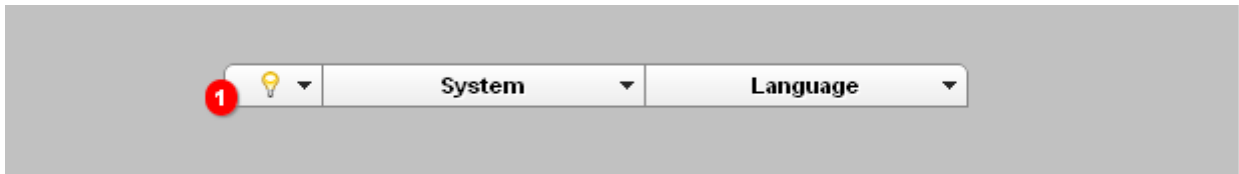

Figure 22. The notification on unsaved changes.

Place the mouse pointer on the **Notifications** icon ( ) to view the list of unsaved changes and click the relevant link.

You can save the router's settings via the top-page menu displayed when the mouse pointer is over the **System** caption.
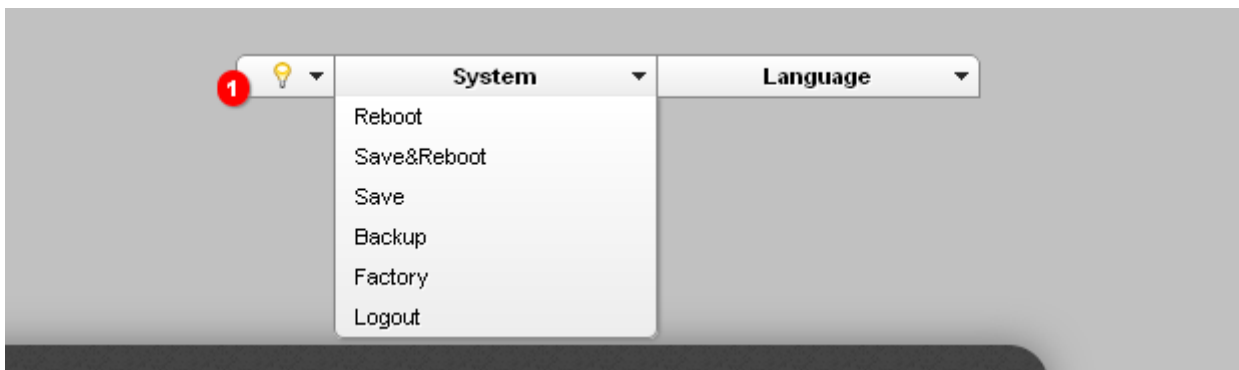
Figure 23. The top-page menu.

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. The button is located on the back panel of the router next to the power connector.

To restore the factory default settings, insert a small paperclip into the hole of the button (with the router **powered on**), push, and hold for 10 seconds. Then remove the paperclip. All LEDs of the router should turn off and then turn on again.

Wait for about 30 seconds. Now you can access the web-based interface of the router using the default IP address, username and password.

If you fail to restore the factory defaults via the method described above, use the emergency reset method.

1. Power off the device.

2. Insert a small paperclip into the hole of the **RESET** button and push.

3. Power on the device keeping the button pushed.

4. After 5 seconds, release the button.

> **!** When you keep the button pushed for more than 8 seconds, the router switches to crash recovery mode. To restore normal operation of the router, please, contact the Technical Support Service.

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

CHAPTER 4. CONFIGURING VIA WEB-BASED INTERFACE

Click'n'Connect

To configure a WAN connection, click the **Click'n'Connect** link in the **Net** section.
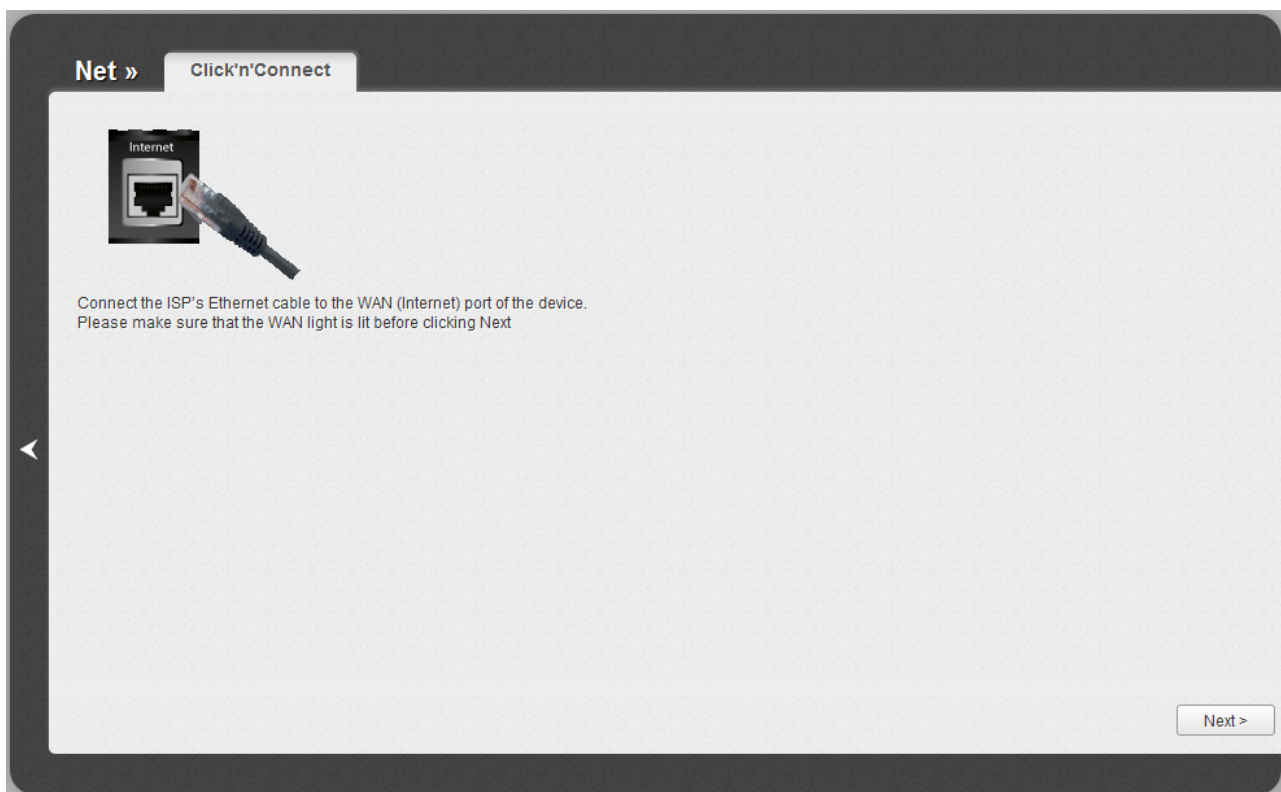
Figure 24. Configuring a WAN connection.

Connect the Ethernet cable provided by your ISP to the WAN port of the router. Verify the relevant LED (the **Internet** LED should be on).

Click the **Next** button to continue.
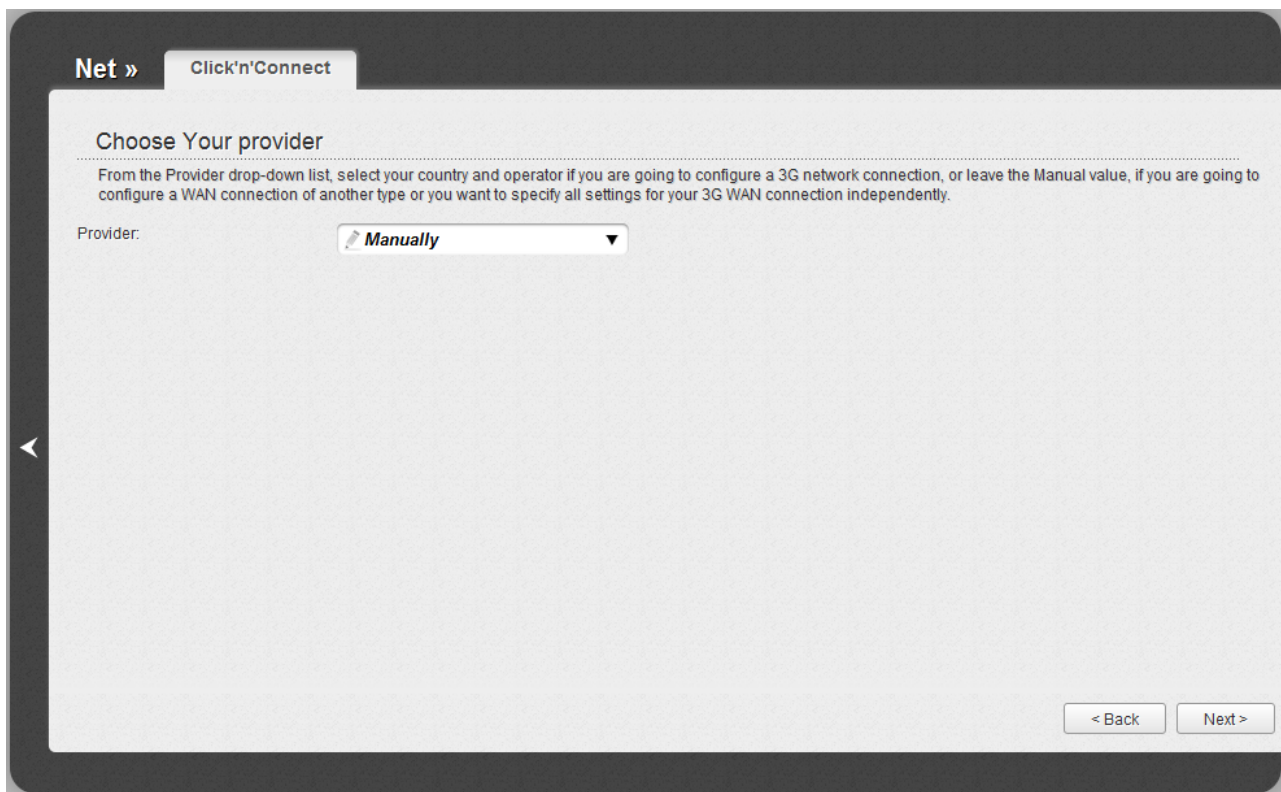
Figure 25. The page for selecting a 3G network operator.

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 or WiMAX WAN connection or you want to specify all settings for your 3G WAN connection independently.

Click the **Next** button to continue.
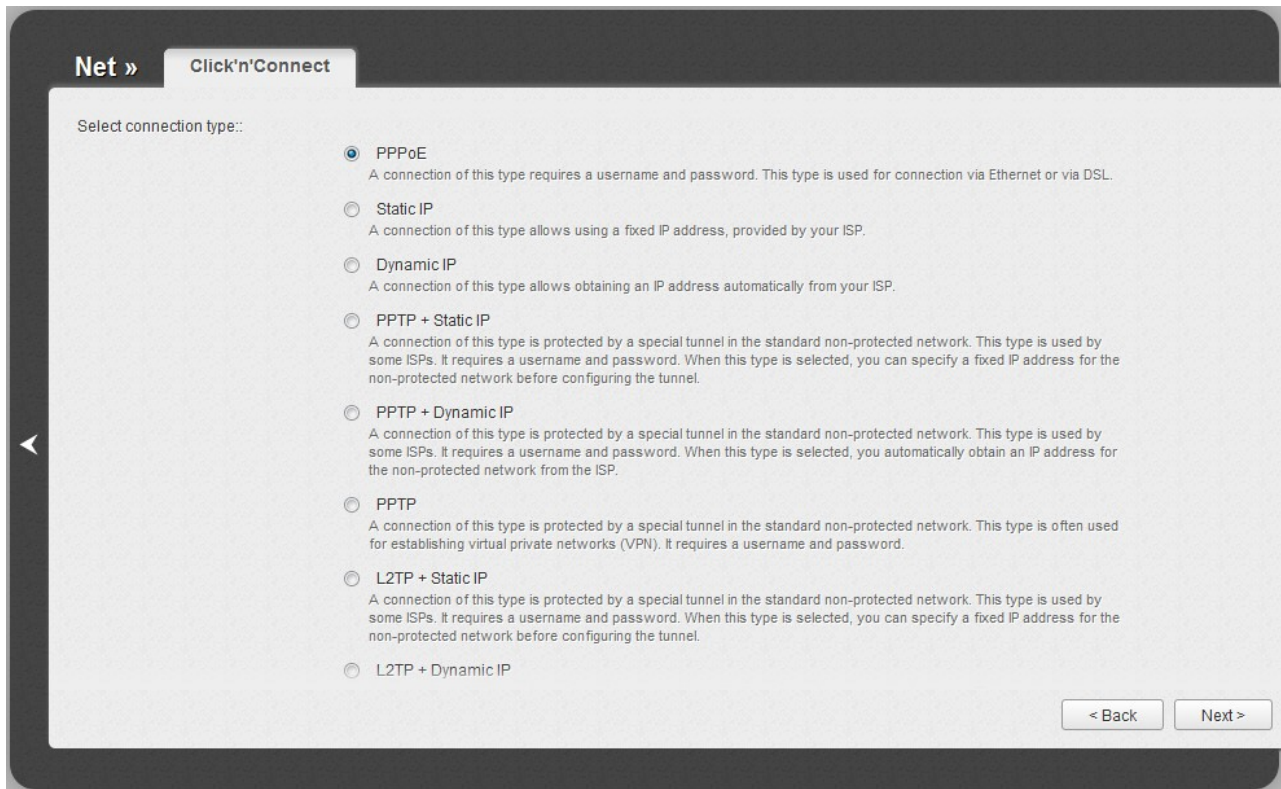
Figure 26. The page for selecting the connection type.
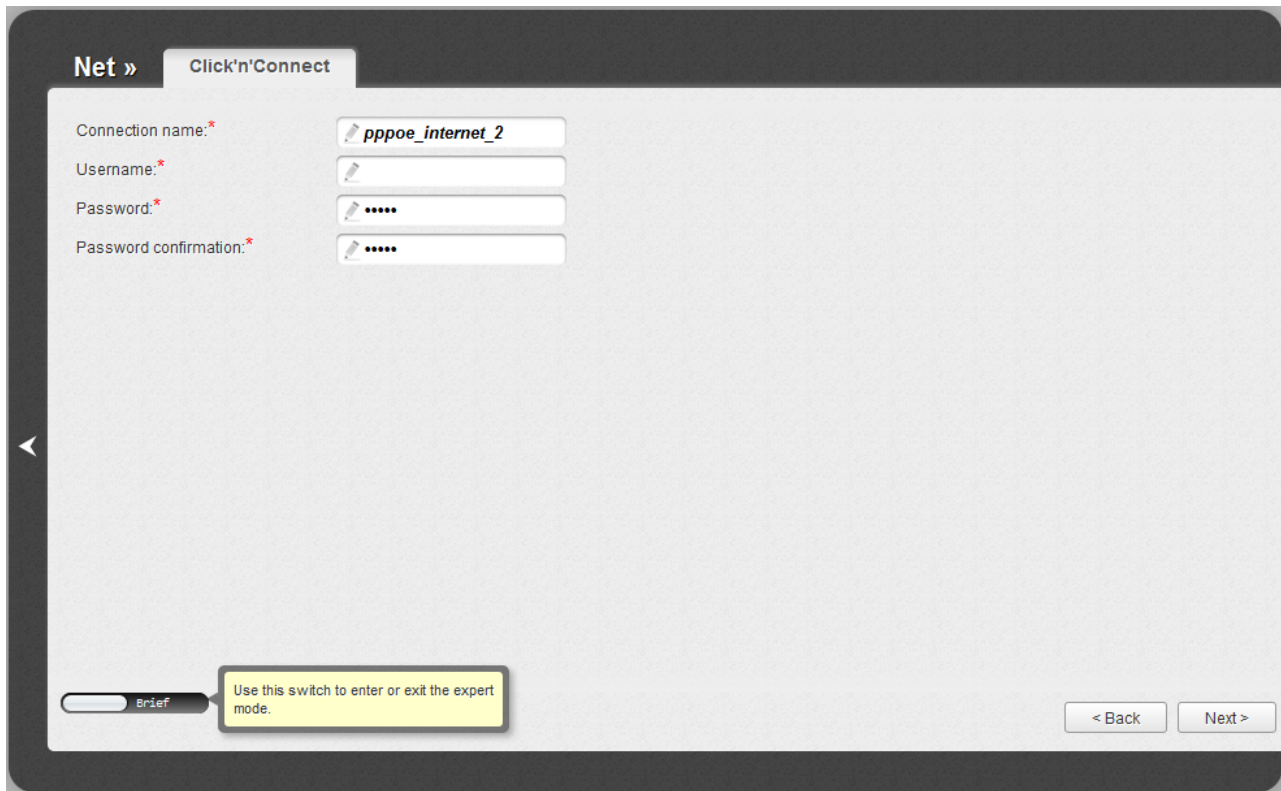
On the opened page, select the needed choice of the radio button and click the **Next** button.

To create a WiMAX WAN connection, on the opened page, select the **USB-WiMAX** choice and click the **Next** button (the page is displayed only when a WiMAX USB modem is connected to the router).

Creating WAN Connection

PPPoE Connection

Figure 27. Configuring PPPoE WAN connection.

In the **Connection name** field, specify a name for the connection for easier identification.

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

As a rule, the specified settings are enough to configure a connection of the selected type. If you need to specify additional settings, open the expert settings mode. To do this, use the switch in the bottom left corner of the page.
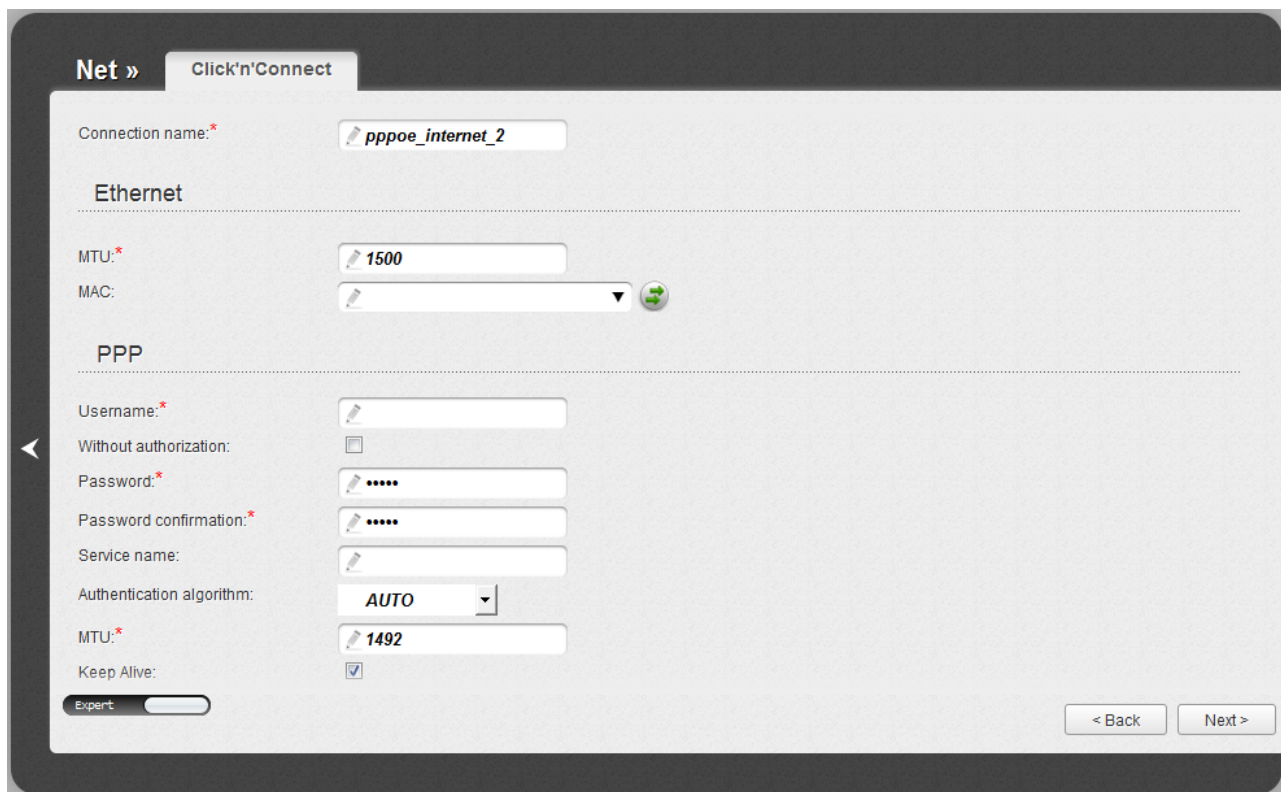
*Figure 28. Configuring PPPoE WAN connection. The expert settings mode. The **Ethernet** section.*

Parameter	Description
Connection name	A name for connection for easier identification.
Ethernet	
MTU	The maximum size of units transmitted by the interface.
MAC	A MAC address assigned to the interface. This parameter is mandatory if your ISP uses MAC address binding. In the field, enter the MAC address registered by your ISP upon concluding the agreement. You can click the **Clone MAC Address** button ( ) to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface. Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list (the field will be filled in automatically).

*Figure 29. Configuring PPPoE WAN connection. The expert settings mode. 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.
Static IP Address	Fill in the field if you want to use a static IP address to access the Internet.
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.

*Figure 30. Configuring PPPoE WAN connection. The expert settings mode. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

Click the **Next** button to continue.

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

After clicking the **Apply** button, the page for checking the Internet availability opens (see the *Checking Internet Availability* section, page 79).

Static IP Connection

Figure 31. Configuring Static IP WAN connection.

In the **Connection name** field, specify a name for the connection for easier identification.

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.

In the **Primary DNS server** field, enter the address of the primary DNS server.

If your wired ISP uses authorization via the 802.1x protocol, in the **Authorization via 802.1x protocol** section, select the **Authorization in the ISP's network via 802.1x protocol** checkbox and fill in the fields of the section in accordance with data provided by your ISP.

As a rule, the specified settings are enough to configure a connection of the selected type. If you need to specify additional settings, open the expert settings mode. To do this, use the switch in the bottom left corner of the page.

*Figure 32. Configuring Static IP WAN connection. The expert settings mode. The **Ethernet** section.*

Parameter	Description
Connection name	A name for connection for easier identification.
Ethernet	
MTU	The maximum size of units transmitted by the interface.
MAC	A MAC address assigned to the interface. This parameter is mandatory if your ISP uses MAC address binding. In the field, enter the MAC address registered by your ISP upon concluding the agreement. You can click the **Clone MAC Address** button ( ) to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface. Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list (the field will be filled in automatically).

*Figure 33. Configuring Static IP WAN connection. The expert settings mode. The **IP** and **Authorization via 802.1x protocol** sections.*

Parameter	Description
IP	
IP Address	Enter an IP address for this WAN connection.
Netmask	Enter a subnet mask for this WAN connection.
Gateway IP address	Enter an IP address of the gateway used by this WAN connection.
Primary DNS server/ Secondary DNS server	Enter addresses of the primary and secondary DNS servers in the relevant fields.
Authorization via 802.1x protocol	
Authorization in the ISP's network via 802.1x protocol	Select the checkbox to allow authorization in the ISP's network via the 802.1x protocol.
Authentication method	Select a needed authentication method from the drop-down list.
Username	Enter the username provided by your ISP.
Password	Enter the password provided by your ISP.

*Figure 34. Configuring Static IP WAN connection. The expert settings mode. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

Click the **Next** button to continue.

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

After clicking the **Apply** button, the page for checking the Internet availability opens (see the *Checking Internet Availability* section, page 79).

Dynamic IP Connection
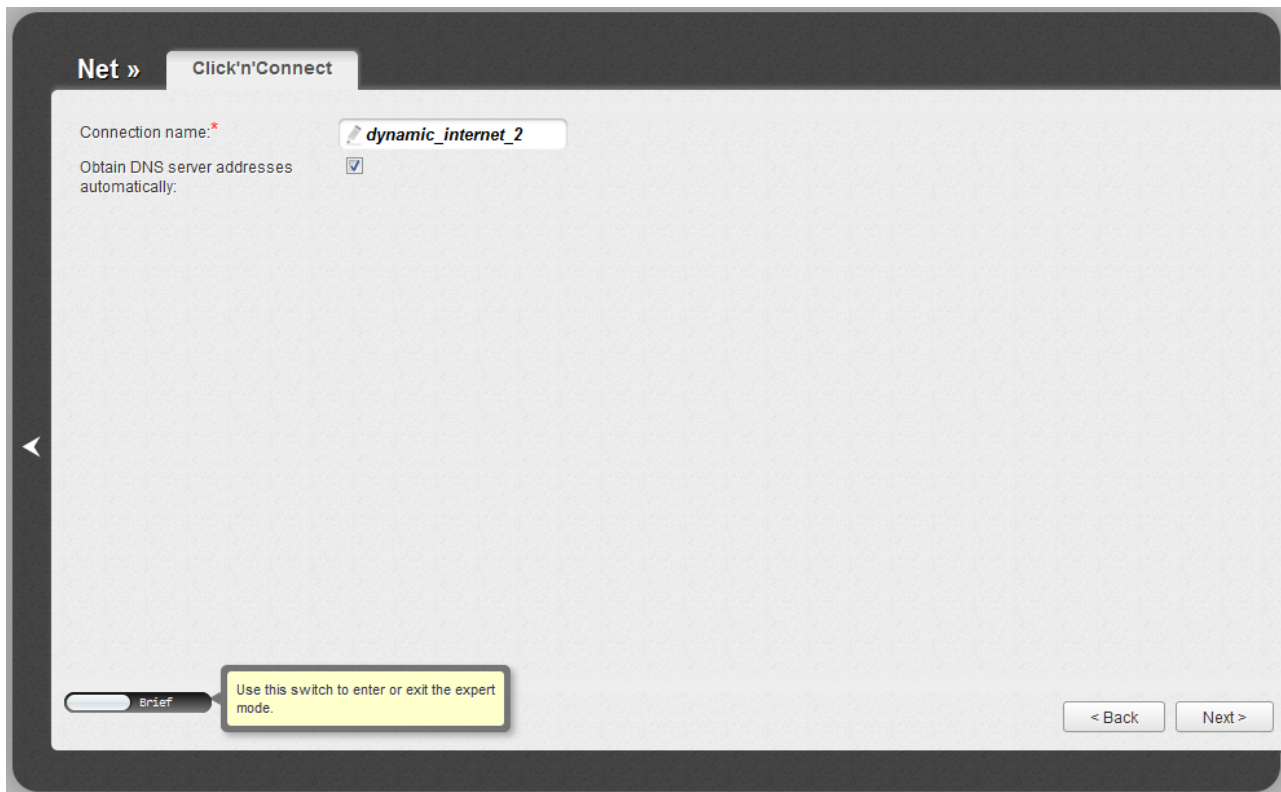
Figure 35. Configuring Dynamic IP WAN connection.

In the **Connection name** field, specify a name for the connection for easier identification.

If your ISP has provided the addresses of the DNS servers, deselect the **Obtain DNS server addresses automatically** checkbox and fill in the **Primary DNS server** field.

As a rule, the specified settings are enough to configure a connection of the selected type. If you need to specify additional settings, open the expert settings mode. To do this, use the switch in the bottom left corner of the page.
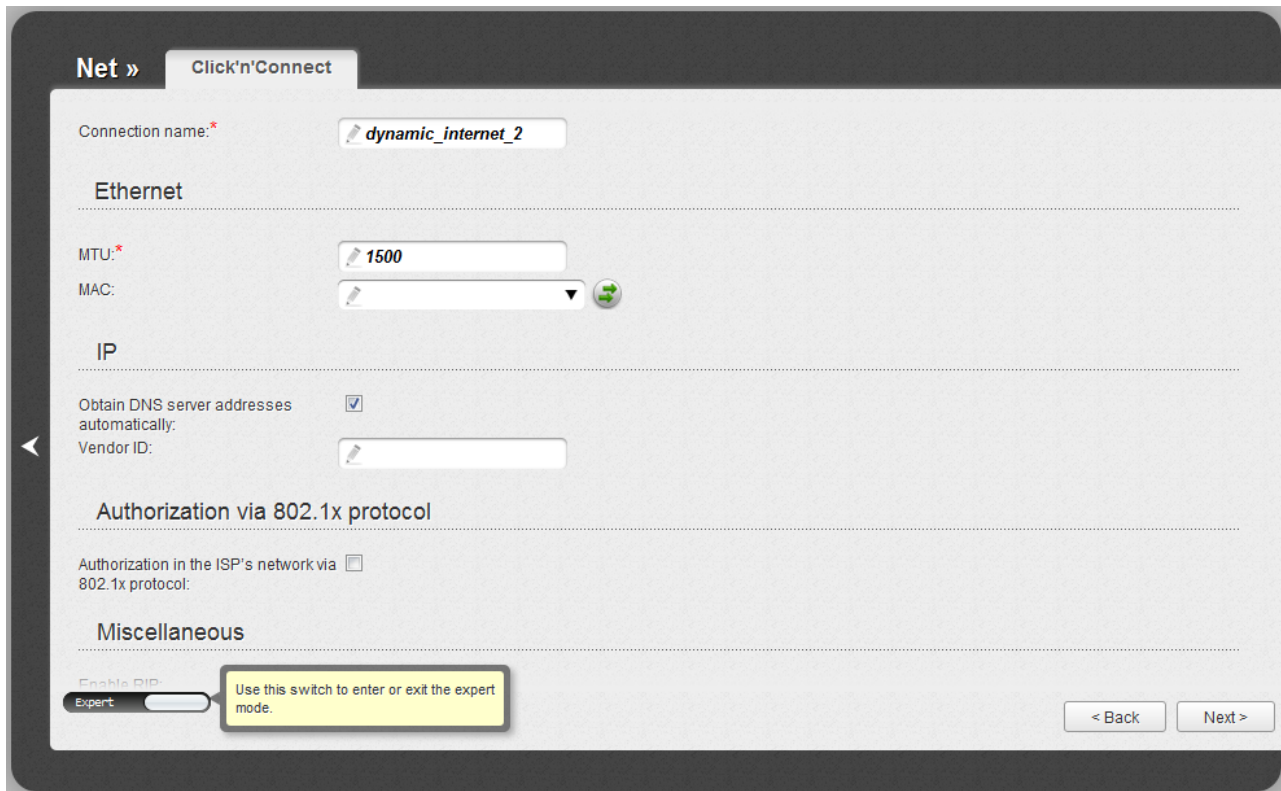
*Figure 36. Configuring Dynamic IP WAN connection. The expert settings mode. The **Ethernet** section.*

Parameter	Description
Connection name	A name for connection for easier identification.
Ethernet	
MTU	The maximum size of units transmitted by the interface.
MAC	A MAC address assigned to the interface. This parameter is mandatory if your ISP uses MAC address binding. In the field, enter the MAC address registered by your ISP upon concluding the agreement. You can click the **Clone MAC Address** button ( ) to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface. Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list (the field will be filled in automatically).

Figure 37. Configuring Dynamic IP WAN connection. The expert settings mode. The **IP** and **Authorization via 802.1x protocol** sections.

Parameter	Description
IP	
Obtain DNS server addresses automatically	Select the checkbox to configure automatic assignment of DNS server addresses. If the checkbox is selected, the **Primary DNS server** and **Secondary DNS server** fields are not displayed.
Primary DNS server/ Secondary DNS server	Enter addresses of the primary and secondary DNS servers in the relevant fields.
Vendor ID	The identifier of your ISP. *Optional*.
Authorization via 802.1x protocol	
Authorization in the ISP's network via 802.1x protocol	Select the checkbox to allow authorization in the ISP's network via the 802.1x protocol.
Authentication method	Select a needed authentication method from the drop-down list.
Username	Enter the username provided by your ISP.
Password	Enter the password provided by your ISP.

Figure 38. Configuring Dynamic IP WAN connection. The expert settings mode. The **Miscellaneous** section.

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

Click the **Next** button to continue.

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

After clicking the **Apply** button, the page for checking the Internet availability opens (see the *Checking Internet Availability* section, page 79).

PPTP or L2TP Connection

Figure 39. Configuring PPTP WAN connection.

In the **Connection name** field, specify a name for the connection for easier identification.

In the **Username** field, enter your login, and in the **Password** and **Password confirmation** fields – the password to connect to a remote server.

In the **VPN server address** field, enter the IP or URL address of the PPTP or L2TP authentication server.

As a rule, the specified settings are enough to configure a protected connection (the VPN tunnel). If you need to specify additional settings, open the expert settings mode. To do this, use the switch in the bottom left corner of the page.
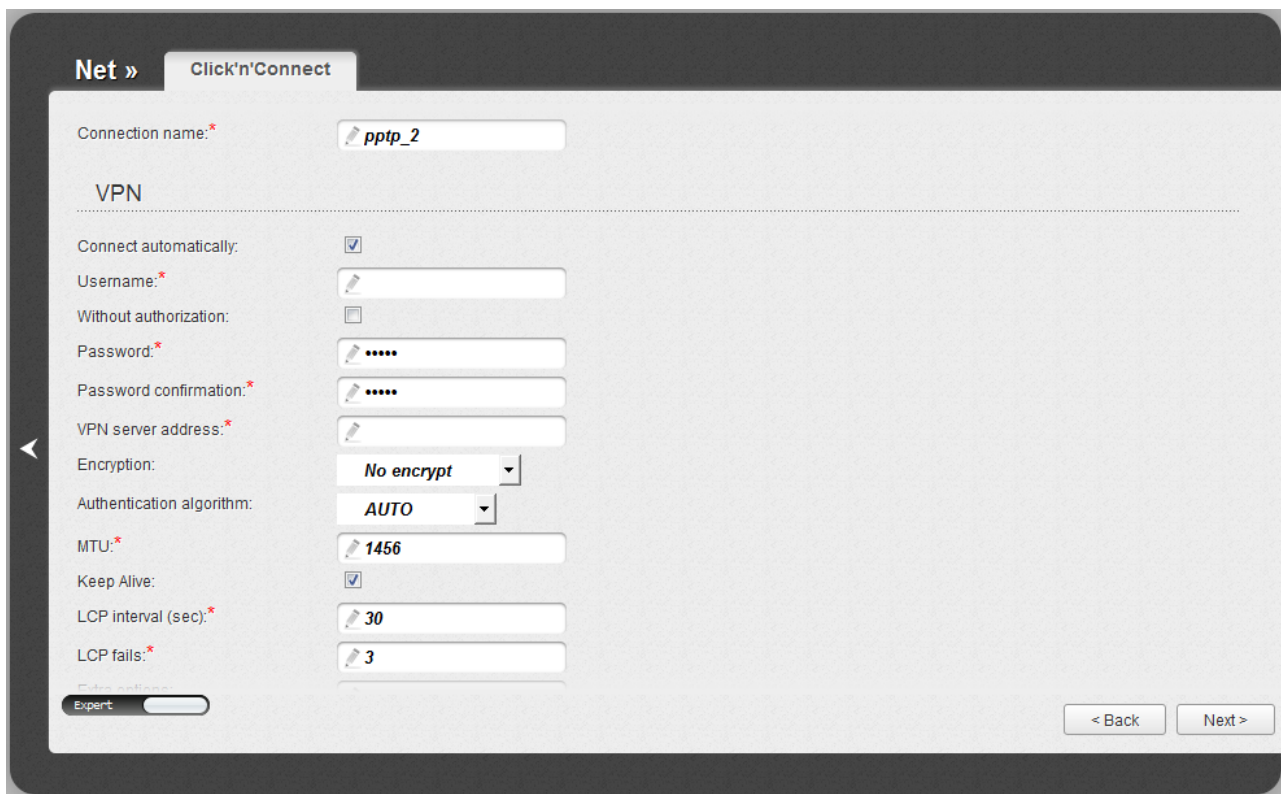
*Figure 40. Configuring PPTP WAN connection. The expert settings mode. The **VPN** section.*

Parameter	Description
Connection name	A name for connection for easier identification.
VPN	
Connect automatically	Select the checkbox to enable auto-start of the connection upon the boot-up of the router.
Username	A username (login) to access the server.
Without authorization	Select the checkbox if you don't need to enter a username and password to access the server.
Password	A password to access the server.
Password confirmation	The confirmation of the entered password (to avoid mistypes).
VPN server address	The IP or URL address of the PPTP or L2TP authentication server.

Parameter	Description
Encryption	Select a method of MPPE encryption. • **No encrypt**: MPPE encryption is not applied. • **MPPE 40/128 bit**: MPPE encryption with a 40-bit or 128-bit key is applied. • **MPPE 40 bit**: MPPE encryption with a 40-bit key is applied. • **MPPE 128 bit**: MPPE encryption with a 128-bit key is applied. MPPE encryption can be applied only if the **MS-CHAP, MS-CHAP-V2**, or **AUTO** value is selected from the **Authentication algorithm** drop-down list.
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 the server 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.
Extra options	Advanced options of the pppd daemon which need to be specified for this connection. *Optional*.
Dial on demand	Select the checkbox if you want the router to establish the connection on demand. In the **Maximum idle time** field, specify a period of inactivity (in seconds) after which the connection should be terminated.
Static IP Address	Fill in the field if you want to use a static IP address for this connection.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.
IP received	The assigned IP address.

*Figure 41. Configuring PPTP WAN connection. The expert settings mode. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

Click the **Next** button to continue.

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

After clicking the **Apply** button, the page for checking the connection availability opens (see the *Checking Internet Availability* section, page 79).

PPTP + Static IP or L2TP + Static IP Connection

Figure 42. Configuring PPTP + Static IP WAN connection.

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.

In the **Primary DNS server** field, enter the address of the primary DNS server.

If your wired ISP uses authorization via the 802.1x protocol, in the **Authorization via 802.1x protocol** section, select the **Authorization in the ISP's network via 802.1x protocol** checkbox and fill in the fields of the section in accordance with data provided by your ISP.

As a rule, the specified settings are enough to configure a non-protected connection of the selected type. If you need to specify additional settings, open the expert settings mode. To do this, use the switch in the bottom left corner of the page.

Figure 43. Configuring PPTP + Static IP WAN connection. The expert settings mode. The **Ethernet** *section.*

Parameter	Description
Ethernet	
MTU	The maximum size of units transmitted by the interface.
MAC	A MAC address assigned to the interface. This parameter is mandatory if your ISP uses MAC address binding. In the field, enter the MAC address registered by your ISP upon concluding the agreement. You can click the **Clone MAC Address** button ( ) to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface. Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list (the field will be filled in automatically).

*Figure 44. Configuring PPTP + Static IP WAN connection. The expert settings mode. The **IP** and **Authorization via 802.1x protocol** sections.*

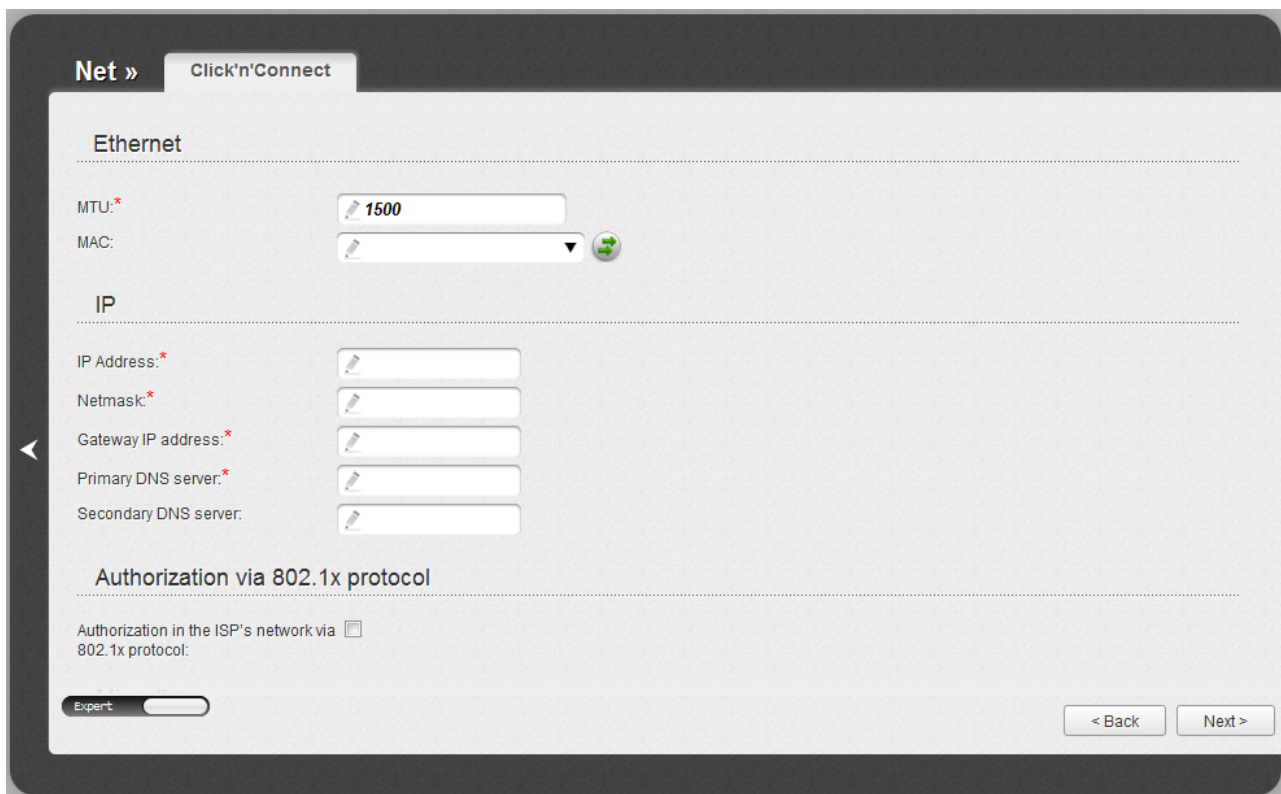| Parameter	Description
IP	
IP Address	Enter an IP address for this WAN connection.
Netmask	Enter a subnet mask for this WAN connection.
Gateway IP address	Enter an IP address of the gateway used by this WAN connection.
Primary DNS server/ **Secondary DNS server**	Enter addresses of the primary and secondary DNS servers in the relevant fields.
Authorization via 802.1x protocol	
Authorization in the ISP's network via 802.1x protocol	Select the checkbox to allow authorization in the ISP's network via the 802.1x protocol.
Authentication method	Select a needed authentication method from the drop-down list.
Username	Enter the username provided by your ISP.
Password	Enter the password provided by your ISP.

*Figure 45. Configuring PPTP + Static IP WAN connection. The expert settings mode. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

Click the **Next** button to continue.

If needed, enter the IP addresses of the ISP's local resources.

Figure 46. Configuring PPTP + Static IP WAN connection.

Click the **Next** button to continue.
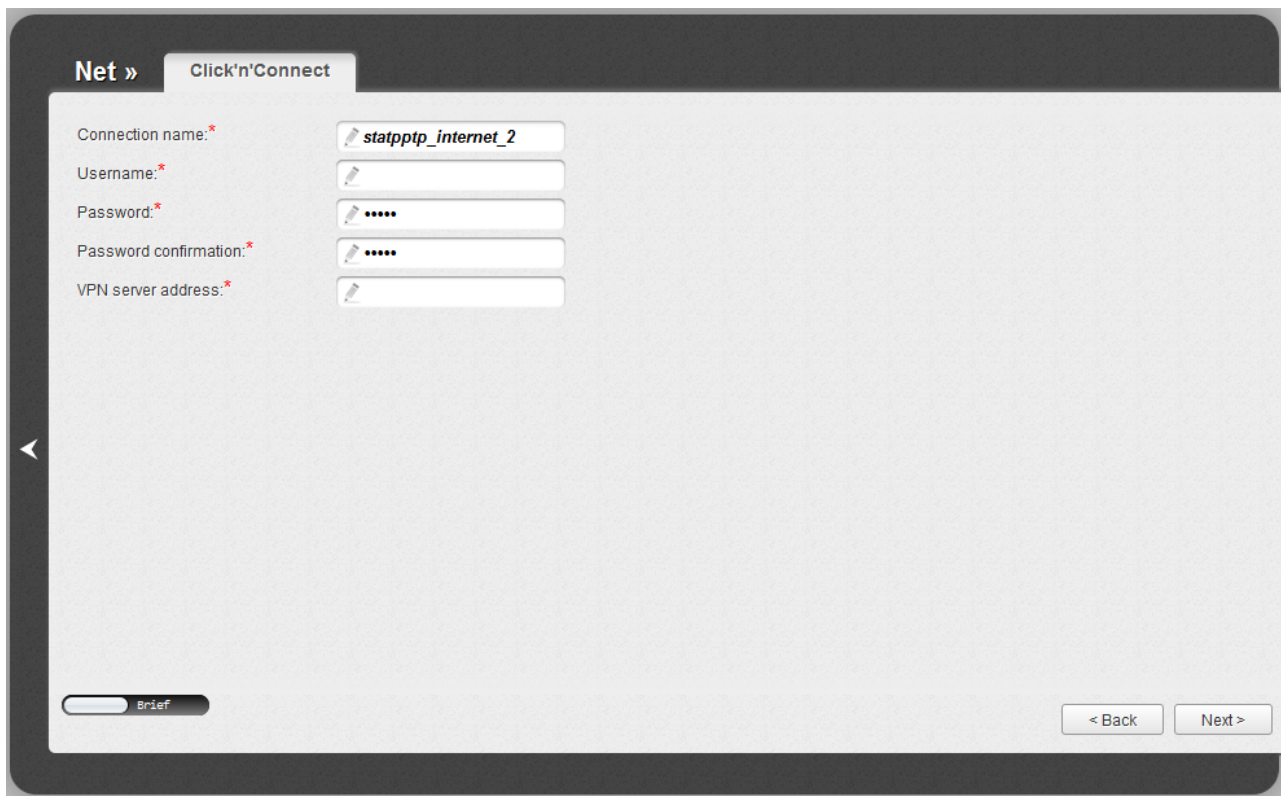
Figure 47. Configuring PPTP + Static IP WAN connection.

In the **Connection name** field, specify a name for the connection for easier identification.

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

In the **VPN server address** field, enter the IP or URL address of the PPTP or L2TP authentication server.

As a rule, the specified settings are enough to configure a protected connection (the VPN tunnel). If you need to specify additional settings, open the expert settings mode. To do this, use the switch in the bottom left corner of the page.
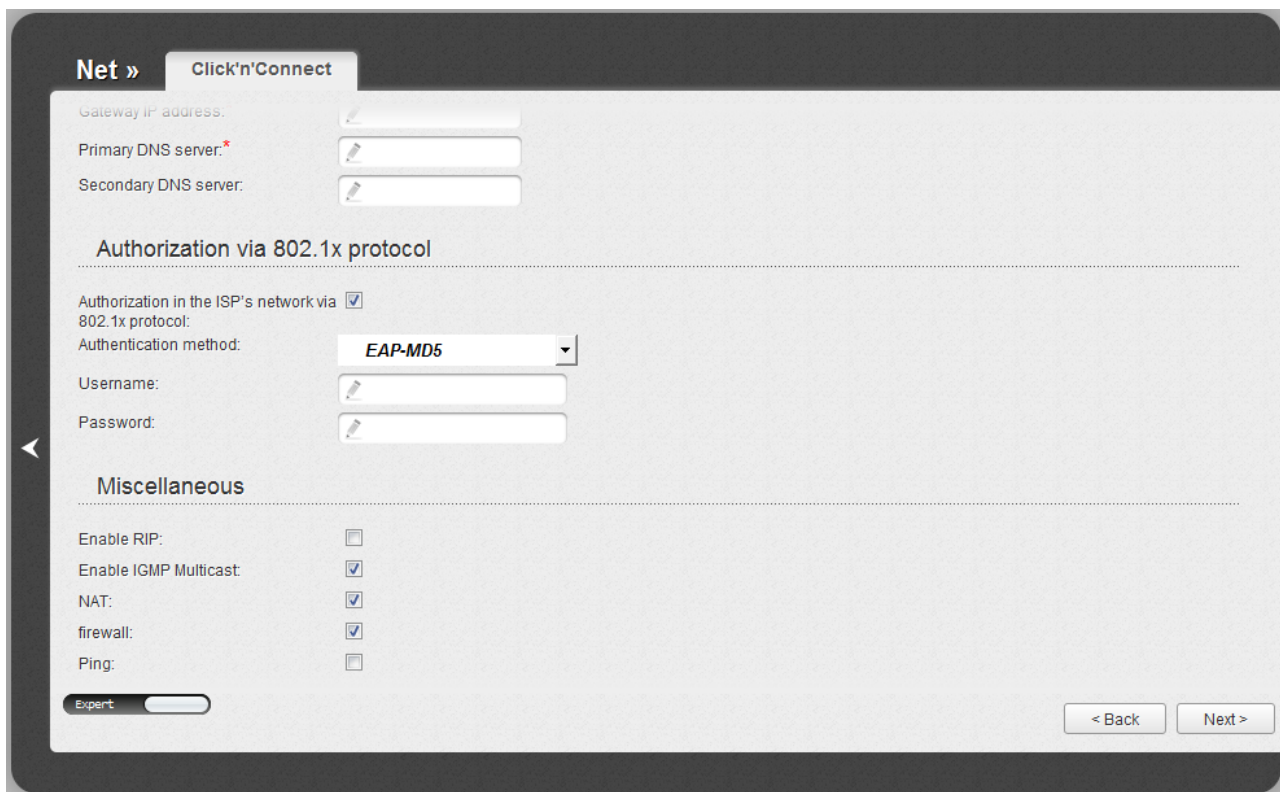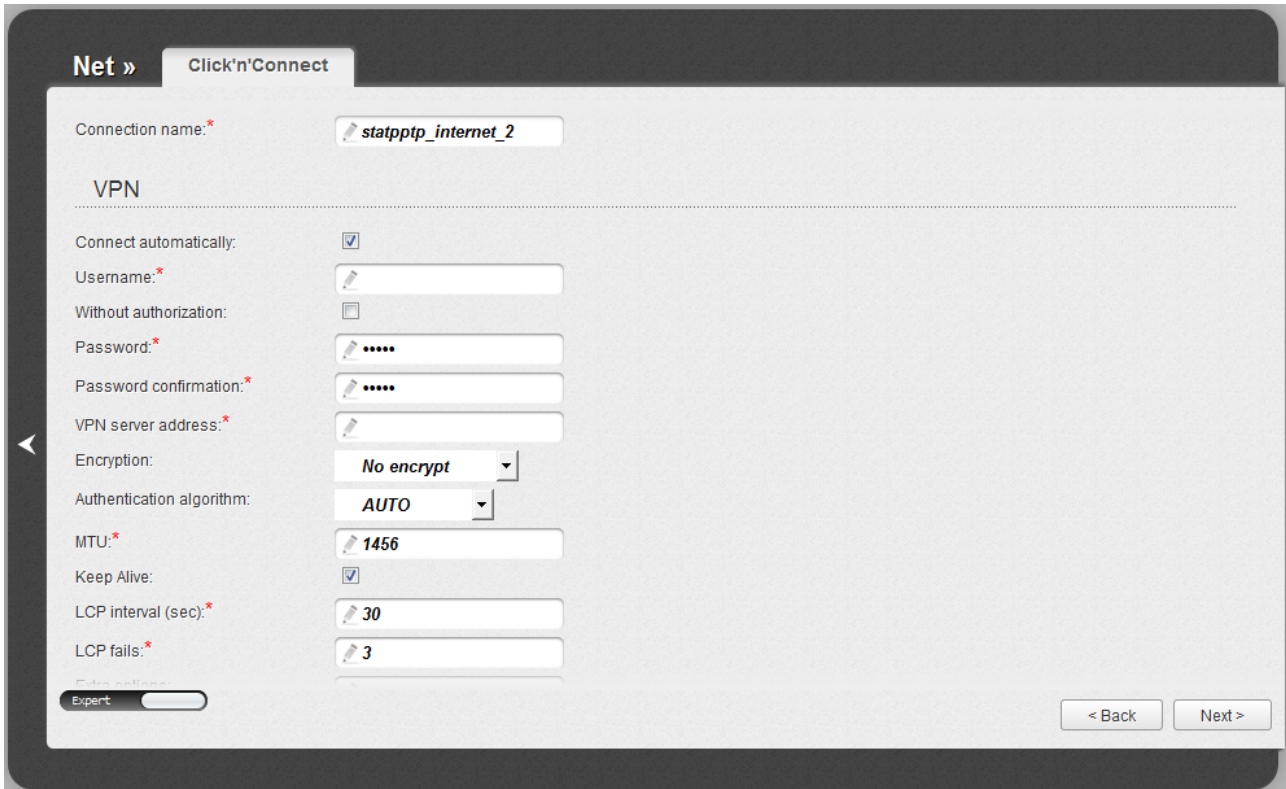
*Figure 48. Configuring PPTP + Static IP WAN connection. The expert settings mode. The **VPN** section.*

Parameter	Description
Connection name	A name for connection for easier identification.
VPN	
Connect automatically	Select the checkbox to enable auto-start of the connection upon the boot-up of the router.
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).
VPN server address	The IP or URL address of the PPTP or L2TP authentication server.

Parameter	Description
Encryption	Select a method of MPPE encryption. • **No encrypt**: MPPE encryption is not applied. • **MPPE 40/128 bit**: MPPE encryption with a 40-bit or 128-bit key is applied. • **MPPE 40 bit**: MPPE encryption with a 40-bit key is applied. • **MPPE 128 bit**: MPPE encryption with a 128-bit key is applied. MPPE encryption can be applied only if the **MS-CHAP, MS-CHAP-V2**, or **AUTO** value is selected from the **Authentication algorithm** drop-down list.
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.
Extra options	Advanced options of the pppd daemon which need to be specified for this connection. *Optional*.
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.
Static IP Address	Fill in the field if you want to use a static IP address to access the Internet.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.
IP received	The IP address assigned by the ISP.

*Figure 49. Configuring PPTP + Static IP WAN connection. The expert settings mode. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

Click the **Next** button to continue.

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

After clicking the **Apply** button, the page for checking the Internet availability opens (see the *Checking Internet Availability* section, page 79).

PPTP + Dynamic IP or L2TP + Dynamic IP Connection
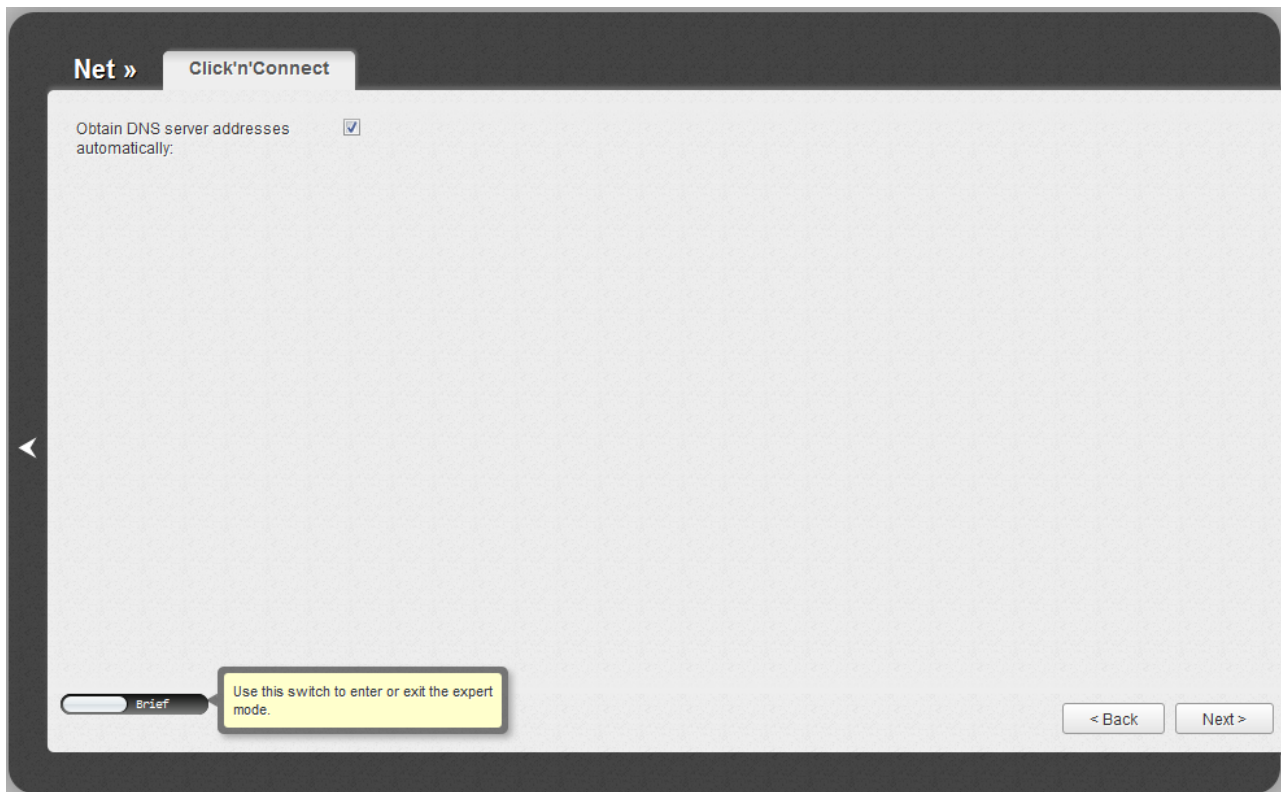
Figure 50. Configuring PPTP + Dynamic IP WAN connection.

If your ISP has provided the addresses of the DNS servers, deselect the **Obtain DNS server addresses automatically** checkbox and fill in the **Primary DNS server** field.

As a rule, the specified settings are enough to configure a non-protected connection of the selected type. If you need to specify additional settings, open the expert settings mode. To do this, use the switch in the bottom left corner of the page.

*Figure 51. Configuring PPTP + Dynamic IP WAN connection. The expert settings mode. The **Ethernet** section.*

Parameter	Description
Ethernet	
MTU	The maximum size of units transmitted by the interface.
MAC	A MAC address assigned to the interface. This parameter is mandatory if your ISP uses MAC address binding. In the field, enter the MAC address registered by your ISP upon concluding the agreement. You can click the **Clone MAC Address** button ( ) to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface. Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list (the field will be filled in automatically).

*Figure 52. Configuring PPTP + Dynamic IP WAN connection. The expert settings mode. The **IP** and **Authorization via 802.1x protocol** sections.*

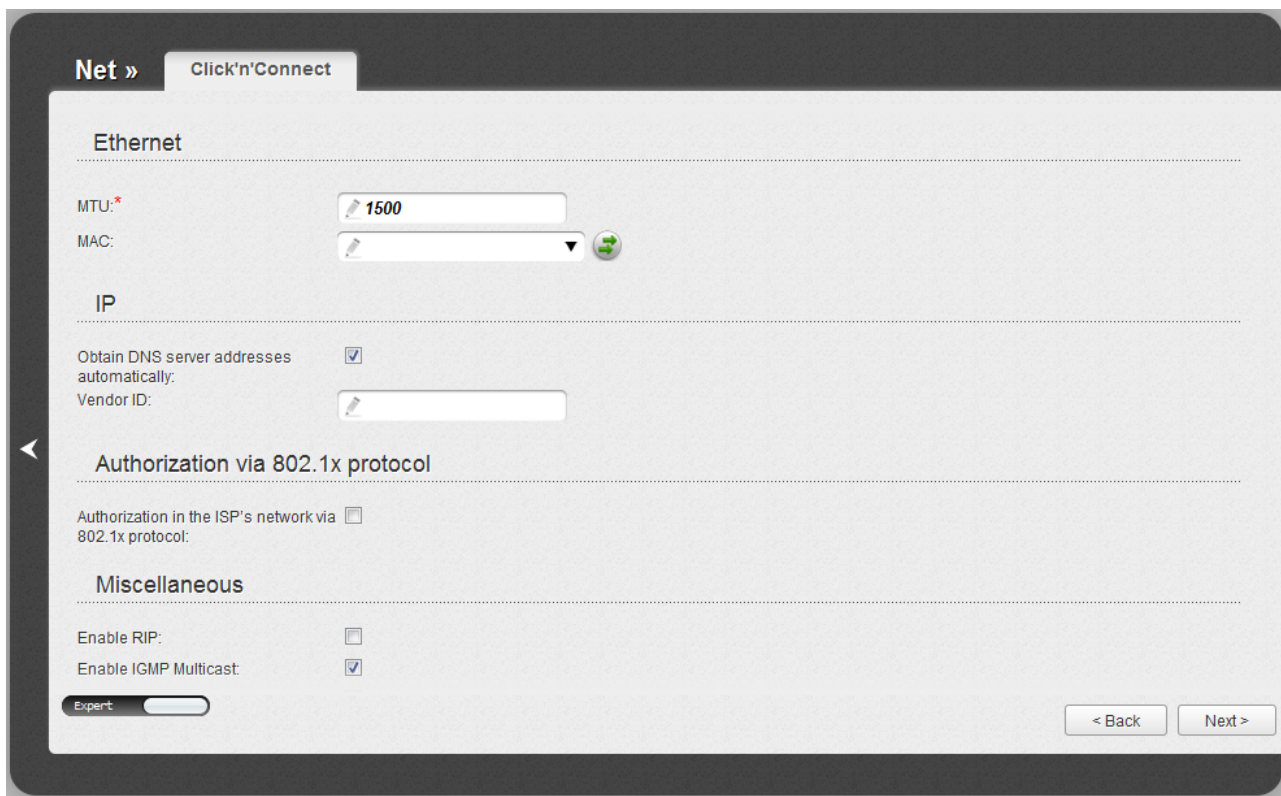| Parameter	Description
IP	
Obtain DNS server addresses automatically	Select the checkbox to configure automatic assignment of DNS server addresses. If the checkbox is selected, the **Primary DNS server** and **Secondary DNS server** fields are not displayed.
Primary DNS server/ **Secondary DNS server**	Enter addresses of the primary and secondary DNS servers in the relevant fields.
Vendor ID	The identifier of your ISP. *Optional*.
Authorization via 802.1x protocol	
Authorization in the ISP's network via 802.1x protocol	Select the checkbox to allow authorization in the ISP's network via the 802.1x protocol.
Authentication method	Select a needed authentication method from the drop-down list.
Username	Enter the username provided by your ISP.
Password	Enter the password provided by your ISP.

*Figure 53. Configuring PPTP + Dynamic IP WAN connection. The expert settings mode. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

Click the **Next** button to continue.

Figure 54. Configuring PPTP + Dynamic IP WAN connection.

In the **Connection name** field, specify a name for the connection for easier identification.

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

In the **VPN server address** field, enter the IP or URL address of the PPTP or L2TP authentication server.

As a rule, the specified settings are enough to configure a protected connection (the VPN tunnel). If you need to specify additional settings, open the expert settings mode. To do this, use the switch in the bottom left corner of the page.

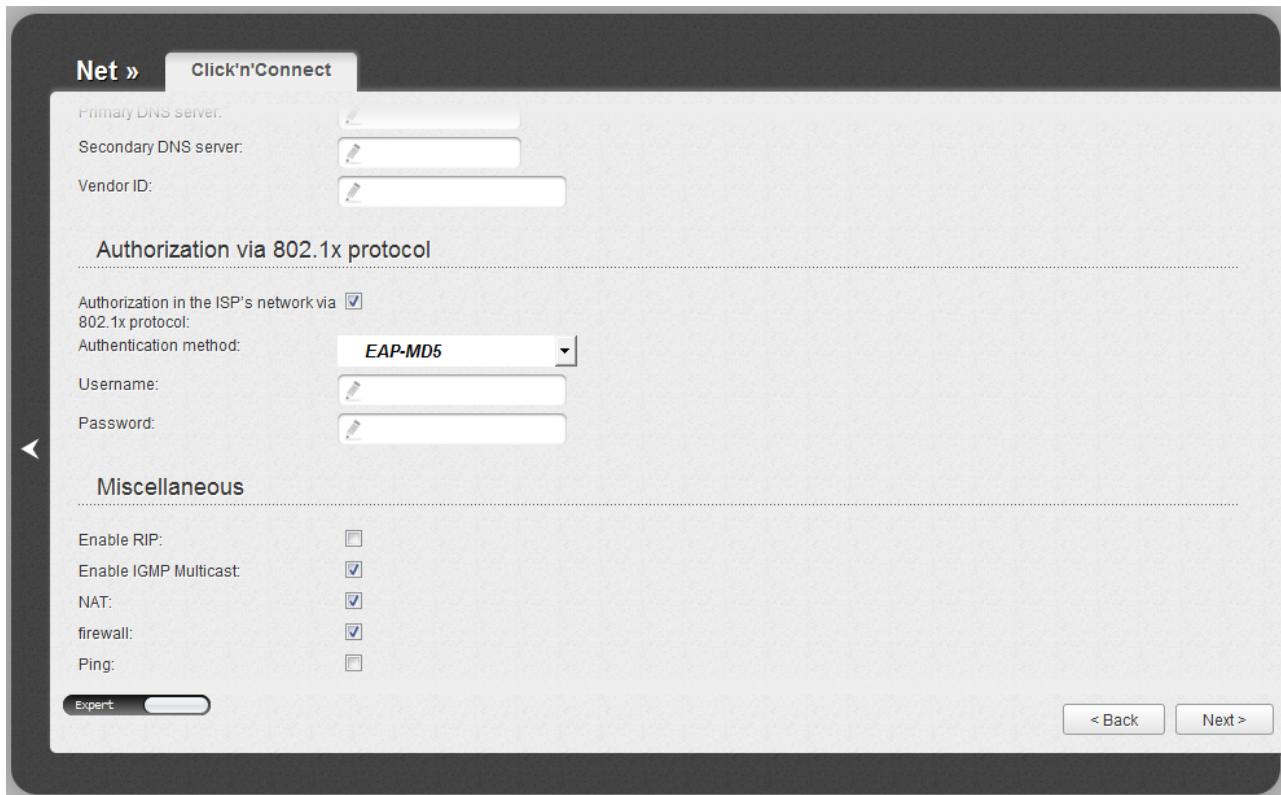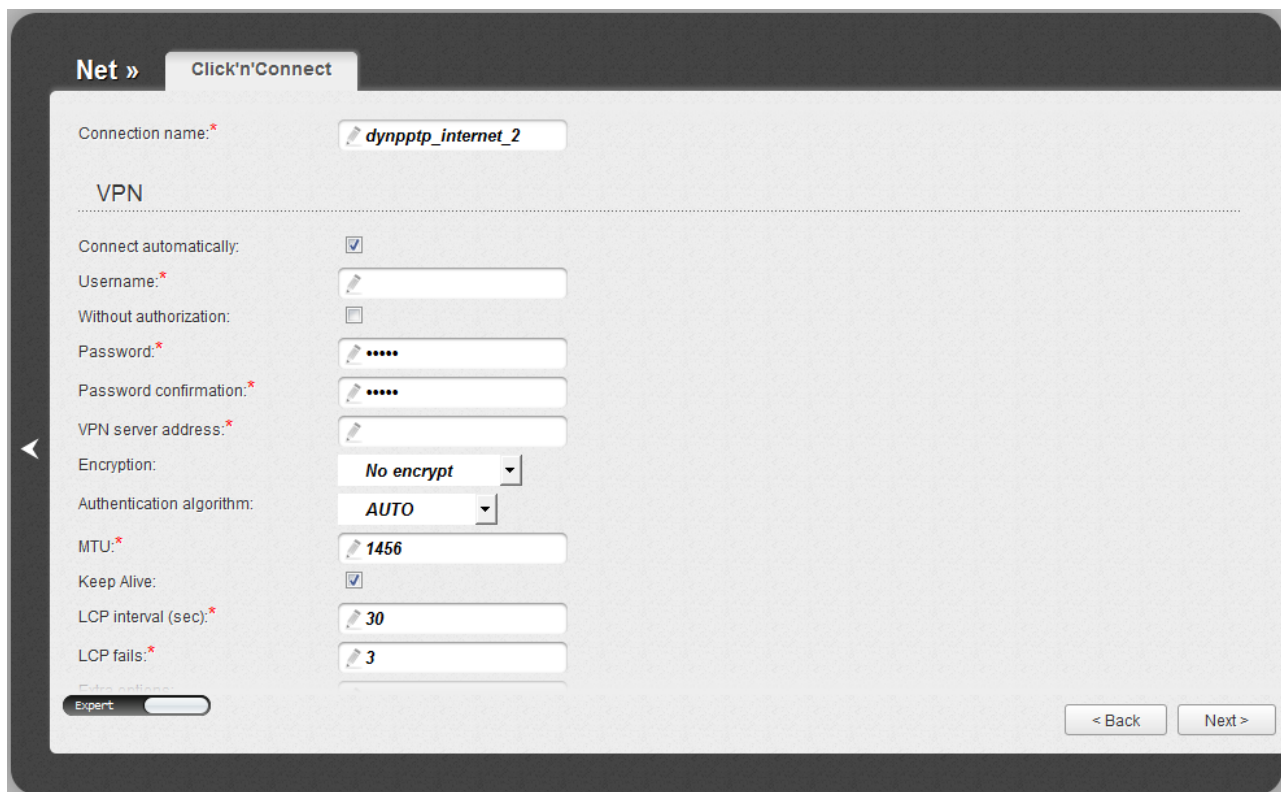*Figure 55. Configuring PPTP + Dynamic IP WAN connection. The expert settings mode. The **VPN** section.*

Parameter	Description
Connection name	A name for connection for easier identification.
VPN	
Connect automatically	Select the checkbox to enable auto-start of the connection upon the boot-up of the router.
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).
VPN server address	The IP or URL address of the PPTP or L2TP authentication server.

Parameter	Description
Encryption	Select a method of MPPE encryption. • **No encrypt**: MPPE encryption is not applied. • **MPPE 40/128 bit**: MPPE encryption with a 40-bit or 128-bit key is applied. • **MPPE 40 bit**: MPPE encryption with a 40-bit key is applied. • **MPPE 128 bit**: MPPE encryption with a 128-bit key is applied. MPPE encryption can be applied only if the **MS-CHAP, MS-CHAP-V2**, or **AUTO** value is selected from the **Authentication algorithm** drop-down list.
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.
Extra options	Advanced options of the pppd daemon which need to be specified for this connection. *Optional*.
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.
Static IP Address	Fill in the field if you want to use a static IP address to access the Internet.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.
IP received	The IP address assigned by the ISP.

Figure 56. Configuring PPTP + Dynamic IP WAN connection. The expert settings mode. The **Miscellaneous** section.

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

Click the **Next** button to continue.

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

After clicking the **Apply** button, the page for checking the Internet availability opens (see the *Checking Internet Availability* section, page 79).

3G Connection

Figure 57. Configuring 3G WAN connection.

In the **Connection name** field, specify a name for the connection for easier identification.

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

In the **APN** field (for GSM USB modems only), enter the access point name, and in the **Dial number** field, enter the number dialed to connect to the authorization server of the operator.

As a rule, the specified settings are enough to configure a connection of the selected type. If you need to specify additional settings, open the expert settings mode. To do this, use the switch in the bottom left corner of the page.
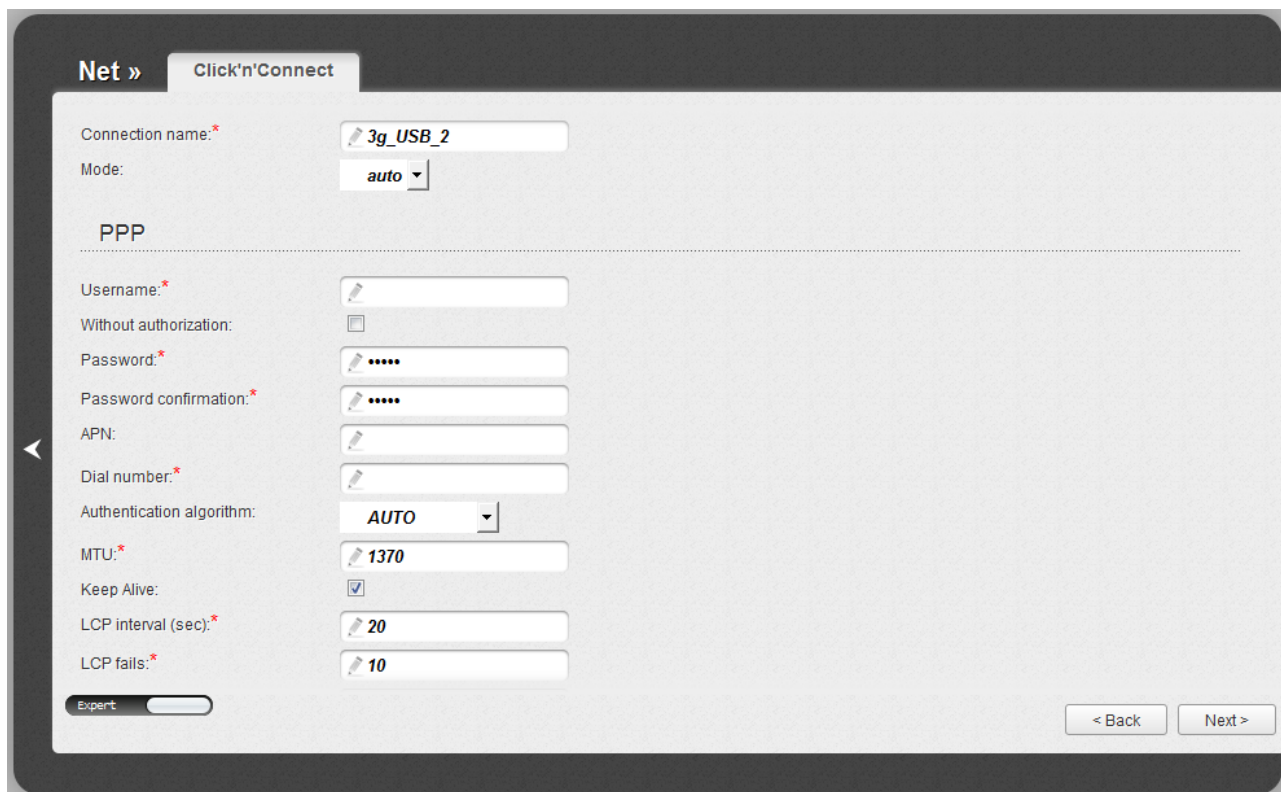
*Figure 58. Configuring 3G WAN connection. The expert settings mode. The **PPP** section.*

Parameter	Description
Connection name	A name for connection for easier identification.
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.*
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. *For GSM USB modems only.*
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.

Parameter	Description
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.
Extra options	In the field, you can specify additional data for encryption or authentication. *Optional*.
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.

*Figure 59. Configuring 3G WAN connection. The expert settings mode. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

Click the **Next** button to continue.

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

After clicking the **Apply** button, the page for checking the Internet availability opens (see the *Checking Internet Availability* section, page 79).

Checking Internet Availability

On the page, you can check the WAN connection you have created.
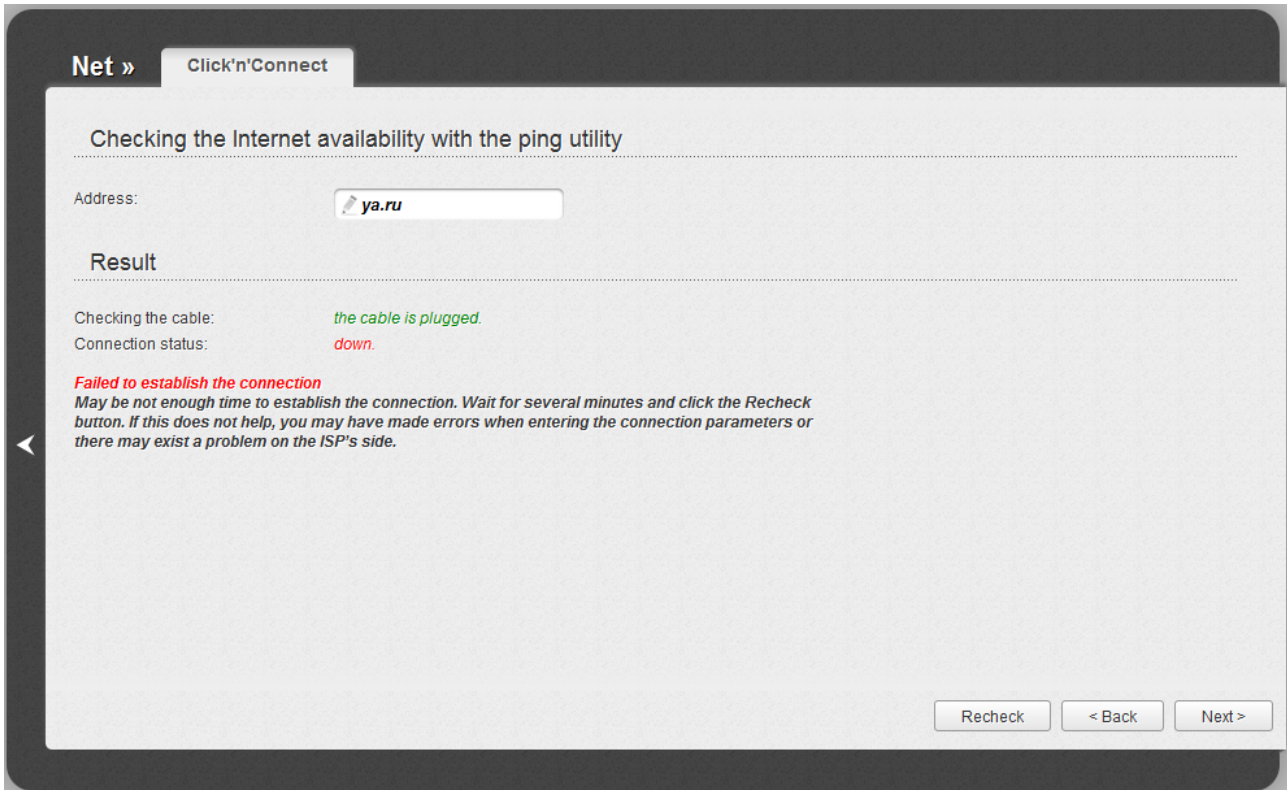
Figure 60. Checking the Internet availability.

In the **Result** section, the status of the WAN connection and possible causes of malfunctions are displayed. To recheck the status of the WAN connection, enter the IP address or name of a host in the **Address** field or leave the value specified by default (`ya.ru`). Then click the **Recheck** button.

Click the **Back** button to specify other settings.

Click the **Next** button to continue.

After clicking the **Next** button, the page for configuring wireless connection opens (see the *Configuring Wireless Connection* section, page 80).

Configuring Wireless Connection

On the page, you can change the name of your wireless network, specify a password to it, or disable Wi-Fi connections.

Figure 61. Configuring the wireless connection.

In the **SSID** field, specify a new name for the network (use digits and Latin characters).

In the **Encryption Key PSK** field, enter a key (a password that will be used to access your wireless network). Use digits and Latin characters.

Click the **Next** button to continue.

Click the **Skip to next** button to disable Wi-Fi connections.

After clicking the **Next** button or the **Skip to next** button, the page for configuring the router to use an IPTV set-top box opens (see the *Configuring IPTV* section, page 81).

Configuring IPTV

On the page, you can configure the router to use an IPTV set-top box.
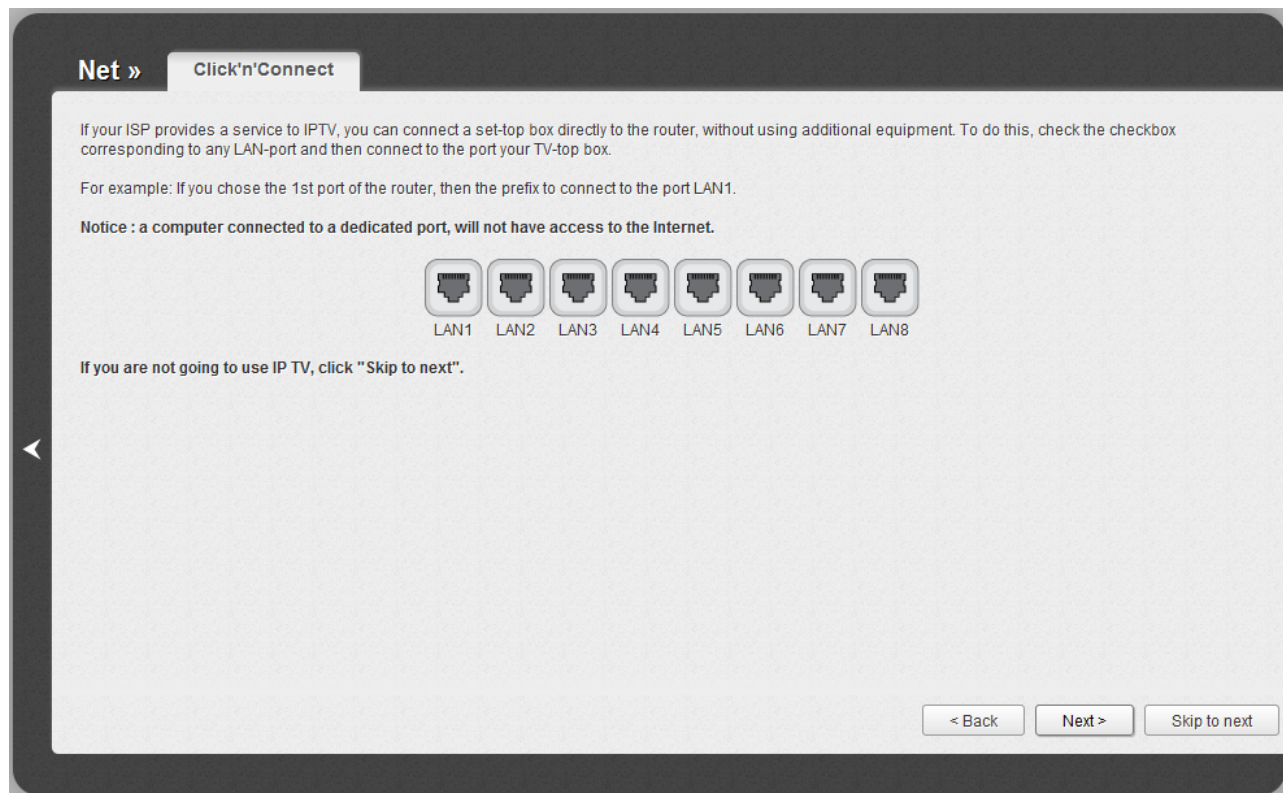
Figure 62. The page for selecting a LAN port to connect an IPTV set-top box.

On the opened page, select the LAN port of the router to which you will connect your IPTV set-top box.

If in the future you need to disconnect your IPTV set-top box from the specified LAN port and connect to it a computer, start the **IPTV settings wizard** (for the detailed description of the Wizard, see the *IPTV Settings Wizard* section, page 90).

If for accessing the Internet and IPTV services your ISP uses virtual local area networks with identifiers (VLAN ID), to configure access to the IPTV service, proceed to the **Advanced / VLAN** page, create a group of ports with the required value of the **VLAN ID** parameter, **Transparent** type, and the port to which the set-top box will be connected (see the *VLAN* section, page 147, for a detailed description of the elements from the page).

Click the **Back** button to specify other settings for your wireless network.

Click the **Next** button to continue.

Click the **Skip to next** button in order not to apply the IPTV settings.

On the opened page, click the **Back** button to specify other settings for configuring the router to use an IPTV set-top box.

Click the **Save** button to save the specified settings.

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

Wireless Network Settings Wizard

To specify all needed settings for your wireless network, click the **Wireless network settings wizard** link in the **Wi-Fi** section.
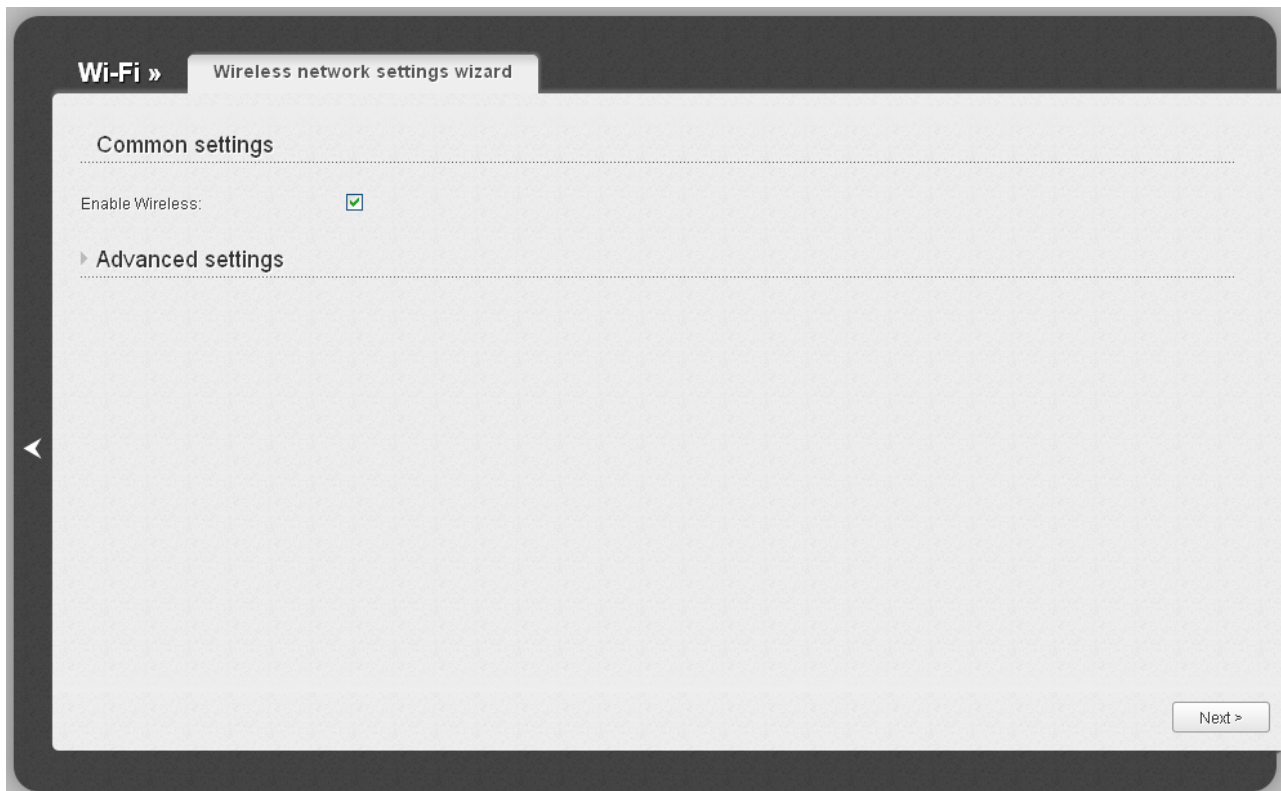
Figure 63. Common and advanced settings of the wireless LAN.

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**), specify the operating mode (**Wireless Mode**) and the maximum number of devices connected to the wireless network (**Max Associated Clients**).

Figure 64. 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.
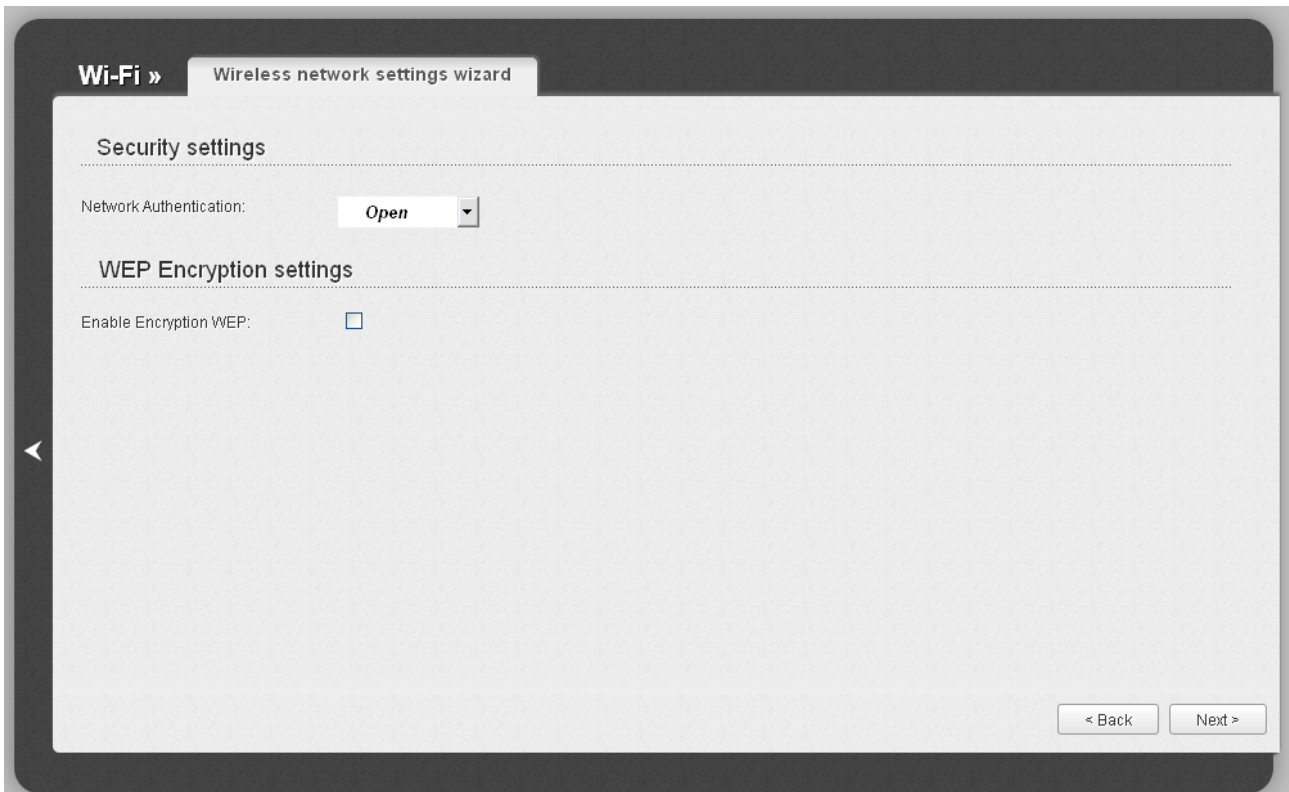
Figure 65. The default security settings.

> ❗ The default security settings do not provide sufficient protection for the WLAN. Please, specify your own security settings for the WLAN.
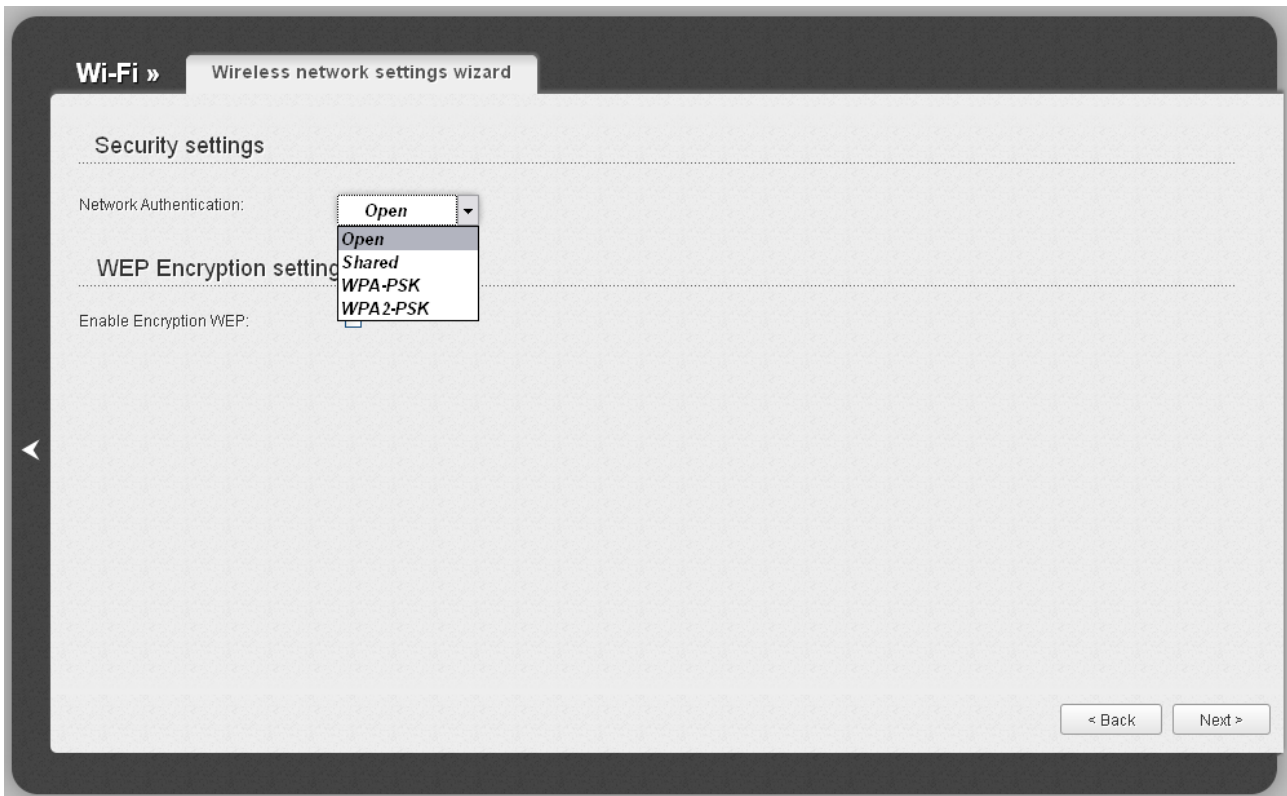
Figure 66. Network authentication types supported by the router.

The router supports the following authentication types:

Authentication type	Description
Open	Open authentication (with WEP encryption for wireless network modes not supporting 802.11n devices).
Shared	Shared key authentication with WEP encryption. This authentication type is not available when on the basic settings page, in the **Wireless mode** drop-down list, a mode supporting 802.11n devices is selected.
WPA-PSK	WPA-based authentication using a PSK.
WPA2-PSK	WPA2-based authentication using a PSK.

When the **Open** or **Shared** value is selected, the **WEP Encryption settings** section is displayed (the section is unavailable for the wireless network operating modes which support the standard 802.11n):

*Figure 67. 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 **Default Key ID** field, the **Encryption Key WEP as HEX** checkbox, and four **Encryption Key WEP** fields are displayed on the page. For the **Shared** authentication type the checkbox is always selected.
Default Key ID	The number of the key (from first to fourth) which will be used for WEP encryption.
Encryption Key WEP as HEX	Select the checkbox to set a hexadecimal number as a key for encryption.
Encryption Key WEP (1-4)	Keys for WEP encryption. The router uses the key selected from the **Default Key ID** drop-down list. It is required to specify all the fields. 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 68. 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.

Virtual Server Settings Wizard

To create a virtual server for redirecting incoming Internet traffic to a specified IP address in the LAN, click the **Virtual server settings wizard** link in the **Firewall** section.
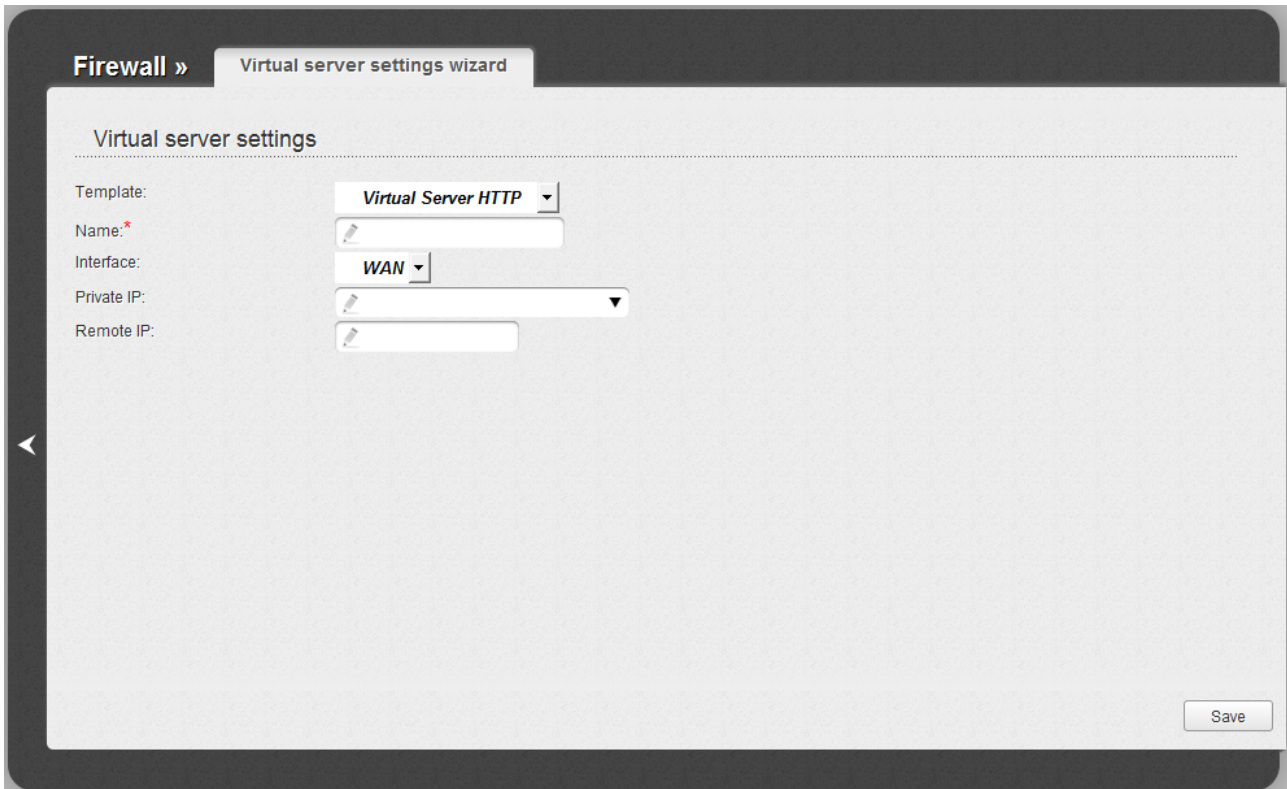
Figure 69. The page for adding a virtual server.

On the opened page, 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	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 (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.

IPTV Settings Wizard

To configure the router to use an IPTV set-top box, click the **IPTV settings wizard** link in the **IP-TV** section.
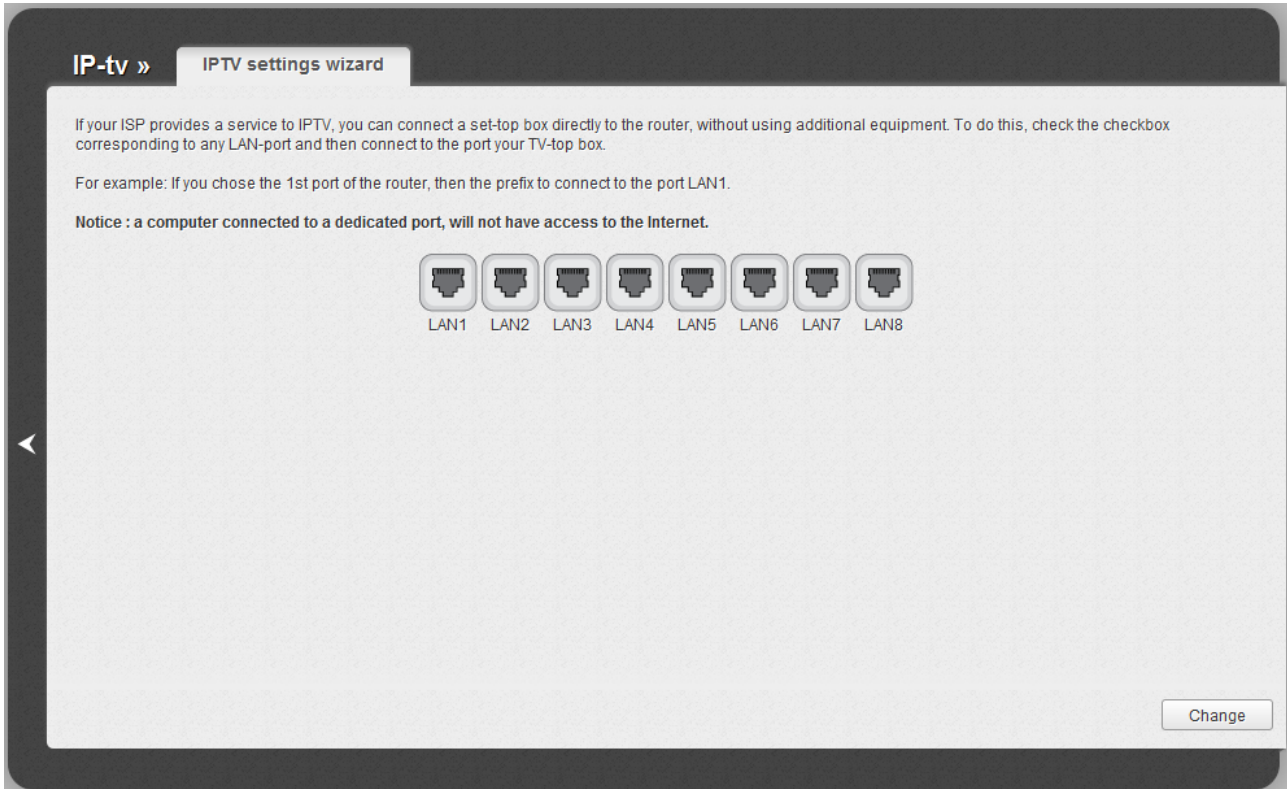
Figure 70. The page for selecting a LAN port to connect an IPTV set-top box.

On the opened page, select the LAN port of the router to which you will connect your IPTV set-top box and click the **Change** button. After that you will get to the quick settings page.

If in the future you need to disconnect your IPTV set-top box from the specified LAN port and connect to it a computer, on the current page deselect the LAN port and click the **Change** button.

If for accessing the Internet and IPTV services your ISP uses virtual local area networks with identifiers (VLAN ID), to configure access to the IPTV service, proceed to the **Advanced / VLAN** page, create a group of ports with the required value of the **VLAN ID** parameter, **Transparent** type, and the port to which the set-top box will be connected (see the *VLAN* section, page 147, for a detailed description of the elements from the page).
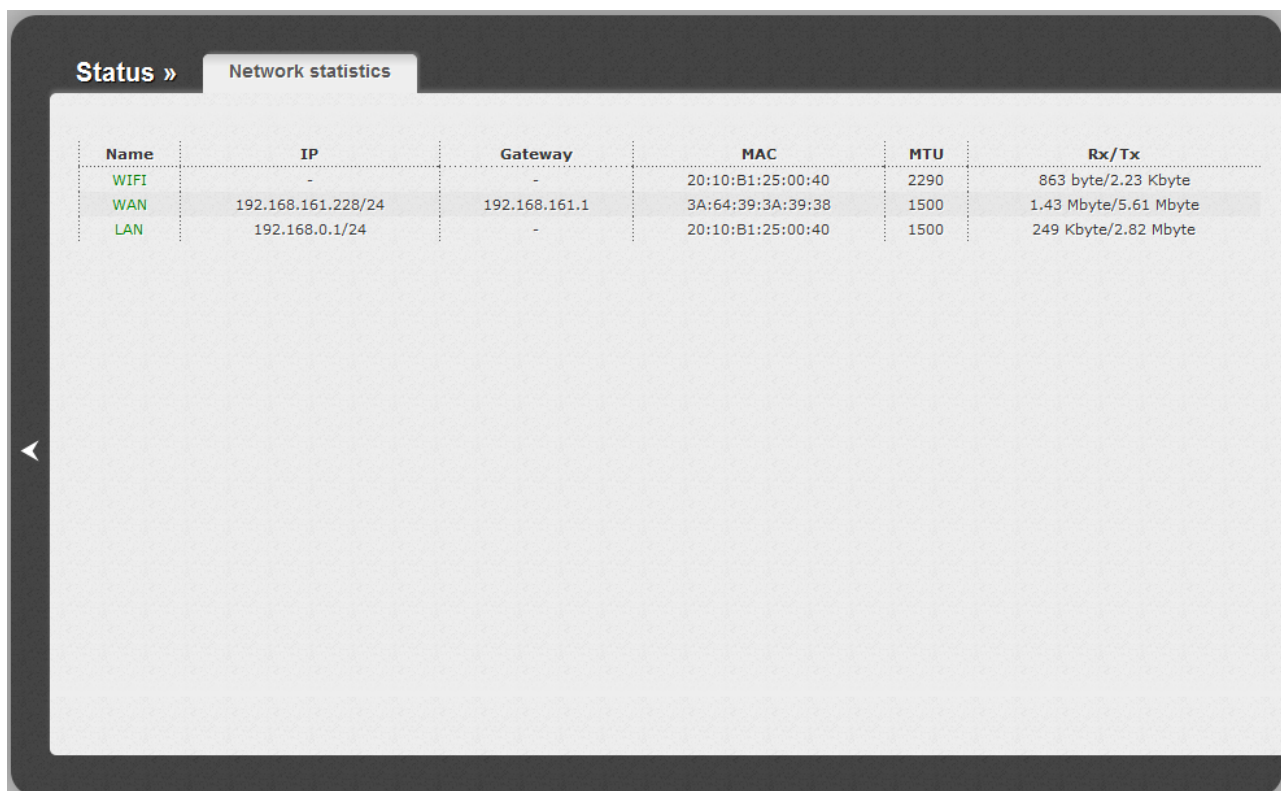
Status

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

- network statistics

- 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 connections existing in the system (WAN connections, LAN, WLAN). For each connection the following data are displayed: name and state (when the connection is on, its name is highlighted in green, when the connection is off, its name is highlighted in red), IP address and subnet mask, 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).
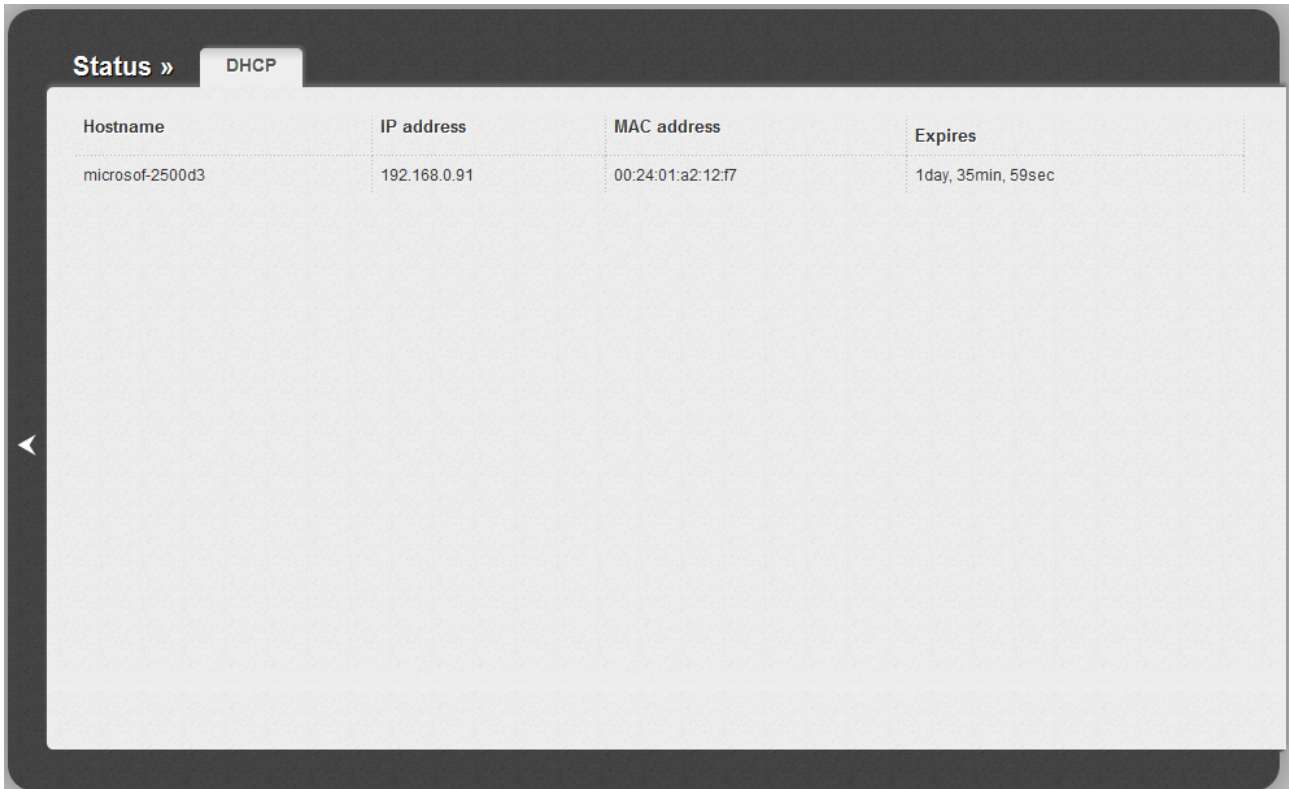
*Figure 71. The **Status / Network statistics** page.*

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).
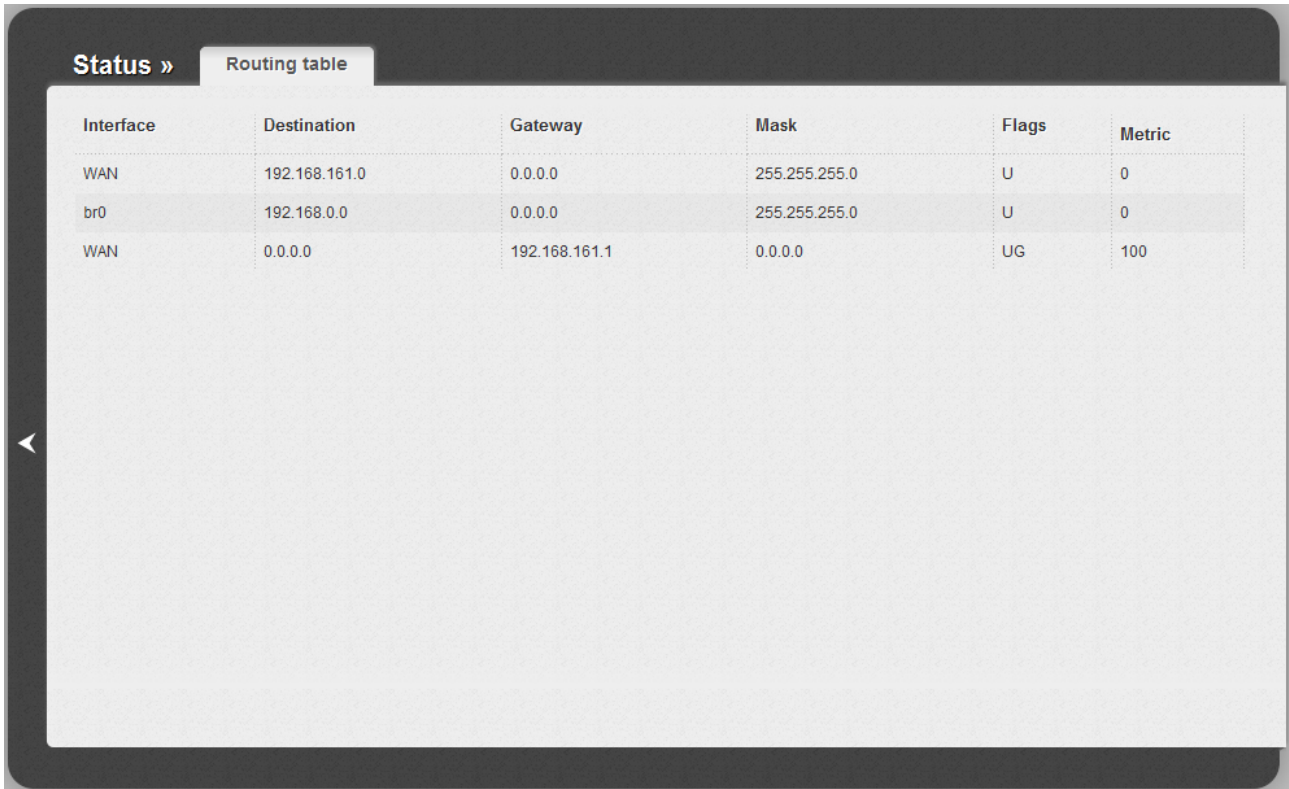
*Figure 72. The **Status / DHCP** page.*

Routing Table

The **Status / Routing table** page displays the information on routes. The table contains destination IP addresses, gateways, subnet masks, and other data.
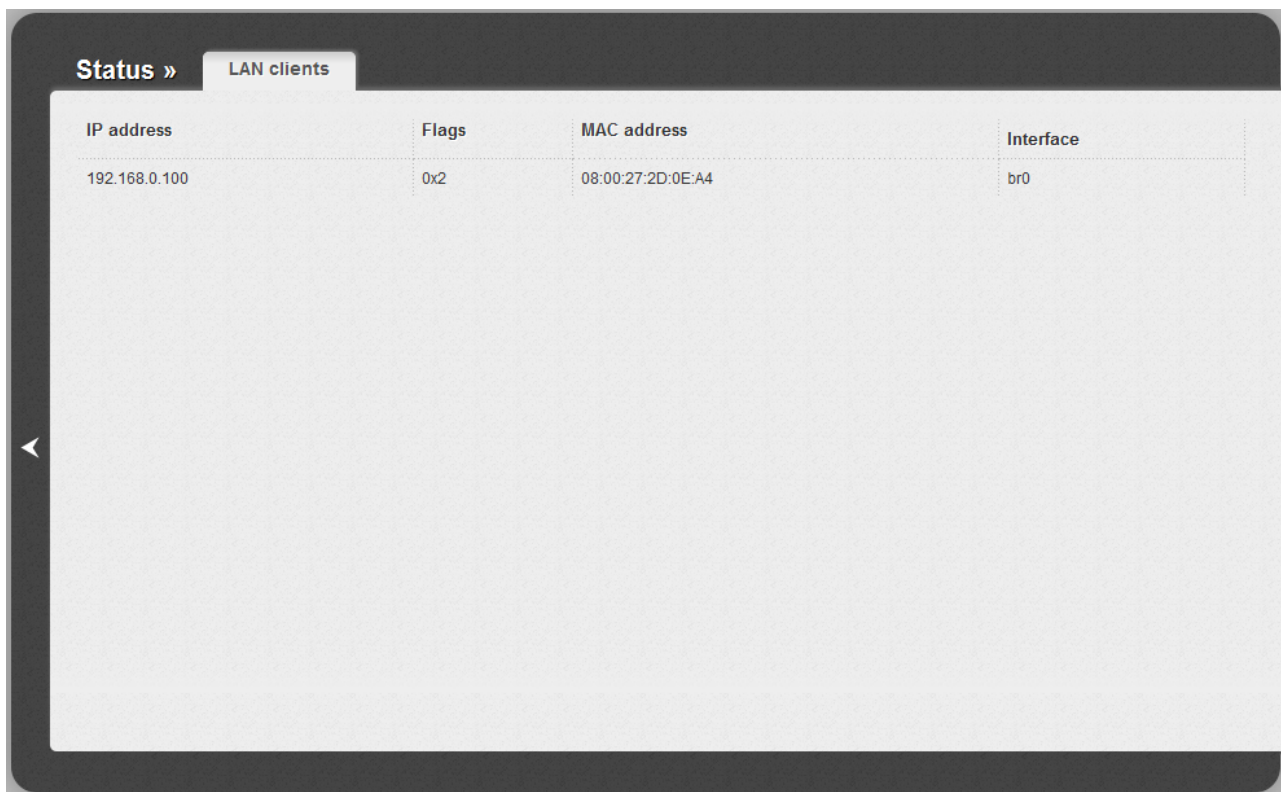
Interface	Destination	Gateway	Mask	Flags	Metric
WAN	192.168.161.0	0.0.0.0	255.255.255.0	U	0
br0	192.168.0.0	0.0.0.0	255.255.255.0	U	0
WAN	0.0.0.0	192.168.161.1	0.0.0.0	UG	100

*Figure 73. The **Status / Routing table** page.*

LAN Clients

On the **Status / LAN clients** page, you can view the list of devices connected to the router and devices accessing its web-based interface.

*Figure 74. 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.

By default, the **WAN** connection is configured in the system. It is assigned to the INTERNET port of the router. You can edit this connection or delete it.
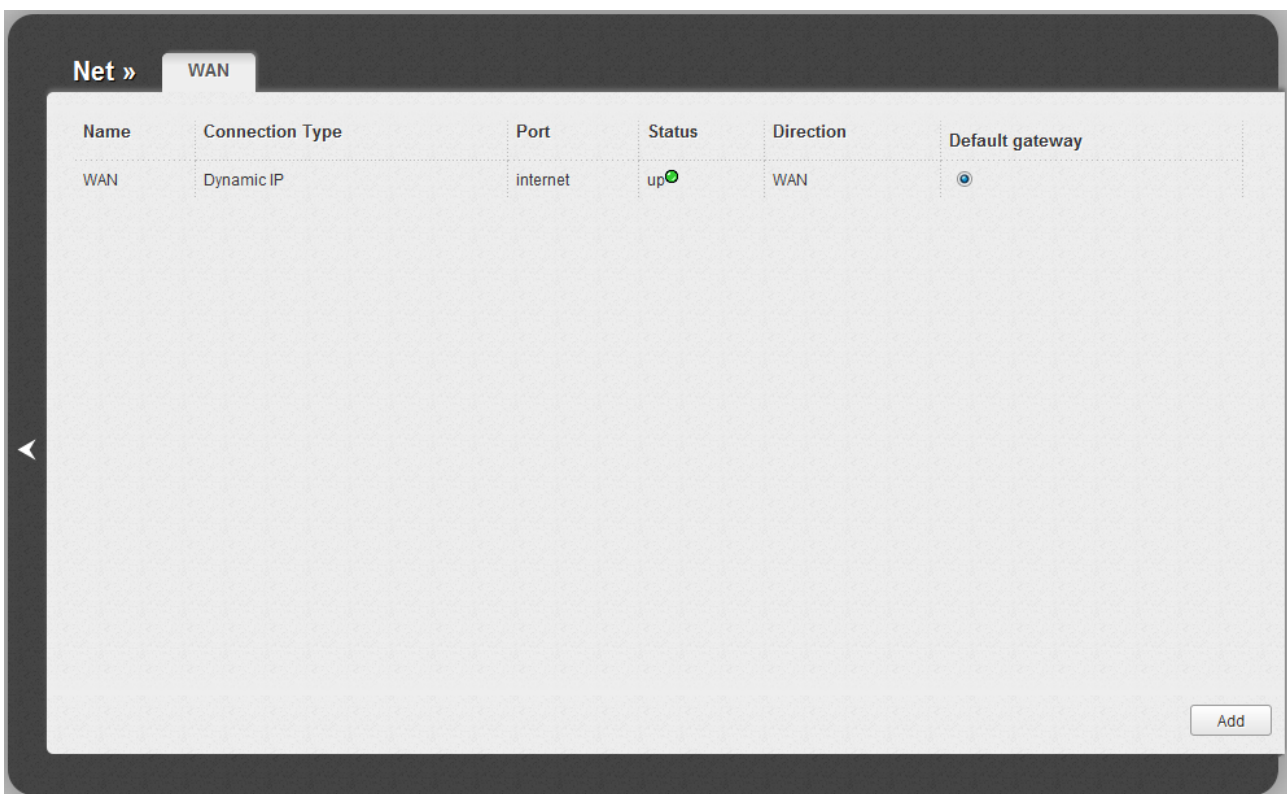
*Figure 75. The **Net / WAN** page.*

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.

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 168). Then proceed to the **Net / WAN** page, click the **Add** button, and select the **3G** value from the **Connection Type** drop-down list.

*Figure 76. 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 77. The page for creating a new connection. The **PPP** section.*

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. *For GSM USB modems only.*
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.*
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.

Parameter	Description
Extra options	In the field, you can specify additional data for encryption or authentication. *Optional*.
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.

*Figure 78. The page for creating a new connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

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

Creating PPPoE WAN Connection

To create a connection of the PPPoE type, click the **Add** button on the **Net / WAN** page. On the opened page, select the **PPPoE** value from the **Connection Type** drop-down list and specify the needed values.

*Figure 79. The page for creating a new connection. The **General settings** and **Ethernet** sections.*

Parameter	Description
General settings	
Provider	Leave the **Manually** value.
Port	A physical or virtual interface to which the new connection will be assigned. Select the **USB-WIMAX** value to assign this connection to the WiMAX USB modem.
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.

Parameter	Description
MAC	A MAC address assigned to the interface. This parameter is mandatory if your ISP uses MAC address binding. In the field, enter the MAC address registered by your ISP upon concluding the agreement. You can click the **Clone MAC Address** button ( ) to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface. Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list (the field will be filled in automatically).

*Figure 80. 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.
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.
Static IP Address	Fill in the field if you want to use a static IP address to access the Internet.
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.

*Figure 81. The page for creating a new connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

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

Creating Static IP WAN Connection

To create a connection of the Static IP type, click the **Add** button on the **Net / WAN** page. On the opened page, select the **Static IP** value from the **Connection Type** drop-down list and specify the needed values.

*Figure 82. The page for creating a new connection. The **General settings** and **Ethernet** sections.*

Parameter	Description
General settings	
Provider	Leave the **Manually** value.
Port	A physical or virtual interface to which the new connection will be assigned. Select the **USB-WIMAX** value to assign this connection to the WiMAX USB modem.
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.

Parameter	Description
MAC	A MAC address assigned to the interface. This parameter is mandatory if your ISP uses MAC address binding. In the field, enter the MAC address registered by your ISP upon concluding the agreement. You can click the **Clone MAC Address** button ( ) to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface. Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list (the field will be filled in automatically).

*Figure 83. The page for creating a new connection. The **IP** and **Authorization via 802.1x protocol** sections.*

Parameter	Description
IP	
IP Address	Enter an IP address for this WAN connection.
Netmask	Enter a subnet mask for this WAN connection.
Gateway IP address	Enter an IP address of the gateway used by this WAN connection.

Parameter	Description
Primary DNS server/ Secondary DNS server	Enter addresses of the primary and secondary DNS servers in the relevant fields.
Authorization via 802.1x protocol	
Authorization in the ISP's network via 802.1x protocol	Select the checkbox to allow authorization in the ISP's network via the 802.1x protocol.
Authentication method	Select a needed authentication method from the drop-down list.
Username	Enter the username provided by your ISP.
Password	Enter the password provided by your ISP.

*Figure 84. The page for creating a new connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

When all needed settings are configured, click the **Save** button.
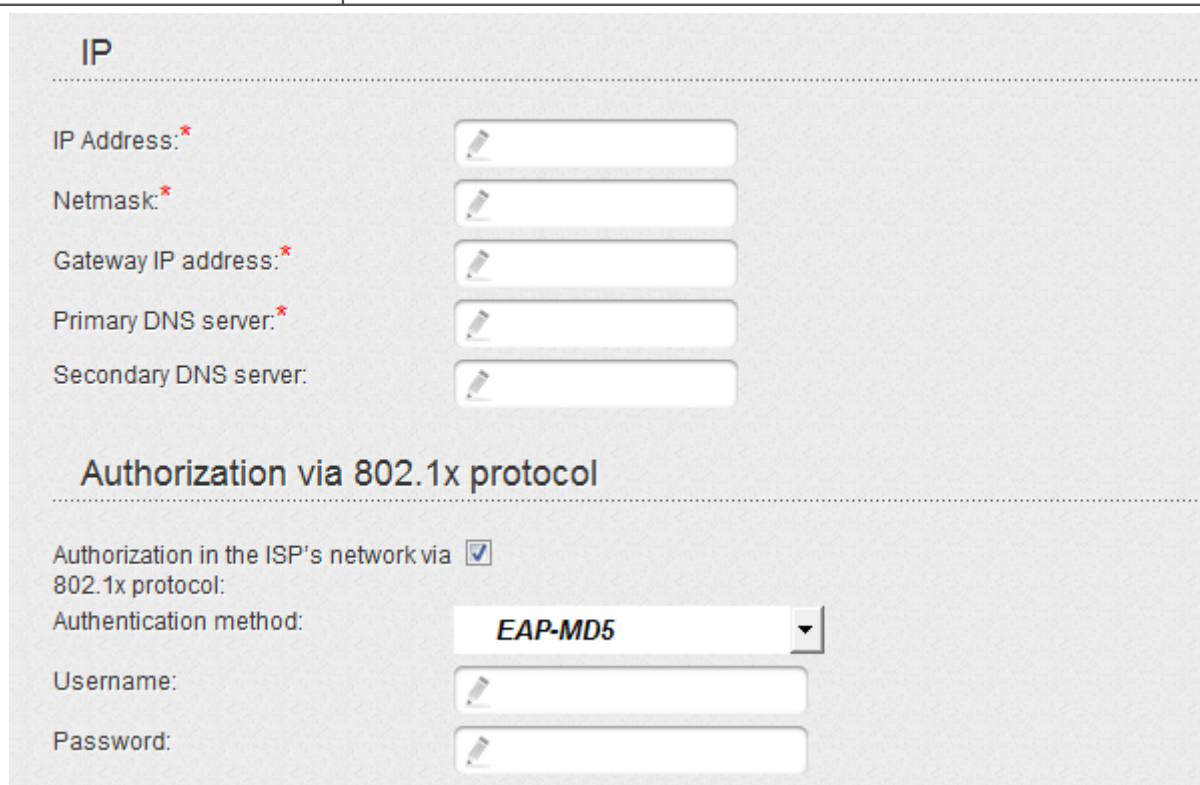
Creating Dynamic IP WAN Connection

To create a connection of the Dynamic IP type, click the **Add** button on the **Net / WAN** page. On the opened page, select the **Dynamic IP** value from the **Connection Type** drop-down list and specify the needed values.

*Figure 85. The page for creating a new connection. The **General settings** and **Ethernet** sections.*

Parameter	Description
General settings	
Provider	Leave the **Manually** value.
Port	A physical or virtual interface to which the new connection will be assigned. Select the **USB-WIMAX** value to assign this connection to the WiMAX USB modem.
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.

Parameter	Description
MAC	A MAC address assigned to the interface. This parameter is mandatory if your ISP uses MAC address binding. In the field, enter the MAC address registered by your ISP upon concluding the agreement. You can click the **Clone MAC Address** button ( ) to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface. Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list (the field will be filled in automatically).

*Figure 86. The page for creating a new connection. The **IP** and **Authorization via 802.1x protocol** sections.*

Parameter	Description
IP	
Obtain DNS server addresses automatically	Select the checkbox to configure automatic assignment of DNS server addresses. If the checkbox is selected, the **Primary DNS server** and **Secondary DNS server** fields are not displayed.
Primary DNS server/ Secondary DNS server	Enter addresses of the primary and secondary DNS servers in the relevant fields.

Parameter	Description
Vendor ID	The identifier of your ISP. *Optional*.
Authorization via 802.1x protocol	
Authorization in the ISP's network via 802.1x protocol	Select the checkbox to allow authorization in the ISP's network via the 802.1x protocol.
Authentication method	Select a needed authentication method from the drop-down list.
Username	Enter the username provided by your ISP.
Password	Enter the password provided by your ISP.

*Figure 87. The page for creating a new connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

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

Creating PPTP or L2TP WAN Connection

To create a connection of the PPTP or L2TP type, click the **Add** button on the **Net / WAN** page. On the opened page, select the relevant value from the **Connection Type** drop-down list and specify the needed values.

*Figure 88. The page for creating a new connection. The **General settings** section.*

Parameter	Description
General settings	
Provider	Leave the **Manually** value.
Port	Leave the **auto** value.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.

*Figure 89. The page for creating a new connection. The **VPN** section.*

Parameter	Description
VPN	
Connect automatically	Select the checkbox to enable auto-start of the connection upon the boot-up of the router.
Username	A username (login) to access the server.
Without authorization	Select the checkbox if you don't need to enter a username and password to access the server.
Password	A password to access the server.
Password confirmation	The confirmation of the entered password (to avoid mistypes).
VPN server address	The IP or URL address of the PPTP or L2TP authentication server.

Parameter	Description
Encryption	Select a method of MPPE encryption. • **No encrypt**: MPPE encryption is not applied. • **MPPE 40/128 bit**: MPPE encryption with a 40-bit or 128-bit key is applied. • **MPPE 40 bit**: MPPE encryption with a 40-bit key is applied. • **MPPE 128 bit**: MPPE encryption with a 128-bit key is applied. MPPE encryption can be applied only if the **MS-CHAP, MS-CHAP-V2**, or **AUTO** value is selected from the **Authentication algorithm** drop-down list.
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 the server 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.
Extra options	Advanced options of the pppd daemon which need to be specified for this connection. *Optional*.
Dial on demand	Select the checkbox if you want the router to establish the connection on demand. In the **Maximum idle time** field, specify a period of inactivity (in seconds) after which the connection should be terminated.
Static IP Address	Fill in the field if you want to use a static IP address for this connection.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.
IP received	The assigned IP address.

*Figure 90. The page for creating a new connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

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

Creating PPTP + Static IP or L2TP + Static IP WAN Connection
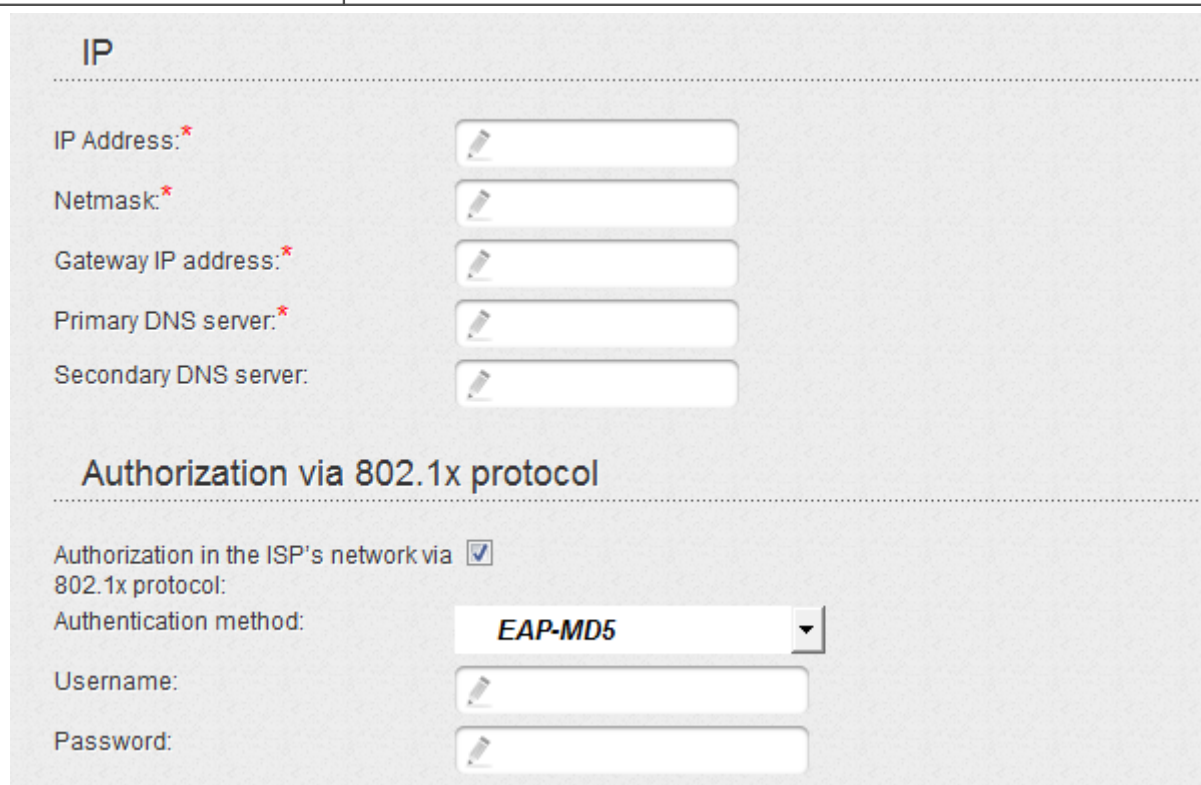
To create a connection of the PPTP + Static IP or L2TP + Static IP type, click the **Add** button on the **Net / WAN** page. On the opened page, select the relevant value from the **Connection Type** drop-down list and specify the needed values.

*Figure 91. The page for creating a new connection. The **General settings** and **Ethernet** sections.*

Parameter	Description
General settings	
Provider	Leave the **Manually** value.
Port	A physical or virtual interface to which the new connection will be assigned. Select the **USB-WIMAX** value to assign this connection to the WiMAX USB modem.
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.

Parameter	Description
MAC	A MAC address assigned to the interface. This parameter is mandatory if your ISP uses MAC address binding. In the field, enter the MAC address registered by your ISP upon concluding the agreement.
	You can click the **Clone MAC Address** button ( ) to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface.
	Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list (the field will be filled in automatically).

*Figure 92. The page for creating a new connection. The **IP** and **Authorization via 802.1x protocol** sections.*

Parameter	Description
IP	
IP Address	Enter an IP address for this WAN connection.
Netmask	Enter a subnet mask for this WAN connection.
Gateway IP address	Enter an IP address of the gateway used by this WAN connection.

Parameter	Description
Primary DNS server/ **Secondary DNS server**	Enter addresses of the primary and secondary DNS servers in the relevant fields.
Authorization via 802.1x protocol	
Authorization in the ISP's network via 802.1x protocol	Select the checkbox to allow authorization in the ISP's network via the 802.1x protocol.
Authentication method	Select a needed authentication method from the drop-down list.
Username	Enter the username provided by your ISP.
Password	Enter the password provided by your ISP.

*Figure 93. The page for creating a new connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

*Figure 94. The page for creating a new connection. The **VPN** section.*

Parameter	Description
VPN	
Connect automatically	Select the checkbox to enable auto-start of the connection upon the boot-up of the router.
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).
VPN server address	The IP or URL address of the PPTP or L2TP authentication server.

Parameter	Description
Encryption	Select a method of MPPE encryption. • **No encrypt**: MPPE encryption is not applied. • **MPPE 40/128 bit**: MPPE encryption with a 40-bit or 128-bit key is applied. • **MPPE 40 bit**: MPPE encryption with a 40-bit key is applied. • **MPPE 128 bit**: MPPE encryption with a 128-bit key is applied. MPPE encryption can be applied only if the **MS-CHAP, MS-CHAP-V2**, or **AUTO** value is selected from the **Authentication algorithm** drop-down list.
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.
Extra options	Advanced options of the pppd daemon which need to be specified for this connection. *Optional*.
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.
Static IP Address	Fill in the field if you want to use a static IP address to access the Internet.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.
IP received	The IP address assigned by the ISP.

*Figure 95. The page for creating a new connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

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

Creating PPTP + Dynamic IP or L2TP + Dynamic IP WAN Connection

To create a connection of the PPTP + Dynamic IP or L2TP + Dynamic IP type, click the **Add** button on the **Net / WAN** page. On the opened page, select the relevant value from the **Connection Type** drop-down list and specify the needed values.

*Figure 96. The page for creating a new connection. The **General settings** and **Ethernet** sections.*

Parameter	Description
General settings	
Provider	Leave the **Manually** value.
Port	A physical or virtual interface to which the new connection will be assigned. Select the **USB-WIMAX** value to assign this connection to the WiMAX USB modem.
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.

Parameter	Description
MAC	A MAC address assigned to the interface. This parameter is mandatory if your ISP uses MAC address binding. In the field, enter the MAC address registered by your ISP upon concluding the agreement. You can click the **Clone MAC Address** button ( ) to set the MAC address of the network interface card (of the computer that is being used to configure the router at the moment) as the MAC address of the WAN interface. Also you can set the address of a device connected to the router's LAN at the moment. To do this, select the relevant value from the drop-down list (the field will be filled in automatically).

*Figure 97. The page for creating a new connection. The **IP** and **Authorization via 802.1x protocol** sections.*

Parameter	Description
IP	
Obtain DNS server addresses automatically	Select the checkbox to configure automatic assignment of DNS server addresses. If the checkbox is selected, the **Primary DNS server** and **Secondary DNS server** fields are not displayed.
Primary DNS server/ **Secondary DNS server**	Enter addresses of the primary and secondary DNS servers in the relevant fields.

Parameter	Description
Vendor ID	The identifier of your ISP. *Optional*.
Authorization via 802.1x protocol	
Authorization in the ISP's network via 802.1x protocol	Select the checkbox to allow authorization in the ISP's network via the 802.1x protocol.
Authentication method	Select a needed authentication method from the drop-down list.
Username	Enter the username provided by your ISP.
Password	Enter the password provided by your ISP.

*Figure 98. The page for creating a new connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

*Figure 99. The page for creating a new connection. The **VPN** section.*

Parameter	Description
VPN	
Connect automatically	Select the checkbox to enable auto-start of the connection upon the boot-up of the router.
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).
VPN server address	The IP or URL address of the PPTP or L2TP authentication server.

Parameter	Description
Encryption	Select a method of MPPE encryption. • **No encrypt**: MPPE encryption is not applied. • **MPPE 40/128 bit**: MPPE encryption with a 40-bit or 128-bit key is applied. • **MPPE 40 bit**: MPPE encryption with a 40-bit key is applied. • **MPPE 128 bit**: MPPE encryption with a 128-bit key is applied. MPPE encryption can be applied only if the **MS-CHAP, MS-CHAP-V2**, or **AUTO** value is selected from the **Authentication algorithm** drop-down list.
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.
Extra options	Advanced options of the pppd daemon which need to be specified for this connection. *Optional*.
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.
Static IP Address	Fill in the field if you want to use a static IP address to access the Internet.
PPP debug	Select the checkbox if you want to log all data on PPP connection debugging.
IP received	The IP address assigned by the ISP.

*Figure 100. The page for creating a new connection. The **Miscellaneous** section.*

Parameter	Description
Miscellaneous	
Enable RIP	Select the checkbox to allow using RIP for this connection.
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.
Ping	Select the checkbox to allow the router to answer ping requests from the external network through this connection. For security reasons, it is recommended not to select this checkbox.

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

LAN

To configure the router's local interface, proceed to the **Net / LAN** page.
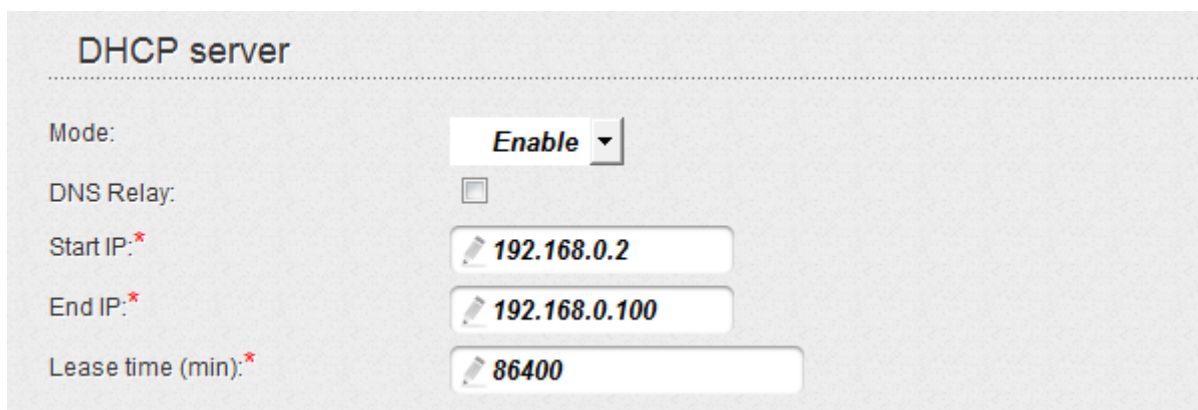
Figure 101. Basic settings of the local interface.

If needed, edit the basic settings 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: `192.168.0.1`.
Netmask	The mask of the local subnet. By default, the following value is specified: `255.255.255.0`.

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

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

Figure 102. The section for configuring the DHCP server.

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 **DNS Relay**, **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.
DNS Relay	Select the checkbox so that the devices connected to the router obtain the address transmitted by the ISP or specified on the **Advanced / DNS page** as the DNS server address. Deselect the checkbox so that the devices connected to the router obtain the address of the router as the DNS server address.
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.

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).

Figure 103. The section for creating MAC-IP pairs.

To create a MAC-IP pair, click the **Add** button. In the **IP** field, enter an IP address which will be assigned to the device from the LAN, then in the **MAC** field, enter the MAC address of this device. In the **Host** field, specify a network name of the device for easier identification (*optional*).

Also you can create a MAC-IP pair for a device connected to the router's LAN at the moment. To do this, select the relevant value from the **Known IP/MAC** addresses drop-down list (the **IP** and **MAC** fields will be filled in automatically).

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 checkbox in the relevant line in the table and click the **Remove** button. Then click the **Save** 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).
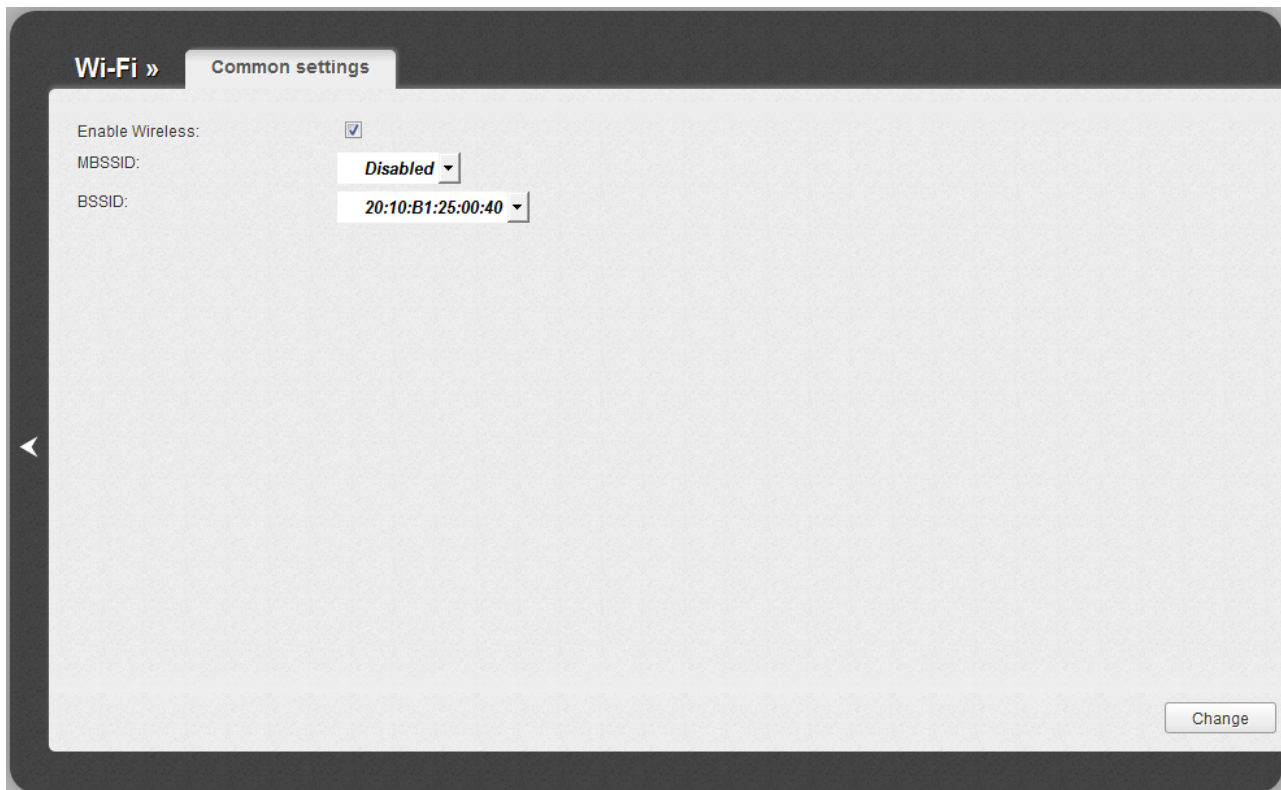
Figure 104. Common settings of the wireless LAN.

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.

The value from the **BSSID** drop-down list is the unique identifier for your Wi-Fi network. You cannot change the value of this parameter, it is determined in the device's internal settings.

Basic Settings

On the **Wi-Fi / Basic settings** page, you can configure basic parameters of the device's WLAN.
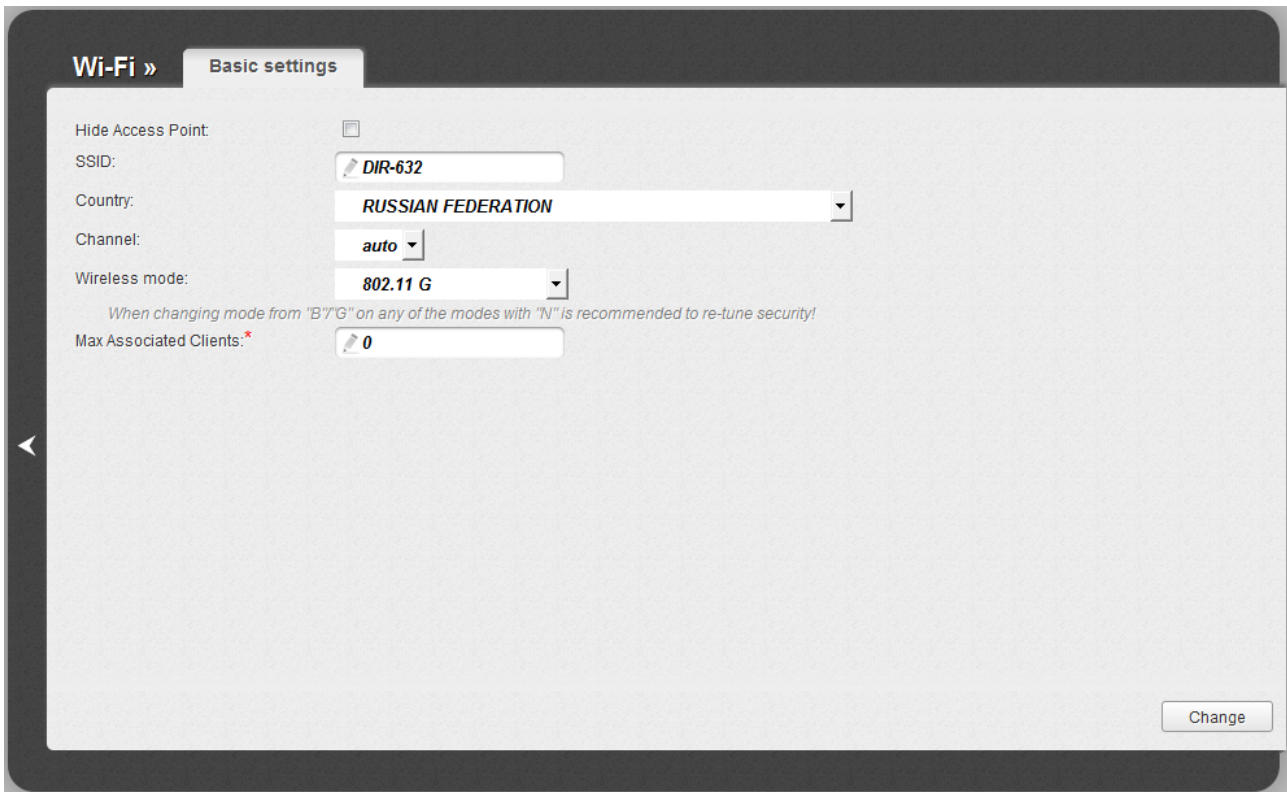
Figure 105. Basic settings of the wireless LAN.

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 `DIR-632` is specified. It is recommended to specify another name for the network upon initial configuration (use digits and Latin characters).
Country	The country you are in. Select a value from the drop-down list.
Channel	The wireless channel number. When the **auto** value is selected, the router itself chooses the channel with the least interference.

Parameter	Description
Wireless mode	Operating mode of the router's WLAN. This parameter defines standards of the devices that will be able to use your WLAN. By default, the router automatically selects a mode for clients connected to it. You can specify your restrictions. **802.11 B**: Only 802.11 b devices can connect to the WLAN. **802.11 G**: Only 802.11b/g devices can connect to the WLAN. **802.11 G/N 20MHz**: 802.11b/g/n devices can connect to the WLAN; 802.11n devices operate at 20MHz channels. **802.11 G/N 20/40MHz +**: 802.11b/g/n devices can connect to the WLAN, 802.11n devices operate at 20MHz channels and 40MHz channels (the channel is combined with the next adjacent channel). **802.11 G/N 20/40MHz -**: 802.11b/g/n devices can connect to the WLAN, 802.11n devices operate at 20MHz channels and 40MHz channels (the channel is combined with the previous adjacent channel).
Max Associated Clients	The maximum number of devices connected to the wireless network of the router. When the value 0 is specified, the device does not limit the number of connected clients.

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.
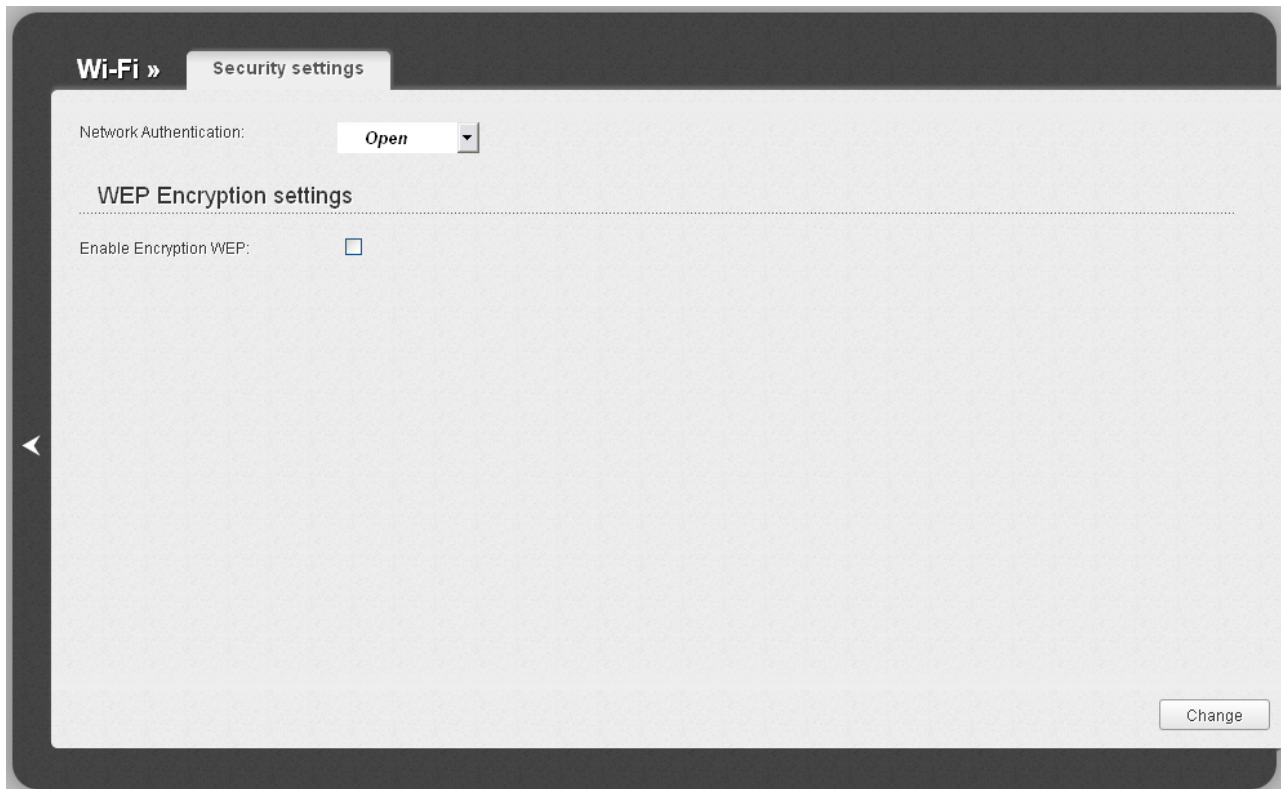
Figure 106. The default security settings.

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 for the WLAN.
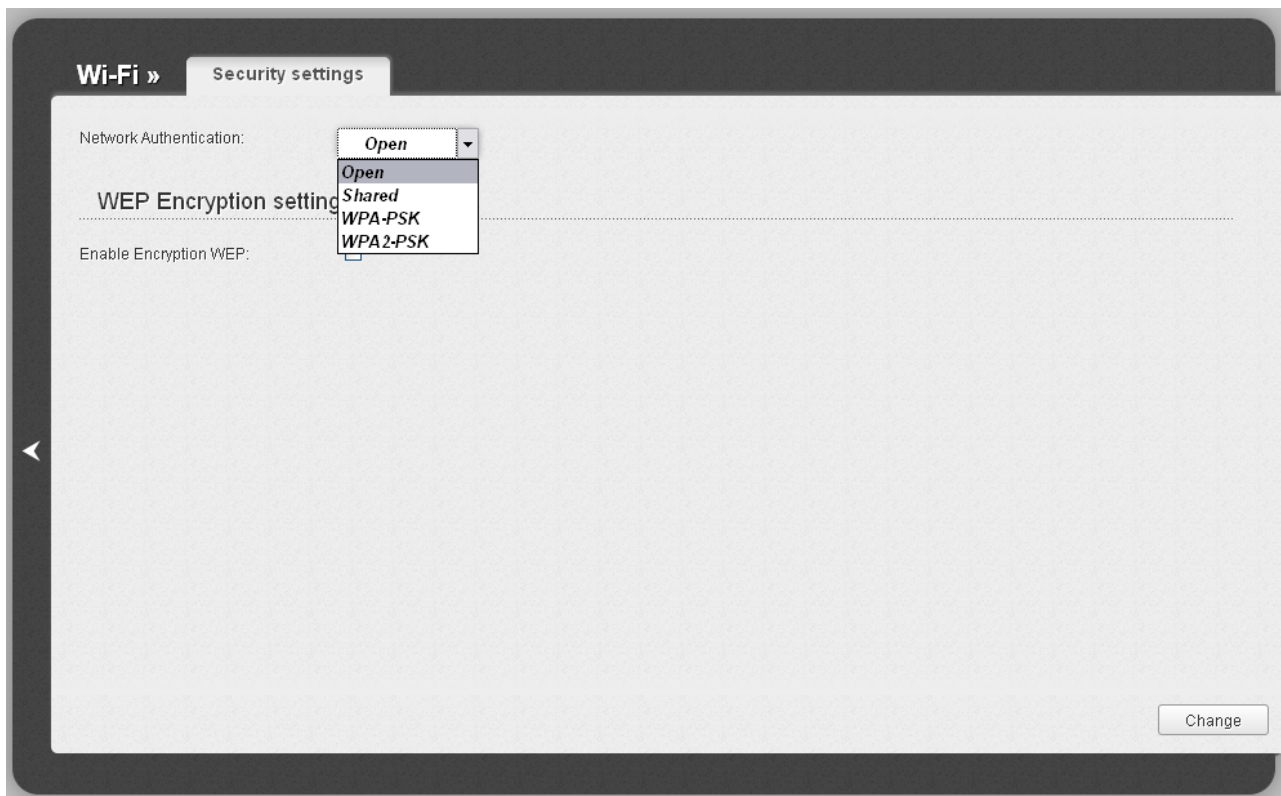
Figure 107. Network authentication types supported by the router.

The router supports the following authentication types:

Authentication type	Description
Open	Open authentication (with WEP encryption for wireless network modes not supporting 802.11n devices).
Shared	Shared key authentication with WEP encryption. This authentication type is not available when on the **Wi-Fi / Basic settings** page, in the **Wireless mode** drop-down list, a mode supporting 802.11n devices is selected.
WPA-PSK	WPA-based authentication using a PSK.
WPA2-PSK	WPA2-based authentication using a PSK.

When the **Open** or **Shared** value is selected, the **WEP Encryption settings** section is displayed (the section is unavailable for the wireless network operating modes which support the standard 802.11n):

*Figure 108. 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 **Default Key ID** field, the **Encryption Key WEP as HEX** checkbox, and four **Encryption Key WEP** fields are displayed on the page. For the **Shared** authentication type the checkbox is always selected.
Default Key ID	The number of the key (from first to fourth) which will be used for WEP encryption.
Encryption Key WEP as HEX	Select the checkbox to set a hexadecimal number as a key for encryption.
Encryption Key WEP (1-4)	Keys for WEP encryption. The router uses the key selected from the **Default Key ID** drop-down list. It is required to specify all the fields. 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 109. 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.
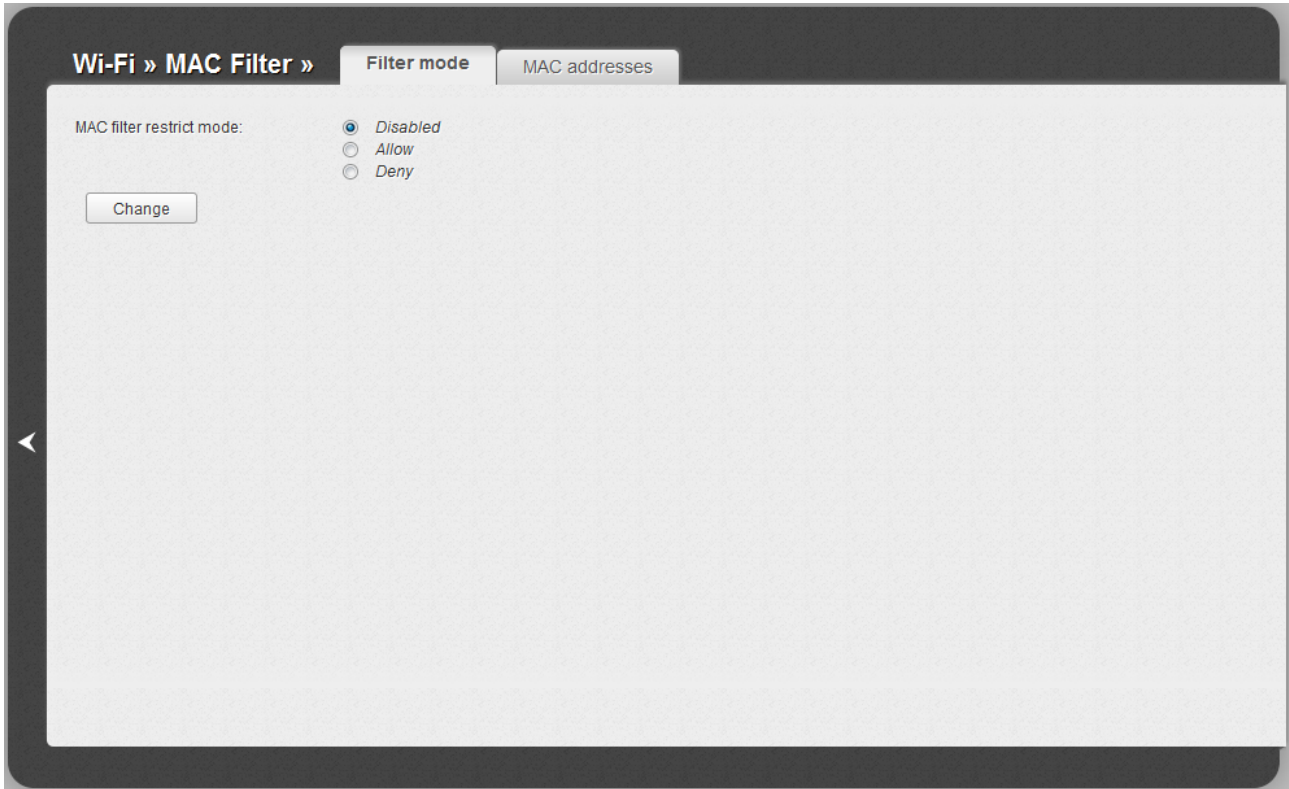
Figure 110. The MAC filter for the wireless network.

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

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.
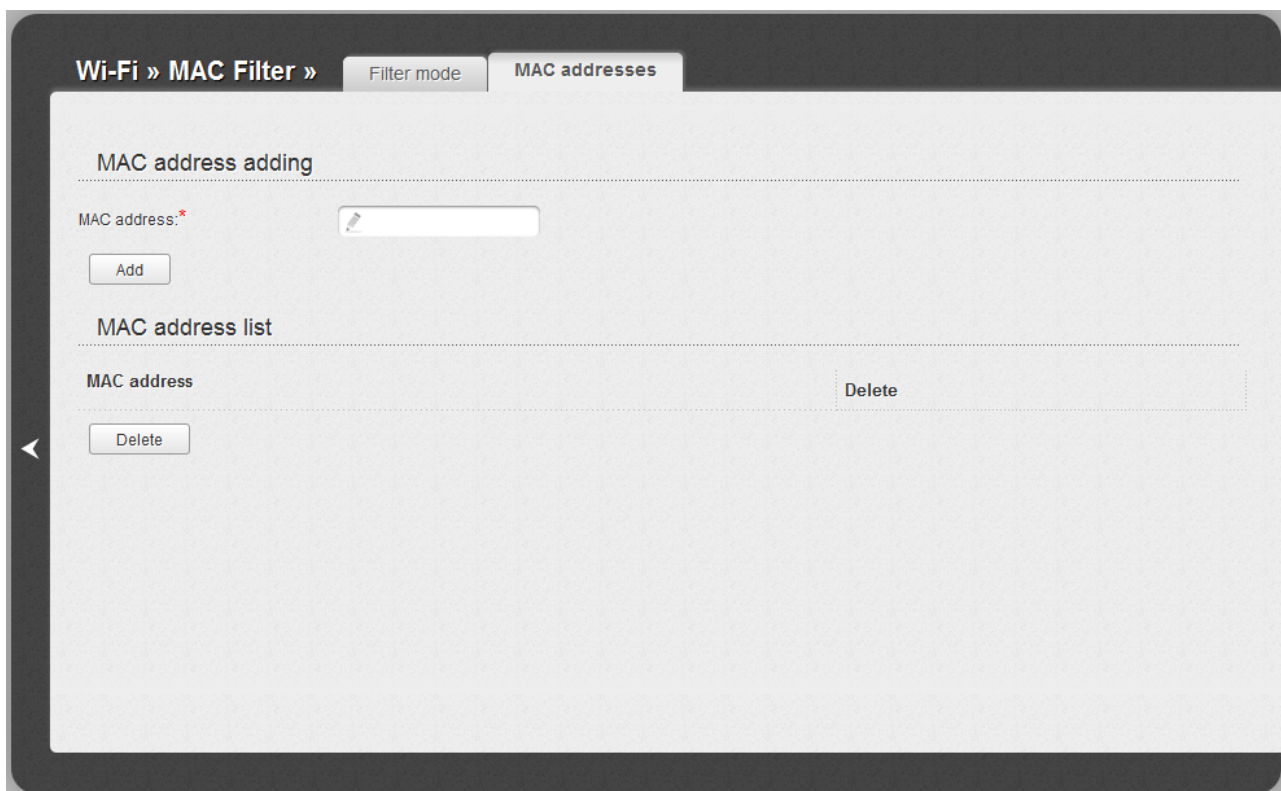
Figure 111. The tab for adding a MAC address.

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

To 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 clients connected to the router.
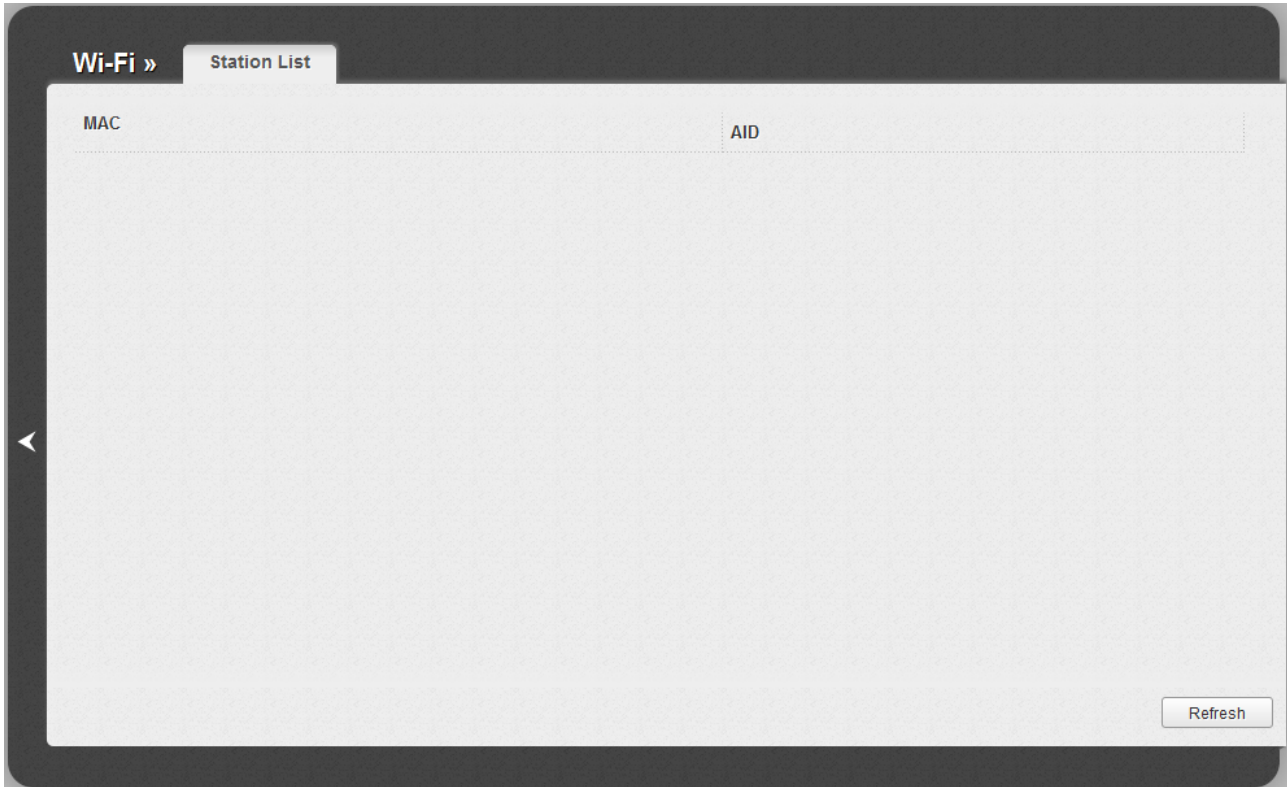
Figure 112. The list of the wireless clients.

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).
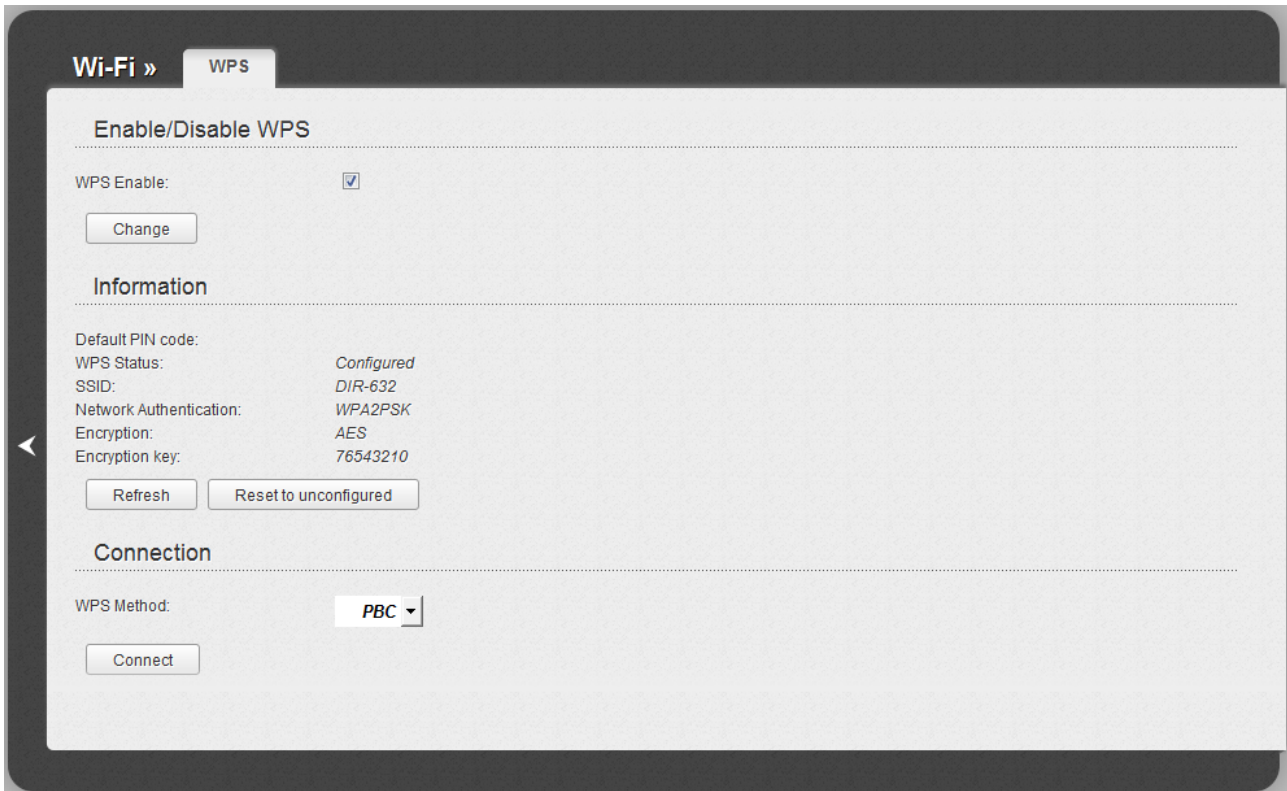
Figure 113. The page for configuring the WPS function.

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
Default PIN code	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.
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.
Encryption key	The encryption key specified for the WLAN.
Refresh	Click the button to refresh the data on the page.
Reset to unconfigured	Click the button to reset the parameters of 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.

Additional Settings

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

> **!** <u>Changing parameters presented on this page may negatively affect your WLAN!</u>
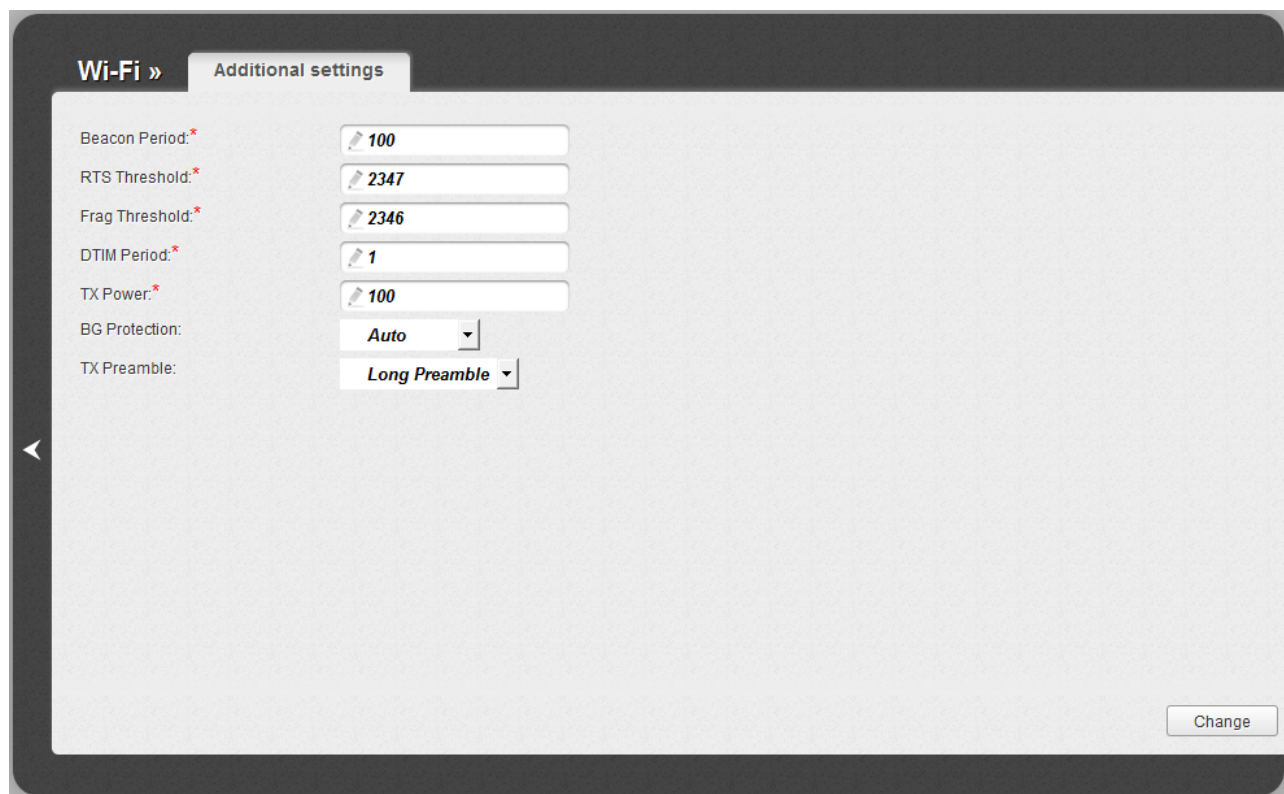
Figure 114. Additional settings of the WLAN.

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 transmit power (in percentage terms) of the router.

Parameter	Description
BG Protection	The 802.11b and 802.11g protection function is used to minimize collisions between devices of your wireless network. Select a value from the drop-down list. **Auto**: The protection function is enabled and disabled automatically depending on the state of the network (this value is recommended if your wireless local area network consists of both 802.11b and 802.11g devices). **Always On**: The protection function is always enabled (this setting can substantially lower the efficiency of your wireless network). **Always Off**: The protection function is always disabled.
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.

WMM

On the **Wi-Fi / WMM** page, you can enable the Wi-Fi Multimedia function.

The WMM function implements the QoS features for Wi-Fi networks. It helps to improve the quality of data transfer over Wi-Fi networks by prioritizing different types of traffic.

To enable the function, select the **WMM** checkbox and click the **Change** button.

Figure 115. The page for configuring the WMM function.

> ! All needed settings for the WMM function are specified in the device's system. It is recommended not to change the default values.

The WMM function allows assigning priorities for four Access Categories (AC):

- **AC_BK** (*Background*), low priority traffic (print jobs, file downloads, etc.).

- **AC_BE** (*Best Effort*), traffic from legacy devices or devices/applications that do not support QoS.

- **AC_VI** (*Video*).

- **AC_VO** (*Voice*).

Parameters of the Access Categories are defined for both the router itself (in the **Parameters of Access Point** section) and wireless devices connected to it (in the **Parameters of Station** section).

For every Access Category the following fields are available:

Parameter	Description
Aifsn	*Arbitrary Inter-Frame Space Number.* This parameter influences time delays for the relevant Access Category. The lower the value, the higher is the Access Category priority.
CWMin/CWMax	*Contention Window Minimum/Contention Window Maximum.* Both fields influence time delays for the relevant Access Category. The **CWMax** field value should not be lower, than the **CWMin** field value. The lower the difference between the **CWMax** field value and the **CWMin** field value, the higher is the Access Category priority.
Txop	*Transmission Opportunity.* The higher the value, the higher is the Access Category priority.
ACM	*Admission Control Mandatory.* If selected, prevents from using the relevant Access Category.
Ack	*Acknowledgment.* Answering response requests while transmitting. Displayed only in the **Parameters of Access Point** section. If not selected, the router answers requests. If selected, the router does not answer requests.

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

Advanced

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

- create groups of ports for VLANs

- enable the UPnP function

- configure a DDNS service

- add name servers

- define static routes

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

- allow the router to use IGMP.

VLAN

On the **Advanced / VLAN** page, you can create and edit groups of ports for virtual networks (VLANs).

By default, 2 groups are created in the router's system:

- **lan**: it includes ports 1-8 and the wireless interface;

- **wan**: for the WAN interface; it includes port INTERNET.

The **VLAN ID** parameter is not specified for both groups. Such a setting means that these groups of ports are not assigned to any VLAN.
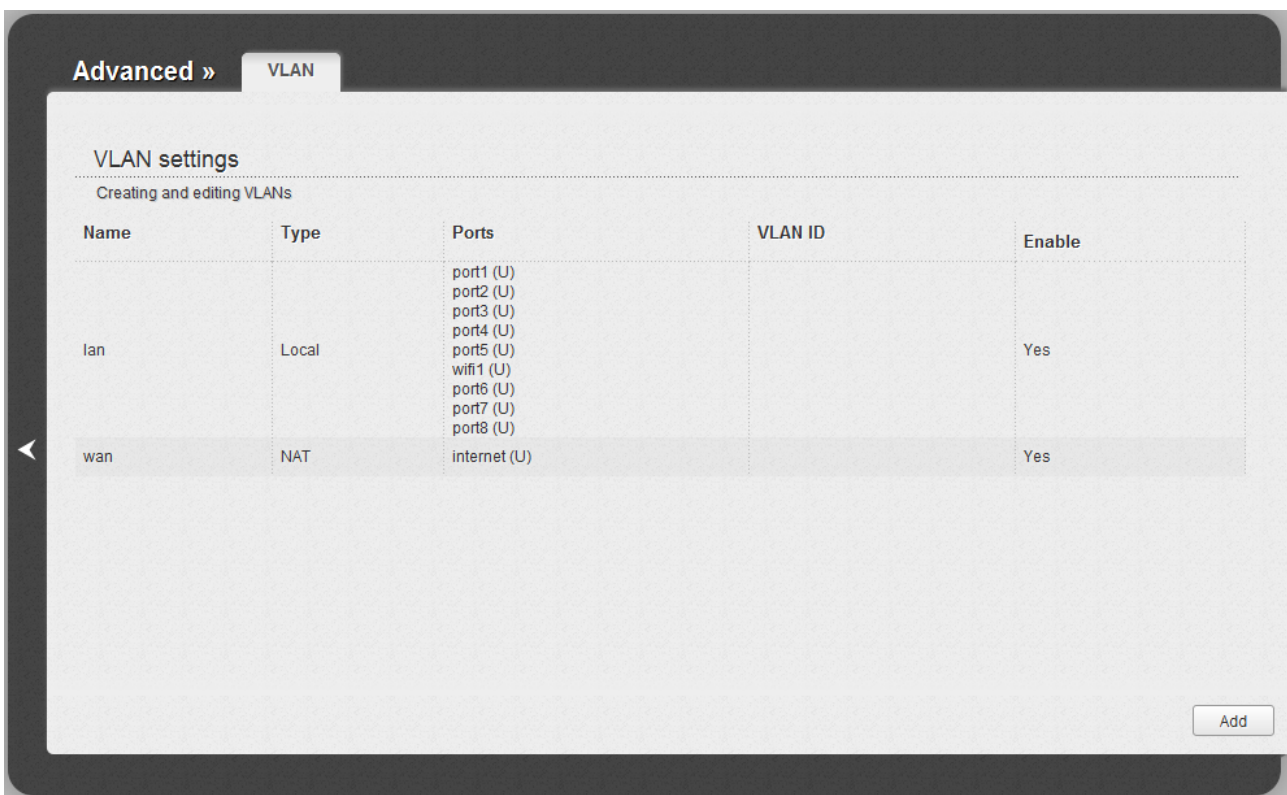
*Figure 116. The **Advanced / VLAN** page.*

To create a new group for VLAN, click the **Add** button.

> **!** If you want to create a group including LAN ports or the wireless network of the router, first delete relevant records from the **lan** group on this page.
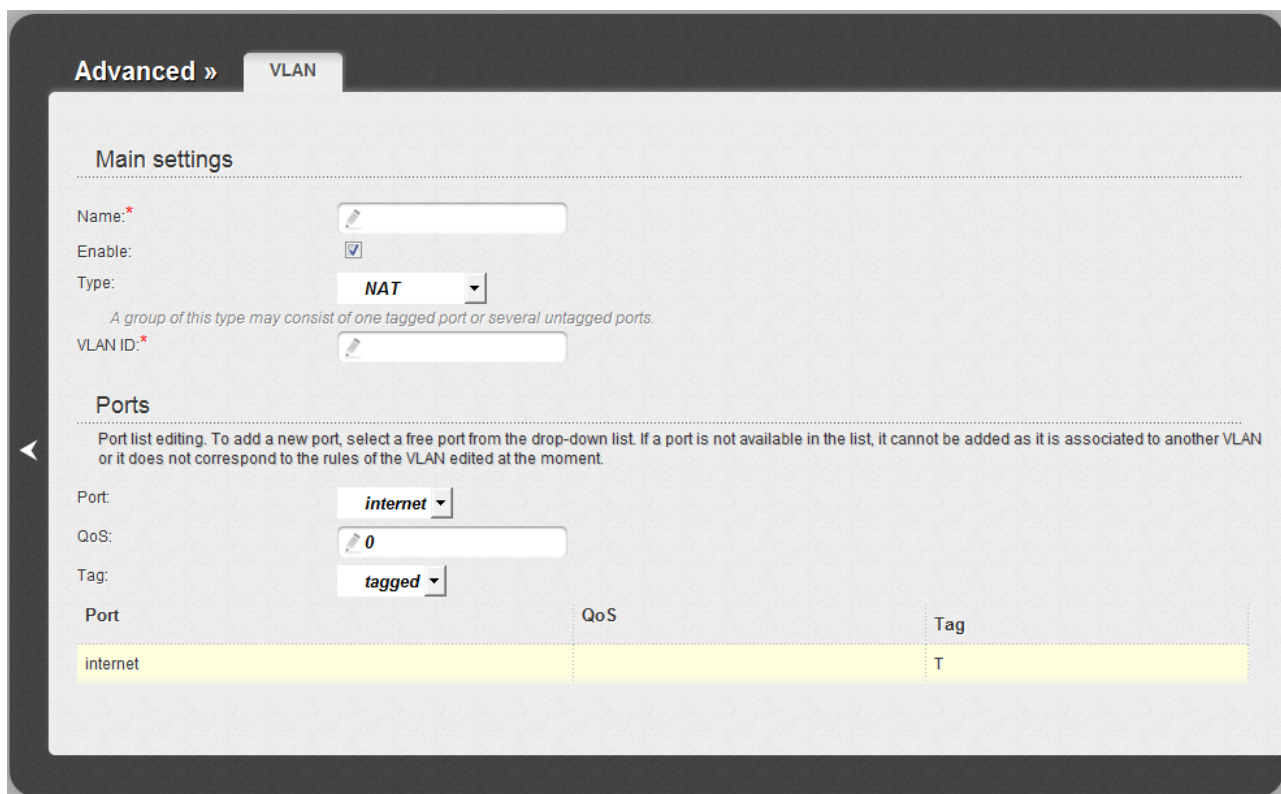
Figure 117. The page for editing a group of ports for VLAN.

You can specify the following parameters:

Parameter	Description
Main settings	
Name	A name for the port for easier identification.
Enable	Select the checkbox to allow using this group of ports.
Type	The type of the VLAN which identifier is specified in the **VLAN ID** field. **Local**. The group of this type is a channel used to connect local clients to the router. It is mostly used to connect different types of clients, which require separate connection settings. **NAT**. The group of this type is an external connection with address translation. It is mostly used to connect to the Internet. Later the VLAN which identifier is specified in the **VLAN ID** field is used to create a WAN connection (on the **Net / WAN** page). **Transparent**. The group of this type is a transparent connection between an internal port and an external connection. It is mostly used to connect IPTV set-top boxes.

Parameter	Description
VLAN ID	An identifier of the VLAN to which this group of ports will be assigned.
Ports	
Port	From the list, select an available value (a physical port of the router, the wireless interface) to assign it to this group. The port will be displayed in the table at the bottom of the page.
QoS	A priority tag for the traffic transmitted through the port highlighted in the table at the bottom of the page.
Tag	Select a value for the port highlighted in the table at the bottom of the page: • **tagged**, • **untagged**.

Click the **Save changes** button.

Click the **Delete port** button to delete the port highlighted in the table at the bottom of the page.

Click the **Delete VLAN** button to delete this group of ports form the system.

！ For further use of groups of ports for VLAN it is required to save the changed settings to the non-volatile memory of the router and reboot it (click the **Save&Reboot** line in the top-page menu displayed when the mouse pointer is over the **System** caption).

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.
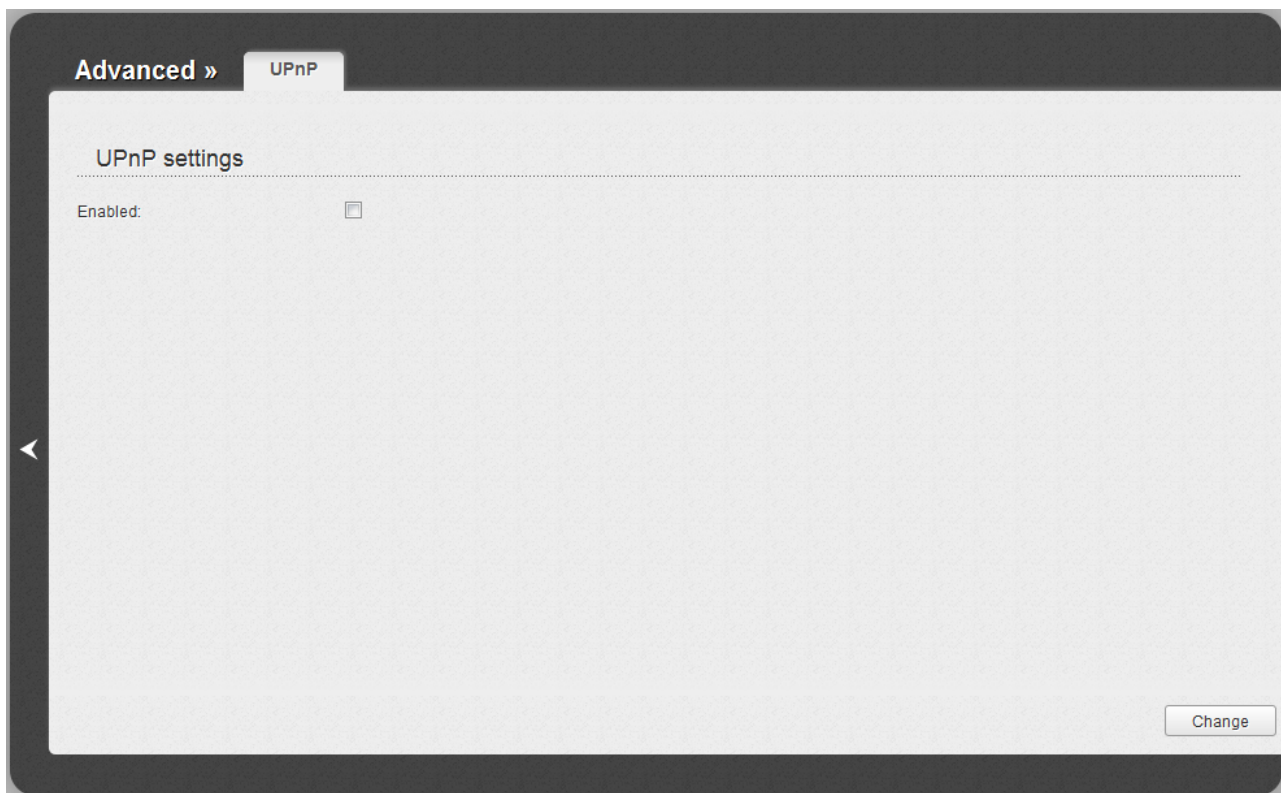
*Figure 118. The **Advanced / UPnP** page.*

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

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

DDNS

On the **Advanced / DDNS** page, you can define parameters of the DDNS service, which allows associating a domain name with dynamic IP addresses.
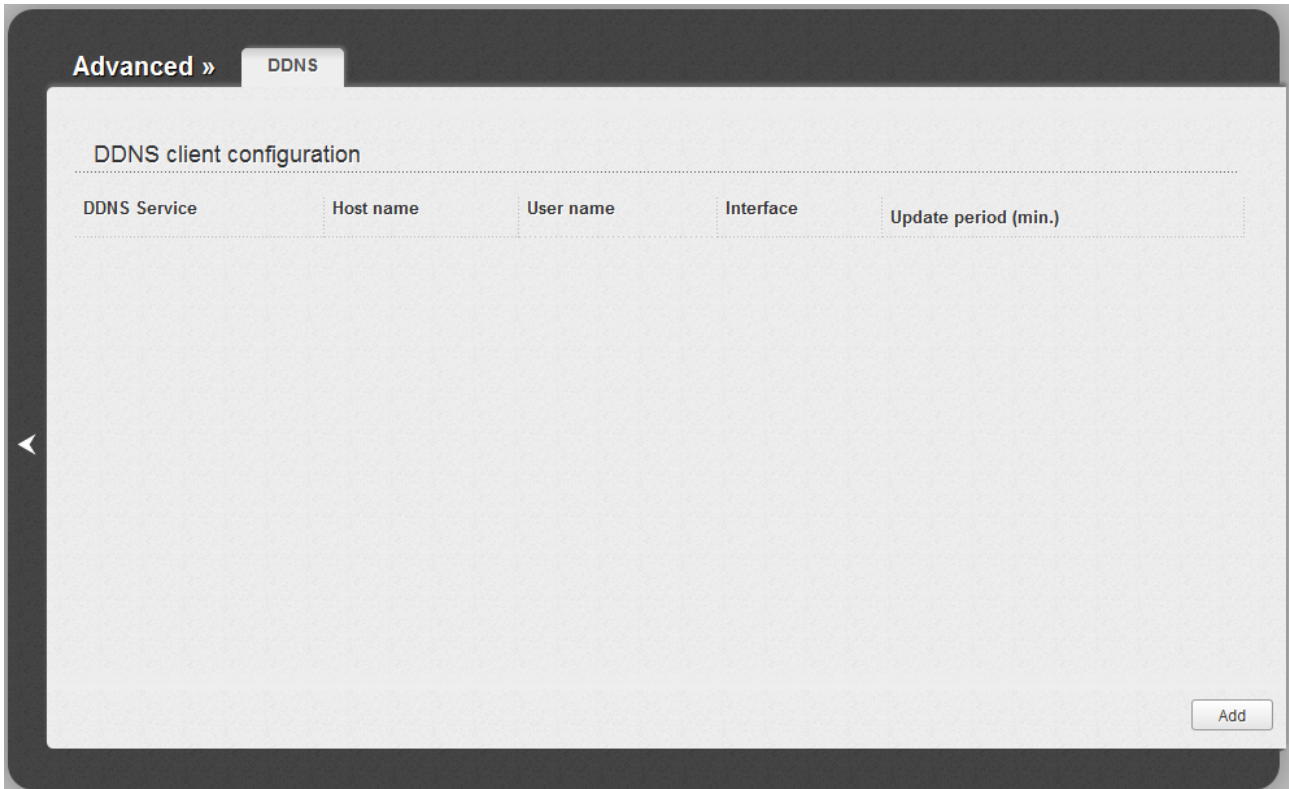
*Figure 119. The **Advanced / DDNS** page.*

To add a new DDNS service, click the **Add** button.
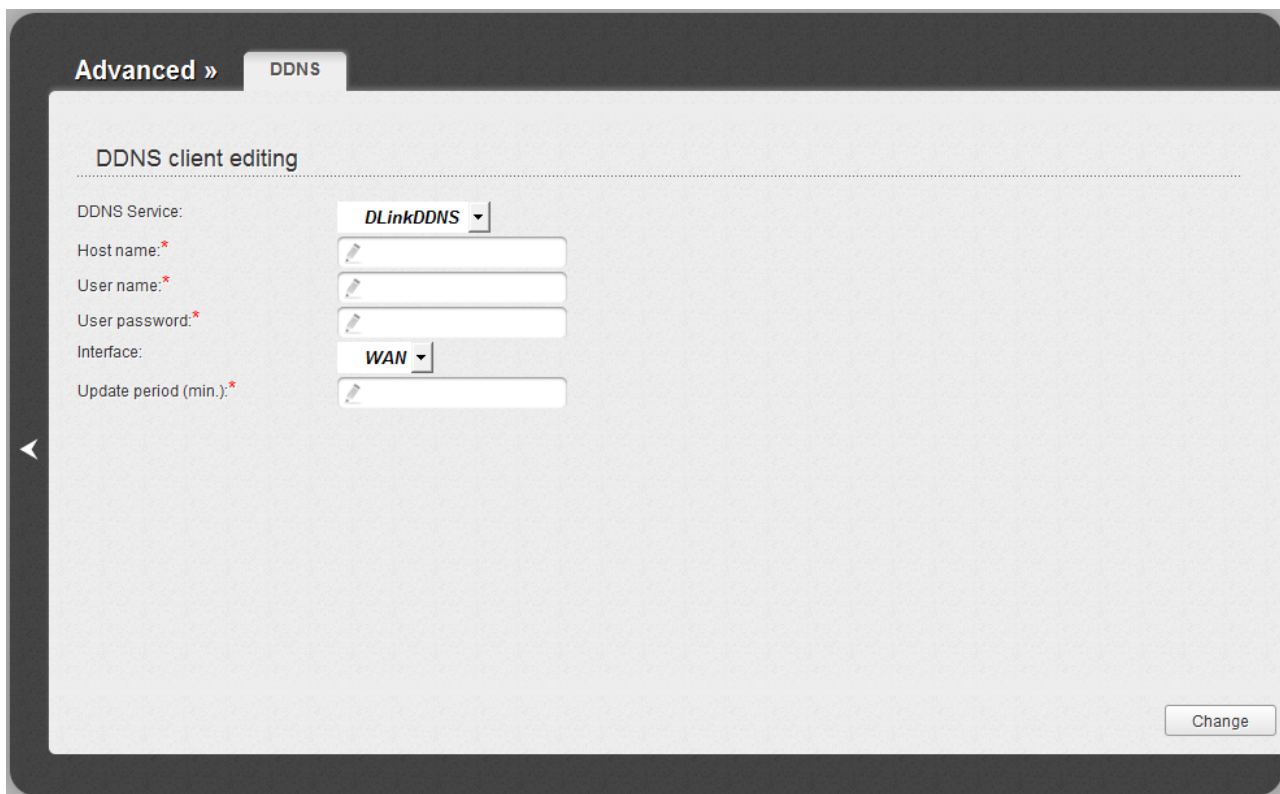
Figure 120. The page for editing the DDNS service.

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.
Update period	An interval (in minutes) between sending data with the IP address of the interface specified in the field above to the relevant 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 121. 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 or select the **Default route** checkbox, so that the router could use the connection set as the default gateway (on the **Net / WAN** page) to obtain DNS server addresses, 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.
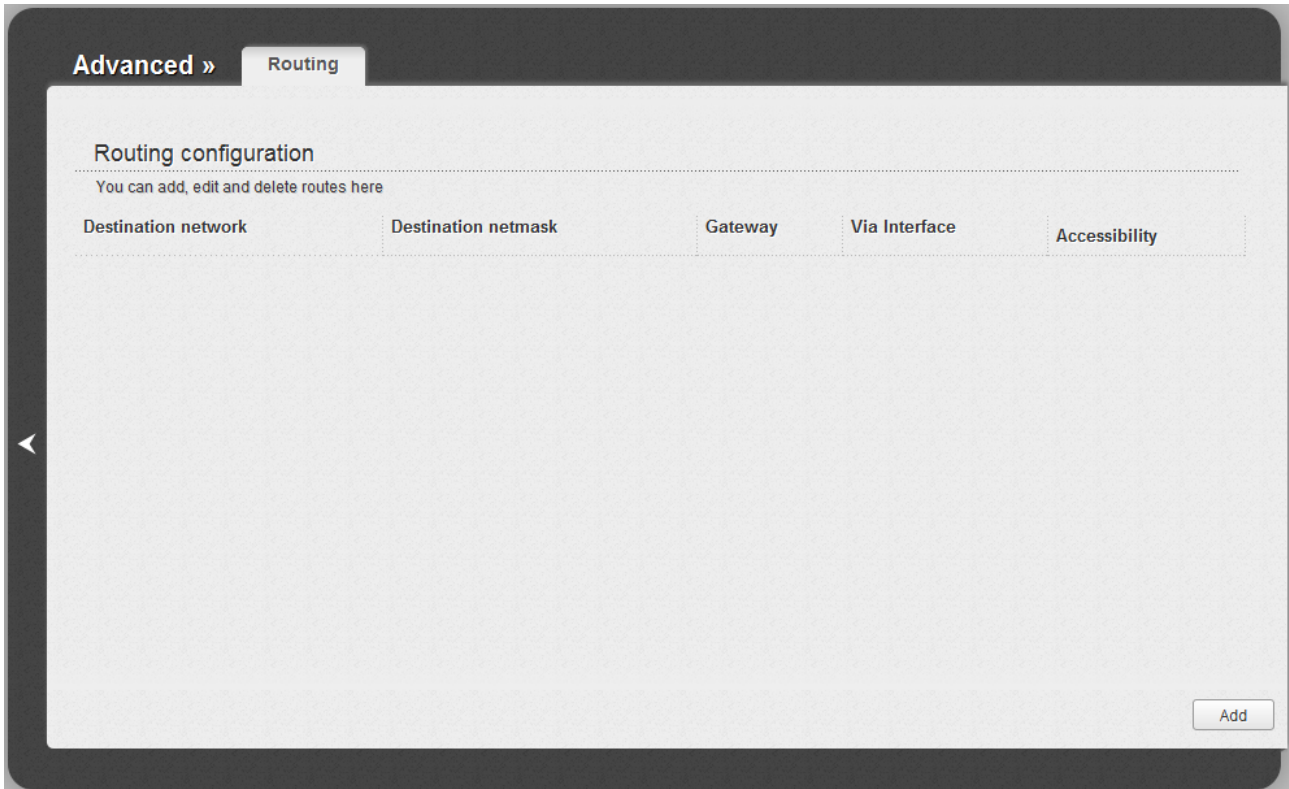
*Figure 122. The **Advanced / Routing** page.*

To create a new route, click the **Add** button.
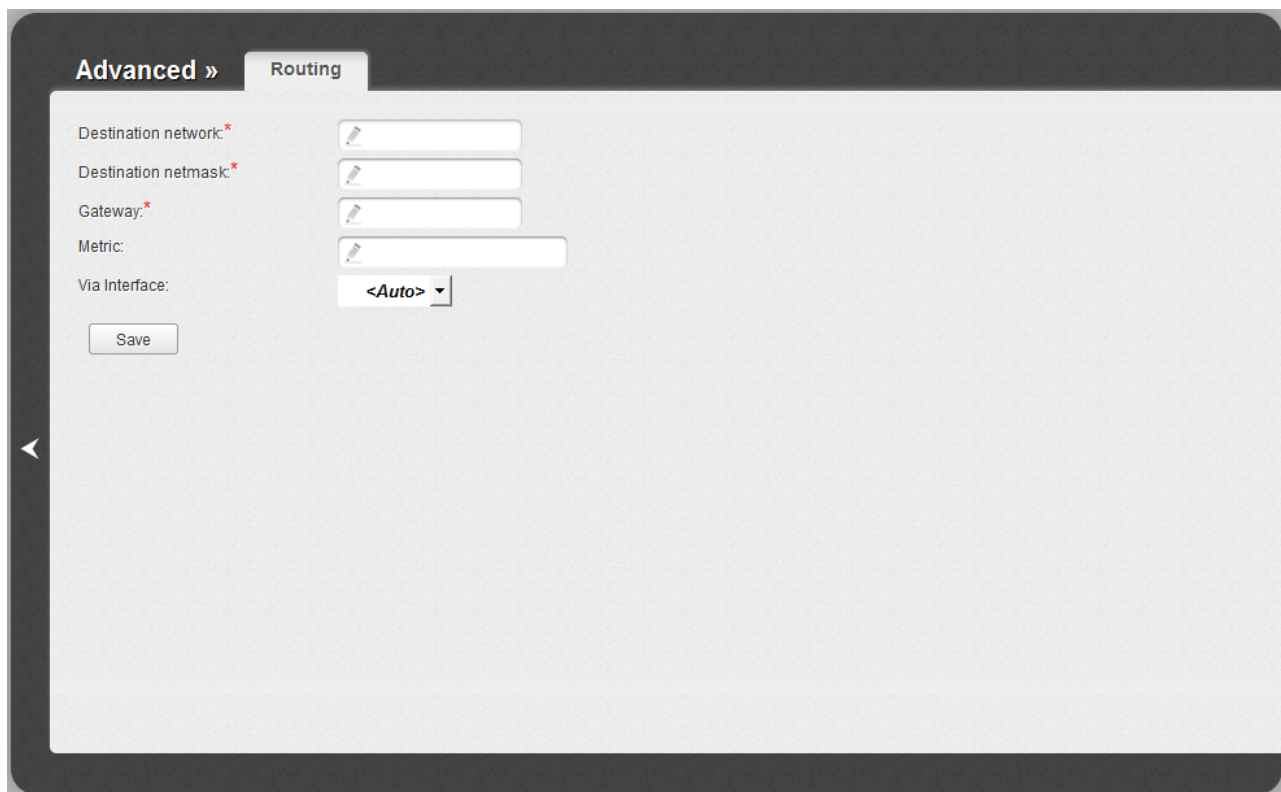
Figure 123. The page for adding a static route.

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 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, click the relevant route link. On the opened page, change the needed parameters and click the **Save** button.

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

Remote Access

On the **Advanced / Remote access** page, you can configure 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.
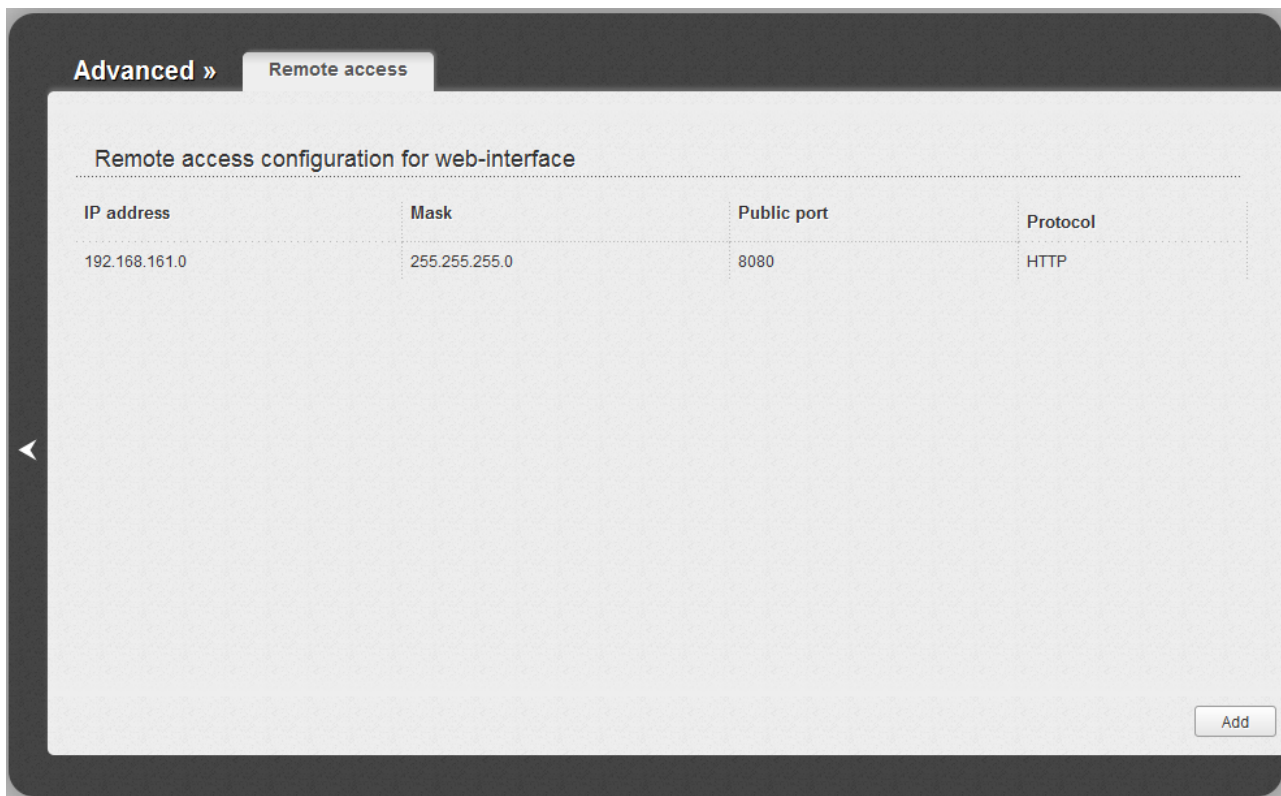

*Figure 124. The **Advanced / Remote access** page.*

To create a new rule, click the **Add** button.
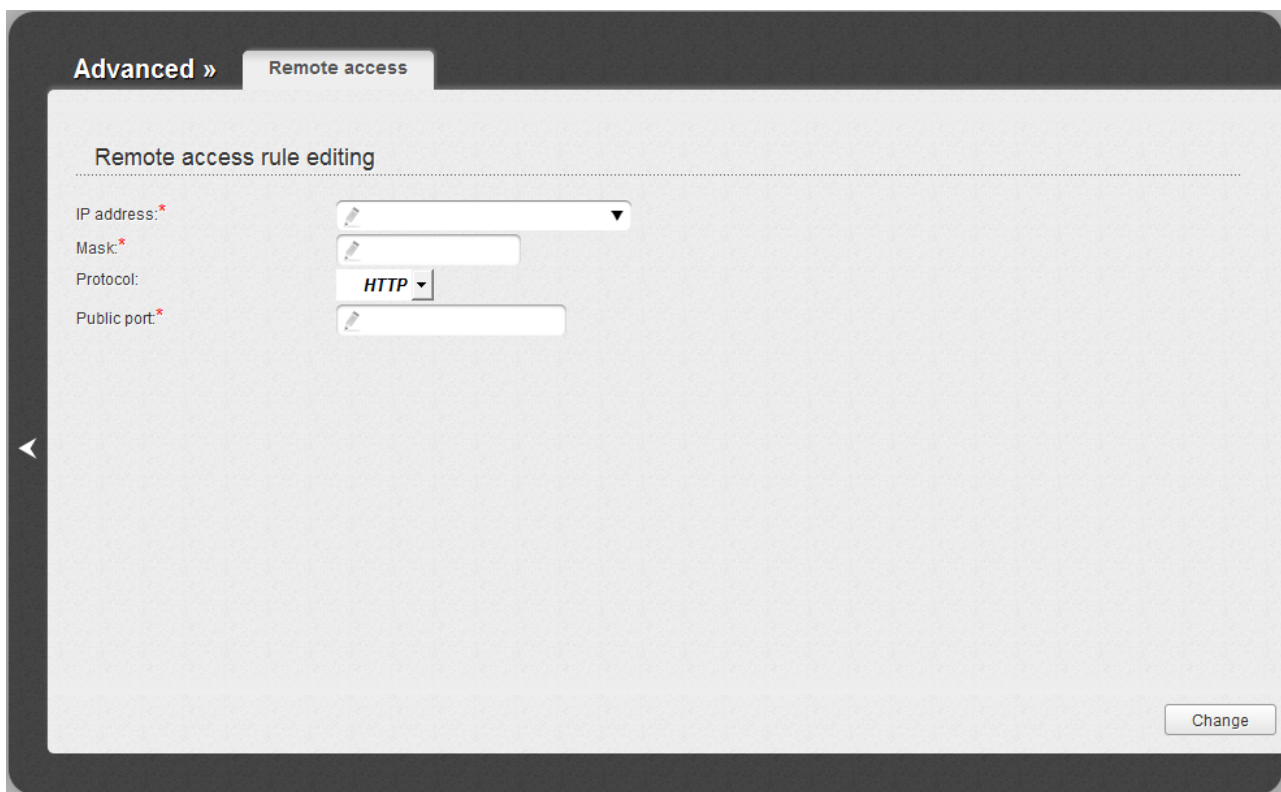
Figure 125. The page for adding a rule for remote management.

You can specify the following parameters:

Parameter	Description
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 (the field will be filled in automatically).
Mask	The mask of the subnet.
Protocol	The protocol available for remote management of the router.
Public port	An external port of the router. You can specify only one port.

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.

IGMP

On the **Advanced / IGMP** page, you can enable IGMP for the router.

IGMP is used for managing multicast traffic (transferring data to a group of destinations). This protocol allows using network resources for some applications, e.g., for streaming video, more efficiently.
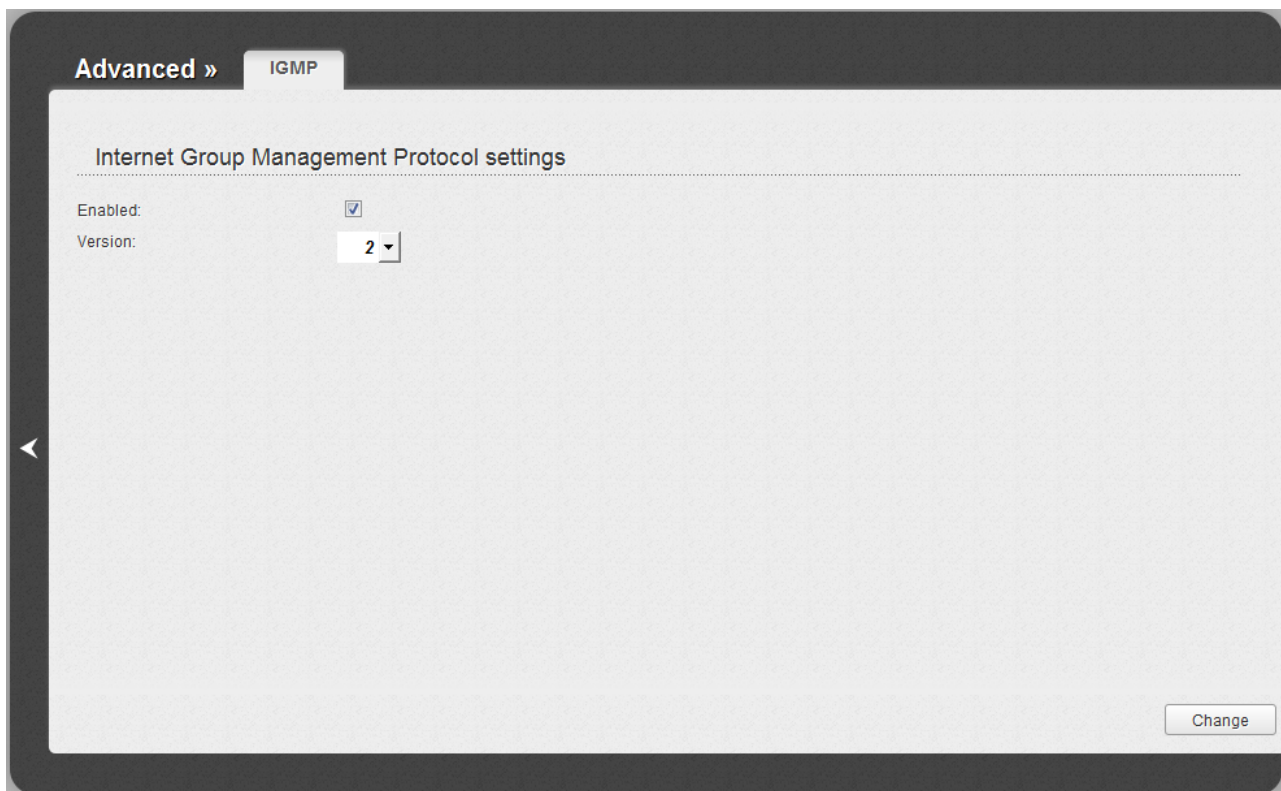
*Figure 126. The **Advanced / IGMP** page.*

To enable IGMP, select the **Enabled** checkbox. From the **Version** drop-down list, select a version of IGMP. Then click the **Change** button. Such a setting allows using the IGMP Proxy function for all WAN connections for which the **Enable IGMP Multicast** checkbox is selected.

To disable IGMP, deselect the **Enabled** checkbox and click the **Change** 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 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.
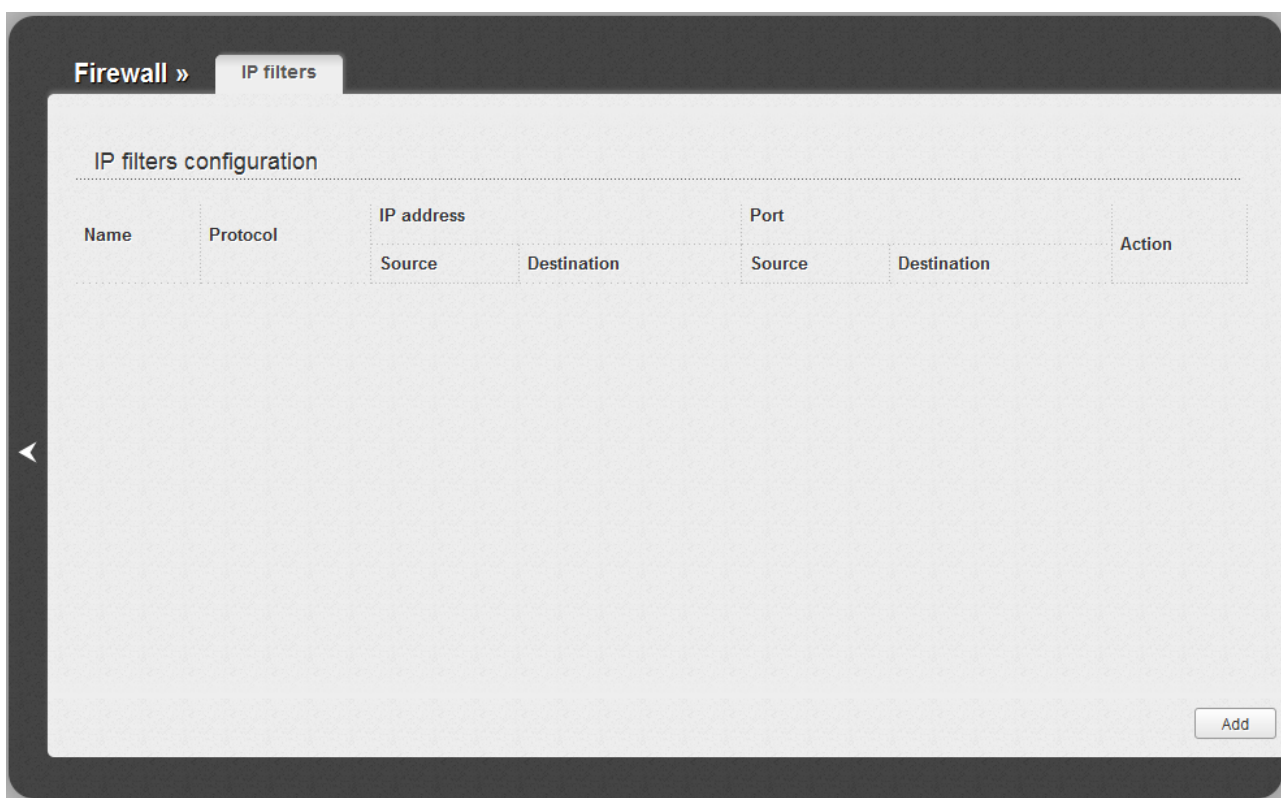
*Figure 127. The **Firewall / IP filters** page.*

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

Figure 128. 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.
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.

Parameter	Description
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 (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 (the field will be filled in automatically).
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, click the link to the relevant rule. On the opened page, change the needed parameters and click the **Change** button.

To remove a rule for IP filtering, click the link to the relevant rule. 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.
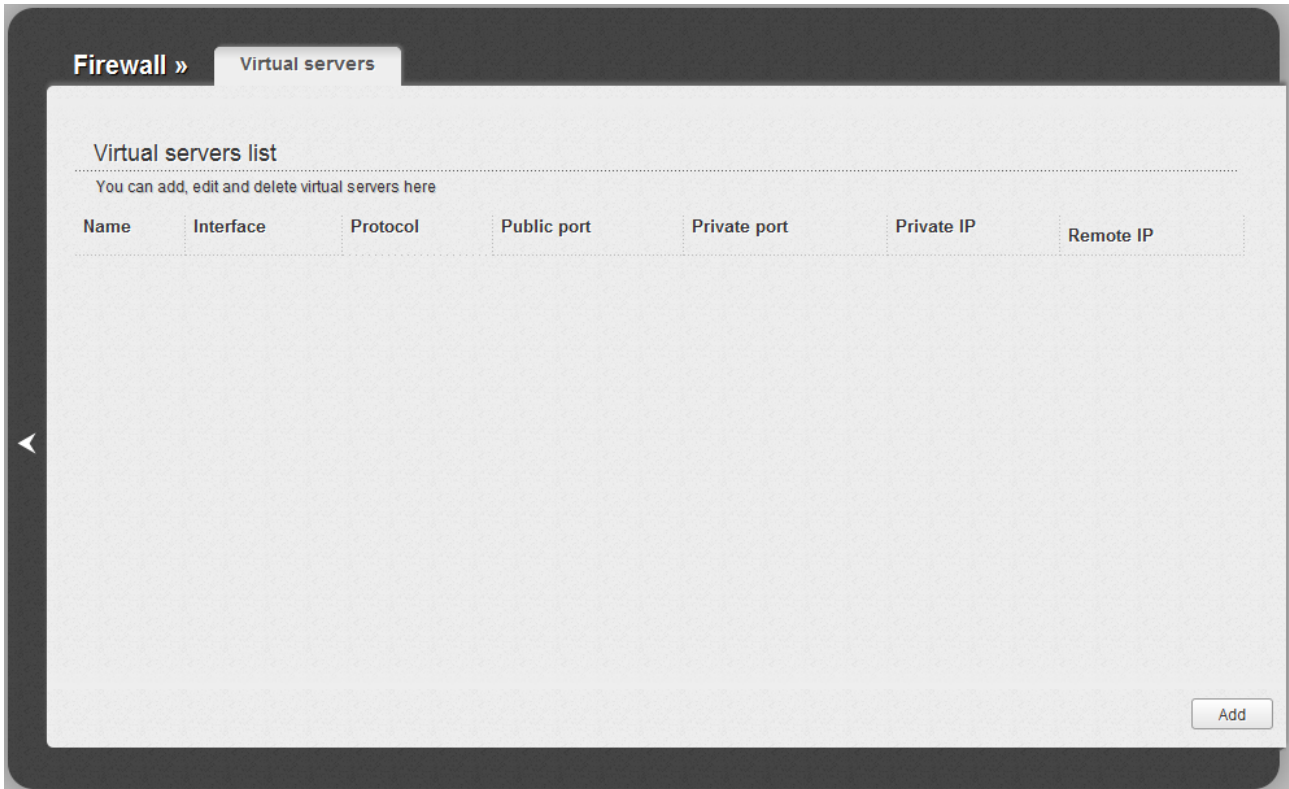
*Figure 129. The **Firewall / Virtual servers** page.*

To create a new virtual server, click the **Add** button.
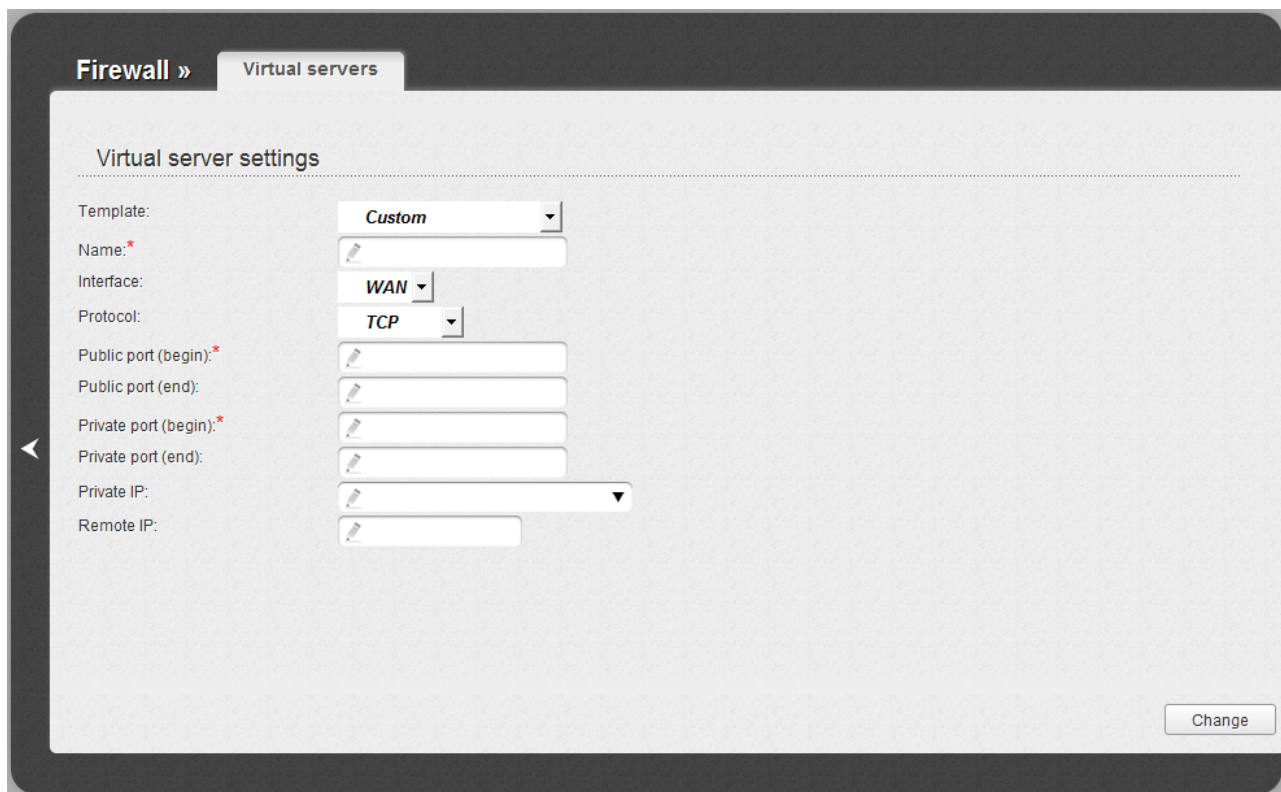
Figure 130. The page for adding a virtual server.

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.
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.

Parameter	Description
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 (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, follow the link with the name of the server. On the opened page, change the needed parameters and click the **Change** button.

To remove an existing server, follow the link with the name of the server. 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 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.
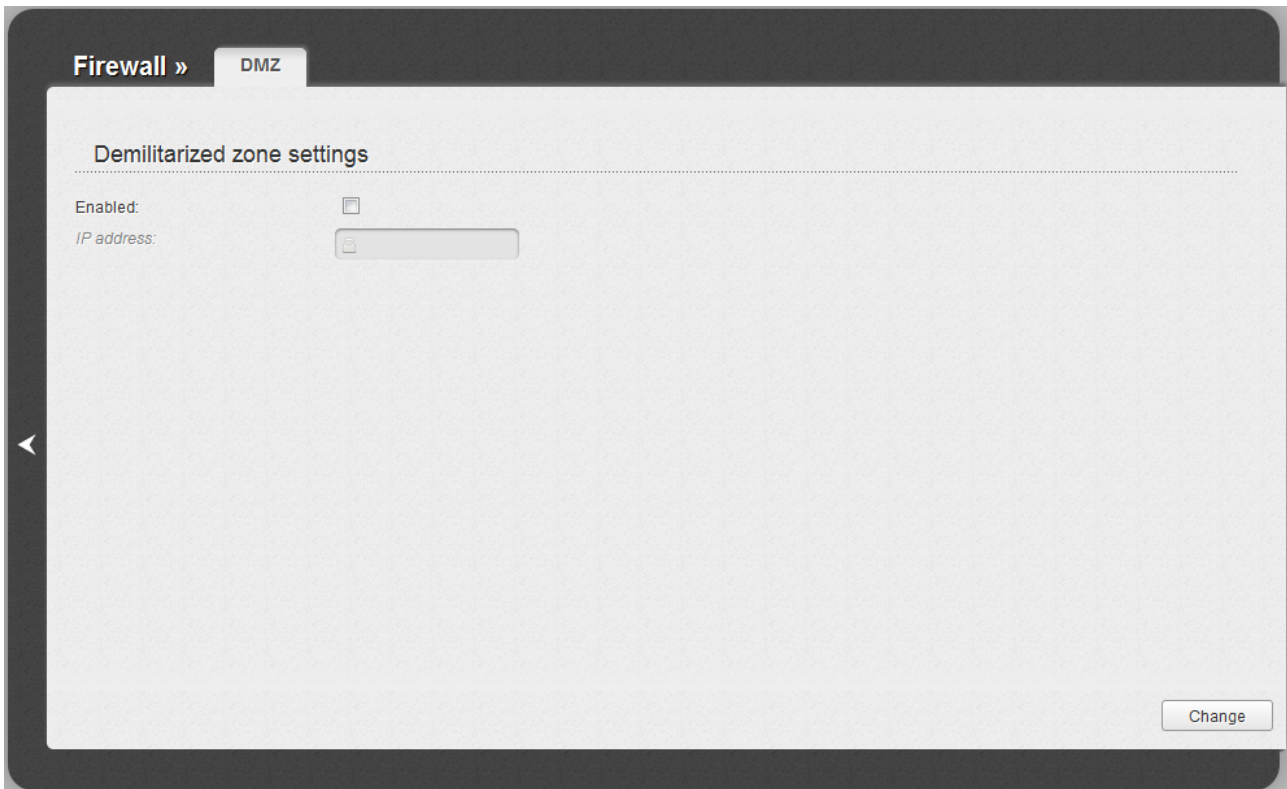
*Figure 131. The **Firewall / DMZ** page.*

To enable the DMZ, select the **Enabled** checkbox, enter the IP address of a host from your network in the **IP address** field, 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.

MAC Filter

On the **Firewall / MAC filter** page, you can configure MAC-address-based filtering for computers of the router's LAN.
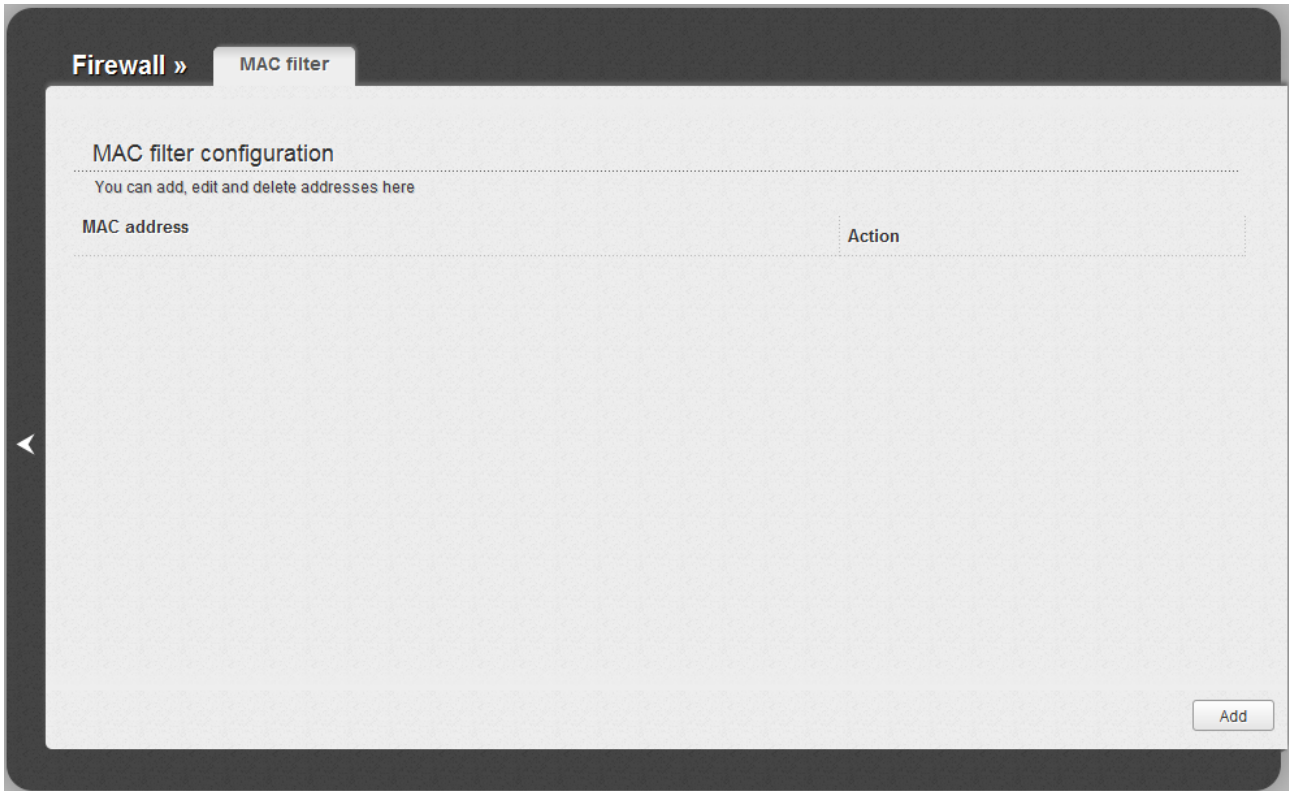
*Figure 132. The **Firewall / MAC filter** page.*

To specify a new address for the MAC filter, click the **Add** button.
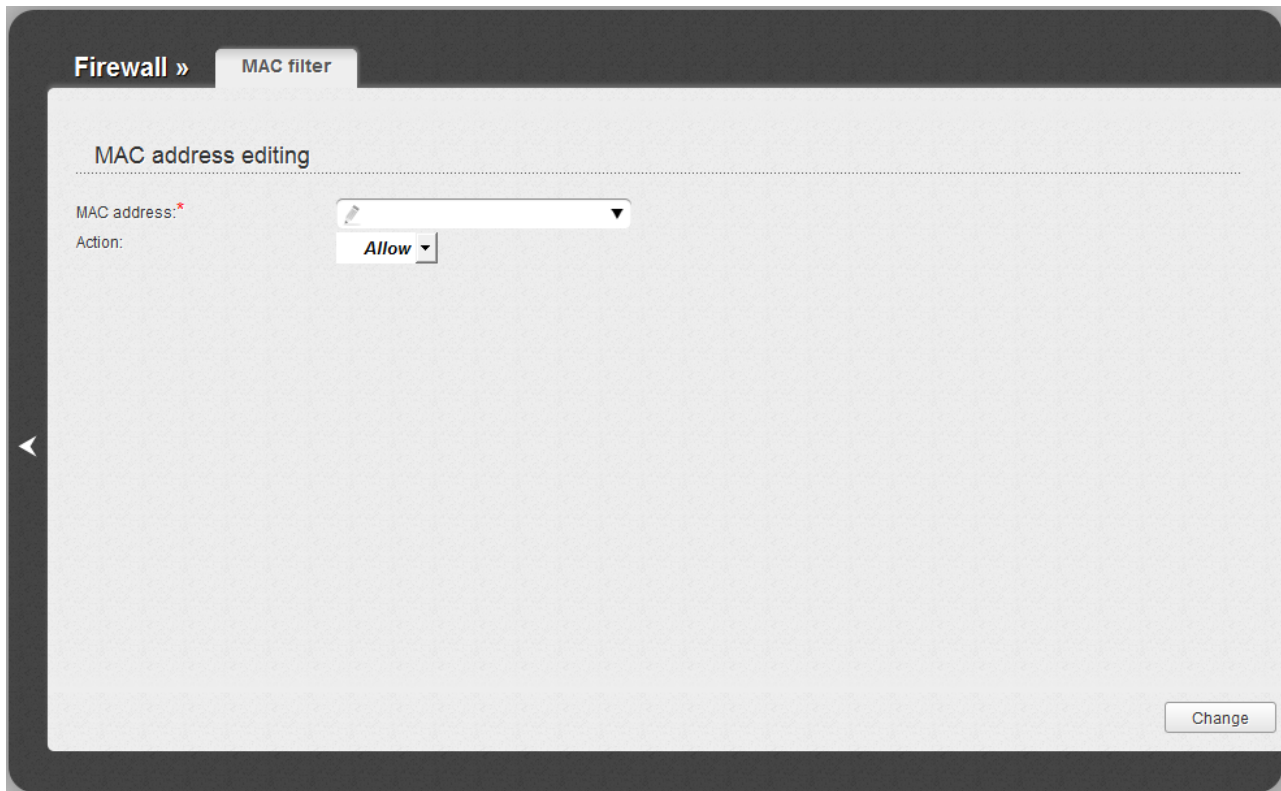
Figure 133. The page for adding an address for the MAC filter.

On the opened page, enter the MAC address of the device from the router's LAN in the **MAC address** field. To choose a device connected to the router's LAN at the moment, select the relevant value from the drop-down list (the field will be filled in automatically). Then select the **Deny** value from the **Action** drop-down list and click the **Change** button.

To remove an address from the list of MAC addresses for filtering, select the line with the relevant MAC address. 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[6]. 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.
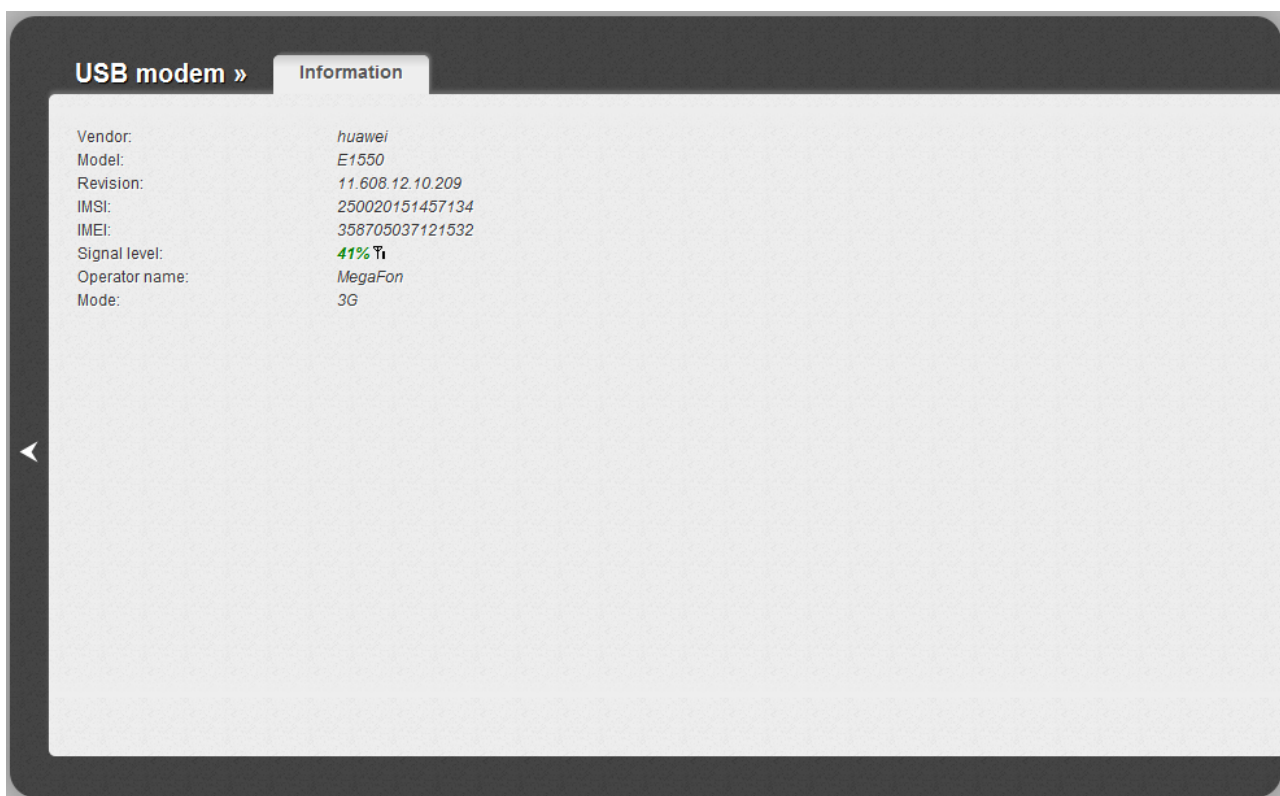
*Figure 134. The **USB modem / Information** page.*

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.

---

6 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.

Parameter	Description
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).

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 135. 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 136. 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.

WiMAX

This menu is designed to operate WiMAX USB modems.

Information

On the **WiMAX / Information** page, you can connect to the network of your WiMAX ISP to establish a high-speed wireless connection to the Internet.
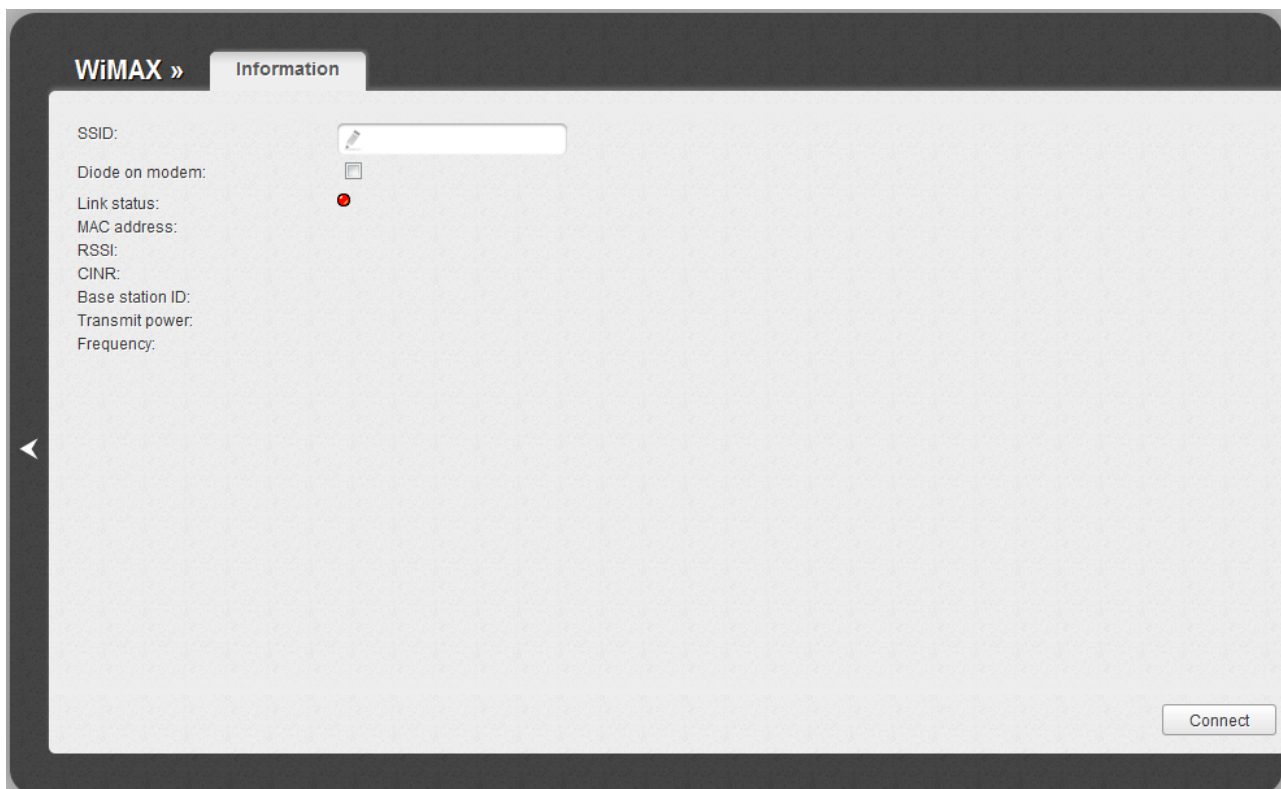
*Figure 137. The **WiMAX / Information** page.*

The following fields and controls are available on the page:

Parameter	Description
SSID	An identifier for the WiMAX network. Specify the parameter if your WiMAX ISP requires this.
Diode on modem	Select the checkbox to enable the modem's LED indicator.
Link status	The state of connection to the WiMAX network. **Red light**: The connection is not established. **Yellow light**: The USB modem is connecting to the network. **Green light**: The connection is established.
MAC address	The MAC address of the WiMAX USB modem.

Parameter	Description
RSSI	The signal level at the input of the modem's receiver.
CINR	The relation of the signal level to the noise level. This parameter is used to measure the quality of the signal.
Base station ID	The identifier of the base station.
Transmit power	The signal level at the output of the modem's receiver.
Frequency	The frequency of the signal transmitted by the modem's receiver.
Connect	Click the button to connect to the WiMAX network. Beforehand, you need to create a WAN connection with relevant parameters. *The button is displayed when the connection is not established.*
Disconnect	Click the button to disconnect from the WiMAX network. *The button is displayed when the connection is established or is being established.*

To save the values of the **SSID** and **Diode on modem** field, click the **Connect** button.

USB Storage

This menu is designed to operate USB storages. Here you can do the following:

- view data on the connected USB storage

- view content of the connected USB storage and configure access to it

- configure the router as a print server

- enable the built-in FTP server of the router.

Information

On the **USB storage / Information** page, you can view data on the USB storage connected to the router.
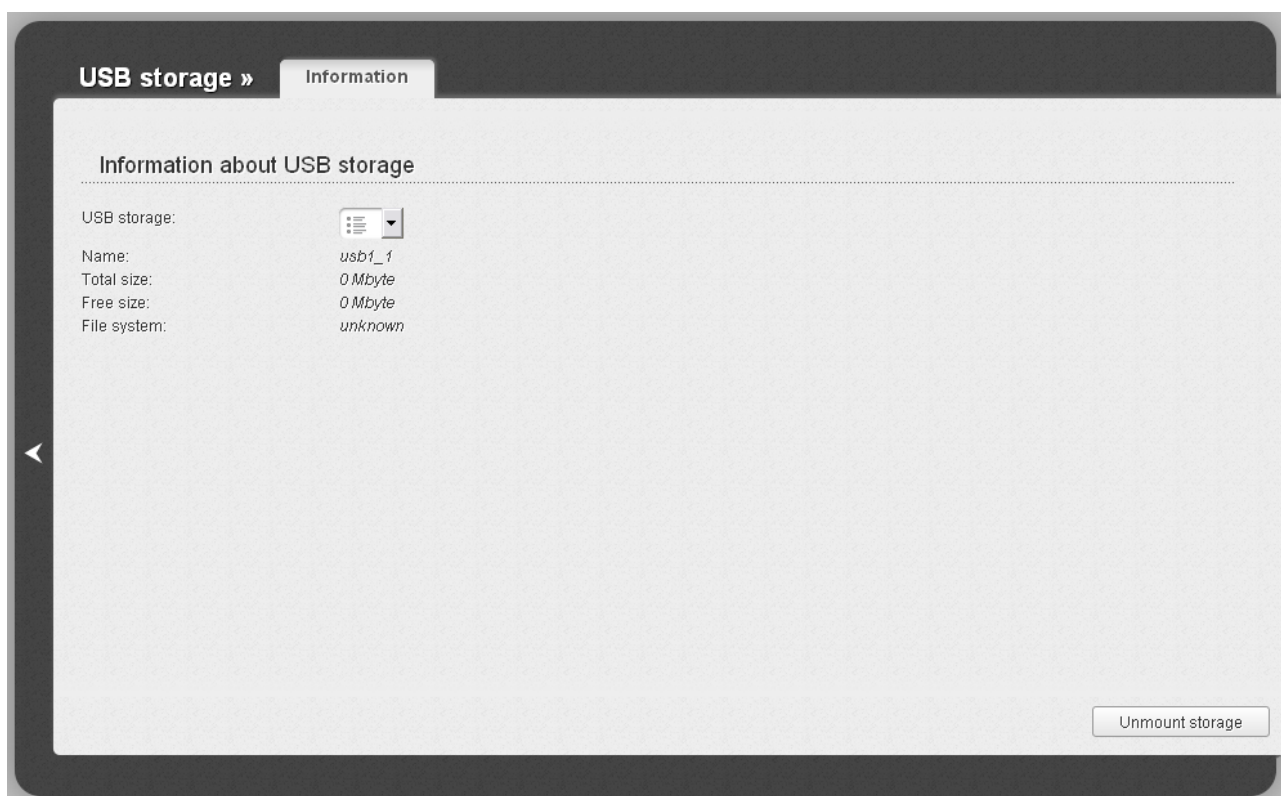
*Figure 138. The **USB storage / Information** page.*

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.
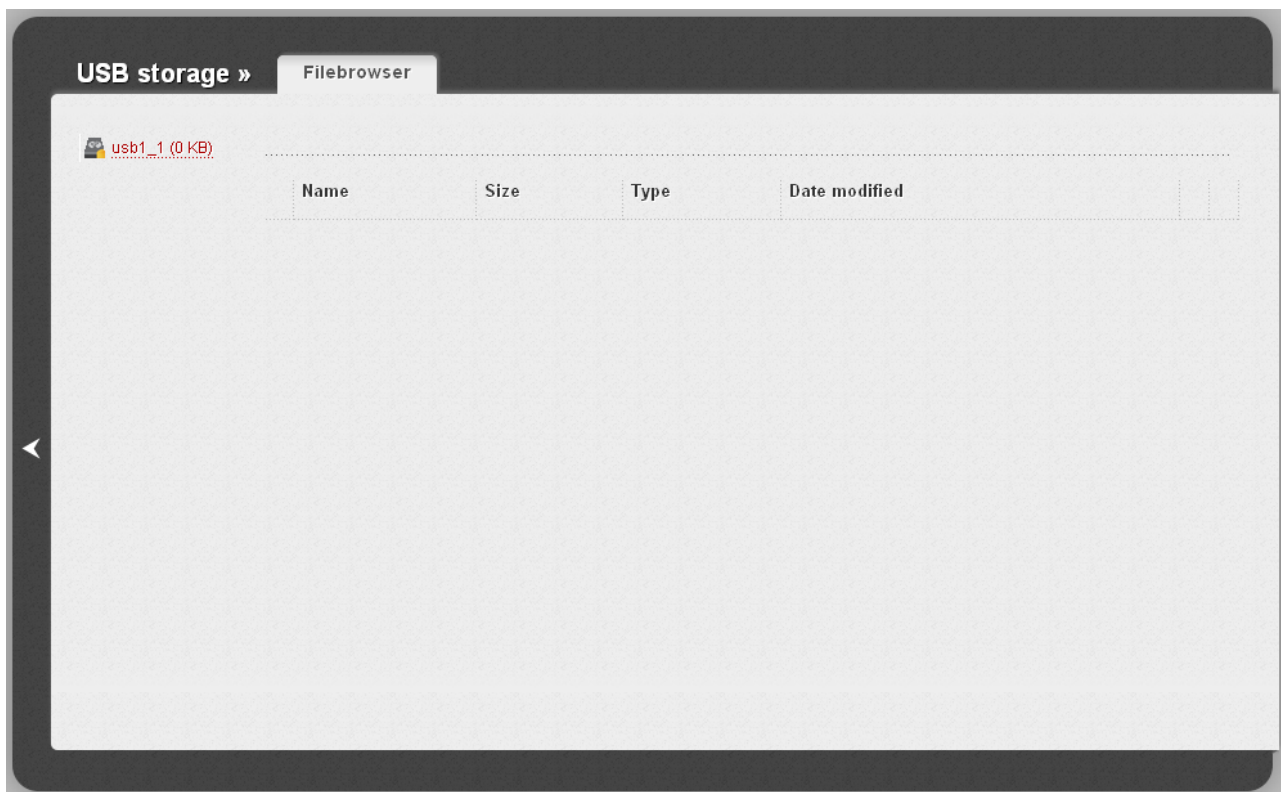
*Figure 139. The **USB storage / Filebrowser** page.*

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.

For content of ext2 or ext3 storages or storage partitions, the **Change rule** link is displayed on the page. Click the link and in the opened window select a user to which you allow access to this folder or file. Then click the **Apply** button.

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.
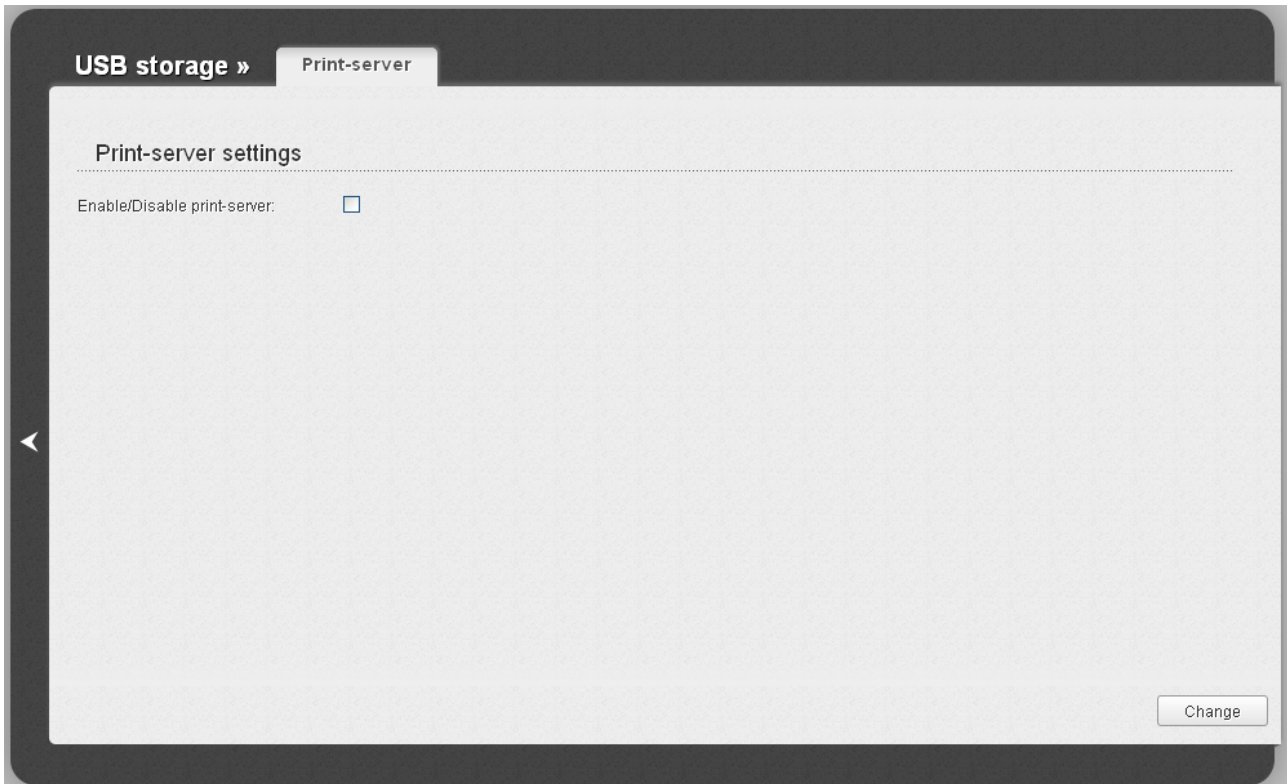
*Figure 140. The **USB storage / Print-server** page.*

To configure the router as a print server, select the **Enable/Disable print-server** checkbox and 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.

FTP

On the **USB storage / FTP** page, you can enable the built-in FTP server of the router to provide access to the USB storage for users of your LAN.

*Figure 141. The **USB storage / FTP** page.*

You can enable the FTP server only when a USB storage is connected to the router (in this case, the **Connected** value is displayed in the **USB storage** field). Select the **Enable** checkbox; if needed, change the router's port used by the FTP server in the **Port** field (by default, the standard port `21` is specified). Then click the **Change** button.

To allow access to the content of the USB storage for users of your LAN, proceed to the **System / Users** page and create needed accounts.

To disable the built-in FTP server of the router, deselect the **Enable** checkbox and click the **Change** button.

Control

This menu is designed to create restrictions on access to certain web sites.

URL Filter

On the **Control / URL filter** page, you can specify restrictions on access to certain web sites.
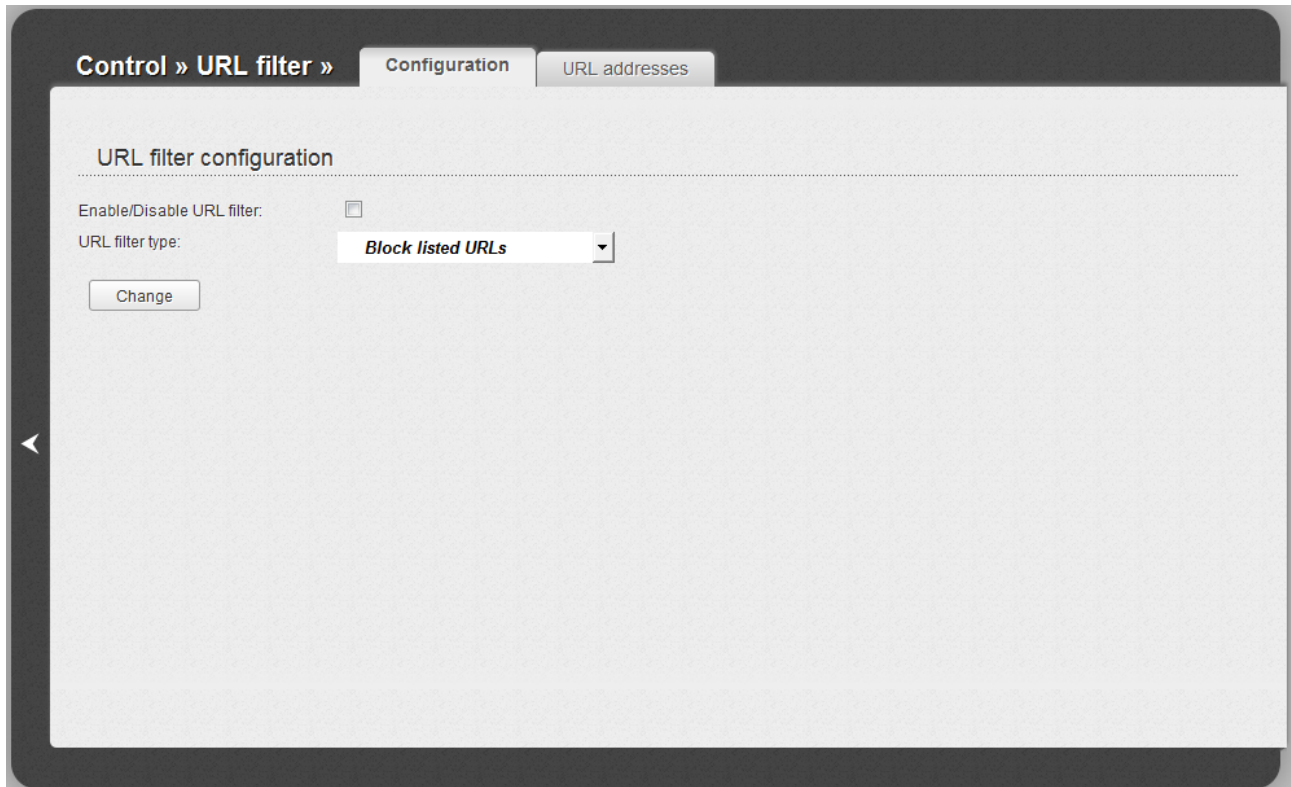
*Figure 142. The **Control / URL filter** page. The **Configuration** tab.*

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.
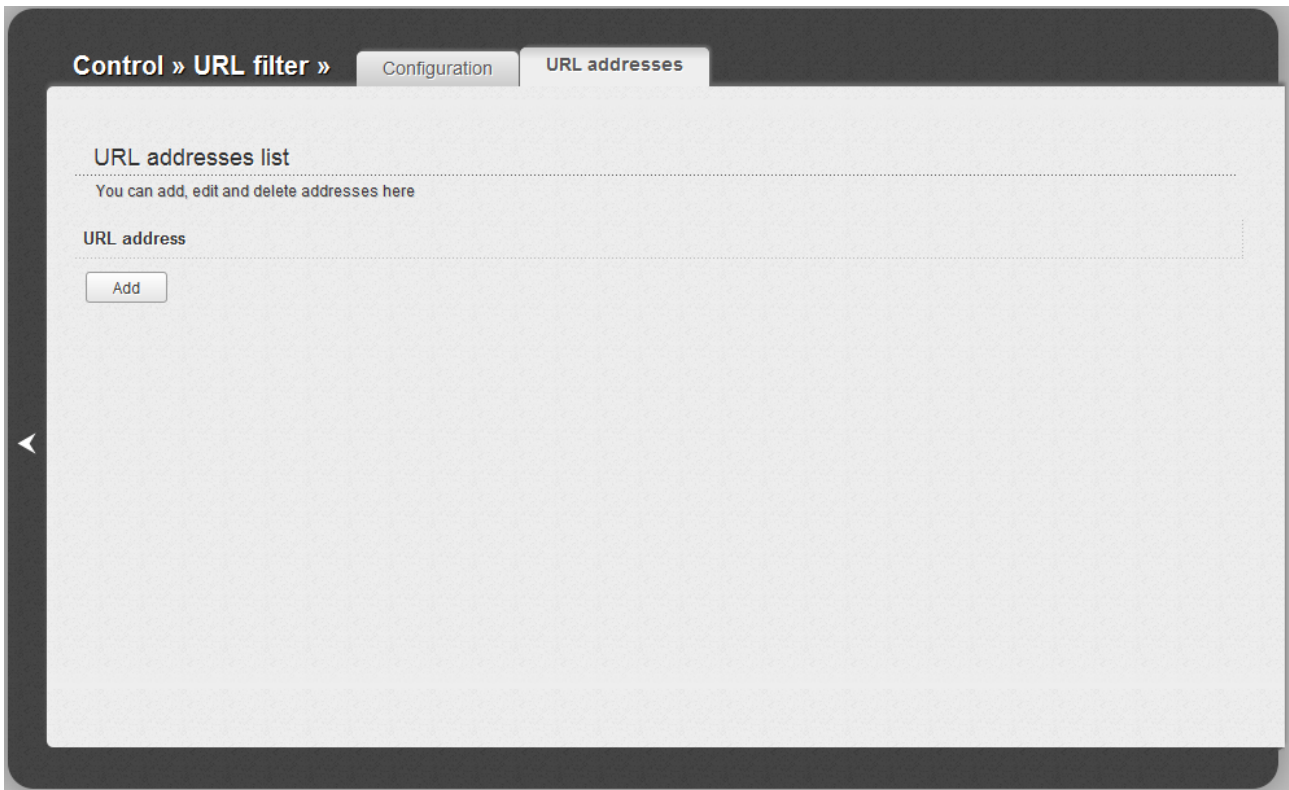
*Figure 143. The **Control / URL filter** page. The **URL addresses** tab.*

On the opened page, specify the needed parameters.
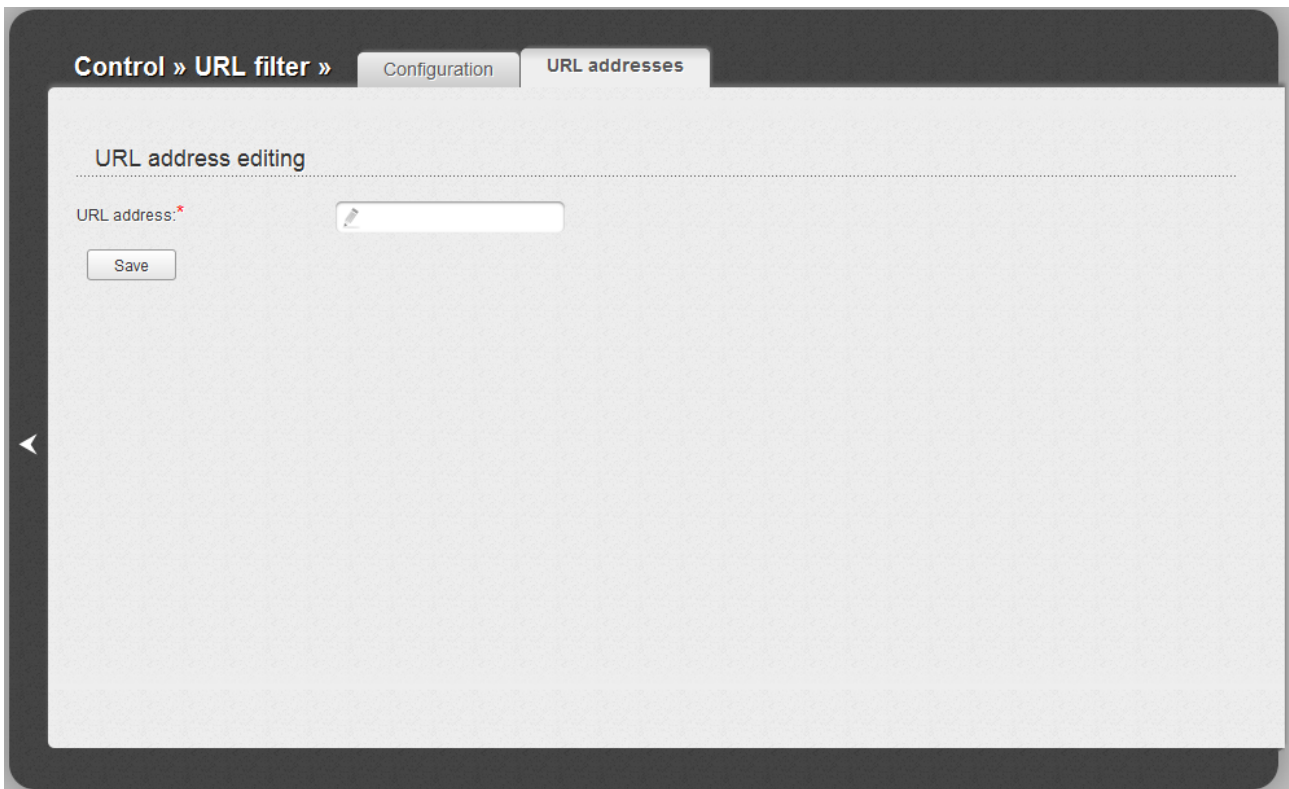
Figure 144. The page for adding an address for the URL filter.

Enter a URL address in the **URL address** field and 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
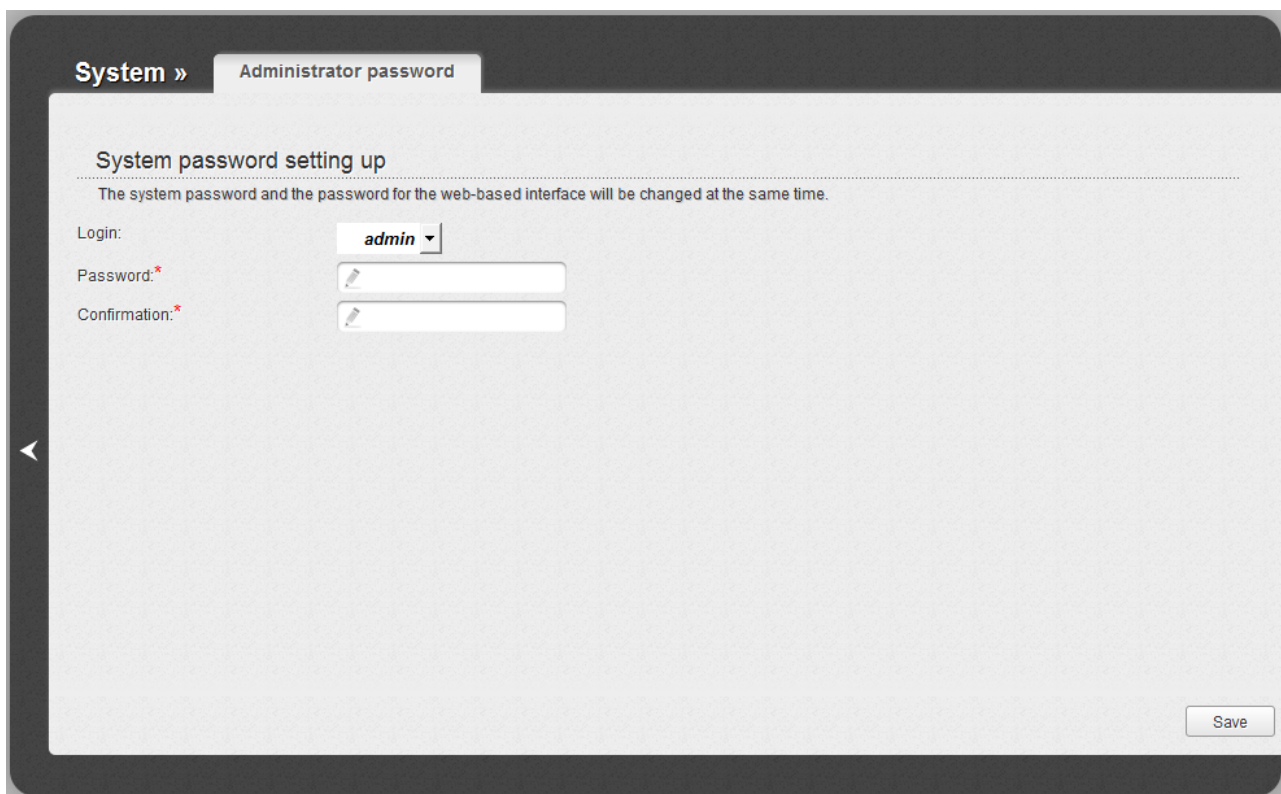
In this menu you can do the following:

- 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

- trace the route to a host

- allow or forbid access to the router via TELNET

- create accounts for users to allow access to the content of the USB storage.

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 settings via TELNET.

> **!** For security reasons, it is strongly recommended to change the administrator password upon initial configuration of the router.

Figure 145. The page for modifying the administrator password.

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.
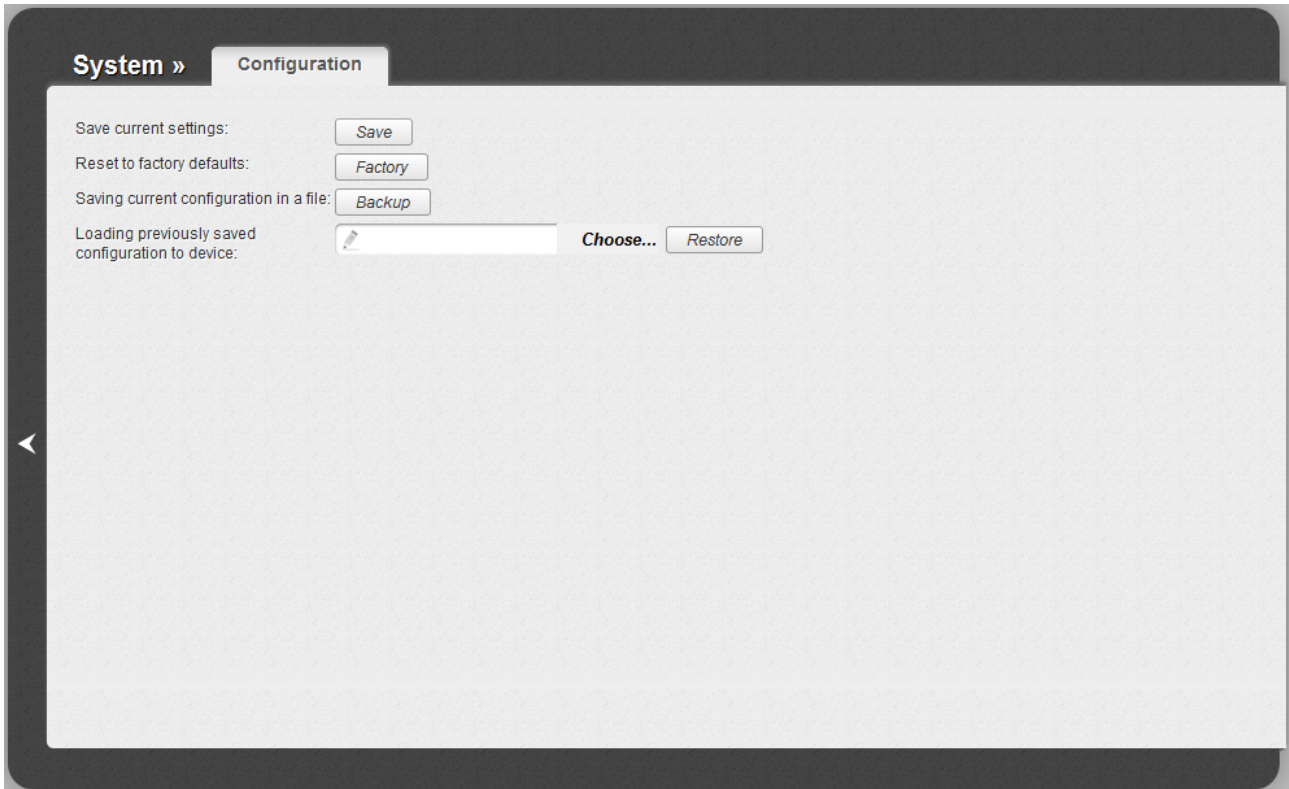
*Figure 146. The **System / Configuration** page.*

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 hardware 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 36).
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**[7] 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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7   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.
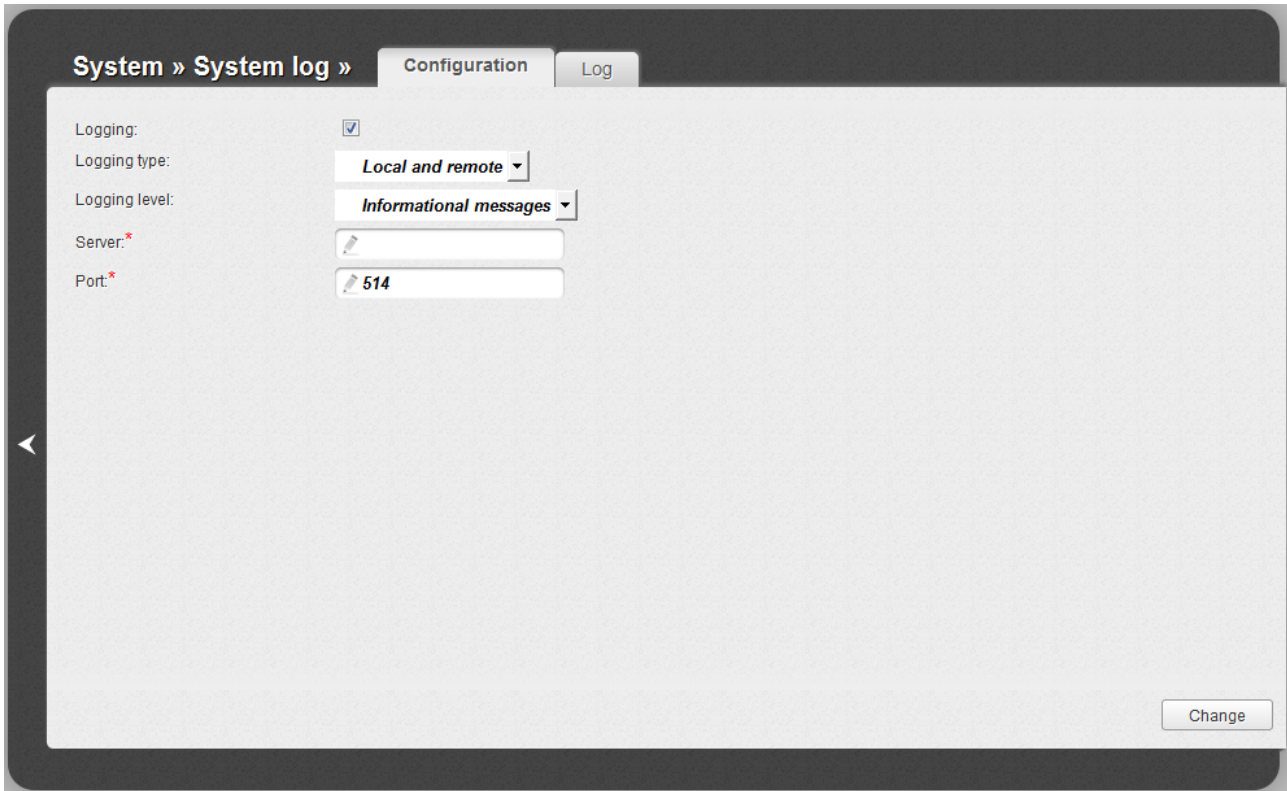
*Figure 147. The **System / System log** page. The **Configuration** tab.*

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** 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 logged.
Server	The IP or URL address of the host from the local or global network, to which the system log will be sent.

Control	Description
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.
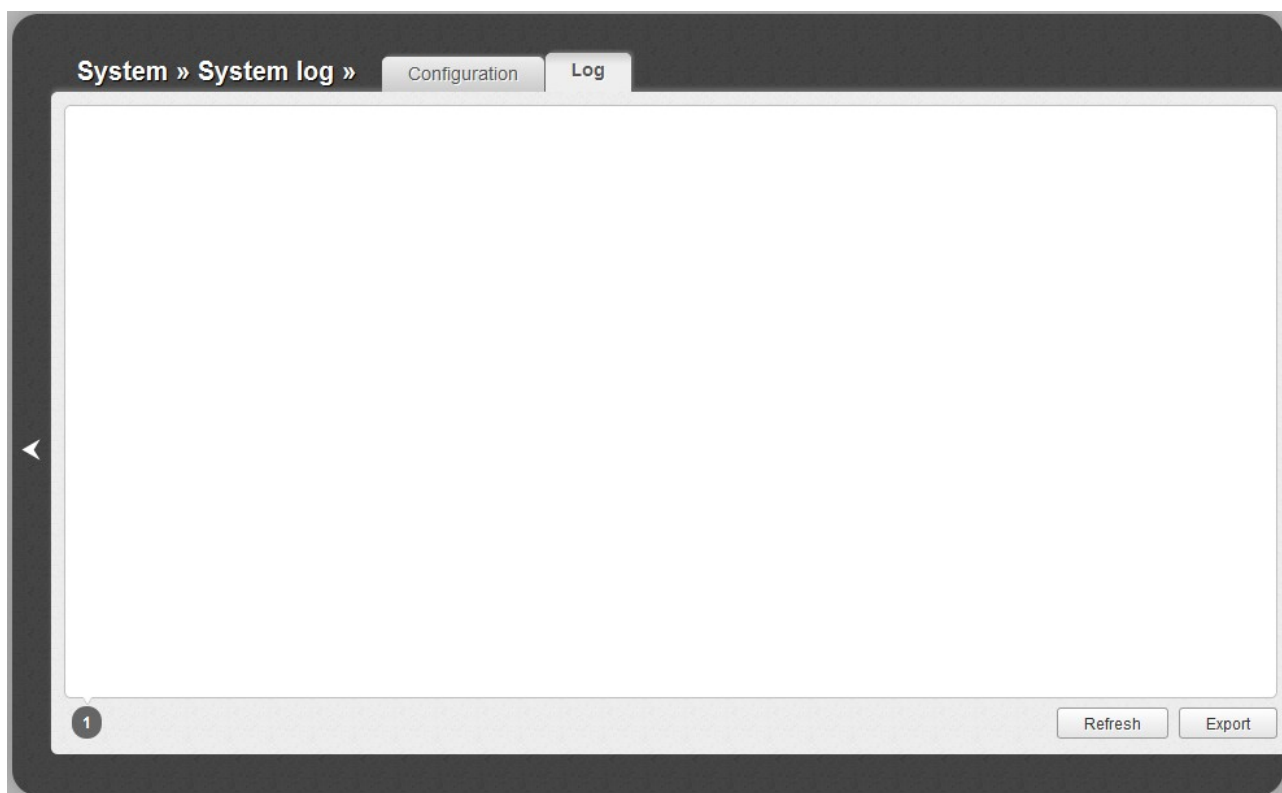

*Figure 148. The **System / System log** page. The **Log** tab.*

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.
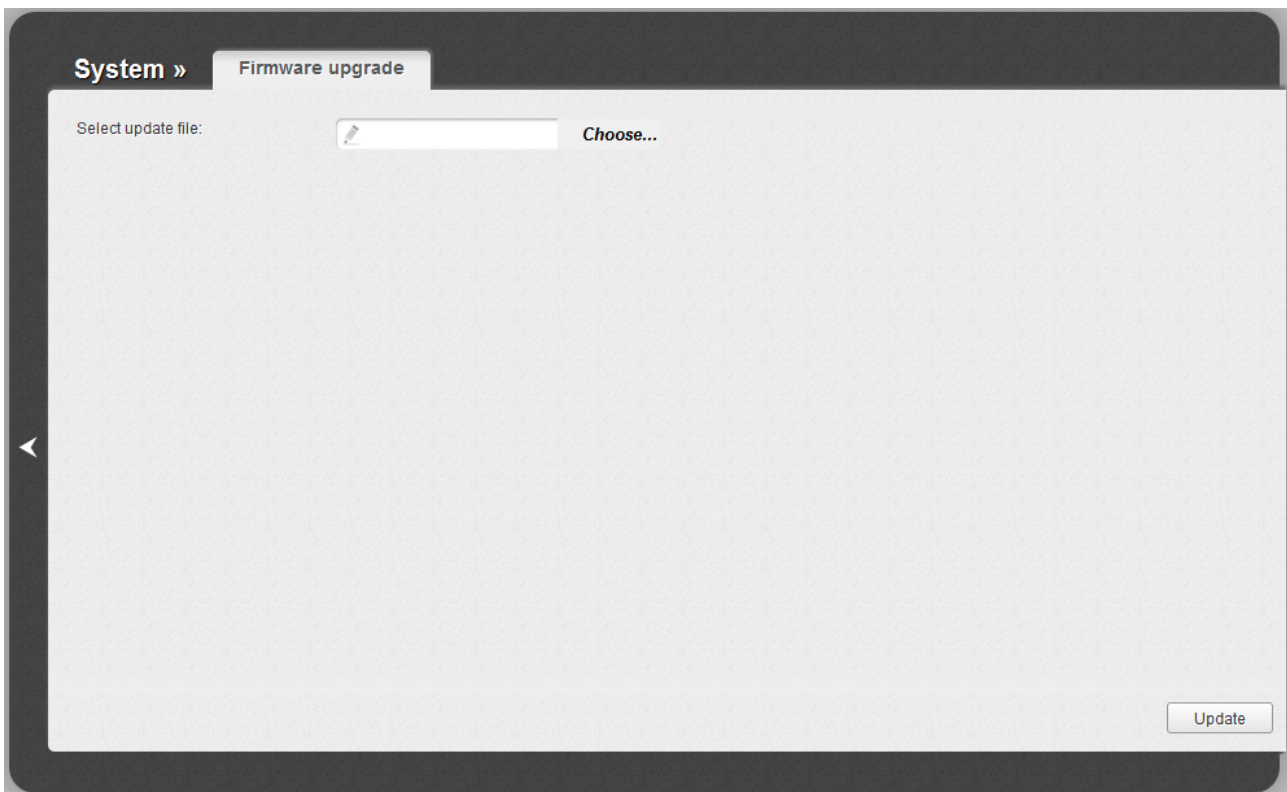
*Figure 149. The **System / Firmware upgrade** page.*

The current version of the router's firmware is displayed in the **Firmware version** field located next the D-Link logo in the top left corner of the 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**[8] 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.

---

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

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 (`192.168.0.1`, **admin**, **admin**).

NTP Client

On the **System / NTP client** page, you can configure automatic synchronization of the system time with a time server on the Internet.
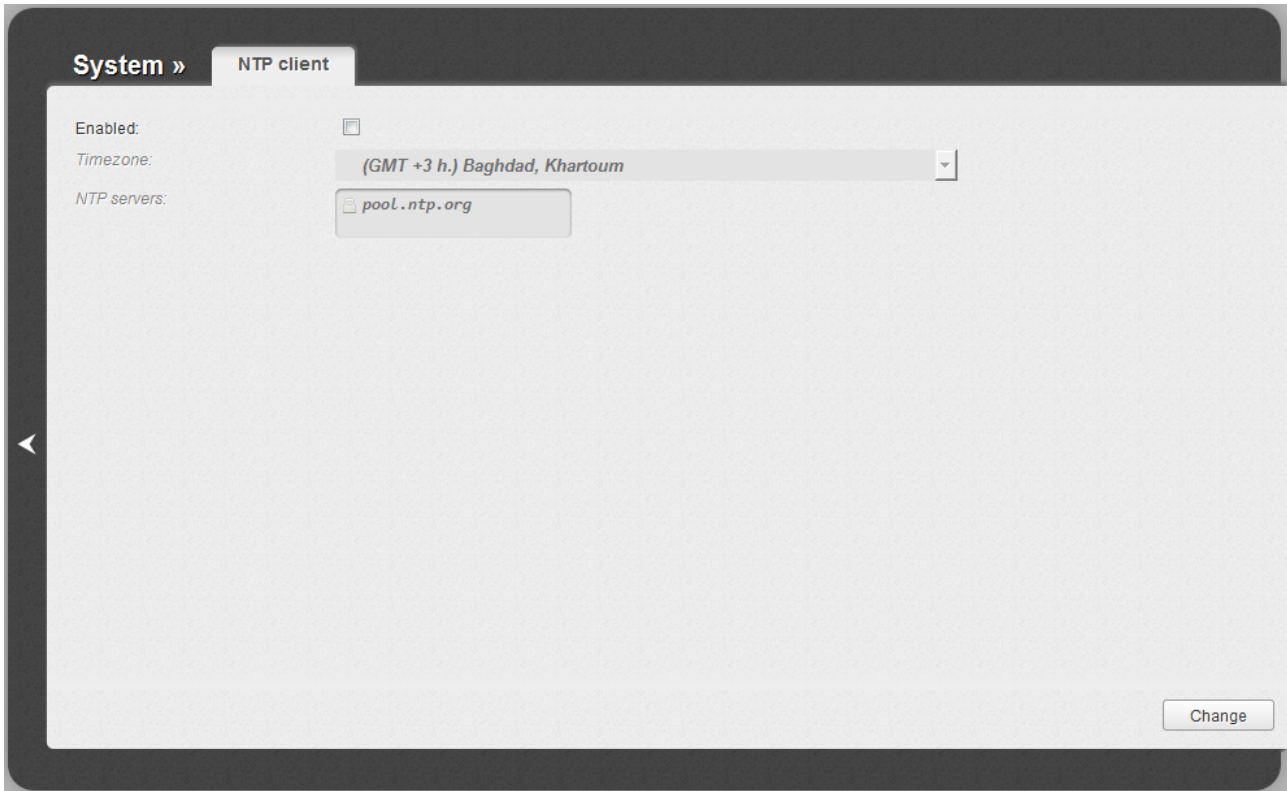
*Figure 150. The **System / NTP client** page.*

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.

Traceroute

On the **System / Traceroute** page, you can define the route of data transfer to a host via the traceroute utility.
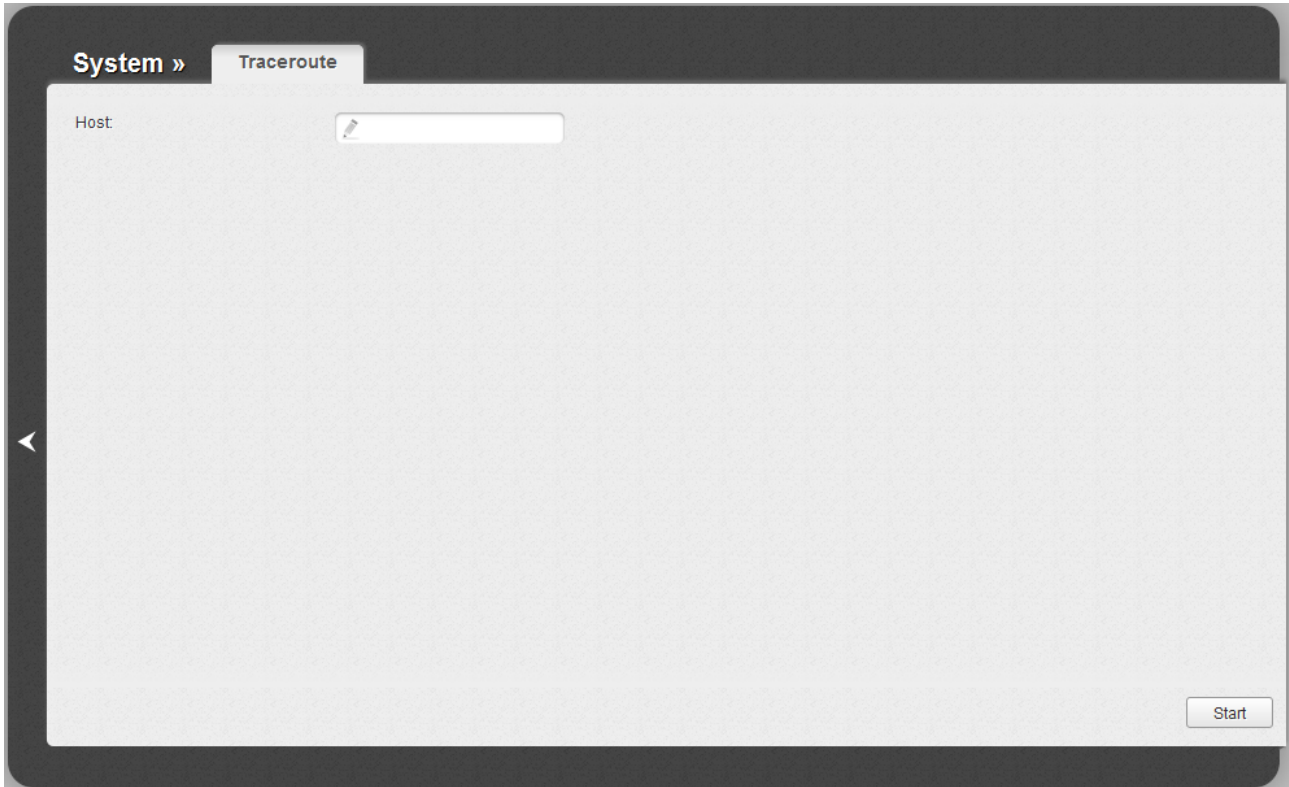
*Figure 151. The **System / Traceroute** page.*

To define the route, enter the name or IP address of a host in the **Host** field and click the **Start** button. After a while, the results will be displayed on the page.

Telnet

On the **System / Telnet** page, you can enable or disable access to the device settings via TELNET from your LAN. By default, access is enabled.
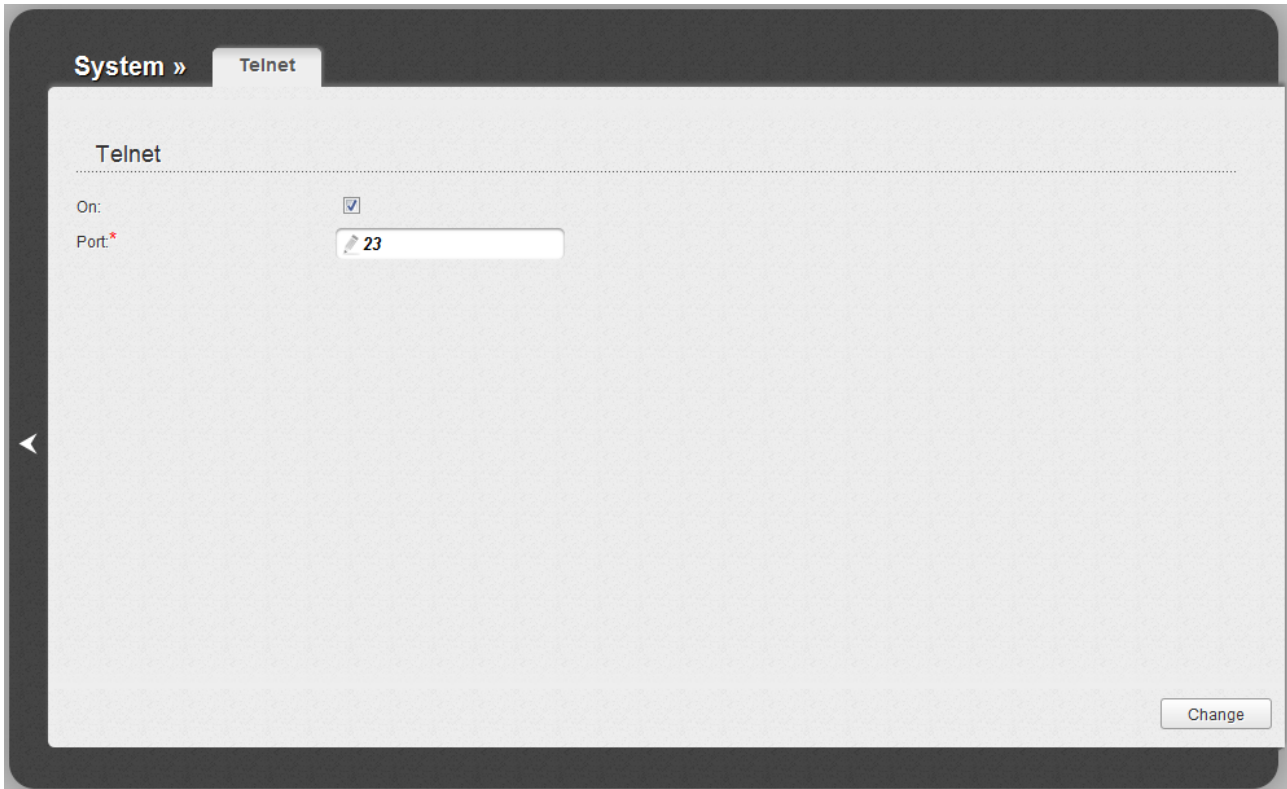
*Figure 152. The **System / Telnet** page.*

To disable access via TELNET, deselect the **On** checkbox and click the **Change** button.

To enable access via TELNET again, select the **On** checkbox. In the **Port** field, enter the number of the router's port through which access will be allowed (by default, the port `23` is specified). Then click the **Change** button.

Users

On the **System / Users** page, you can create user accounts to provide access to data on the USB storage connected to the router.
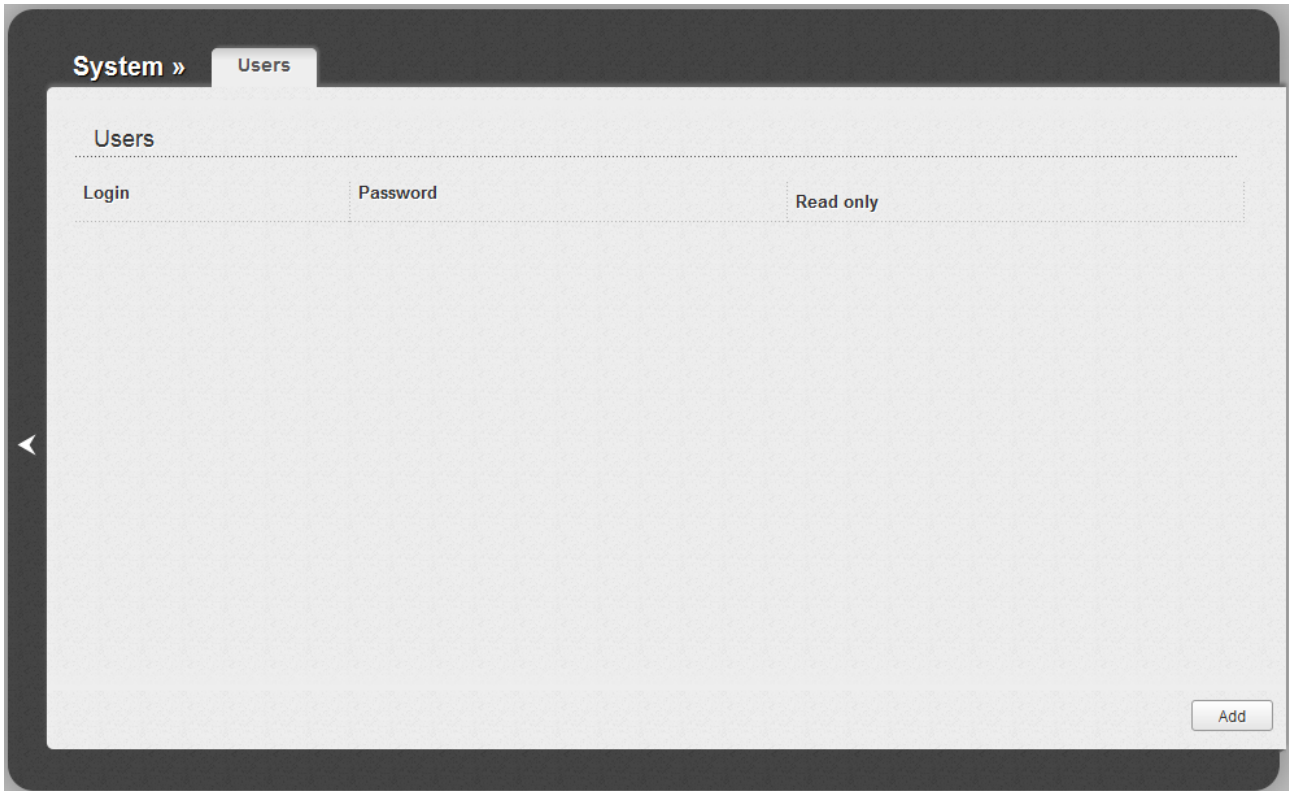
*Figure 153. The **System / Users** page.*

To create a new user account, click the **Add** button.
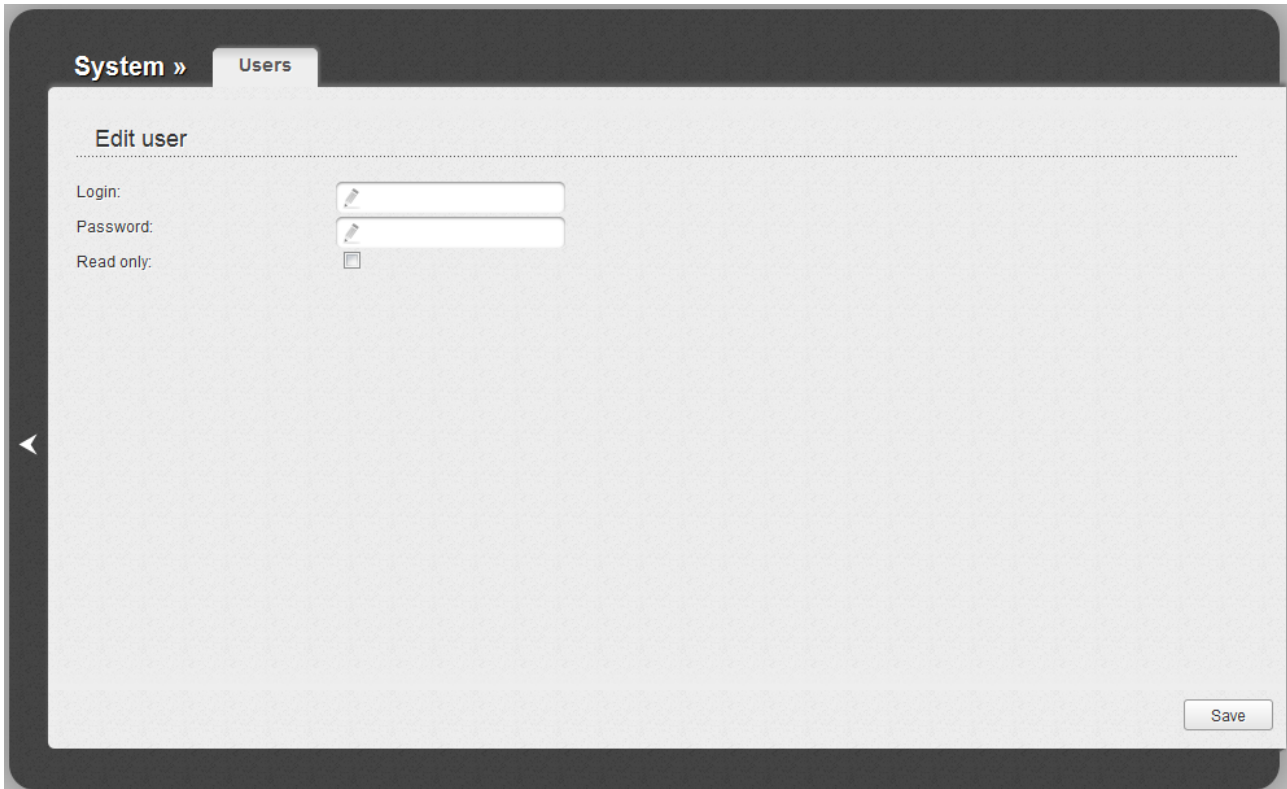
Figure 154. The page for adding a user.

On the opened page, specify a username and password for the account in the relevant fields. You can use letters of the Latin and Russian alphabets (uppercase and/or lowercase) and digits.

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

To change the password of an account, select the relevant line in the table. On the opened page, enter a new value in the **Password** field and click the **Save** button.

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

For ext2 or ext3 storages or storage partitions, it is possible to create users with limited rights. Select the **Read only** checkbox not to let the user create, change, or delete files.

In addition, by default, users with accounts from this page cannot access ext2 or ext3 storages or storage partitions. To configure access, it is necessary to proceed to the **USB storage / Filebrowser** page and assign relevant rights.

CHAPTER 5.   OPERATION GUIDELINES

Supported USB Modems

GSM modems:

- Huawei E1550

- Huawei E160G

- Huawei E169G

- Huawei E171

- Huawei E220

- ZTE MF112

- ZTE MF192

- ZTE MF626

- ZTE MF627

- ZTE MF652

- ZTE MF668

- ZTE MF752.

CDMA modems[9]:

- Airplus MCD-650

- Airplus MCD-800

- AnyDATA ADU-300A

- AnyDATA ADU-310A

- Axesstel MV110

- Ubiquam UM-400

- WeTelecom WM-D200.

WiMAX modem:

- Samsung SWC-U200 (firmware version *u200_rev1-2.7.40-CI14*).

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

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9   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 DIR-632 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 DIR-632 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.

Connecting to Cable or DSL Modem

If you need to connect the router to a cable or DSL modem, do the following.

1. Place the router in an open location in the supposed center of your wireless network. Do not plug the power adapter into the router.

2. Turn off your PC.

3. Unplug the Ethernet cable (that connects your PC to your modem) from your computer and place it into the INTERNET port of your router.

4. Plug another Ethernet cable into one of the four LAN ports on the router. Plug the other end into the Ethernet port of your PC.

5. Turn on your modem. Wait until the modem is booted (about 30 seconds).

6. Plug the power adapter to the router and connect to an electrical outlet or power strip. Wait until the router is booted (about 30 seconds).

7. Turn on your PC.

8. Verify the LEDs of the router. The following LEDs should be on: **Power**, **LAN** (of the relevant Ethernet port), and **Internet**. If not, make sure that your computer, modem, and router are powered on and the relevant cables are connected correctly.

CHAPTER 6.   ABBREVIATIONS AND ACRONYMS

3G	Third Generation
AC	Access Category
AES	Advanced Encryption Standard
ARP	Address Resolution Protocol
BSSID	Basic Service Set Identifier
CDMA	Code Division Multiple Access
CINR	Carrier to Interference + Noise Ratio
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
FTP	File Transfer Protocol
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
ISP	Internet Service Provider
L2TP	Layer 2 Tunneling Protocol
LAN	Local Area Network
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
PPPoE	Point-to-point protocol over Ethernet
PPTP	Point-to-point tunneling protocol
PSK	Pre-shared key
PUK	PIN Unlock Key
QoS	Quality of Service
R-UIM	Removable User Identity Module
RIP	Routing Information Protocol
RSSI	Received Signal Strength Indicator
RTS	Request To Send
SIM	Subscriber Identification Module
SSID	Service Set Identifier
TKIP	Temporal Key Integrity Protocol
UDP	User Datagram Protocol
UPnP	Universal Plug and Play
URL	Uniform Resource Locator
USB	Universal Serial Bus
VLAN	Virtual Local Area Network
VPN	Virtual Private Network
WAN	Wide Area Network
WEP	Wired Equivalent Privacy
Wi-Fi	Wireless Fidelity
WiMAX	Worldwide Interoperability for Microwave Access
WISP	Wireless Internet Service Provider
WLAN	Wireless Local Area Network
WMM	Wi-Fi Multimedia
WPA	Wi-Fi Protected Access
WPS	Wi-Fi Protected Setup