D-Link®

DSL-6740U

VDSL/Ethernet Router with Wi-Fi and Built-in Switch

May 2013

Contents

CHAPTER 1.   INTRODUCTION

Contents and Audience

This manual describes the router DSL-6740U and explains how to configure and operate it.

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

Conventions

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

Document Structure

Chapter 1 describes the purpose and structure of the document.

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

Chapter 3 explains how to install the wireless router DSL-6740U 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 configuring the device.

Chapter 6 introduces abbreviations and acronyms used in this manual.

CHAPTER 2.   OVERVIEW

General Information

The DSL-6740U device is an affordable high-end VDSL/Ethernet router developed for home and SOHO (*Small Office/Home Office*) networks. It provides fast and simple broadband access to the Internet and a shared connection for multi users. The device allows accessing the Internet via VDSL/ADSL technology and via Ethernet technology.

DSL-6740U provides all the essentials for creating a secure high-speed wireless and wired network: VDSL2/VDSL/ADSL2+/ADSL2/ADSL standards, Fast Ethernet standard, the built-in firewall, the QoS engine, and numerous additional features.

The router is equipped with a VDSL port to connect to a high-speed VDSL line. The built-in 4-port switch enables you to connect Ethernet-enabled computers, game consoles, and other devices to your network. In addition, any Ethernet port of the device can be used to connect to a private Ethernet line.

Also DSL-6740U can operate as a base station for connecting wireless devices of the standards 802.11b, 802.11g, and 802.11n. The router supports multiple functions for the wireless interface: several security standards (WEP, WPA/WPA2), MAC address filtering, and the WPS function.

The wireless router DSL-6740U 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 wireless router DSL-6740U via the user-friendly web-based interface (the interface is available in several languages).

Specifications*

Interfaces

- VDSL: 1 RJ-11 port

- LAN: 4 RJ-45 10/100BASE-TX Fast Ethernet ports

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

Frequency Range

- 802.11b

  ○ 2400 ~ 2484MHz ISM band

- 802.11g

  ○ 2400 ~ 2484MHz ISM band

- 802.11n

  ○ ISM band

  ○ Channel frequency for HT40: 2422 ~ 2452MHz

  ○ Channel frequency for HT20: 2400 ~ 2483.5MHz

Wireless Data Rate

- 802.11b: 11, 5.5, 2, 1Mbps per channel, auto fallback

- 802.11g: 54, 48, 36, 24, 18, 12, 9, 6Mbps per channel, auto fallback

- 802.11n

  ○ HT20: up to 150Mbps

  ○ HT40: up to 300Mbps

Modulation Schemes

- 802.11b: CCK, DQPSK, DBPSK

- 802.11g: 64QAM, 16QAM, QPSK, BPSK, DSSS

- 802.11n

  ○ HT20 and HT40: 64 QAM, 16QAM, QPSK, BPSK

Wireless Network Range[1]

- Indoors: up to 300 feet (100 meters)

- Outdoors: up to 900 feet (300 meters)

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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.

1 Wireless network range varies depending on the actual environment.

VDSL/ADSL Standards

- VDSL2
  - ITU G.993.2
  - Support of 8a, 8b, 8c, 8d, 12a, 12b, 17a, 30a profiles
- ADSL
  - Multi-mode, ANSI T1.413 Issue 2, ITU-T G.992.1 (G.dmt) Annex A, ITU-T G.992.2 (G.lite) Annex A, ITU-T G.994.1 (G.hs)
- ADSL2
  - ITU-T G.992.3 (G.dmt.bis) Annex A/L/M, ITU-T G.992.4 (G.lite.bis) Annex A
- ADSL2+
  - ITU-T G.992.5 Annex A/L/M

WAN Connection Types

- VDSL
  - PPPoE
  - Static IP
  - Dynamic IP
  - Bridge
- ADSL
  - PPPoE
  - PPPoA
  - IPoA
  - Static IP
  - Dynamic IP
  - Bridge
- Ethernet
  - PPPoE
  - Static IP
  - Dynamic IP
  - Bridge

Wireless Network

- IEEE 802.11n standard, IEEE 802.11b/g compliant

- Support of guest wireless network

- WEP data encryption

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

- MAC-based access to wireless network

- PIN and PBC methods of WPS

- Advanced settings

ATM/PPP Protocols

- Bridged and routed Ethernet encapsulation

- VC-based or LLC-based multiplexing

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

- ATM Adaptation Layer Type 5 (AAL5)

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

- ATM QoS

- PPP over ATM (RFC 2364)

- PPP over Ethernet (PPPoE)

- Keep-alive for PPP connections

Network Protocols and Functions

- Additional IP address for LAN interface

- Static IP routing

- NAT (*Network Address Translation*)

- DHCP server/client/relay

- DNS relay

- DDNS

- UPnP

- Support of VLAN

- IGMP proxy

- IGMP snooping

- TR-069 client

Firewall and Access Management Functions

- Network Address Translation (NAT)

- Stateful Packet Inspection (SPI)

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

- URL filter

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

- Virtual servers

- Prevention of DoS attacks

- Intrusion detection system

- DMZ

- Port Triggering

QoS

- Interface grouping
- VLAN priority (802.1p)

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 and manual time/date setup

LEDs

- Power

- DSL

- Internet

- LAN 1-4

- WLAN

- WPS

Power

- External power adapter DC 12V/1A

- ON/OFF power switch

- Enable/disable wireless connection button

- Reset to Factory Defaults button

- WPS button

Operating Temperature

- From 0 to 40 °C (from 32 to 104 °F)

Storage Temperature

- From -20 to 70 °C (from -4 to 158 °F)

Humidity

- From 5% to 95% non-condensing

Product Appearance

Front Panel and Left Side Panel

Figure 1. Front panel view.

LED	Mode	Description
Power	*Solid green*	The router is powered on.
	No light	The router is powered off.
	Solid red	The router is in the crash recovery mode.
DSL	*Solid green*	DSL has been synchronized.
	Blinking green	Detecting a carrier signal and synchronizing DSL.
	No light	No carrier signal.

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

The **WPS**, **WLAN**, and **ON/OFF** buttons are located on the left side panel. The **WPS** button is designed to quickly add wireless devices to the router's WLAN. The **WLAN** button is designed to enable/disable the router's wireless network. The **ON/OFF** button is designed to enable/disable the device.

Back Panel

Figure 2. Back panel view.

Port	Description
DSL	A DSL port to connect the router to the telephone line.
LAN 1-4	4 Ethernet ports to connect Ethernet devices. One port can be used to connect to a private Ethernet line.
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 5 seconds, and then release the button.
Power	Power connector.

Delivery Package

The following should be included:

- Wireless router DSL-6740U

- Power adapter DC 12V/1A

- RJ-11 telephone cable

- Ethernet cable (CAT 5E)

- Splitter

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

The "*User Manual*" and "*Quick Installation Guide*" documents in Russian and English are available on D-Link website (see ftp://dlink.ru/pub/VDSL2/DSL-6740U/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 VDSL/Ethernet router DSL-6740U (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:

- Apple Safari 5 and later
- Google Chrome 5 and later
- Microsoft Internet Explorer 7 and later
- Mozilla Firefox 5 and later
- Opera 10 and later.

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.

Connecting to PC

PC with Ethernet Adapter

1. Make sure that your PC is powered off.

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

3. *To connect the router to a DSL line:* connect a phone cable between the DSL port of the router and the **MODEM** port of the splitter. Connect your phone to the **PHONE** port of the splitter. Then connect another phone cable between a phone jack and the **LINE** port of the splitter.

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

5. 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.

6. Turn on the router by pressing the **ON/OFF** button on its left side panel.

7. 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.
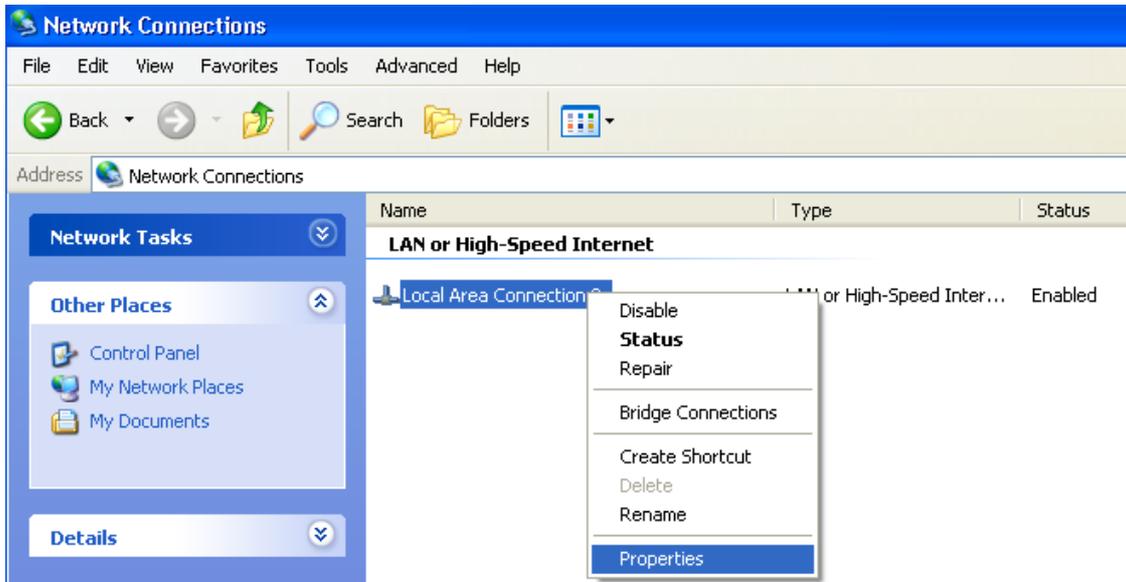

*Figure 3. The **Network Connections** window.*

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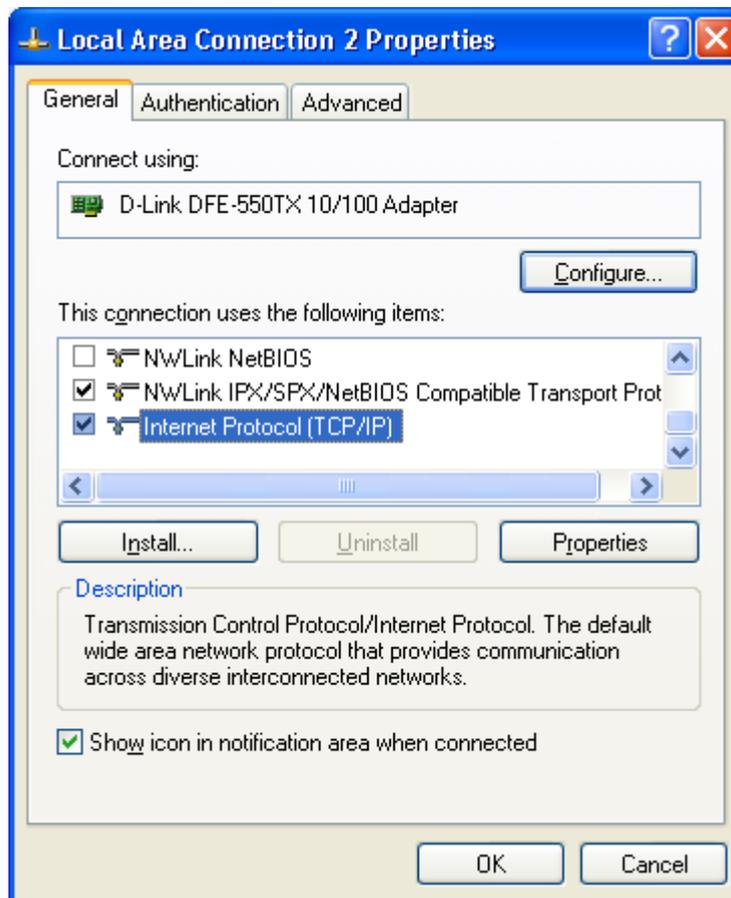

Figure 4. The *Local Area Connection Properties* window.

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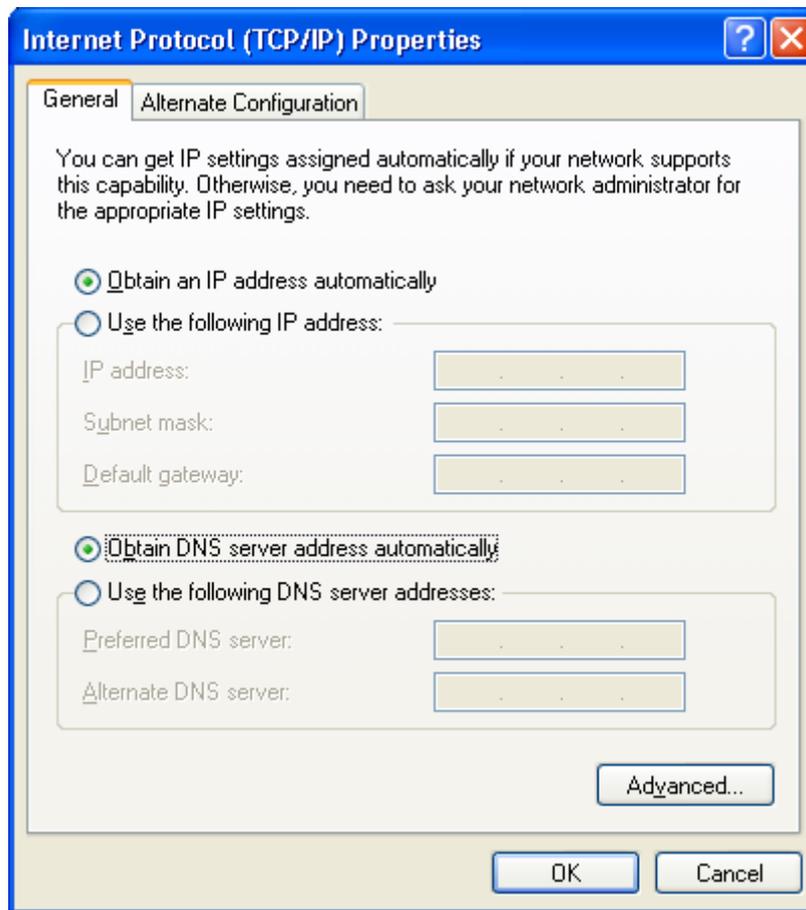

*Figure 5. The **Internet Protocol (TCP/IP) Properties** window.*

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.)
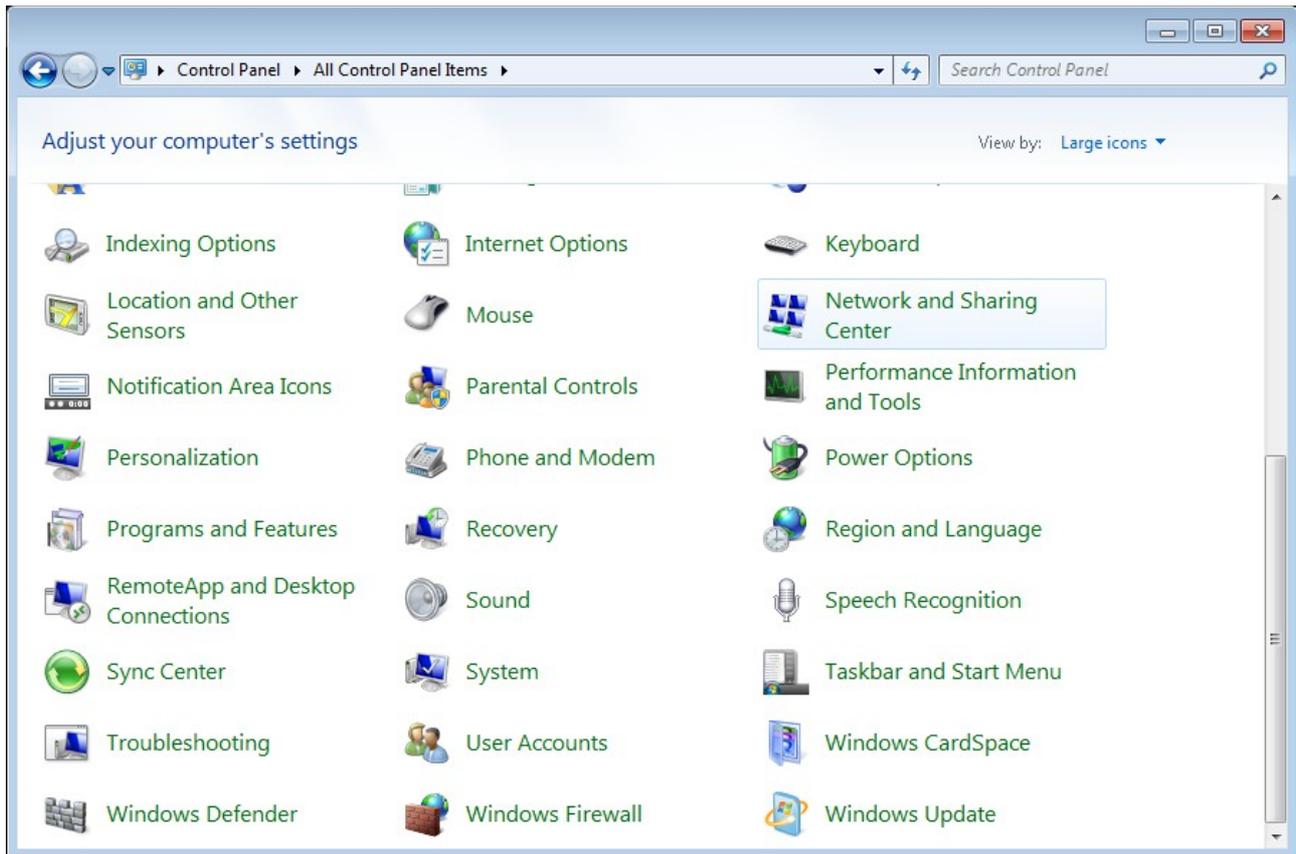

*Figure 6. The **Control Panel** window.*

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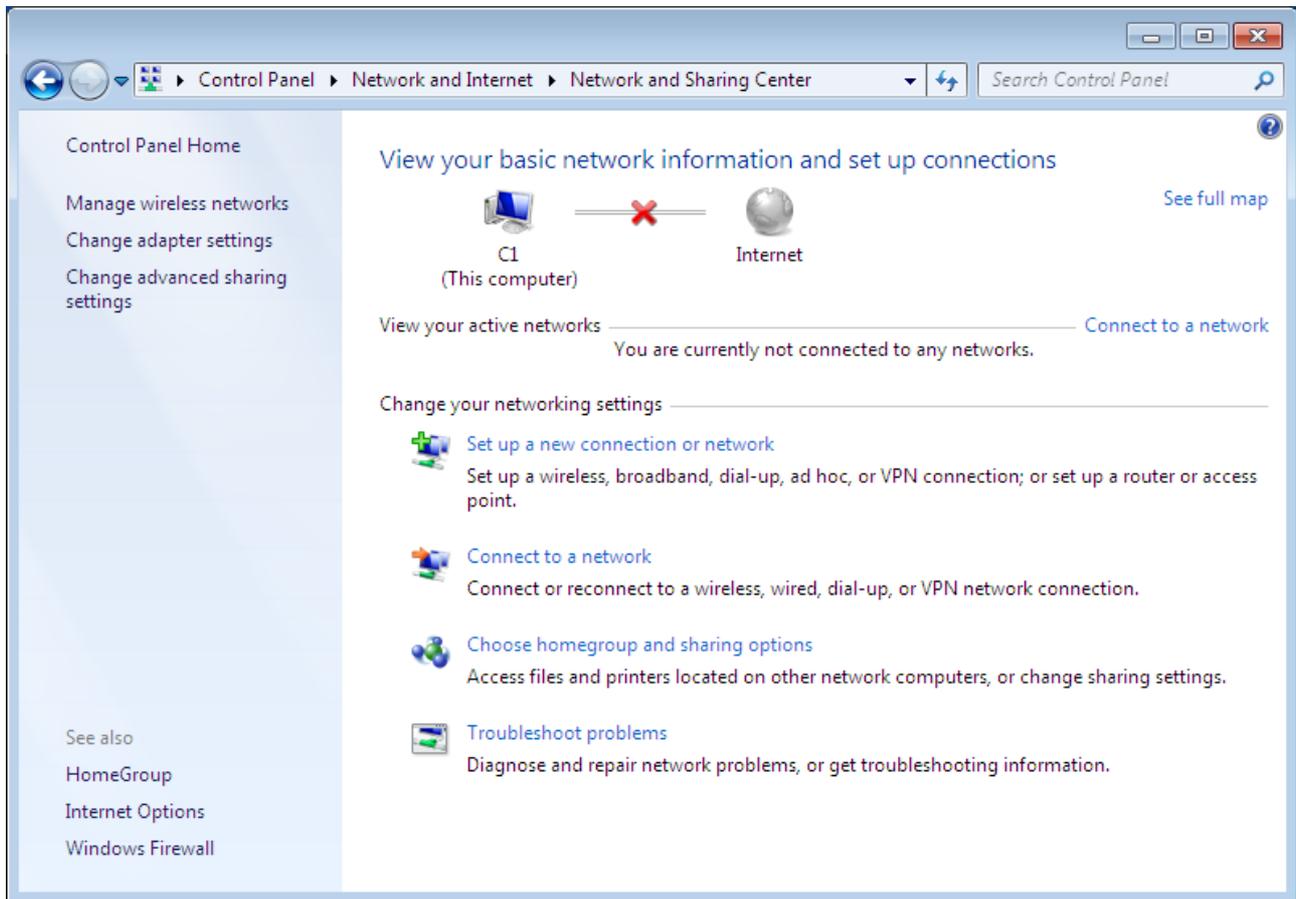

*Figure 7. The **Network and Sharing Center** window.*

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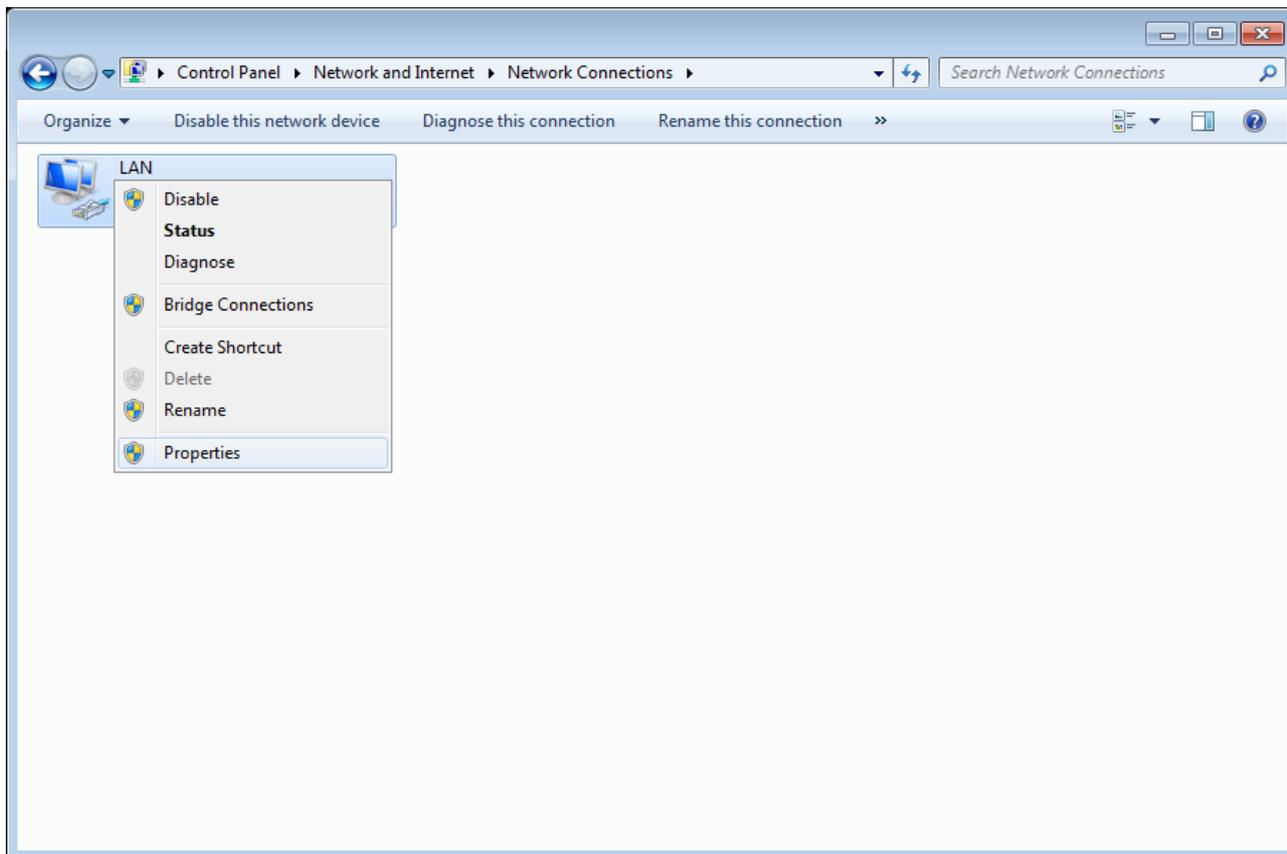

*Figure 8. The **Network Connections** window.*

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.

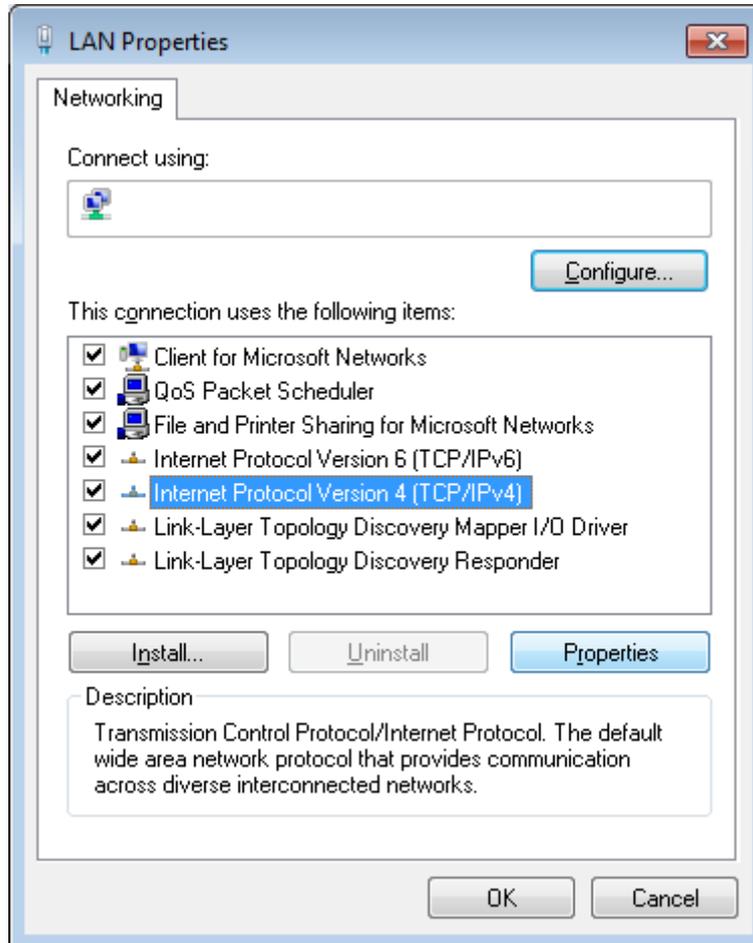*Figure 9. The **Local Area Connection Properties** window.*

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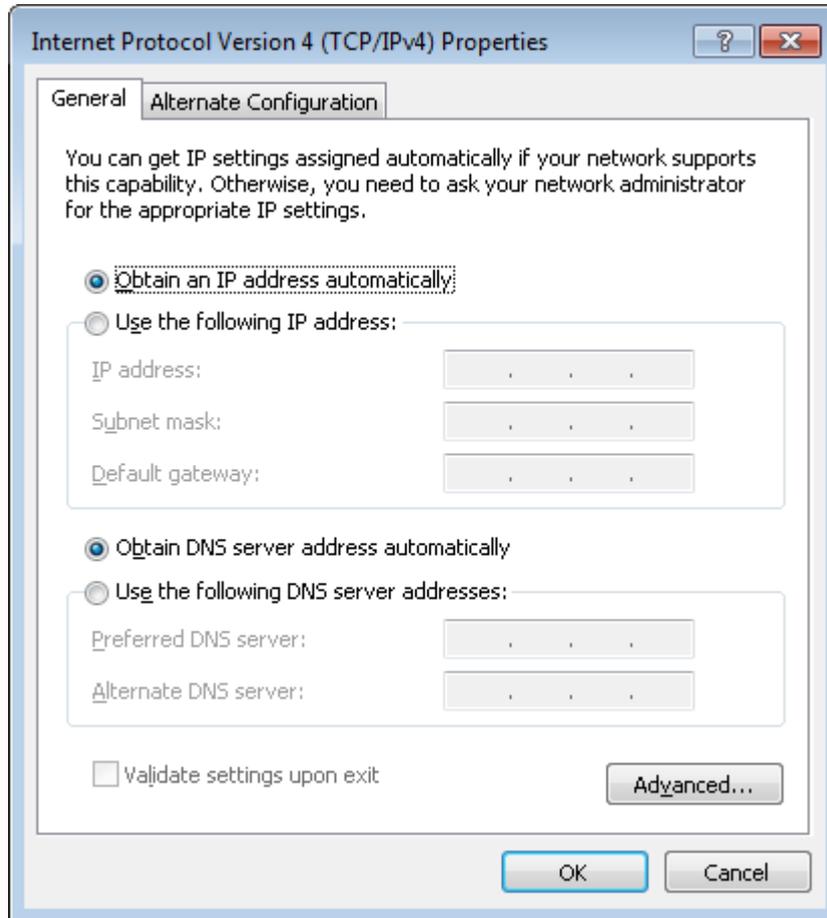

*Figure 10. The **Internet Protocol Version 4 (TCP/IPv4) Properties** window.*

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 the router to a DSL line:*** connect a phone cable between the DSL port of the router and the **MODEM** port of the splitter. Connect your phone to the **PHONE** port of the splitter. Then connect another phone cable between a phone jack and the **LINE** port of the splitter.

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

3. 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.

4. Turn on the router by pressing the **ON/OFF** button on its left side panel.

5. Turn on the router's wireless connection by pressing the **WLAN** button on its left side panel.

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

7. 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.

Configuring Wi-Fi Adapter in OS Windows XP

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

2. Select the icon of the wireless network connection and make sure that your Wi-Fi adapter is on.
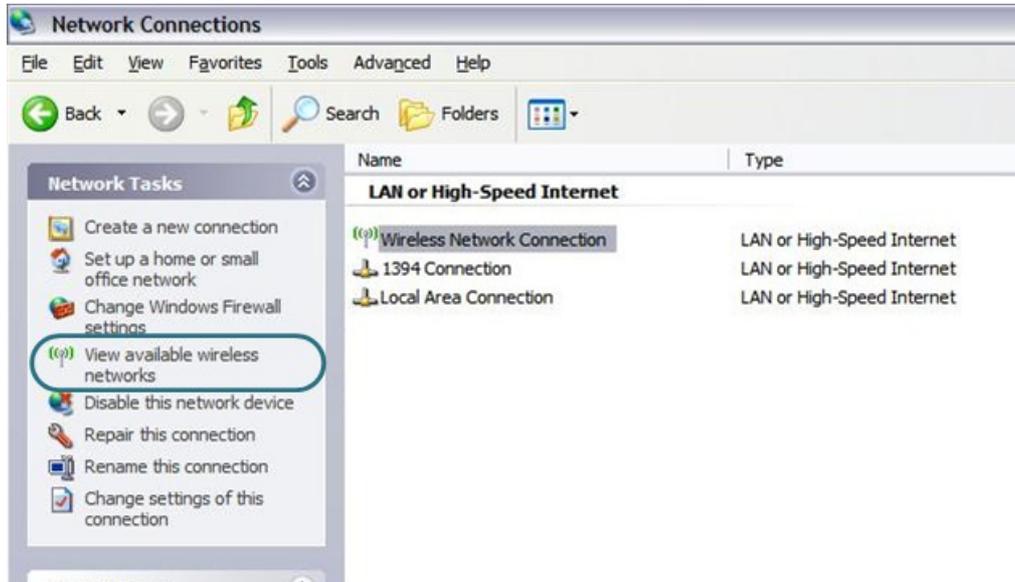

*Figure 11. The **Network Connections** window.*

3. Search for available wireless networks.

4. In the opened **Wireless Network Connection** window, select the wireless network `DSL-6740U` and click the **Connect** button.

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

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

Configuring Wi-Fi Adapter in OS Windows 7

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

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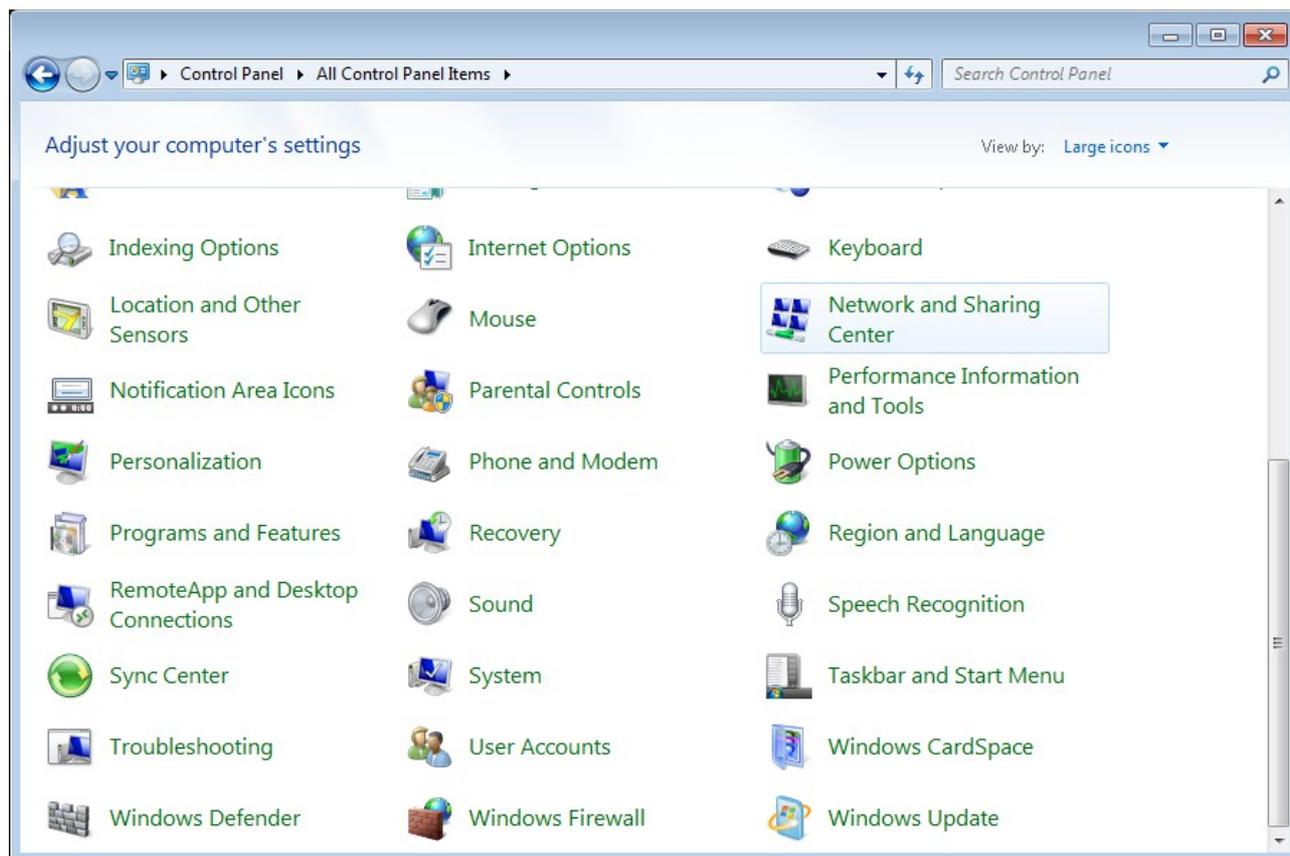

*Figure 12. The **Control Panel** window.*

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

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

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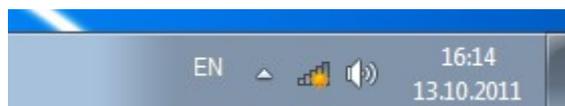

Figure 13. The notification area of the taskbar.

6. In the opened window, in the list of available wireless networks, select the wireless network `DSL-6740U` and click the **Connect** button.

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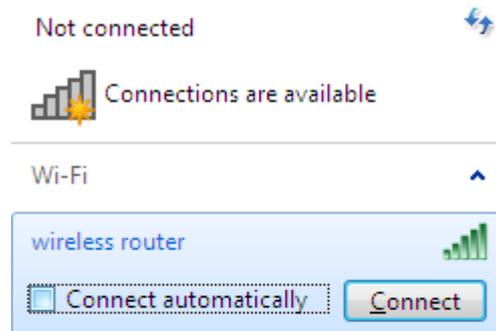
7. Wait for about 20-30 seconds. After the connection is established, the network icon will be displayed as the signal level scale.

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

Connecting to Web-based Interface

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

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

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

Figure 15. Connecting to the web-based interface of the DSL-6740U 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.

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

Web-based Interface Structure

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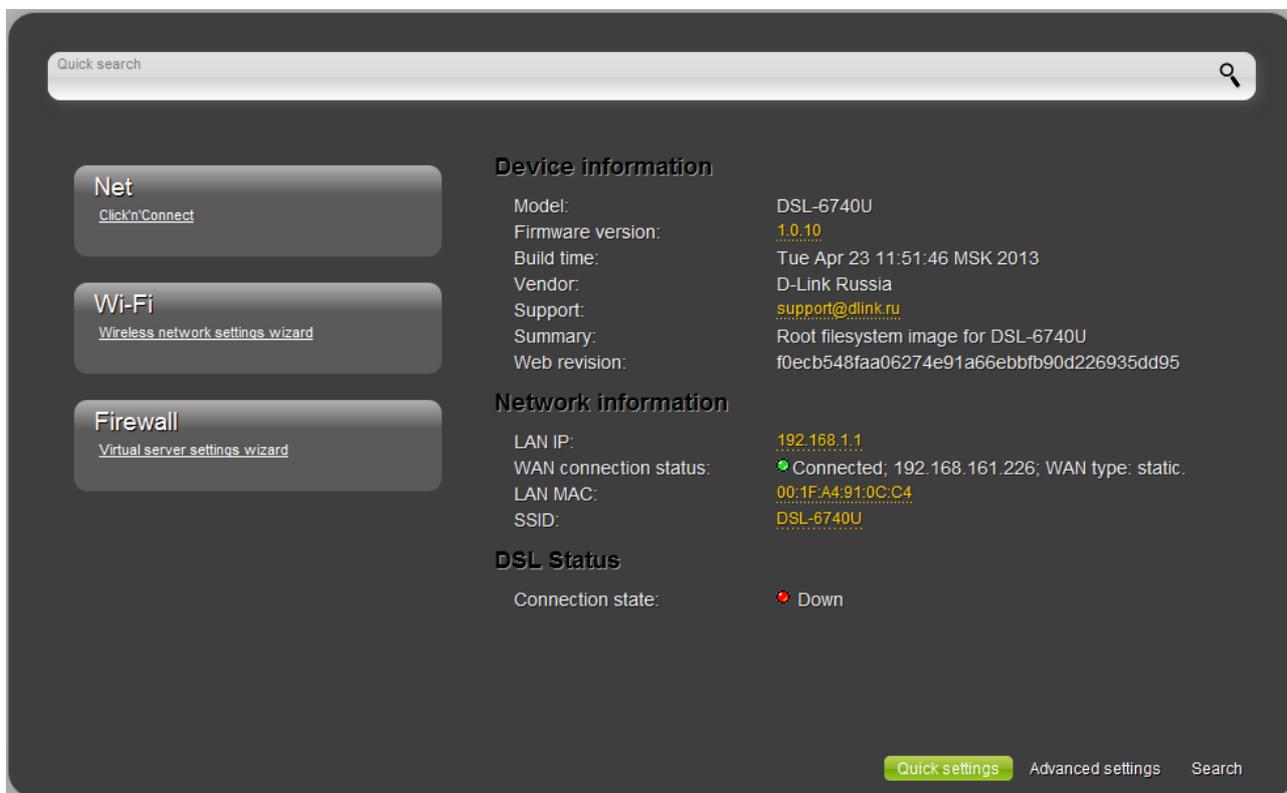

Figure 17. The quick settings page.

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.
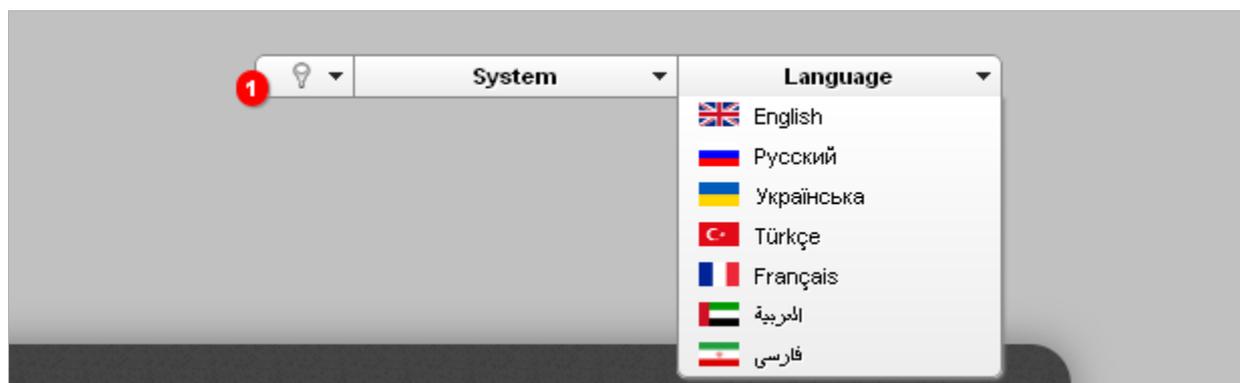

Figure 18. Changing the language of the web-based interface.

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, and data on the DSL connection state.

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 147).

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 94).

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 97).

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 35).

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 64).

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 67).

To configure all parameters of the router independently without the Wizards, click the **Advanced settings** link in the bottom right corner of the page.
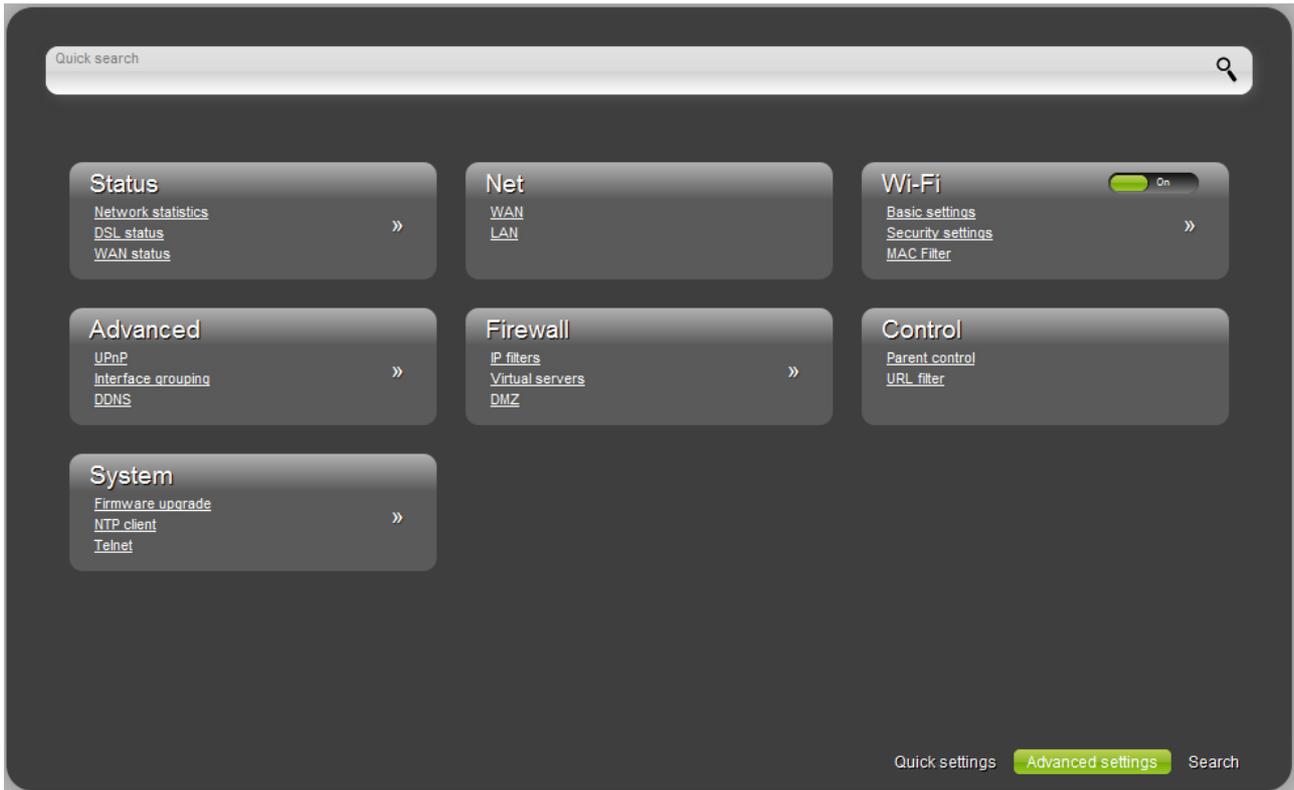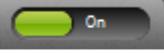
Figure 19. The advanced settings page.

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 69).

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 75).

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 97). 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 111).

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 126).

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 137).

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 142).

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.
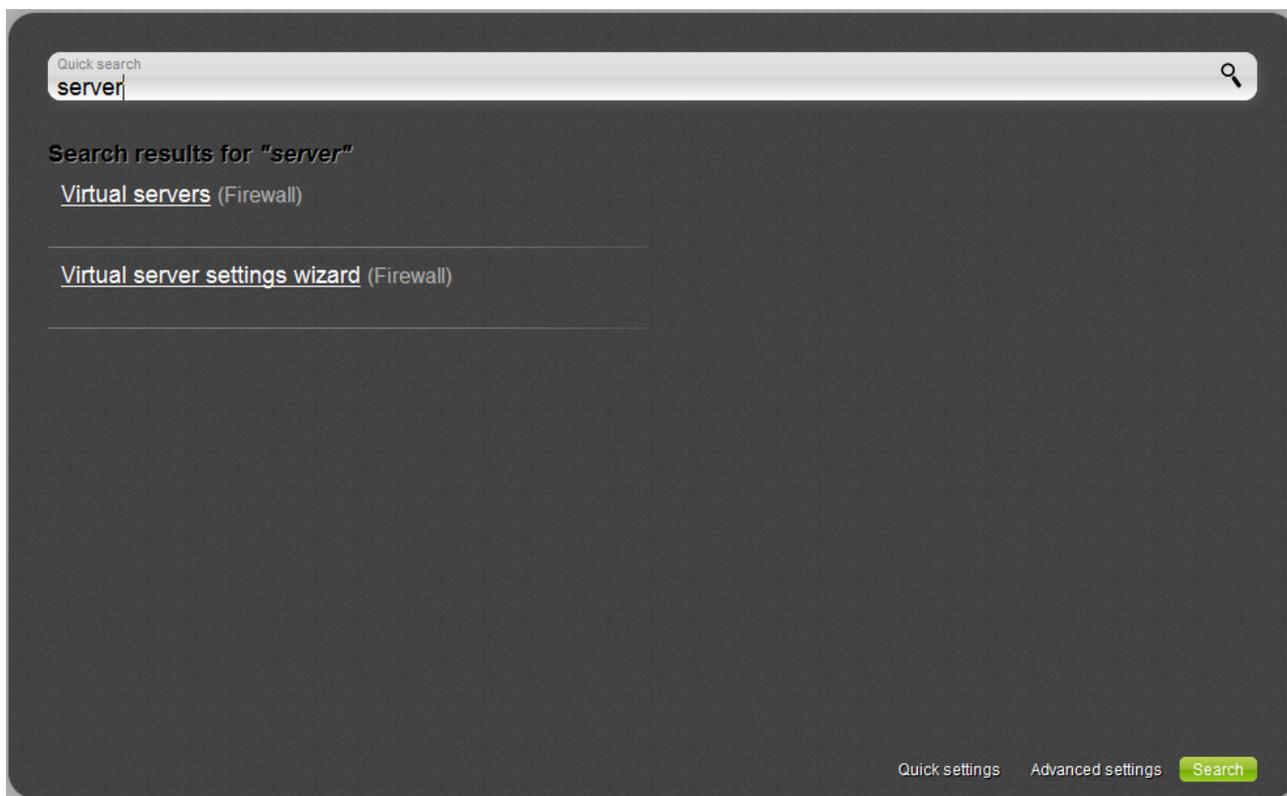

Figure 20. The page displaying the search results.

Saving and Restoring Settings

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

The router's web-based interface displays the notification on unsaved changes at the top of the page.
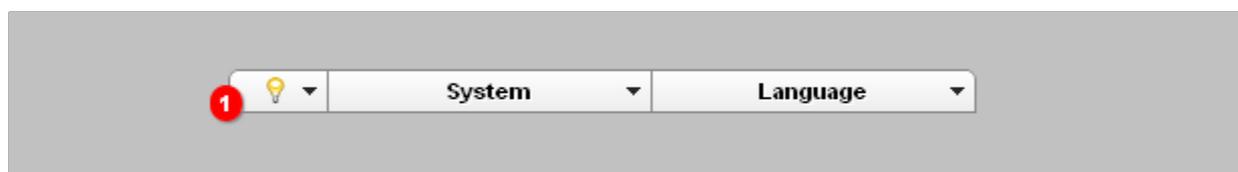

Figure 21. The notification on unsaved changes.

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.
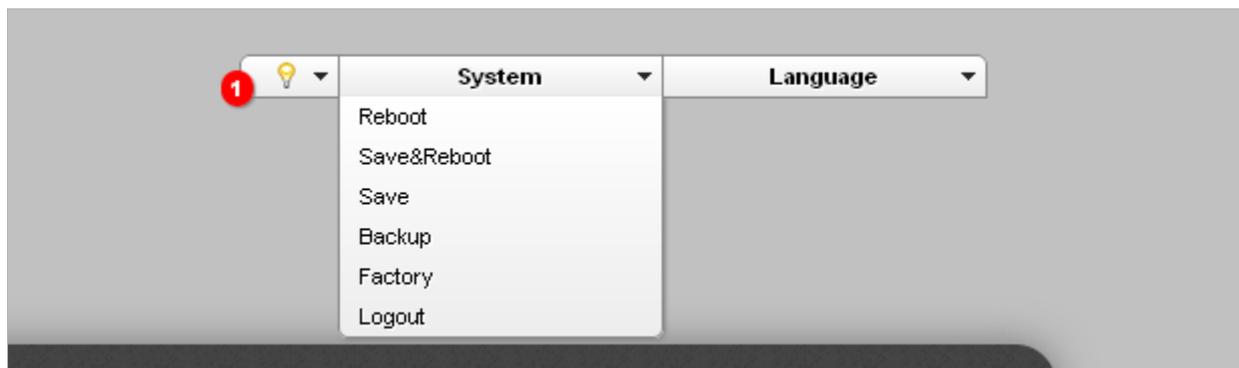
Figure 22. The top-page menu.

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

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

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

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

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

Also you can restore the factory default settings via the hardware **RESET** button located on the back panel of the router. Use a small paperclip to activate the button; insert it into the hole (with the device **turned on**), push, and hold for 5 seconds. Release the button and wait until the router is rebooted (about a minute). Now you can access the web-based interface of the router using the default IP address, username and password.

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

CHAPTER 4. CONFIGURING VIA WEB-BASED INTERFACE

Click'n'Connect

To configure a WAN connection, click the **Click'n'Connect** link in the **Net** section.
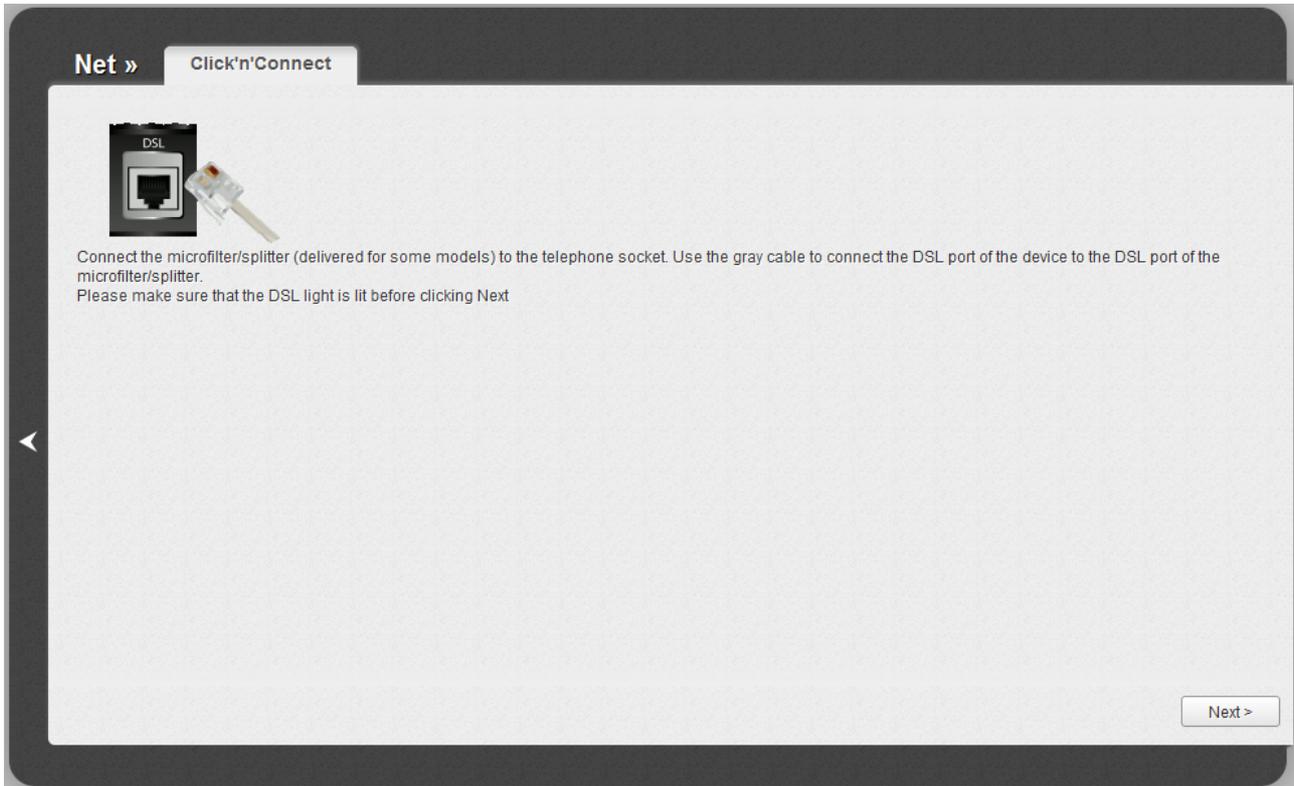
Figure 23. Configuring a WAN connection.

Connect a phone or Ethernet cable to the router (see the ***Connecting to PC*** section, page 16).

Click the **Next** button to continue.
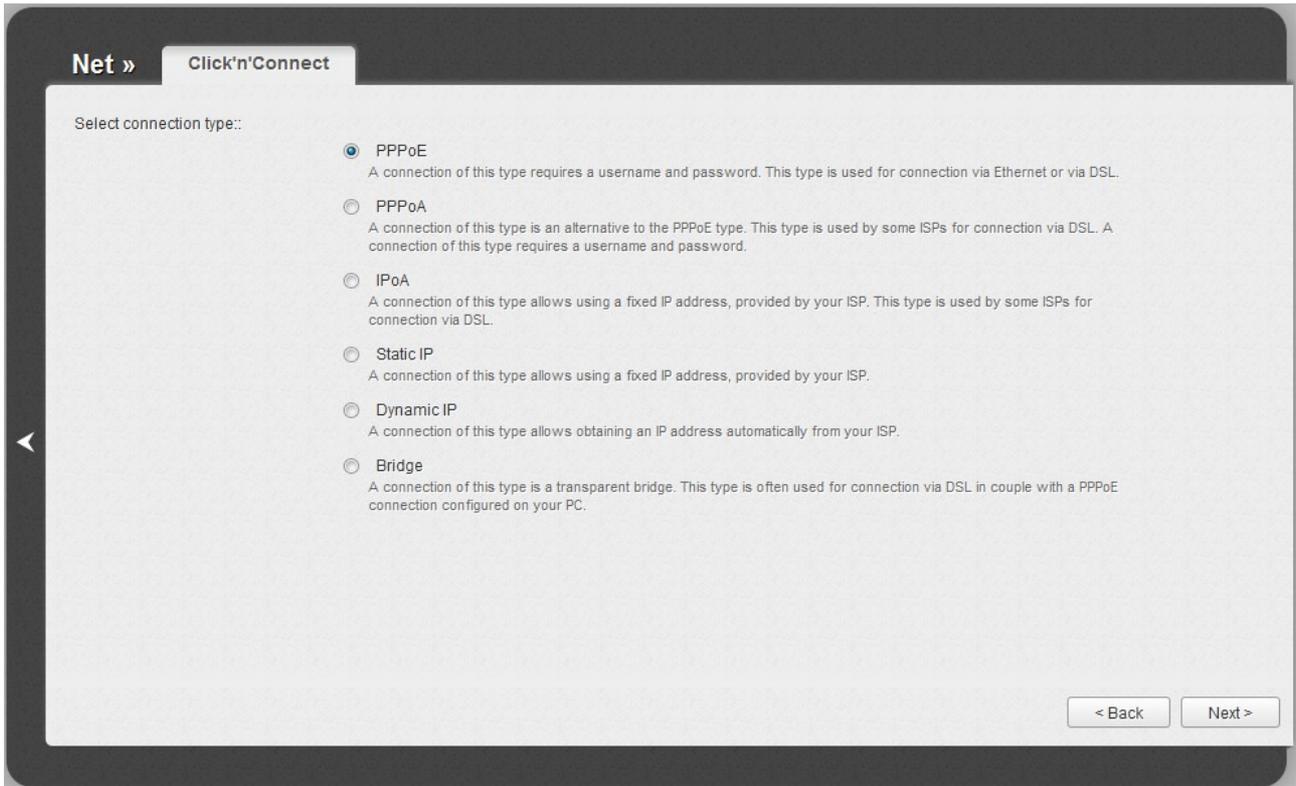
Figure 24. The page for selecting the connection type.

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

Figure 25. The page for selecting a port or interface.

On the opened page, select a port of interface to which the new connection will be assigned and click the **Next** button.

Creating WAN Connection

PPPoE or PPPoA Connection

Figure 26. Configuring PPPoE WAN connection.

In the **Connection name** field, specify a name for the connection for easier identification.
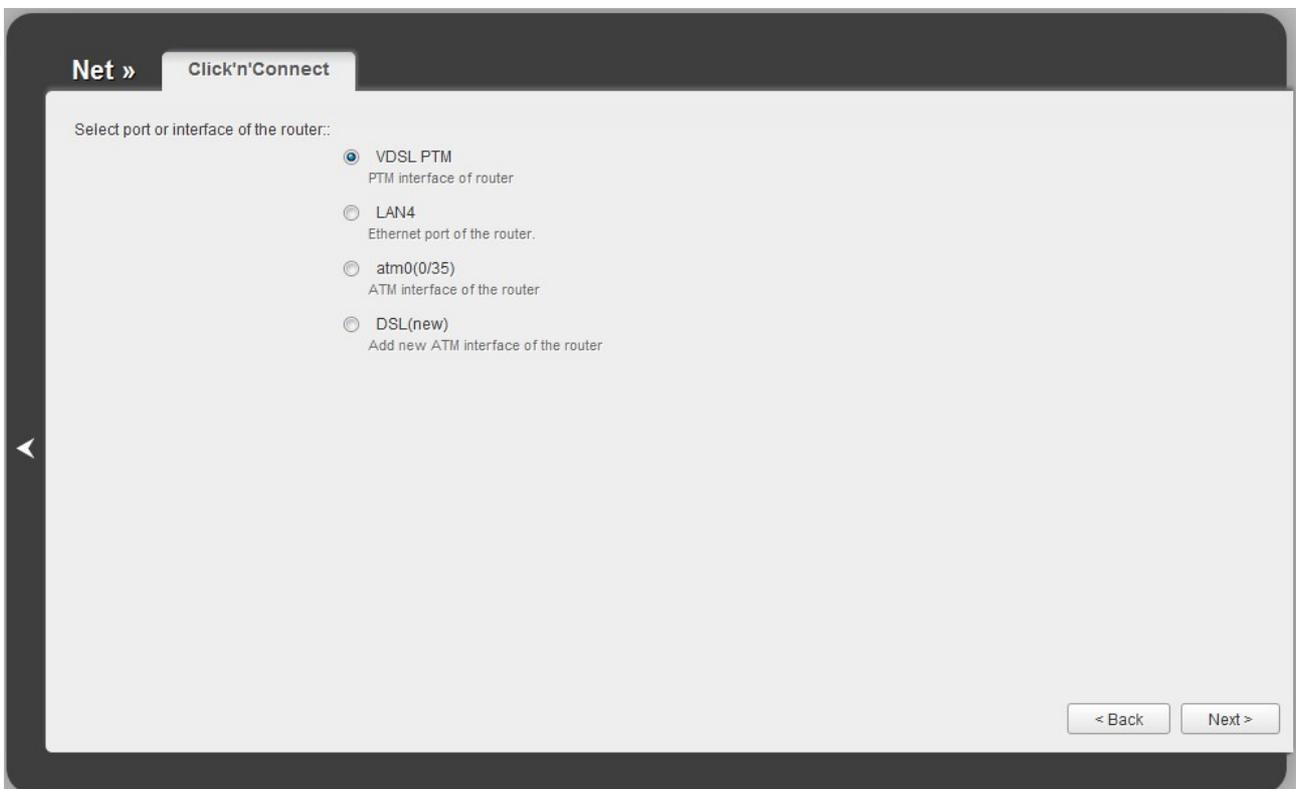
For ADSL WAN connection, fill in the **VPI** and **VCI** fields.

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. After switching to the expert settings mode, the following sections are displayed: **ATM** (for ADSL WAN connection), **Ethernet** (for Ethernet WAN connection), **PPP**, **Miscellaneous**, and **VLAN**.
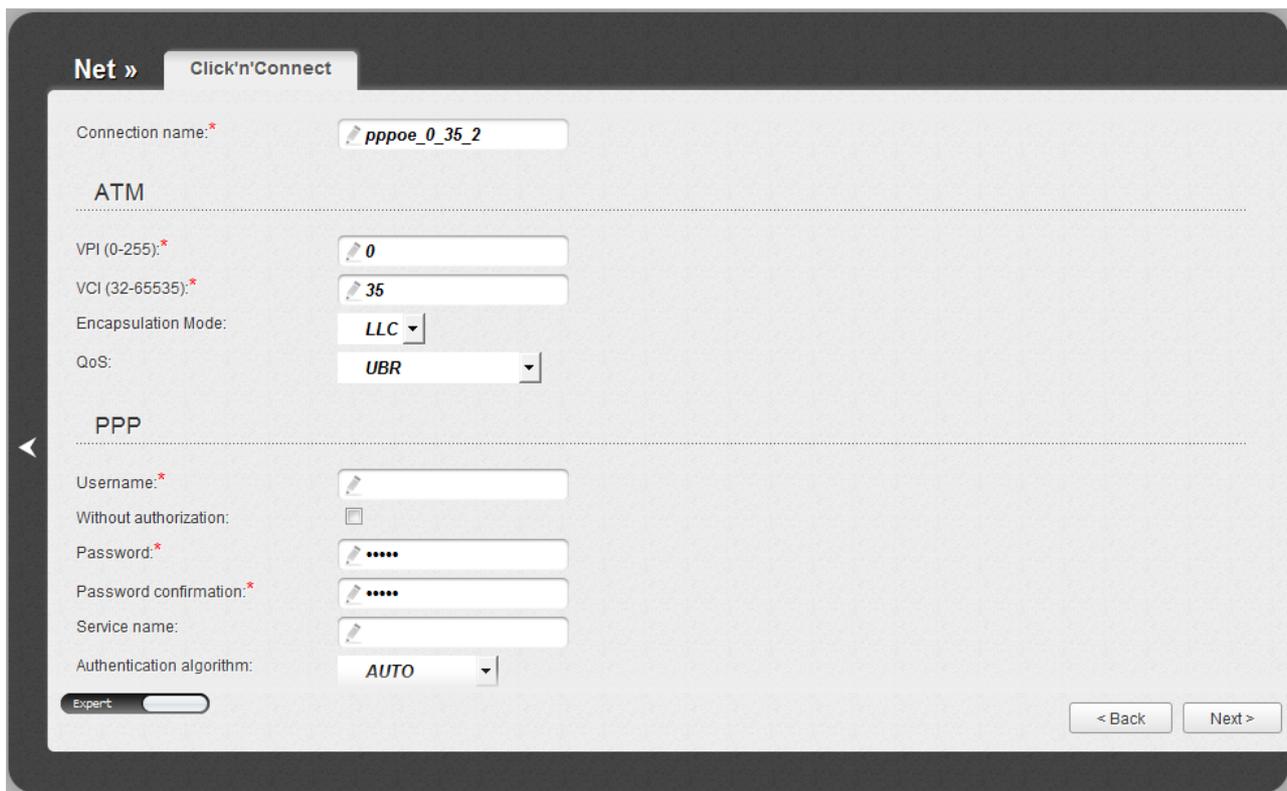
*Figure 27. Configuring PPPoE WAN connection. The expert settings mode. The **ATM** section.*

Parameter	Description
Connection name	A name for connection for easier identification.
ATM	
VPI	Virtual Path Identifier. The valid range is from 0 to 250.
VCI	Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation Mode	Select **LLC** or **VC** from the drop-down list.
QoS	A class of traffic for this connection. **UBR** (*Unspecified Bit Rate*): The UBR service is used for applications that allow various delays and losses of packets. It is appropriate to use the UBR service for text/data/image transfer applications, as well as messaging, distribution, retrieval, and remote terminal applications. **UBR With PCR** (*Unspecified Bit Rate with Peak Cell Rate*): The UBR service is used for applications that allow various delays and losses of packets. The Peak Cell Rate is a determining factor in how often cells are sent in an effort to minimize lag or jitter caused by traffic

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

*Figure 28. Configuring PPPoE 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. 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	*Displayed for the **PPPoE** type only.* The name of the PPPoE authentication server.
Authentication algorithm	Select a required authentication method from the drop-down list or leave the **AUTO** value.
MTU	The maximum size of units transmitted by the interface.
Keep Alive	Select the checkbox if you want the router to keep you connected to your ISP even when the connection has been inactive for a specified period of time. When the checkbox is selected, the **LCP interval** and **LCP fails** fields are available. Specify the required values.

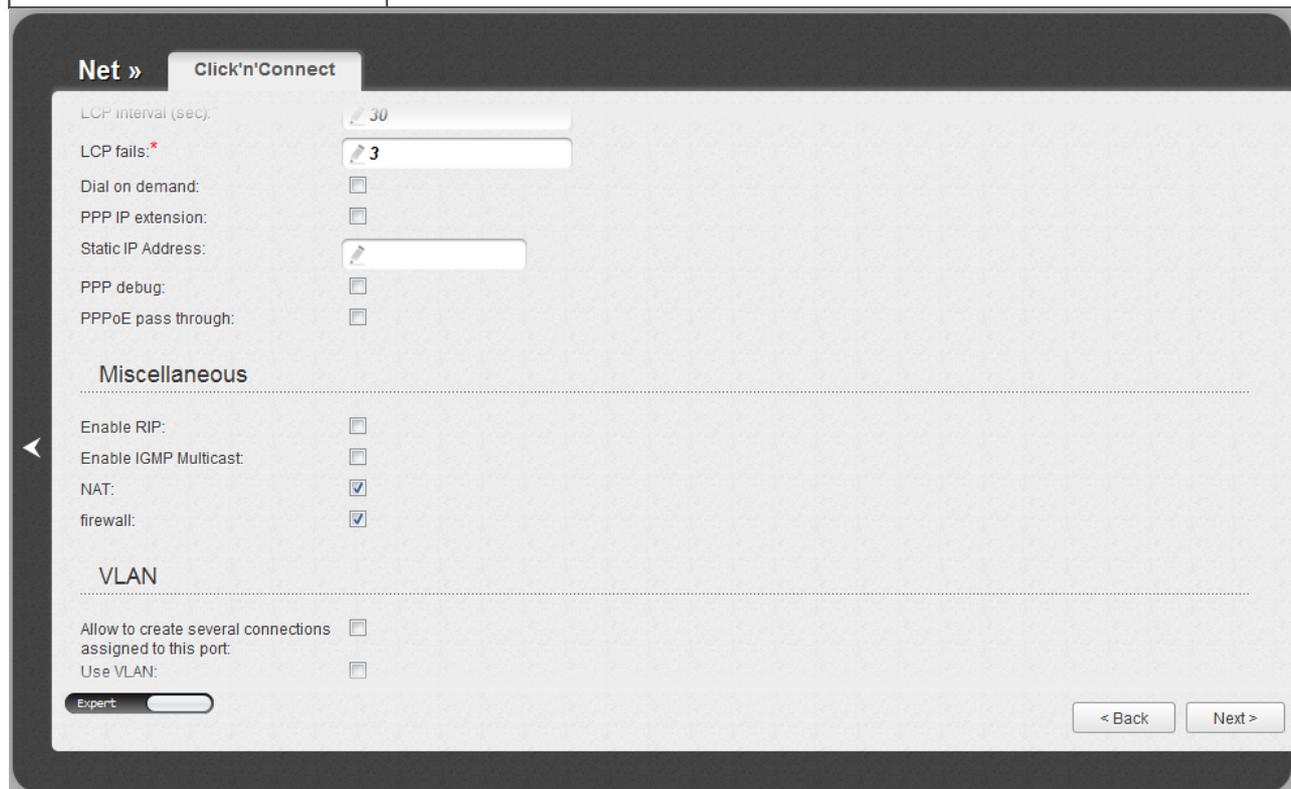| Parameter	Description
Dial on demand	Select the checkbox if you want the router to establish connection to the Internet on demand. In the **Maximum idle time** field, specify a period of inactivity (in seconds) after which the connection should be terminated.
PPP IP extension	This option is used by some ISPs. Contact your ISP to clarify if this checkbox needs to be enabled.
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	*Displayed for the **PPPoE** type only.* Select the checkbox if you want to allow PPPoE clients of computers from your LAN to connect to the Internet through this PPPoE connection of the router.

*Figure 30. Configuring PPPoE WAN connection. The expert settings mode. The **Miscellaneous** and **VLAN** sections.*

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

Click the **Next** button to continue.

After that the page displaying all specified settings opens. Click the **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 60).

IPoA or Static IP Connection

Figure 31. Configuring Static IP WAN connection.

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

For ADSL WAN connection, fill in the **VPI** and **VCI** fields.

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.

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. After switching to the expert settings mode, the following sections are displayed: **ATM** (for ADSL WAN connection), **Ethernet** (for Ethernet WAN connection), **IP**, **Miscellaneous**, and **VLAN**.
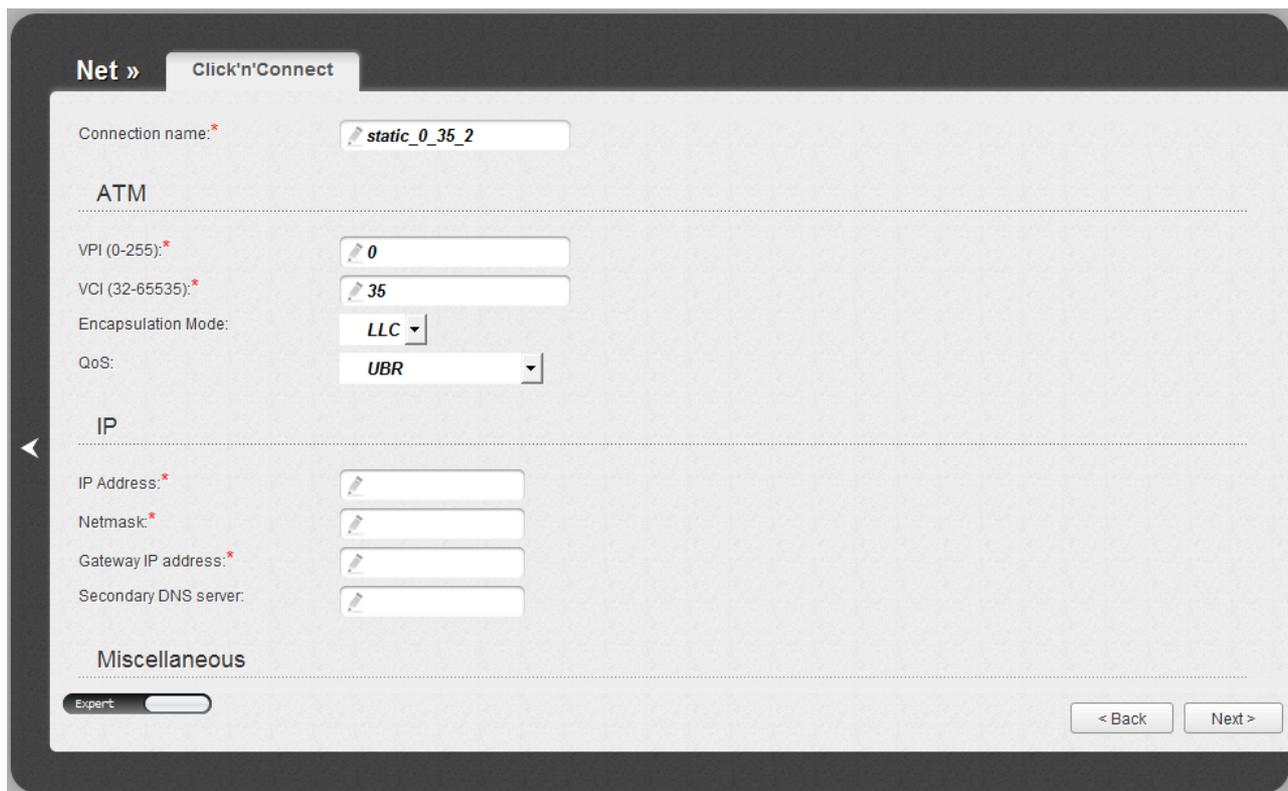
*Figure 32. Configuring Static IP WAN connection. The expert settings mode. The **ATM** and **IP** sections.*

Parameter	Description
Connection name	A name for connection for easier identification.
ATM	
VPI	Virtual Path Identifier. The valid range is from 0 to 250.
VCI	Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation Mode	Select **LLC** or **VC** from the drop-down list.
QoS	A class of traffic for this connection. **UBR** (*Unspecified Bit Rate*): The UBR service is used for applications that allow various delays and losses of packets. It is appropriate to use the UBR service for text/data/image transfer applications, as well as messaging, distribution, retrieval, and remote terminal applications. **UBR With PCR** (*Unspecified Bit Rate with Peak Cell Rate*): The UBR service is used for applications that allow various delays and losses of packets. The Peak Cell Rate is a determining factor in how often cells are sent in an effort to minimize lag or jitter caused by traffic

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

*Figure 33. Configuring Static IP WAN connection. The expert settings mode. The **Ethernet** section.*

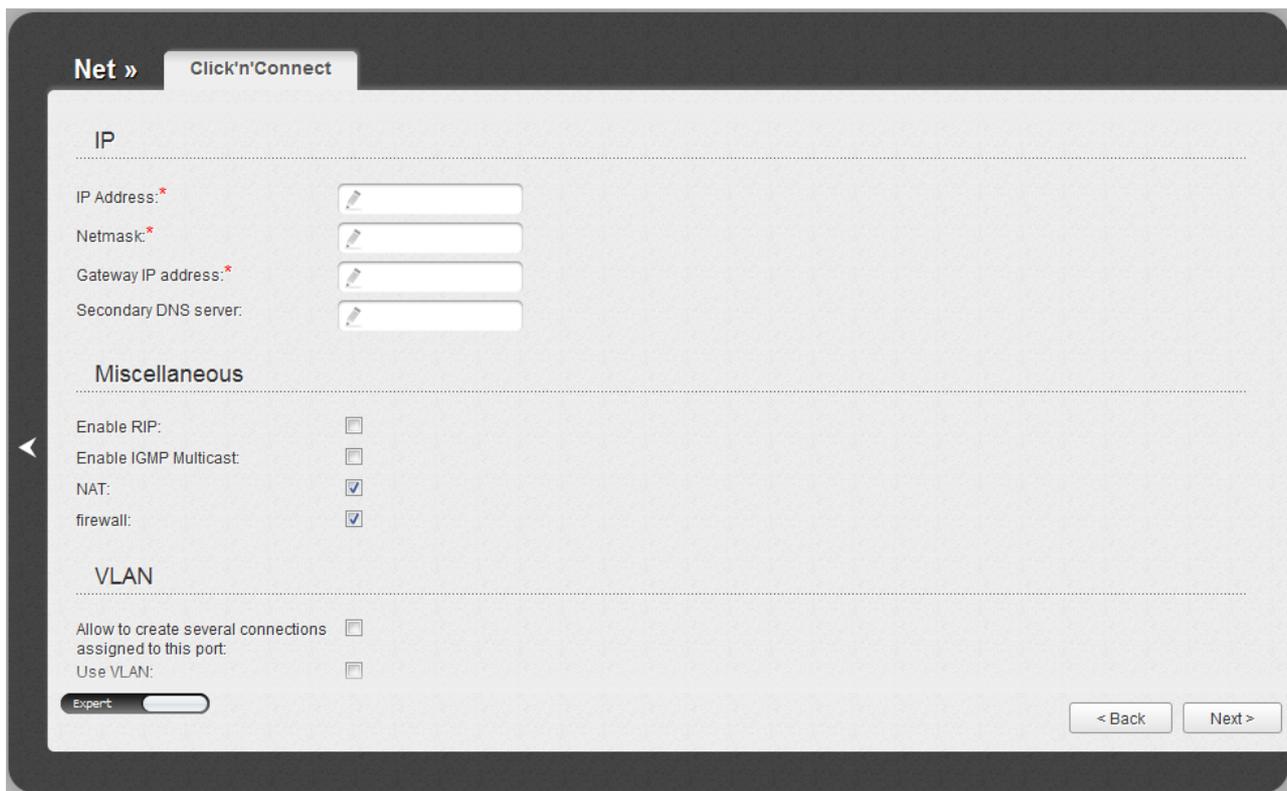| Parameter	Description
Ethernet	
MTU	The maximum size of units transmitted by the interface.
MAC	A MAC address assigned to the interface. This parameter is mandatory if your ISP uses MAC address binding. In the field, enter the MAC address registered by your ISP upon concluding the agreement. Also you 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 34. Configuring Static IP WAN connection. The expert settings mode. The **Miscellaneous** and **VLAN** sections.*

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.
VLAN *(displayed for the **Static IP** type only)*	
Allow to create several connections assigned to this port	Select the checkbox to allow the router to use several untagged connections.
Use VLAN	Select the checkbox to allow the router to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** checkbox is selected.

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

Click the **Next** button to continue.

After that the page displaying all specified settings opens. Click the **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 60).

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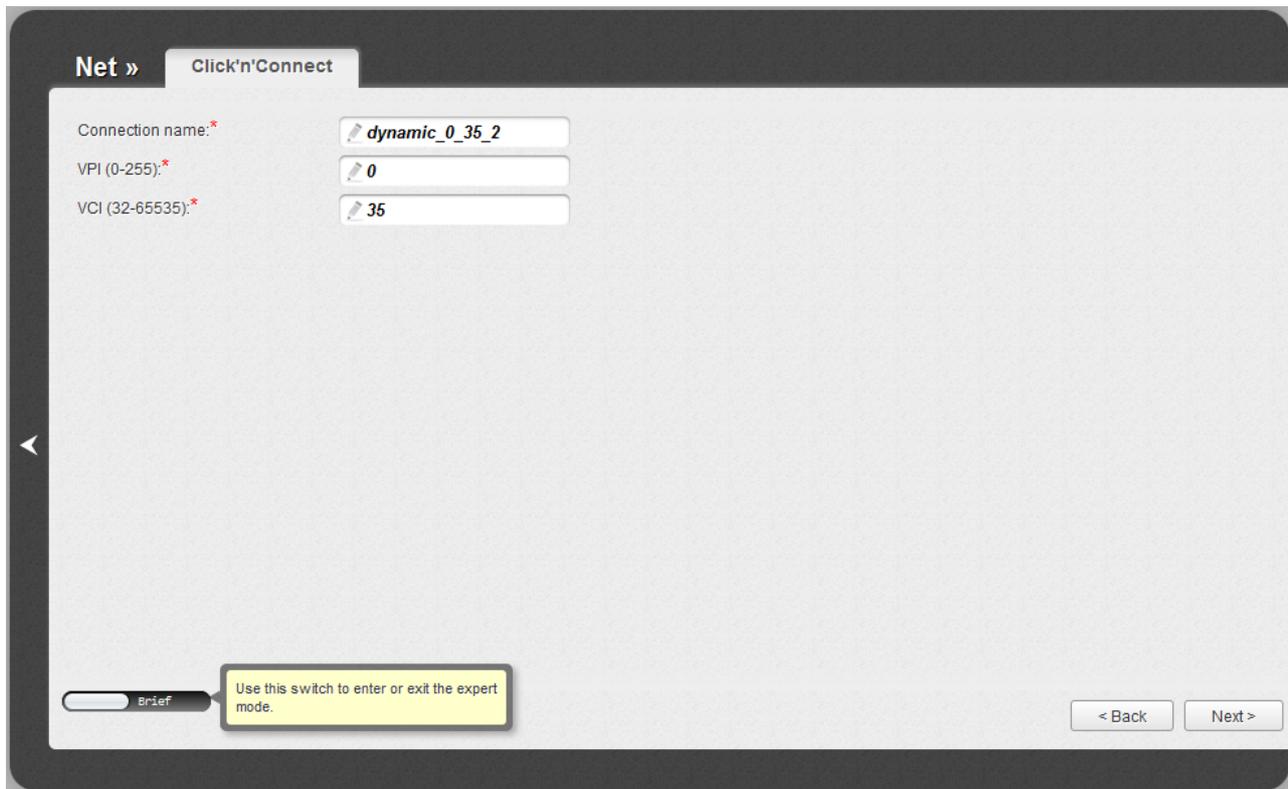
Figure 35. Configuring Dynamic IP WAN connection.

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

For ADSL WAN connection, fill in the **VPI** and **VCI** fields.

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. After switching to the expert settings mode, the following sections are displayed: **ATM** (for ADSL WAN connection), **Ethernet** (for Ethernet WAN connection), **IP**, **Miscellaneous**, and **VLAN**.

*Figure 36. Configuring Dynamic IP WAN connection. The expert settings mode. The **ATM** and **IP** sections.*

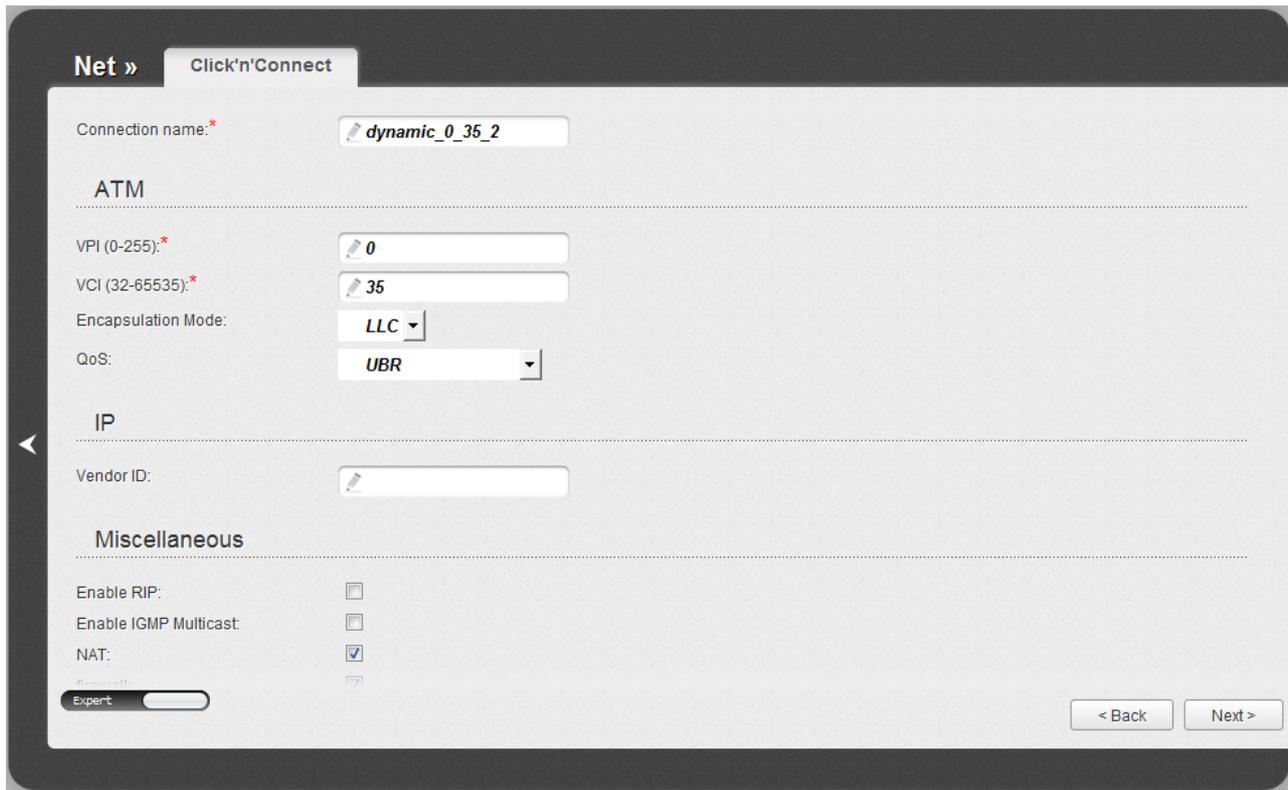| Parameter	Description
Connection name	A name for connection for easier identification.
ATM	
VPI	Virtual Path Identifier. The valid range is from 0 to 250.
VCI	Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation Mode	Select **LLC** or **VC** from the drop-down list.
QoS	A class of traffic for this connection. **UBR** (*Unspecified Bit Rate*): The UBR service is used for applications that allow various delays and losses of packets. It is appropriate to use the UBR service for text/data/image transfer applications, as well as messaging, distribution, retrieval, and remote terminal applications. **UBR With PCR** (*Unspecified Bit Rate with Peak Cell Rate*): The UBR service is used for applications that allow various delays and losses of packets. The Peak Cell Rate is a determining factor in how often cells are sent in an effort to minimize lag or jitter caused by traffic

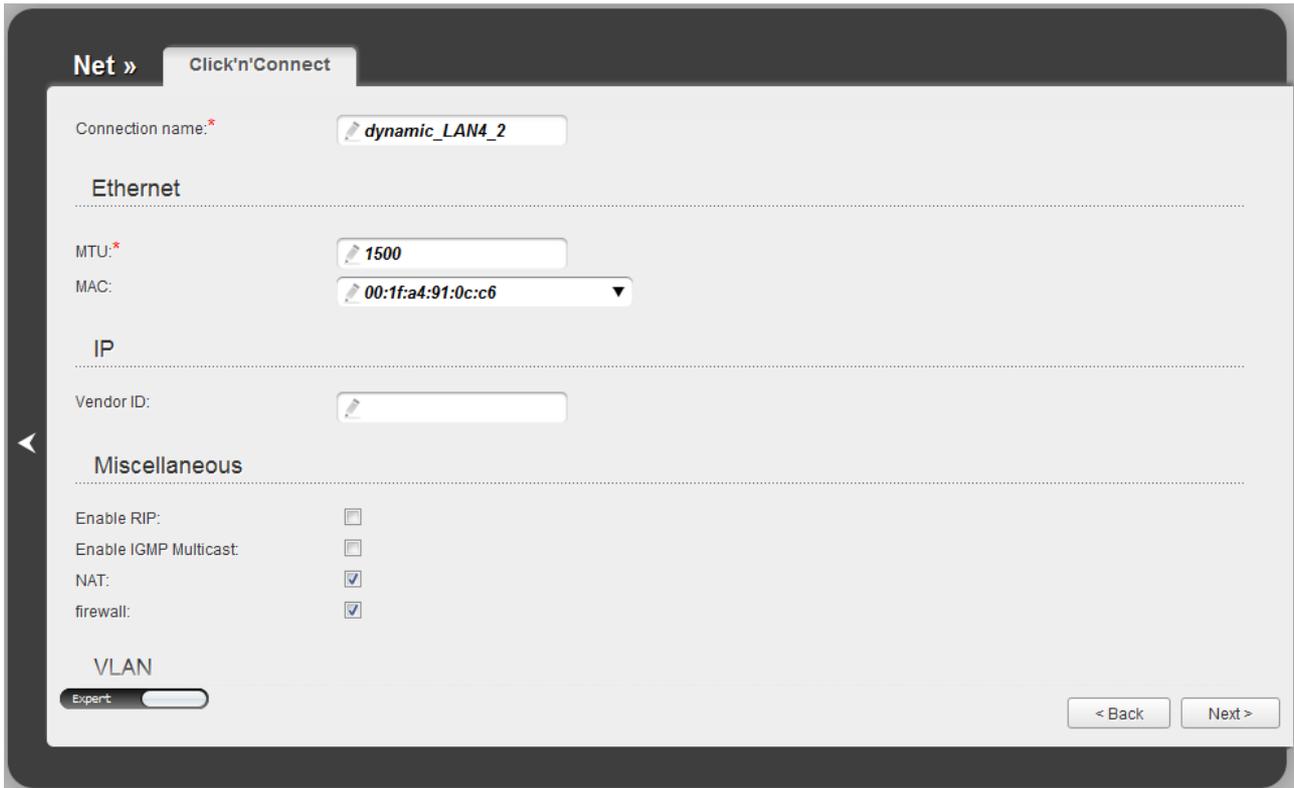| Parameter	Description
	inconsistencies. When you select this value from the drop-down list, the **Peak Cell Rate** field is displayed. Specify a required value (in cells per second). **CBR** (*Constant Bit Rate*): This service is used for applications that require a constant data rate. It is mostly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

*Figure 37. Configuring Dynamic IP WAN connection. The expert settings mode. The **Ethernet** section.*

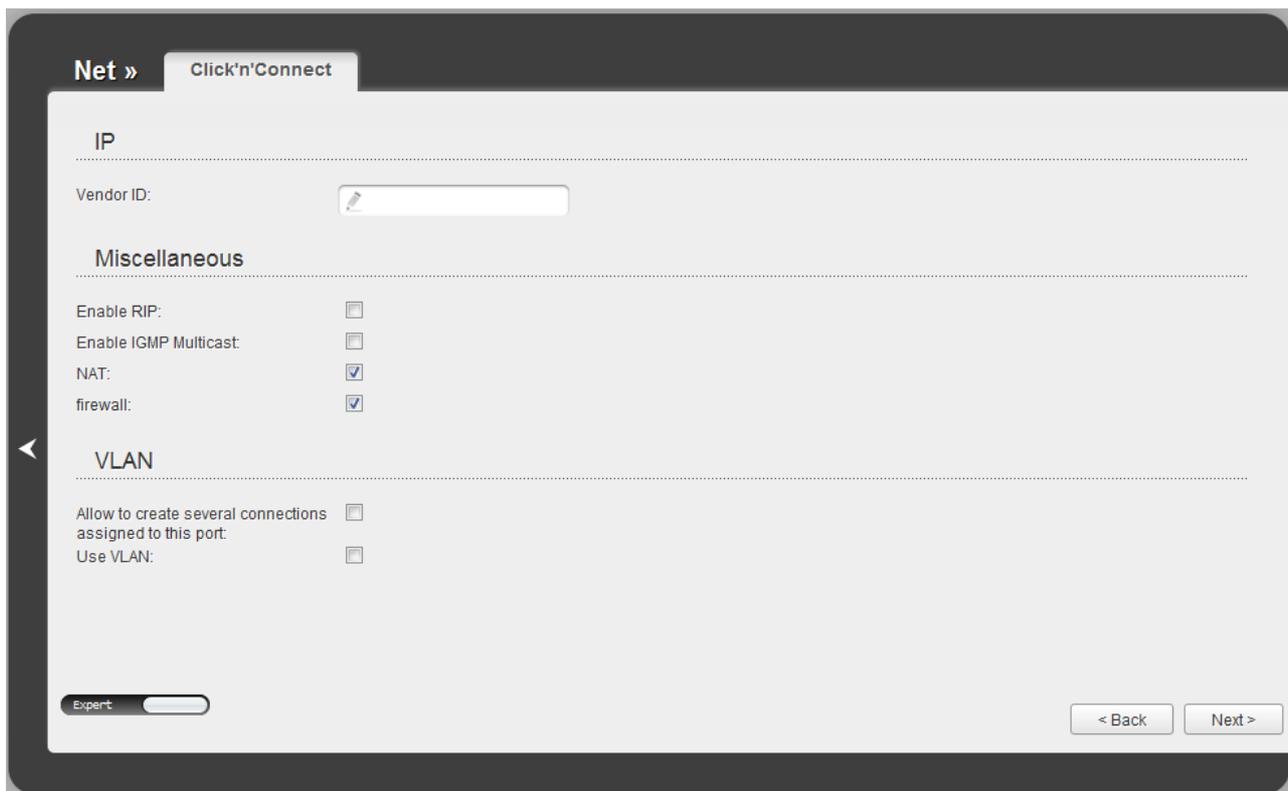| Parameter	Description
Ethernet	
MTU	The maximum size of units transmitted by the interface.
MAC	A MAC address assigned to the interface. This parameter is mandatory if your ISP uses MAC address binding. In the field, enter the MAC address registered by your ISP upon concluding the agreement. Also you 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 38. Configuring Dynamic IP WAN connection. The expert settings mode. The **Miscellaneous** *and* **VLAN** *sections.*

| 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.
VLAN	
Allow to create several connections assigned to this port	Select the checkbox to allow the router to use several untagged connections.
Use VLAN	Select the checkbox to allow the router to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** checkbox is selected.

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

Click the **Next** button to continue.

After that the page displaying all specified settings opens. Click the **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 60).

Bridge Connection
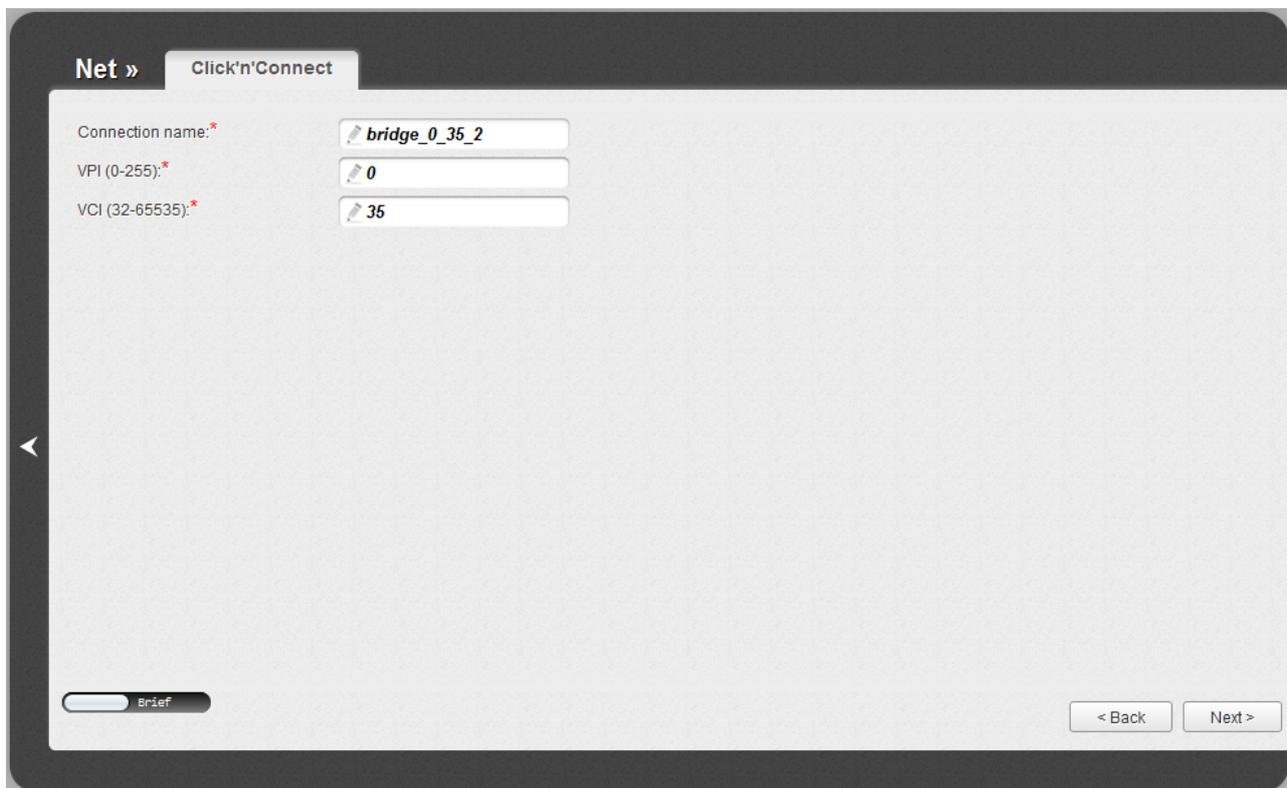
Figure 39. Configuring Bridge WAN connection.

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

For ADSL WAN connection, fill in the **VPI** and **VCI** fields.

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. After switching to the expert settings mode, the following sections are displayed: **ATM** (for ADSL WAN connection), **Ethernet** (for Ethernet WAN connection), and **VLAN**.
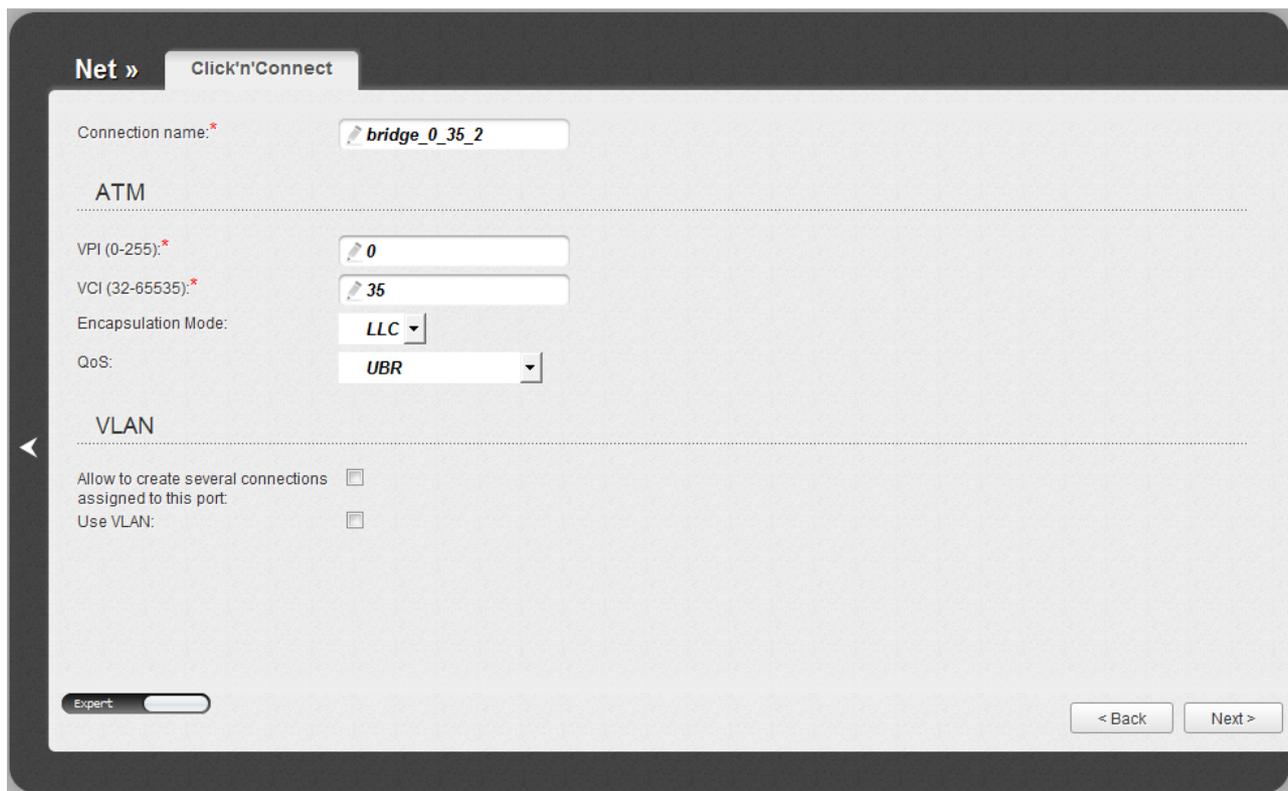
*Figure 40. Configuring Bridge WAN connection. The expert settings mode. The **ATM** and **VLAN** sections.*

Parameter	Description
Connection name	A name for connection for easier identification.
ATM	
VPI	Virtual Path Identifier. The valid range is from 0 to 250.
VCI	Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation Mode	Select **LLC** or **VC** from the drop-down list.
QoS	A class of traffic for this connection. **UBR** (*Unspecified Bit Rate*): The UBR service is used for applications that allow various delays and losses of packets. It is appropriate to use the UBR service for text/data/image transfer applications, as well as messaging, distribution, retrieval, and remote terminal applications. **UBR With PCR** (*Unspecified Bit Rate with Peak Cell Rate*): The UBR service is used for applications that allow various delays and losses of packets. The Peak Cell Rate is a determining factor in how often cells are sent in an effort to minimize lag or jitter caused by traffic

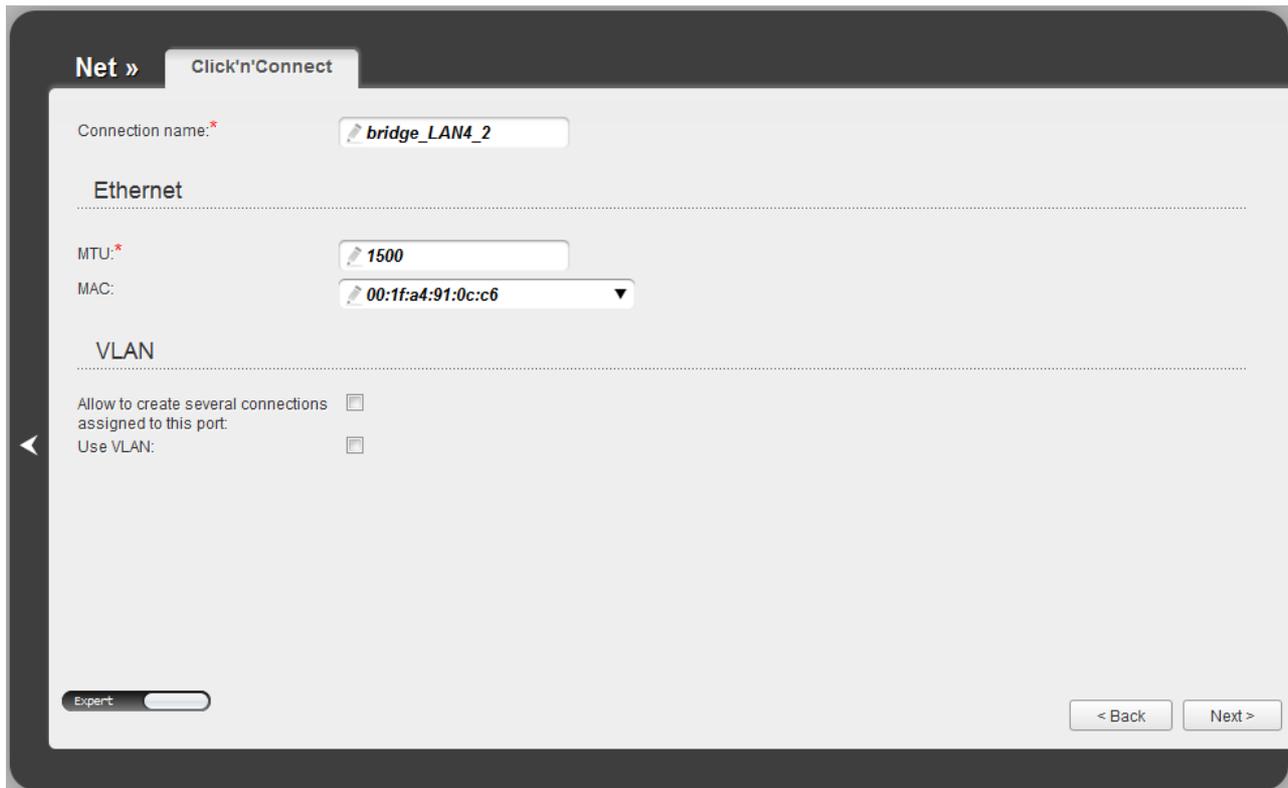| Parameter	Description
	inconsistencies. When you select this value from the drop-down list, the **Peak Cell Rate** field is displayed. Specify a required value (in cells per second). **CBR** (*Constant Bit Rate*): This service is used for applications that require a constant data rate. It is mostly used for transferring uncompressed audio and video, e.g. videoconferencing, interactive audio (telephony), audio/video distribution (television, distance education, e-shops), and retrieval (video-on demand, audio libraries). When you select this value from the drop-down list, the **Peak Cell Rate** field is displayed. Specify a required value (in cells per second). **Non Realtime VBR** (*Non-Real-time Variable Bit Rate*): This service can be used for transferring data that have critical response-time requirements, e.g. air ticket booking, bank transactions, and process monitoring. When you select this value from the drop-down list, the **Peak Cell Rate**, **Sustainable Cell Rate**, and **Maximum Burst Size** fields are displayed. Specify required values. **Realtime VBR** (*Real-time Variable Bit Rate*): This service is used for delay-sensitive applications such as real time video. The Rt-VBR provides higher network flexibility than the CBR service. When you select this value from the drop-down list, the **Peak Cell Rate**, **Sustainable Cell Rate**, and **Maximum Burst Size** fields are displayed. Specify required values.
	VLAN
Allow to create several connections assigned to this port	Select the checkbox to allow the router to use several untagged connections.
Use VLAN	Select the checkbox to allow the router to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** checkbox is selected.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** checkbox is selected.

*Figure 41. Configuring Bridge 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. 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).

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 60).

Checking Internet Availability

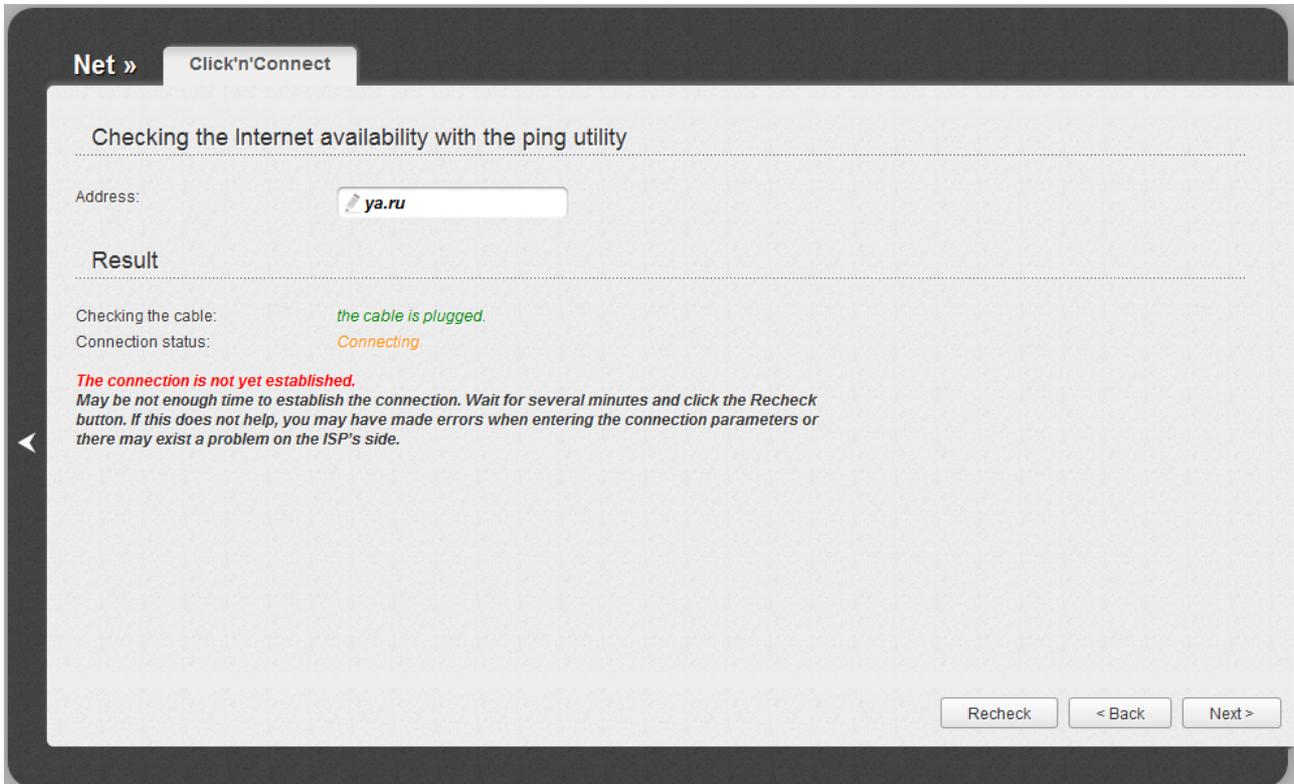On the page, you can check the WAN connection you have created.

Figure 42. 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 61).

Configuring Wireless Connection
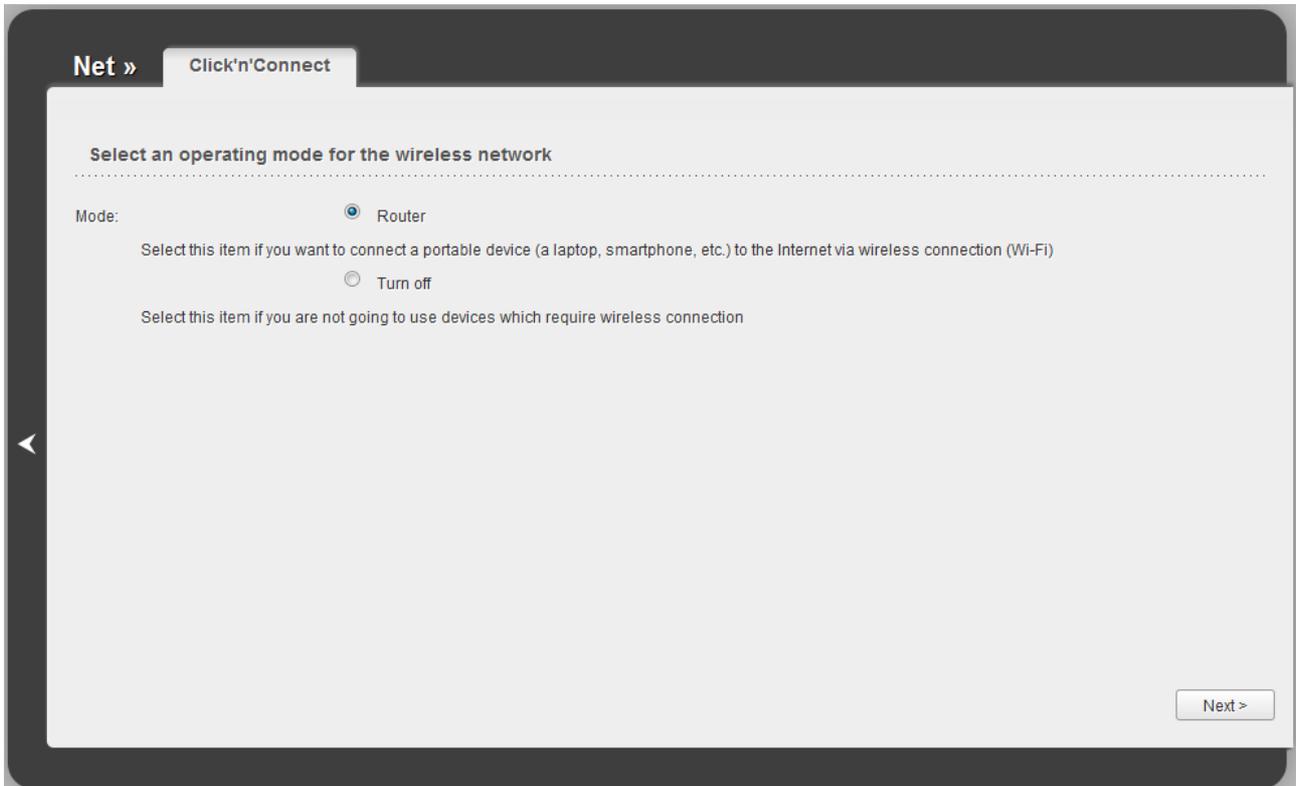
Figure 43. The page for selecting the operating mode for the wireless network.

If you are not going to use the wireless connection, select the **Turn off** choice of the **Mode** radio button. Click the **Next** button and then click the **Save** button on the opened page. After clicking the **Save** button, the quick settings page opens.

If you want to connect portable devices to the Internet via wireless connection, select the **Router** choice of the **Mode** radio button. Click the **Next** button.

On the opened page, in the **SSID** field, specify a new name for the network (use digits and Latin characters).

Figure 44. Page for changing the name of the wireless LAN.

Click the **Next** button to continue.

On the next page, you can modify security settings of the WLAN.

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

Select the **Protected** value from the **Network Authentication** drop-down list and enter a key (a password that will be used to access your wireless network) in the **Network key** field. Use digits and Latin characters. After applying this setting, the **WPA2-PSK** authentication type is specified for the router's WLAN.

When the **Open** value is selected, the **Network key** field is unavailable. After applying this setting, the **Open** authentication type with no encryption is specified for the router's WLAN.

Figure 45. Page for selecting a security mode for the wireless network.

Click the **Next** button to continue.

On the next page, the specified settings are displayed. Make sure that they are correct and then click the **Save** button. 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** in the **Wi-Fi** section.
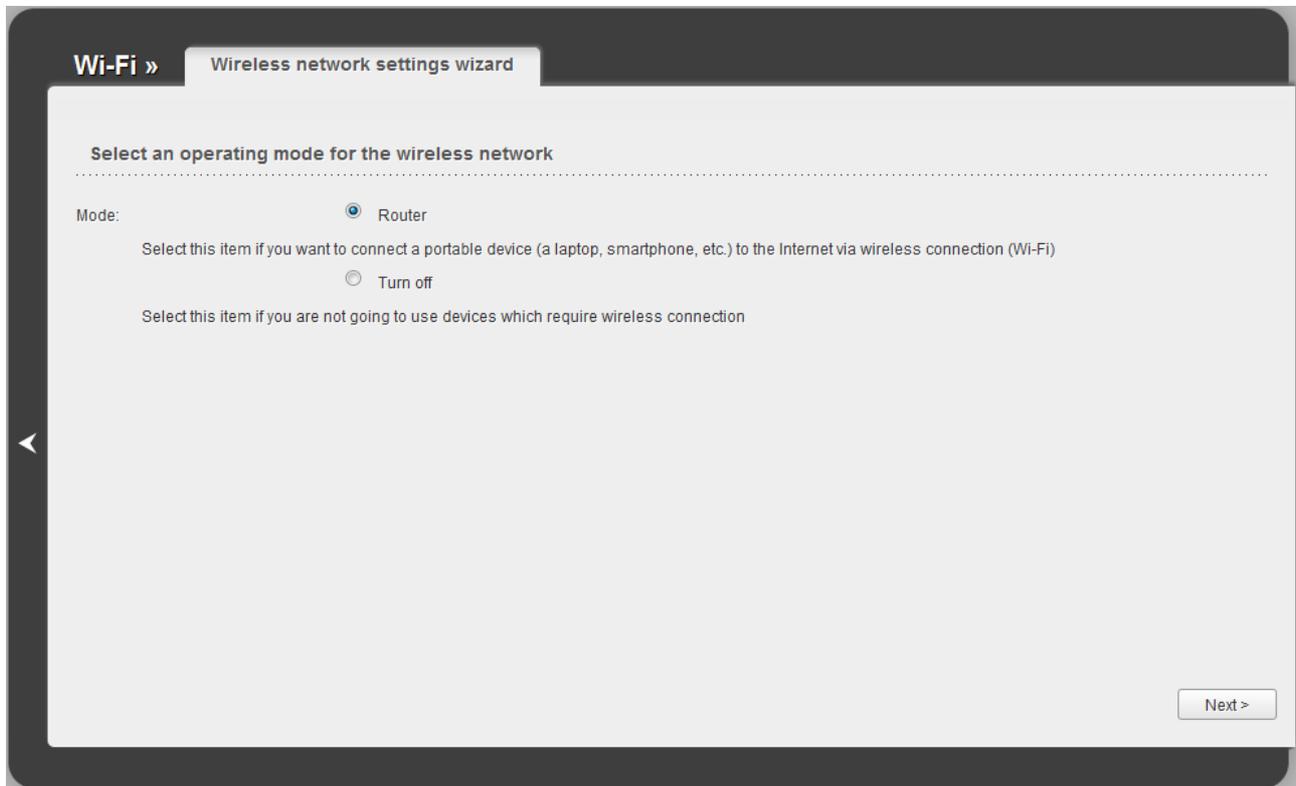
Figure 46. The page for selecting the operating mode for the wireless network.

If you are not going to use the wireless connection, select the **Turn off** choice of the **Mode** radio button. Click the **Next** button and then click the **Save** button on the opened page. After clicking the **Save** button, the quick settings page opens.

If you want to connect portable devices to the Internet via wireless connection, select the **Router** choice of the **Mode** radio button. Click the **Next** button.

On the opened page, in the **SSID** field, specify a new name for the network (use digits and Latin characters).

Figure 47. Page for changing the name of the wireless LAN.

Click the **Next** button to continue.

On the next page, you can modify security settings of the WLAN.

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

Select the **Protected** value from the **Network Authentication** drop-down list and enter a key (a password that will be used to access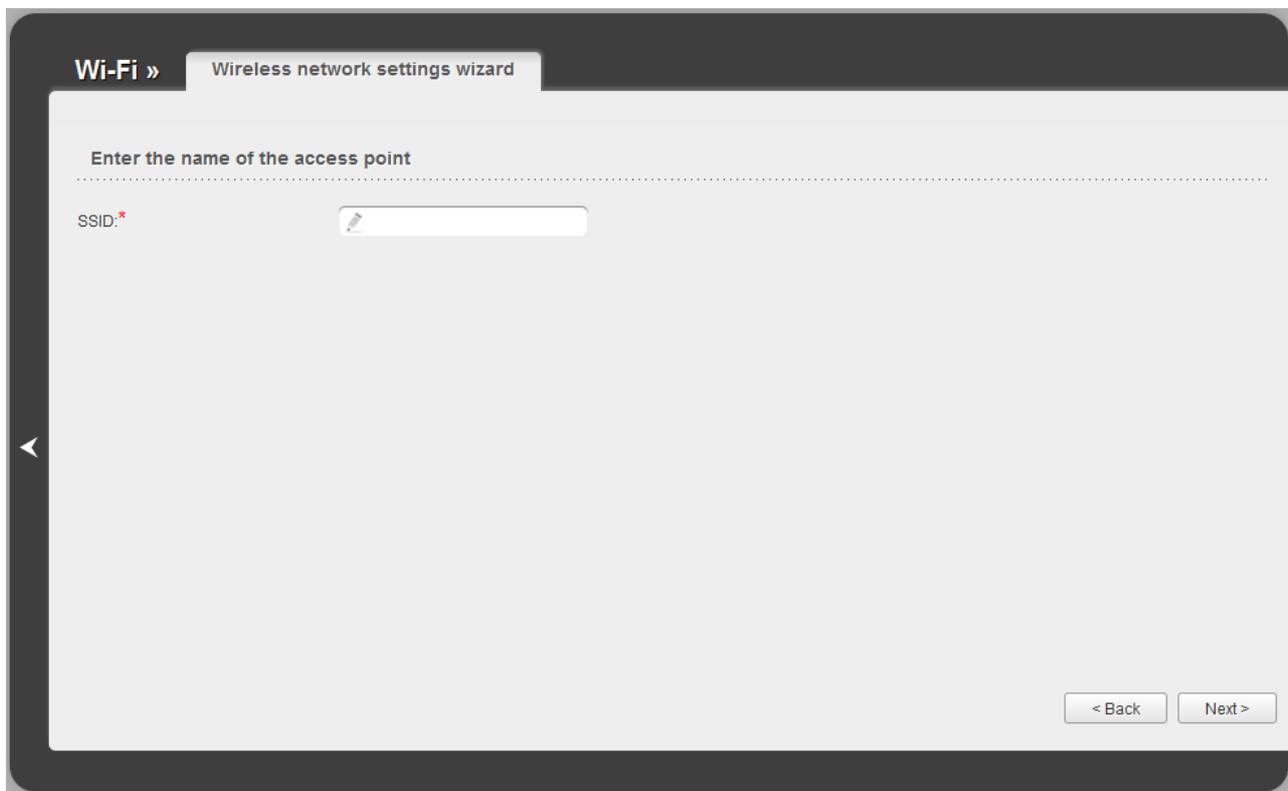 your wireless network) in the **Network key** field. Use digits and Latin characters. After applying this setting, the **WPA2-PSK** authentication type is specified for the router's WLAN.

When the **Open** value is selected, the **Network key** field is unavailable. After applying this setting, the **Open** authentication type with no encryption is specified for the router's WLAN.

Figure 48. Page for selecting a security mode for the wireless network.

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

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 49. 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.
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.

Parameter	Description
Private port (begin)/ **Private port (end)**	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).
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 successful creation of the virtual server a notification appears. Click the **OK** button in the notification window, and then click the

Back icon () on the left side of the page to get back to the quick settings page.

Status

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

- network statistics

- DSL connection status

- active WAN connections

- IP addresses leased by the DHCP server

- the routing table

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

Network Statistics

On the **Status / Network statistics** page, you can view statistics for WAN connections and LAN ports of the router. 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 50. The **Status / Network statistics** page.*

DSL Status

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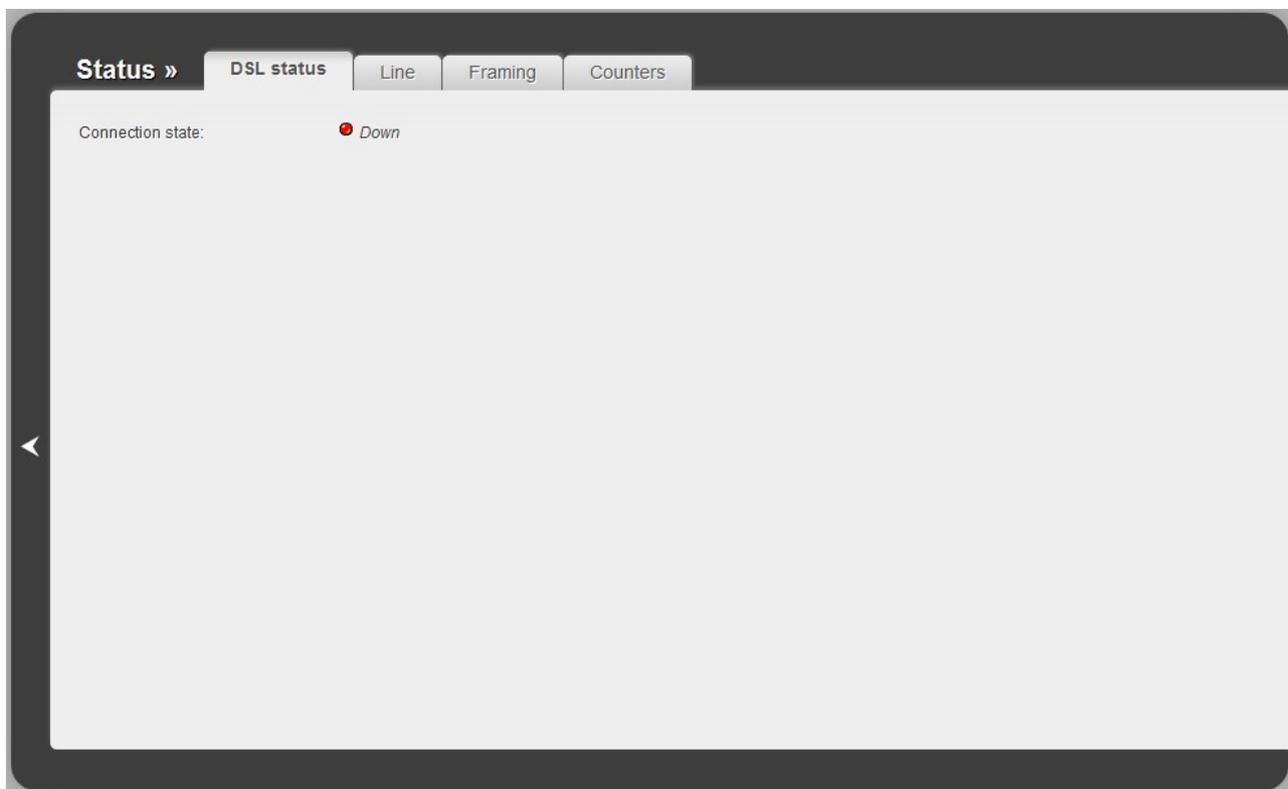
*Figure 51. The **Status / DSL status** page.*

WAN Status

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

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

DHCP

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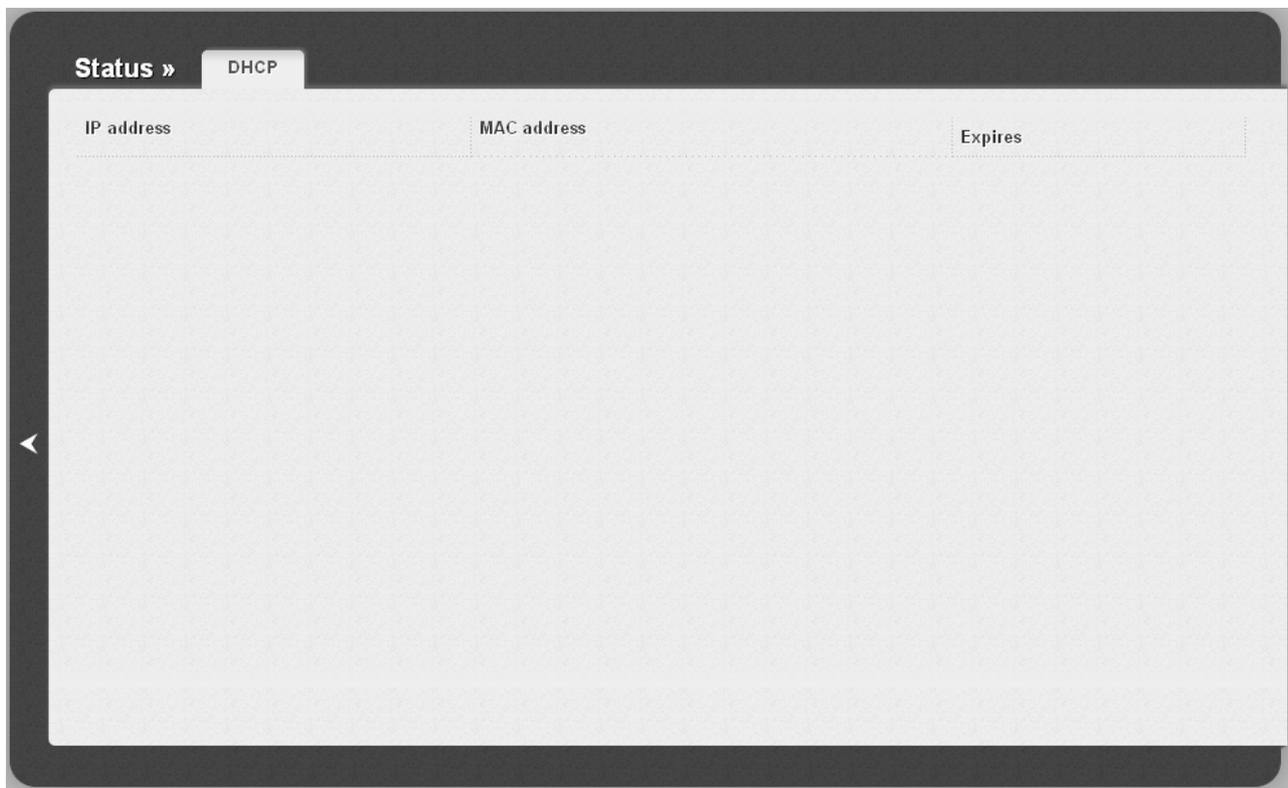
*Figure 53. The **Status / DHCP** page.*

Routing Table

The **Status / Routing table** page displays the information on routes. The table contains destination IP addresses, gateways, subnet masks, and other data.
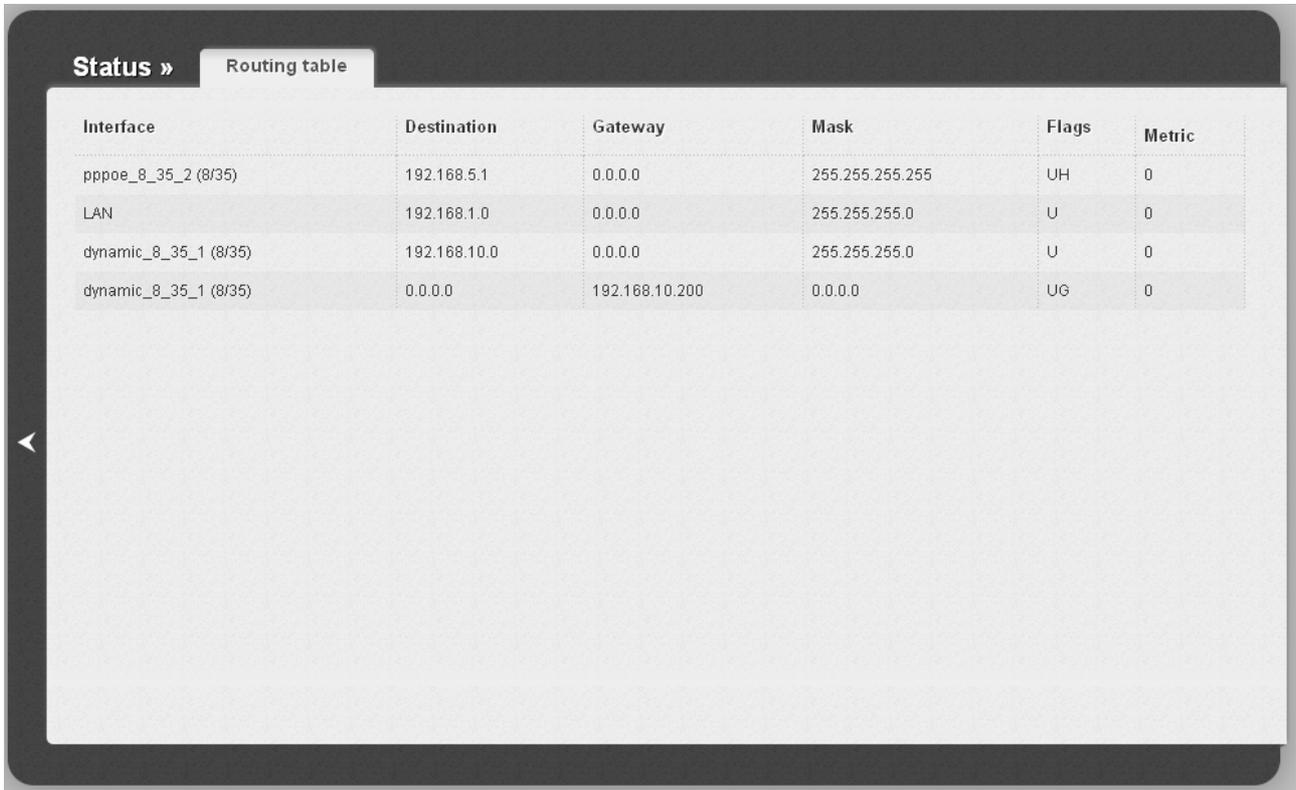
*Figure 54. The **Status / Routing table** page.*

Clients

On the **Status / Clients** page, you can view the list of devices connected to the router and devices accessing its web-based interface.
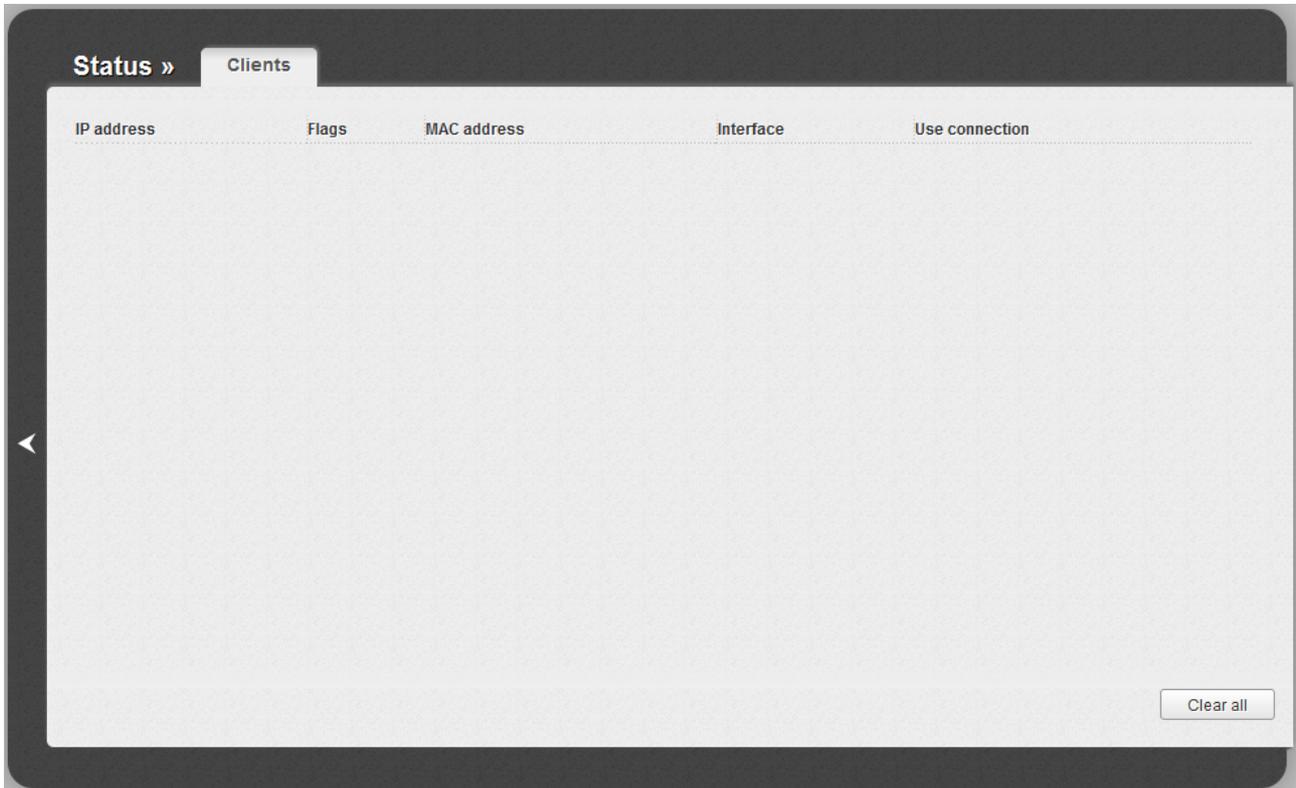
*Figure 55. The **Status / Clients** page.*

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

The **Clear all** button allows to clear the router's ARP table. It includes the MAC addresses of the devices connected to the router before and IP addresses assigned to them. The MAC addresses of the devices connected to the router in the bridge mode are not deleted.

Net

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

WAN

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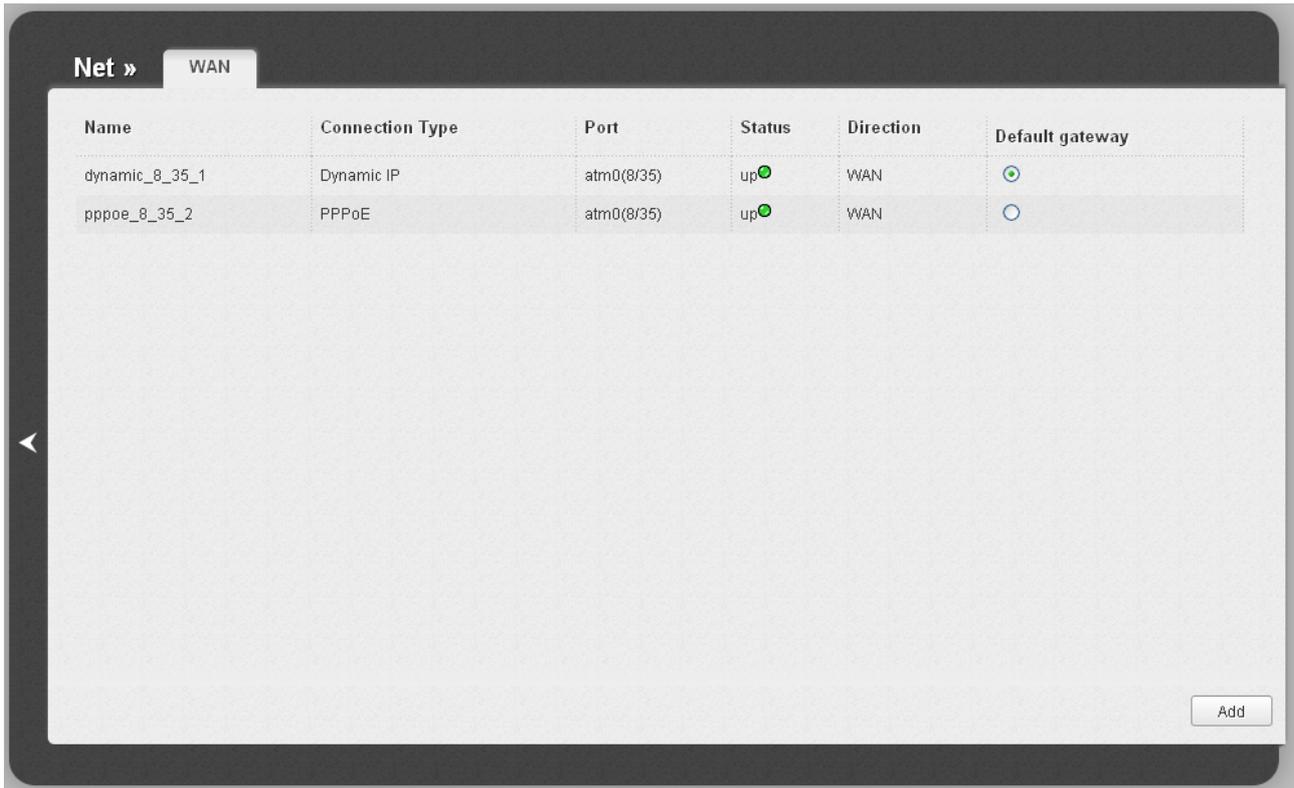
*Figure 56. The **Net / WAN** page.*

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

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

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

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

See an example of creating several connections in the *Creating Two Connections on One Channel* section, page 153.

Creating VDSL WAN Connection

*Figure 57. The page for creating a new connection. The **General settings** section.*

Parameter	Description
General settings	
Connection Type	A type of network protocol to be used by the connection. Available values: • **PPPoE** • **Static IP** • **Dynamic IP** • **Bridge**.
Interface	Leave the **VDSL PTM** value.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.
VLAN	

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

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

*Figure 58. 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.

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

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

Parameter	Description
PPP	
Username	A username (login) to access the Internet.
Without authorization	Select the checkbox if you don't need to enter a username and password to access the Internet.
Password	A password to access the Internet.

Parameter	Description
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.

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

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

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

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

Creating ADSL WAN Connection

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

Parameter	Description
General settings	
Connection Type	A type of network protocol to be used by the connection. Available values: • **PPPoE** • **PPPoA** • **IPoA** • **Static IP** • **Dynamic IP** • **Bridge.**
Interface	A physical interface to which the new connection will be assigned. Select the **DSL(new)** value to create a new interface at the physical layer.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.

Parameter	Description
Direction	The direction of this connection.
ATM	
VPI	Virtual Path Identifier. The valid range is from 0 to 250.
VCI	Virtual Circuit Identifier. The valid range is from 32 to 65535.
Encapsulation Mode	Select **LLC** or **VC** from the drop-down list.
QoS	A class of traffic for this connection. **UBR** (*Unspecified Bit Rate*): The UBR service is used for applications that allow various delays and losses of packets. It is appropriate to use the UBR service for text/data/image transfer applications, as well as messaging, distribution, retrieval, and remote terminal applications. **UBR With PCR** (*Unspecified Bit Rate with Peak Cell Rate*): The UBR service is used for applications that allow various delays and losses of packets. The Peak Cell Rate is a determining factor in how often cells are sent in an effort to minimize lag or jitter caused by traffic inconsistencies. When you select this value from the drop-down list, the **Peak Cell Rate** field is displayed. Specify a required value (in cells per second). **CBR** (*Constant Bit Rate*): This service is used for applications that require a constant data rate. It is mostly used for transferring uncompressed audio and video, e.g. videoconferencing, interactive audio (telephony), audio/video distribution (television, distance education, e-shops), and retrieval (video-on demand, audio libraries). When you select this value from the drop-down list, the **Peak Cell Rate** field is displayed. Specify a required value (in cells per second). **Non Realtime VBR** (*Non-Real-time Variable Bit Rate*): This service can be used for transferring data that have critical response-time requirements, e.g. air ticket booking, bank transactions, and process monitoring. When you select this value from the drop-down list, the **Peak Cell Rate**, **Sustainable Cell Rate**, and **Maximum Burst Size** fields are displayed. Specify required values.

Parameter	Description
	Realtime VBR (*Real-time Variable Bit Rate*): This service is used for delay-sensitive applications such as real time video. The Rt-VBR provides higher network flexibility than the CBR service. When you select this value from the drop-down list, the **Peak Cell Rate**, **Sustainable Cell Rate**, and **Maximum Burst Size** fields are displayed. Specify required values.

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

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

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

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

The **Miscellaneous** section is displayed for all connection types except for **Bridge**.
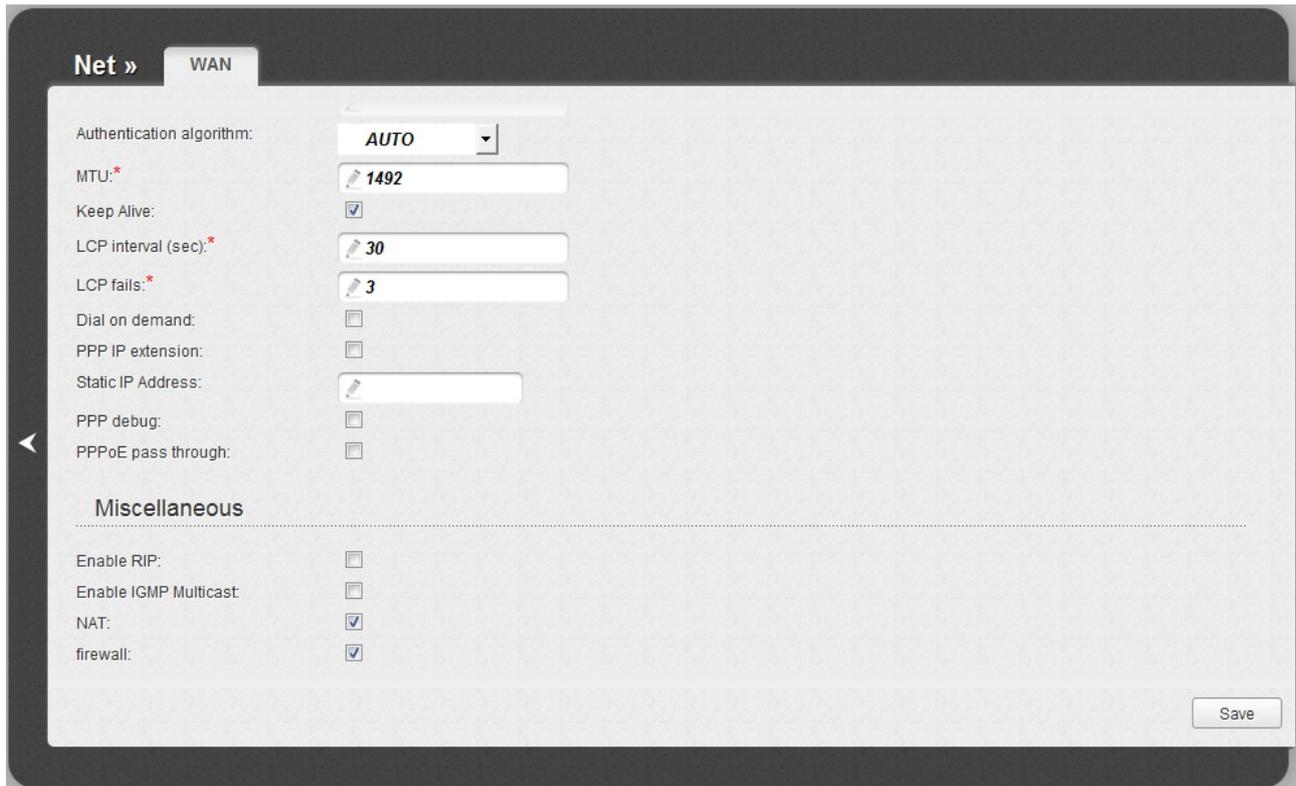
*Figure 63. The page for creating a new connection. The **Miscellaneous** section.*

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.

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

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

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

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

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

*Figure 65. The page for creating a new connection. The **IP** section.*

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

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

Creating Ethernet WAN Connection

Prior to creating an Ethernet WAN connection, specify a LAN port that will be used as the WAN port (see the ***Interface Grouping*** section, page 113).

*Figure 66. The page for creating a new connection. The **General settings** and **Ethernet** sections.*

Parameter	Description
General settings	
Connection Type	A type of network protocol to be used by the connection. Available values: • **PPPoE** • **Static IP** • **Dynamic IP** • **Bridge**.
Interface	Select the value corresponding to the LAN port specified as the WAN port.
Name	A name for connection for easier identification.
Enable	Select the checkbox to enable the connection.
Direction	The direction of this connection.

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. 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).
VLAN (The **VLAN** section for this connection type can be used if the **VLAN MUX Mode** value is selected from the **Ethernet WAN type** drop-down list on the **Advanced / Interface grouping / Make WAN** page.)	
Allow to create several connections assigned to this port	If the checkbox is selected, the router is able to use several untagged connections.
Use VLAN	If the checkbox selected, the router is able to use tagged VLAN connections.
VLAN ID	An identifier for the VLAN. The field is displayed when the **Use VLAN** checkbox is selected.
VLAN priority	A priority tag for the type of traffic transmitted. The field is displayed when the **Use VLAN** checkbox is selected.

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

*Figure 67. 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.

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

*Figure 68. The page for creating a new connection. The **PPP** section.*

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

Parameter	Description
Dial on demand	Select the checkbox if you want the router to establish connection to the Internet on demand. In the **Maximum idle time** field, specify a period of inactivity (in seconds) after which the connection should be terminated.
PPP IP extension	This option is used by some ISPs. Contact your ISP to clarify if this checkbox needs to be enabled.
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.

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

*Figure 69. The page for creating a new connection. The **IP** section.*

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

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

LAN

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

| IP Address:* | 🖉 192.168.1.1 |
| Netmask:* | 🖉 255.255.255.0 |

Figure 70. Basic settings of the local interface.

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

Parameter	Description
IP Address	The IP address of the router in the local subnet. By default, the following value is specified: `192.168.1.1`.
Netmask	The mask of the local subnet. By default, the following value is specified: `255.255.255.0`.

On the page, you can also specify parameters for the additional local subnet.

IP Address 2:	🖉
Netmask 2:	🖉
NAT 2:	☐
Firewall 2:	☐

Figure 71. Configuring parameters for the additional local subnet.

Parameter	Description
IP Address 2	An alias IP address of the router's IP address.
Netmask 2	A mask of the additional local subnet.
NAT 2	Select the checkbox if you want one WAN IP address to be used for all computers of the additional local subnet. For the main local subnet, you can select the **NAT** checkbox while creating WAN connection via the **Click'n'Connect** Wizard or on the **Net / WAN** page.
Firewall 2	Select the checkbox to enable protection against ARP and DDoS attacks for all computers of the additional local subnet. For the main local subnet, you can select the **Firewall** checkbox while creating WAN connection via the **Click'n'Connect** Wizard or on the **Net / WAN** page.

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. The built-in DHCP server automatically assigns IP addresses to computers of the main local subnet (you need to specify IP addresses manually for computers of the additional local subnet).

Figure 72. 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 of the router as the DNS server address. Deselect 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.
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 73. 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.

Basic Settings

On the **Wi-Fi / Basic settings** page, you can enable your wireless local area network (WLAN) and configure its basic parameters.

Figure 74. Basic settings of the wireless LAN.

Parameter	Description
Enable Wireless	The checkbox enables Wi-Fi connections. If you want to disable your WLAN, deselect the checkbox.
Hide Access Point	If the checkbox is selected, other users cannot see your Wi-Fi network. (It is recommended not to select this checkbox in order to simplify initial configuration of your WLAN.)
SSID	A name for the WLAN. By default, the value `DSL-6740U` is specified. It is recommended to specify another name for the network upon initial configuration (use digits and Latin characters).
BSSID	The parameter that uniquely identifies your wireless network. You cannot change the value of this parameter.
Country	The country you are in. Select a value from the drop-down list.
Channel	The wireless channel number. By default, channel 6 is specified. If you want to use another channel, select a value from the drop-down list. When the **auto** value is selected, the router itself chooses the channel with the least interference.
Clients Isolation	Select the checkbox to isolate the users of your WLAN (to forbid wireless clients to communicate to each other).
Enable Wireless Guest Network	Select the checkbox to create a separate part of your WLAN with open authentication type and with no password. Wireless devices connected to this network can access the Internet, but are isolated from the router's LAN.
Guest SSID	A name for the guest part of your WLAN.

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

Security Settings

On the **Wi-Fi / Security settings** page, you can modify security settings of the WLAN.
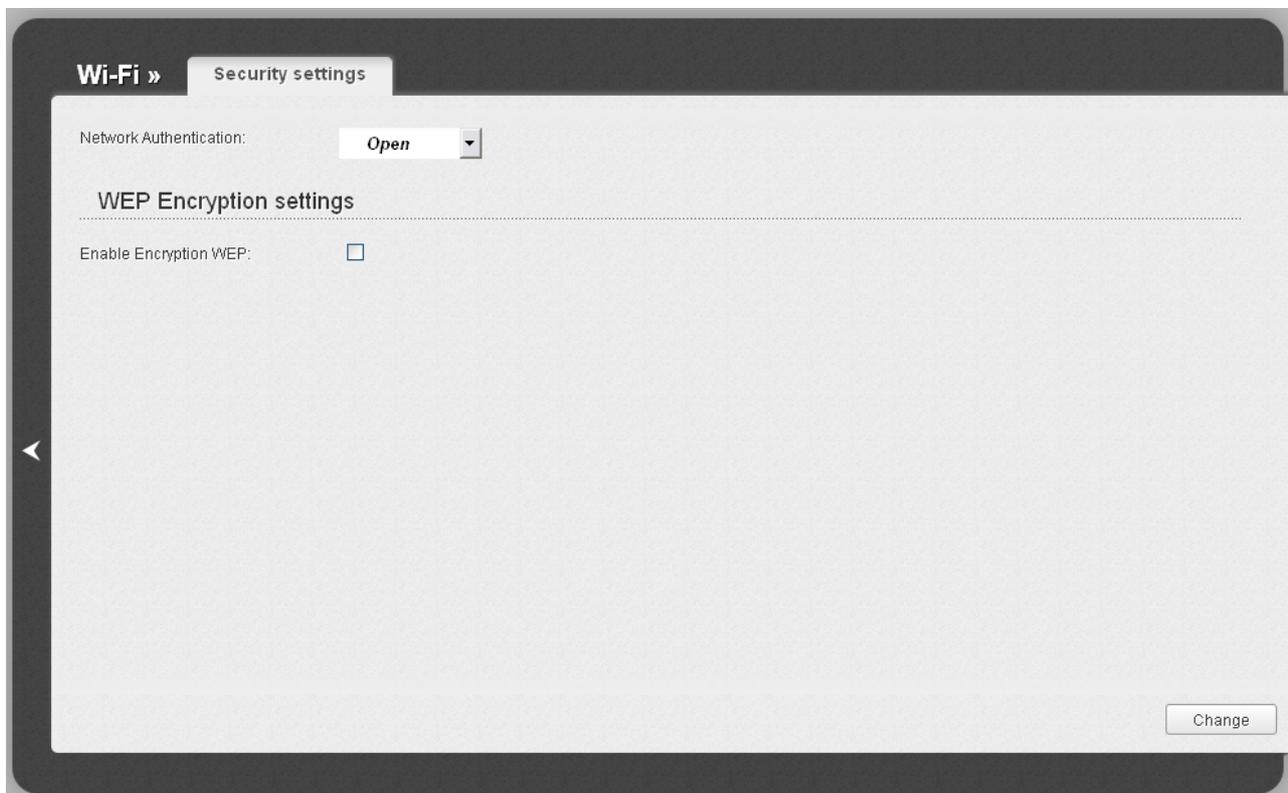
Figure 75. The default security settings.

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

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

The router supports the following authentication types:

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

When the **Open** value is selected, the **WEP Encryption settings** section is displayed:
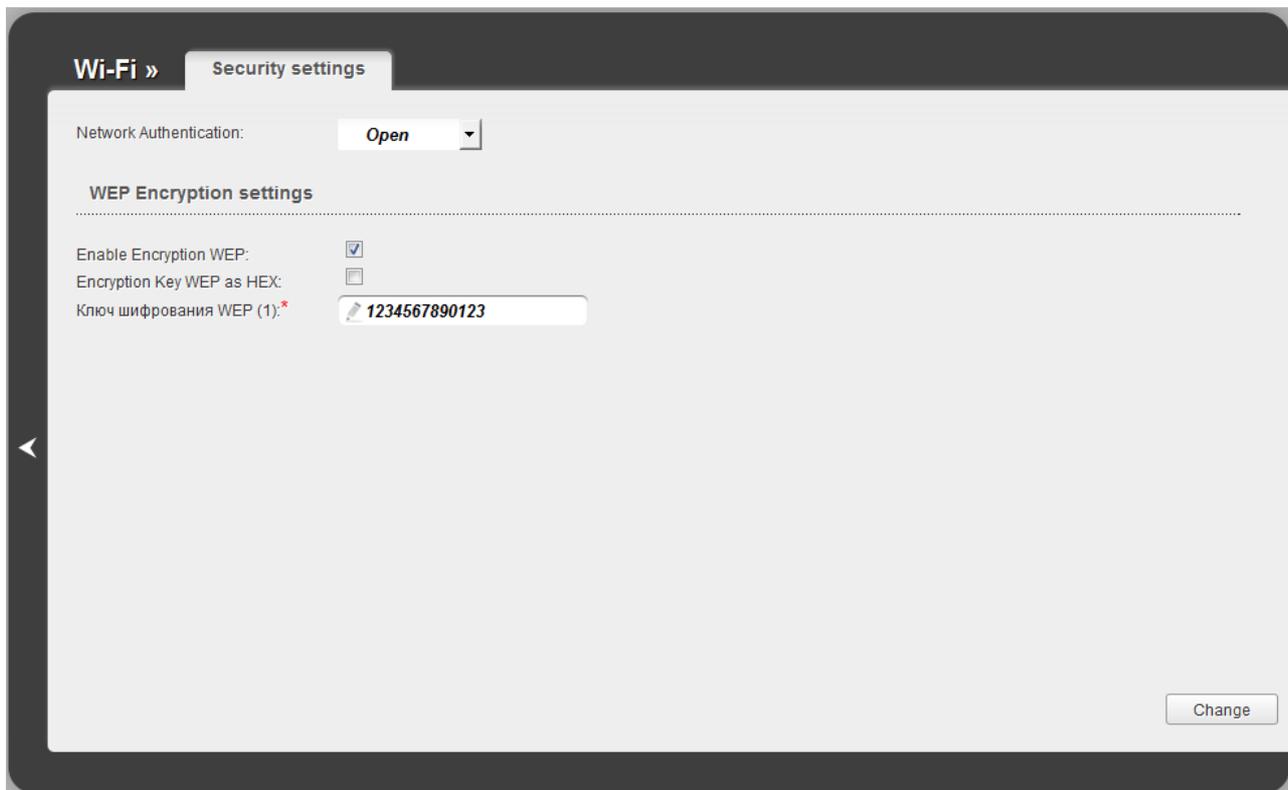
*Figure 76. The **Open** value is selected from the **Network Authentication** drop-down list.*

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

When the **WPA-PSK** or **WPA2-PSK** value is selected, the **WPA Encryption settings** section is displayed:
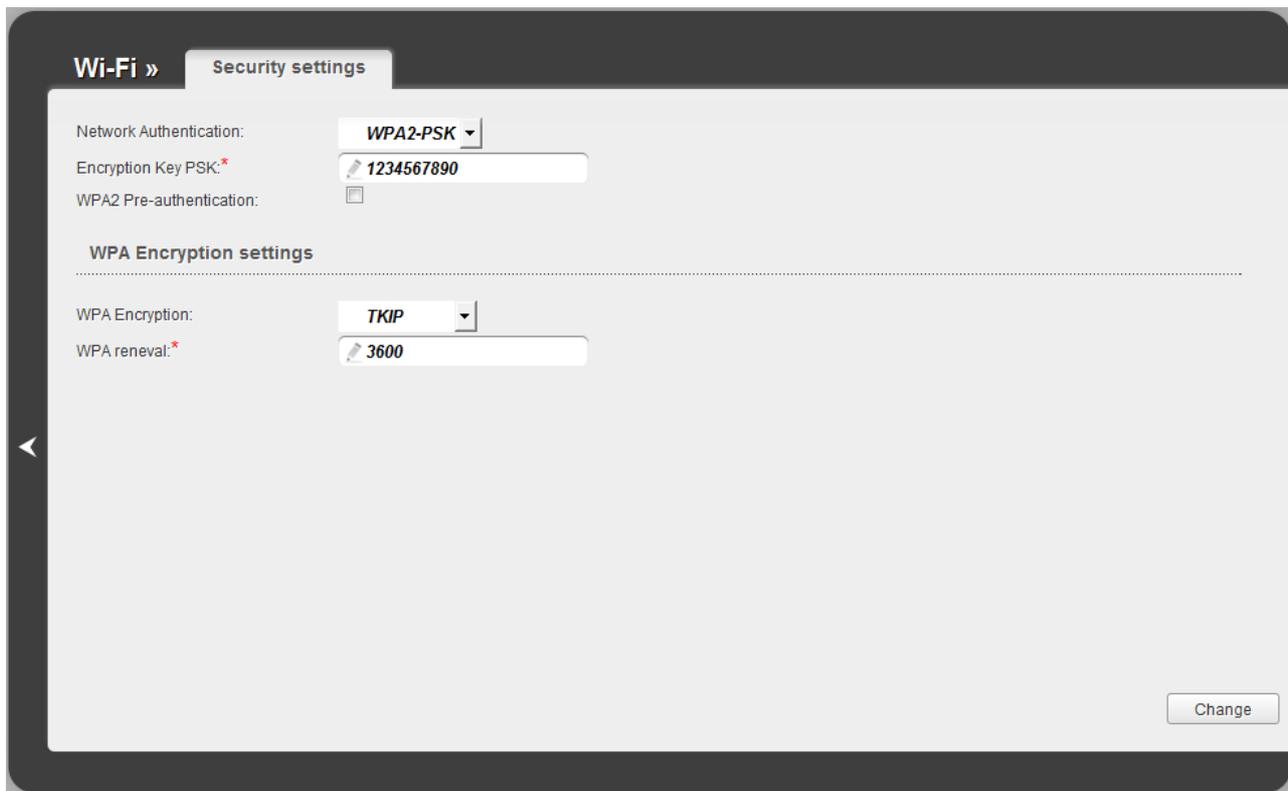
*Figure 77. The **WPA2-PSK** value is selected from the **Network Authentication** drop-down list.*

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.
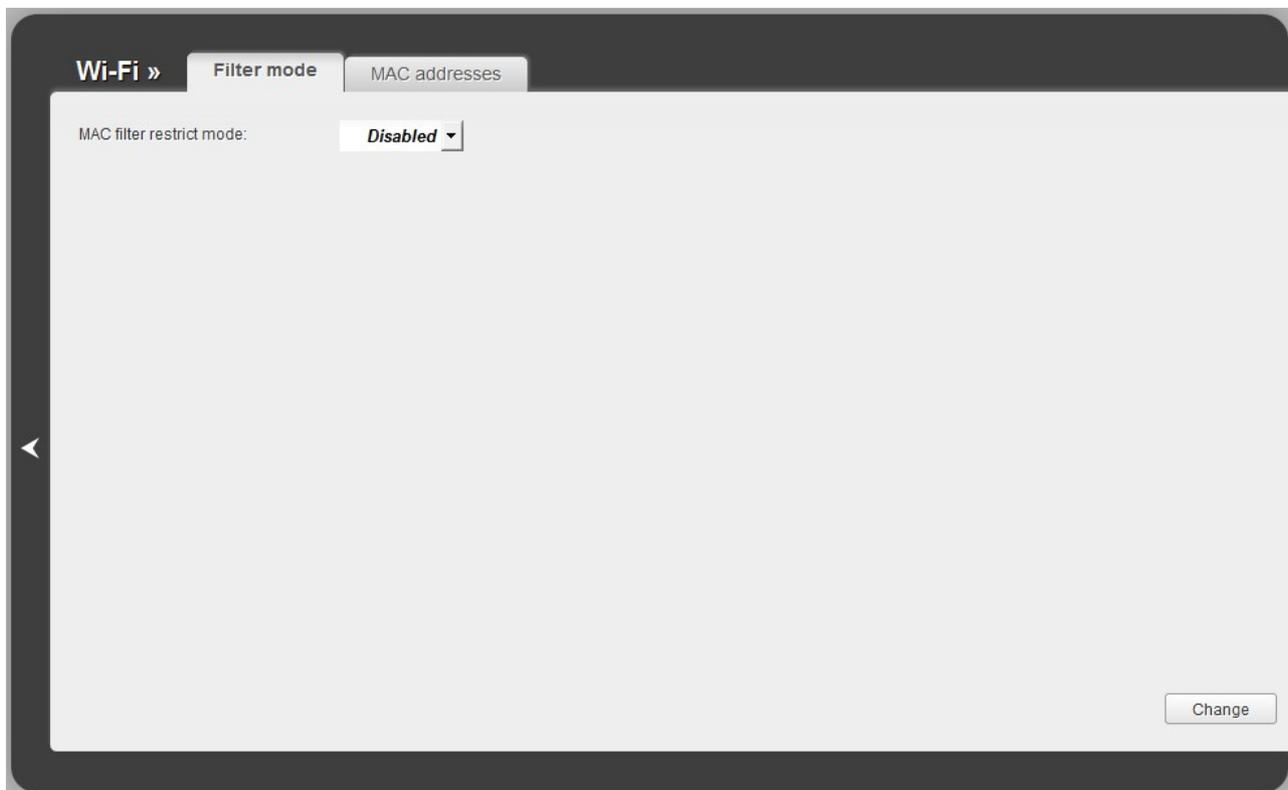
Figure 78. The MAC filter for the wireless network.

By default, MAC filtering is not active (the **Disabled** value is selected from the **MAC filter restrict mode** drop-down list 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** value from the **MAC filter restrict mode** drop-down list 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** value from the **MAC filter restrict mode** drop-down list 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.
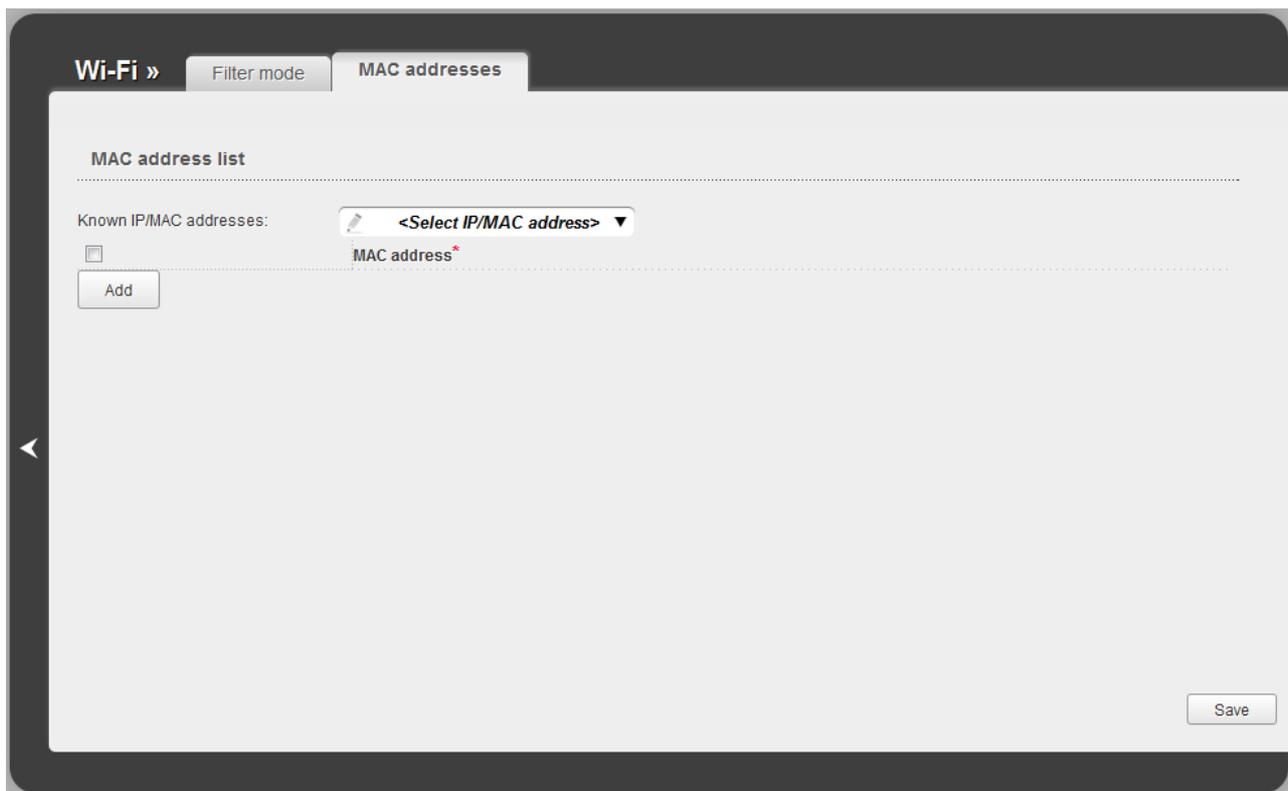
Figure 79. The tab for adding a MAC address.

Click the **Add** button and enter an address in the field displayed. Also you can enter the MAC address of a device connected to the router's LAN at the moment. To do this, select the relevant device from the **Known IP/MAC addresses** drop-down list (the field will be filled in automatically). Then click the **Save** button.

To remove a MAC address from the list of MAC addresses, select the checkbox located to the left of the relevant MAC address and click the **Save** button.

Station List

On the **Wi-Fi / Station List** page, you can view the list of wireless clients connected to the router.
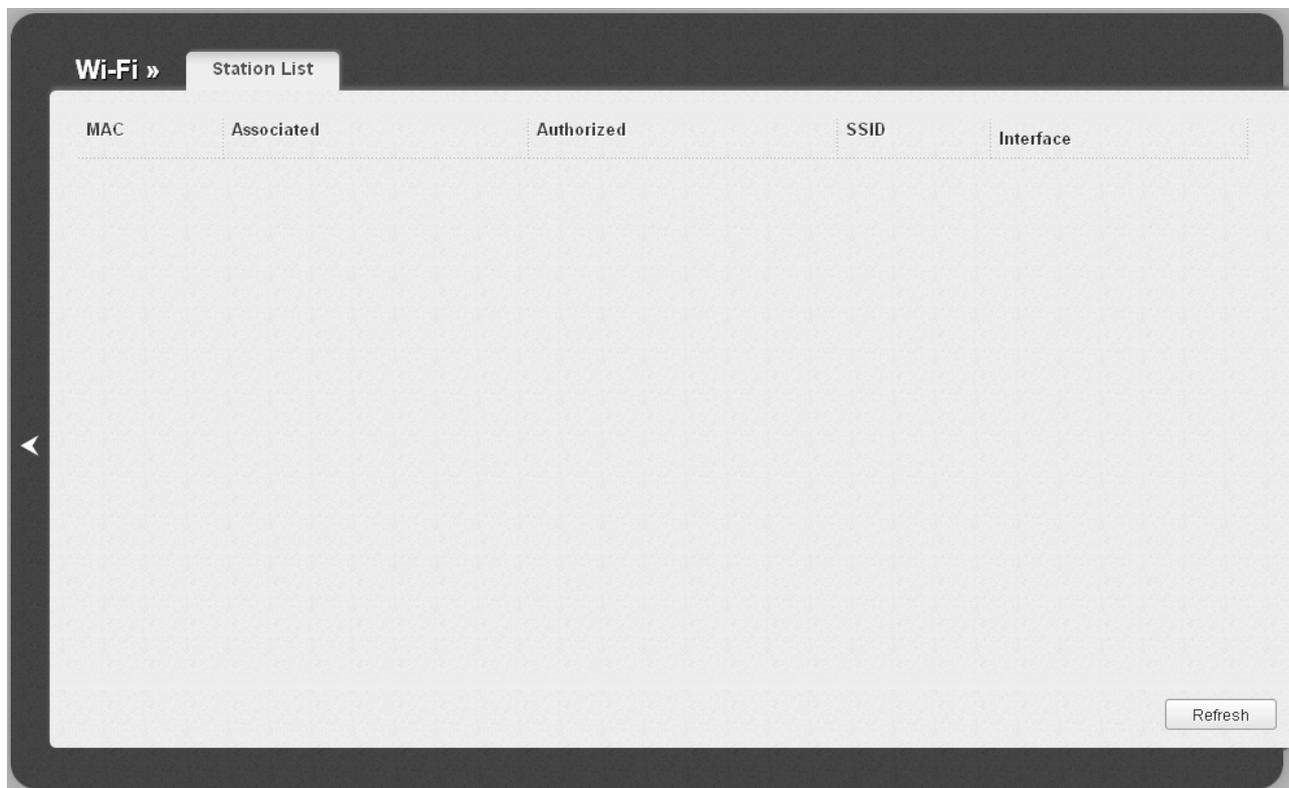
Figure 80. The list of the router's wireless clients.

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

WPS

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

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

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

Figure 81. The page for configuring the WPS function.

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

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

Using WPS Function via Web-based Interface

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

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

2. Click the **Change** button.

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

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

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

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

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

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

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

2. Click the **Change** button.

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

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

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

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

Using WPS Function without Web-based Interface

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

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

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

3. Click the **Change** button.

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

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

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

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

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

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

Additional Settings

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

! <u>Changing parameters presented on this page may negatively affect your WLAN!</u>
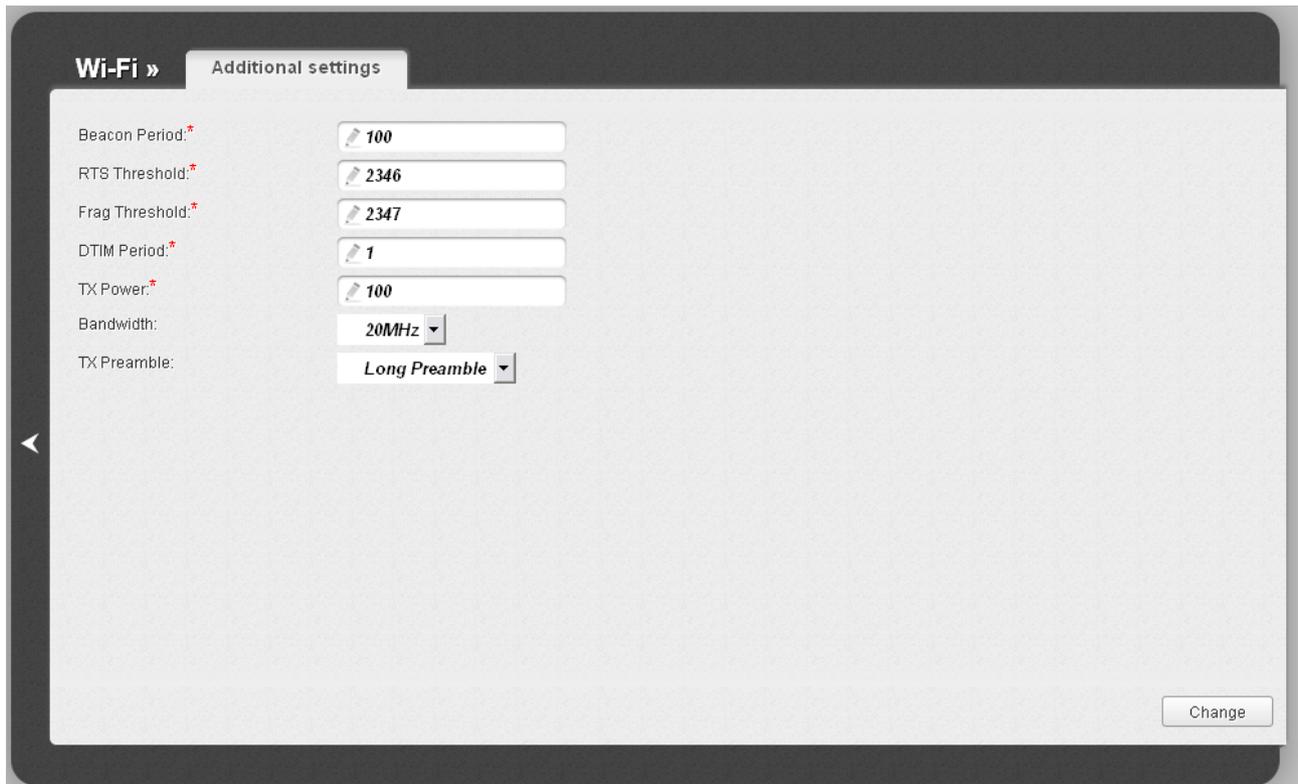
Figure 82. Additional settings of the WLAN.

The following fields are available on the page:

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

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

Advanced

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

- enable the UPnP function

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

- configure a DDNS service

- add name servers

- define static routes

- edit the ADSL connection parameters

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

- configure TR-069 client.

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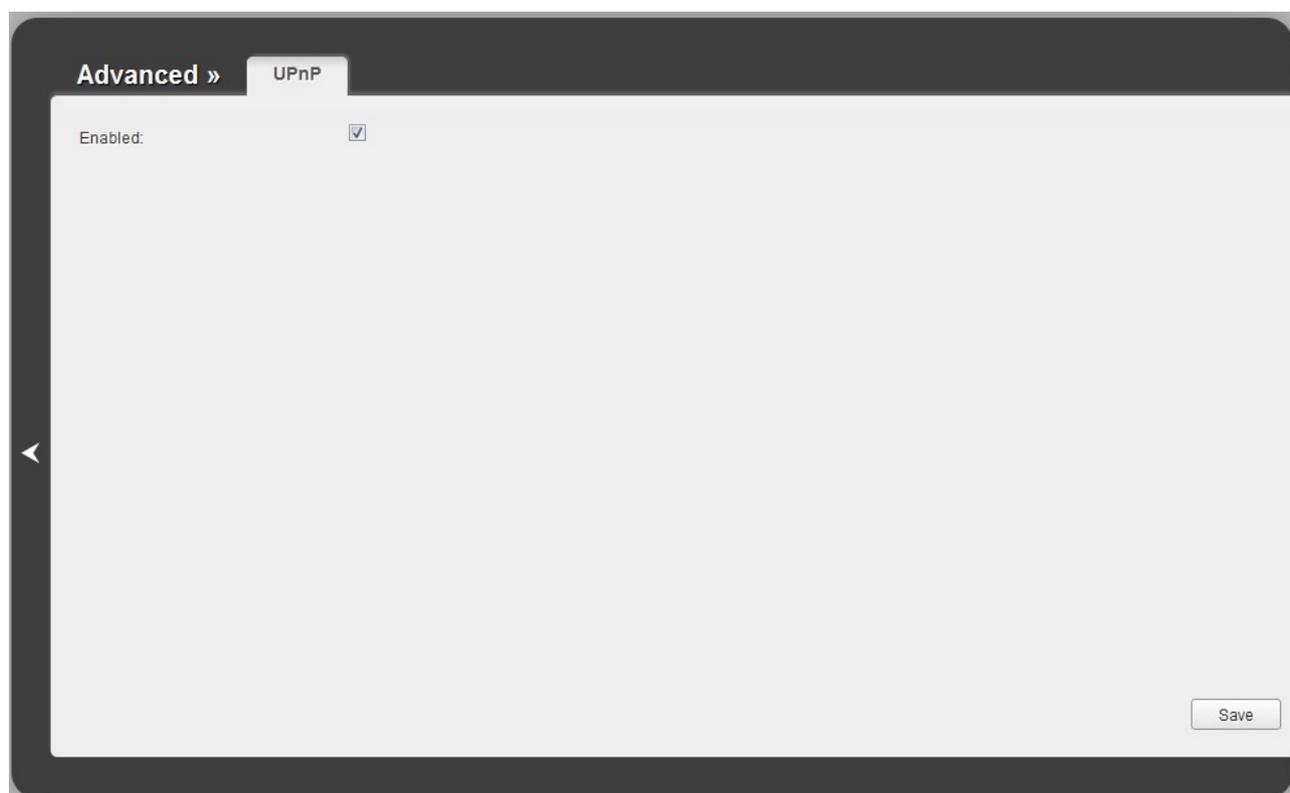
*Figure 83. The **Advanced / UPnP** page.*

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

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

Interface Grouping

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

> **!** The Ethernet WAN function allows using any Ethernet port of the router to access the Internet via Ethernet technology. When the function is enabled, the router is still able to access the Internet via VDSL and ADSL technologies.

*Figure 84. The **Advanced / Interface grouping** page.*

To change the operating parameters of a LAN port of the router, place the mouse pointer on the relevant LAN port and click the **Setup speed and stream** line in the menu displayed (the line is not available if the LAN port is used as the WAN port).
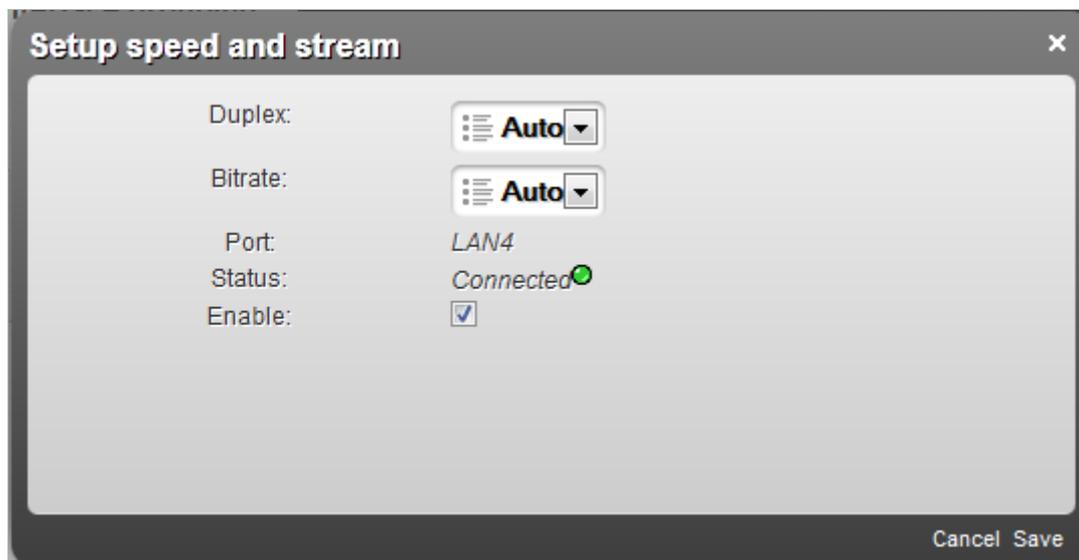
Figure 85. The page for changing parameters of the router's LAN port.

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

Parameter	Description
Duplex	Data transfer mode. This parameter defines the data transfer mode for a device connected to the selected LAN port of the router. • **Half** – half-duplex mode • **Full** – full-duplex mode. If you have selected the **Auto** value of this drop-down list, the router itself sets the data transfer mode.
Bitrate	Data speed (in bytes). If you have selected the **Auto** value of this drop-down list, the router itself sets the data speed.
Port	The name of the LAN port.
Status	The state of the router's LAN port. • **Connected** (green light): the port is used (a device is connected to the port of the router, the connection is on). • **Disconnected** (red light): the port is not used.
Enable	Select the checkbox if you want to enable the LAN port.

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

1. Place the mouse pointer on the router's LAN port that will be used as the WAN port and click the **Make WAN** line in the menu displayed.

2. On the opened page, select the needed value from the **Ethernet WAN type** drop-down list.

   • **Single service over one connection**: if you need to assign one WAN connection to the created Ethernet WAN interface.

   • **VLAN MUX Mode**: if you need to assign one or more tagged VLAN connections or several untagged connections to the created Ethernet WAN interface.

3. Click the **Save** link.

If in the future you need to disconnect the LAN port from the private Ethernet line, on the **Advanced / Interface grouping** page, place the mouse pointer on the port that is used as the WAN port and click the **Default** line in the menu displayed. Then click the **Save** button.

To create a new rule for interface grouping (a group of ports), click the **Add group** button (the button is not displayed if there is no WAN connection in the system).
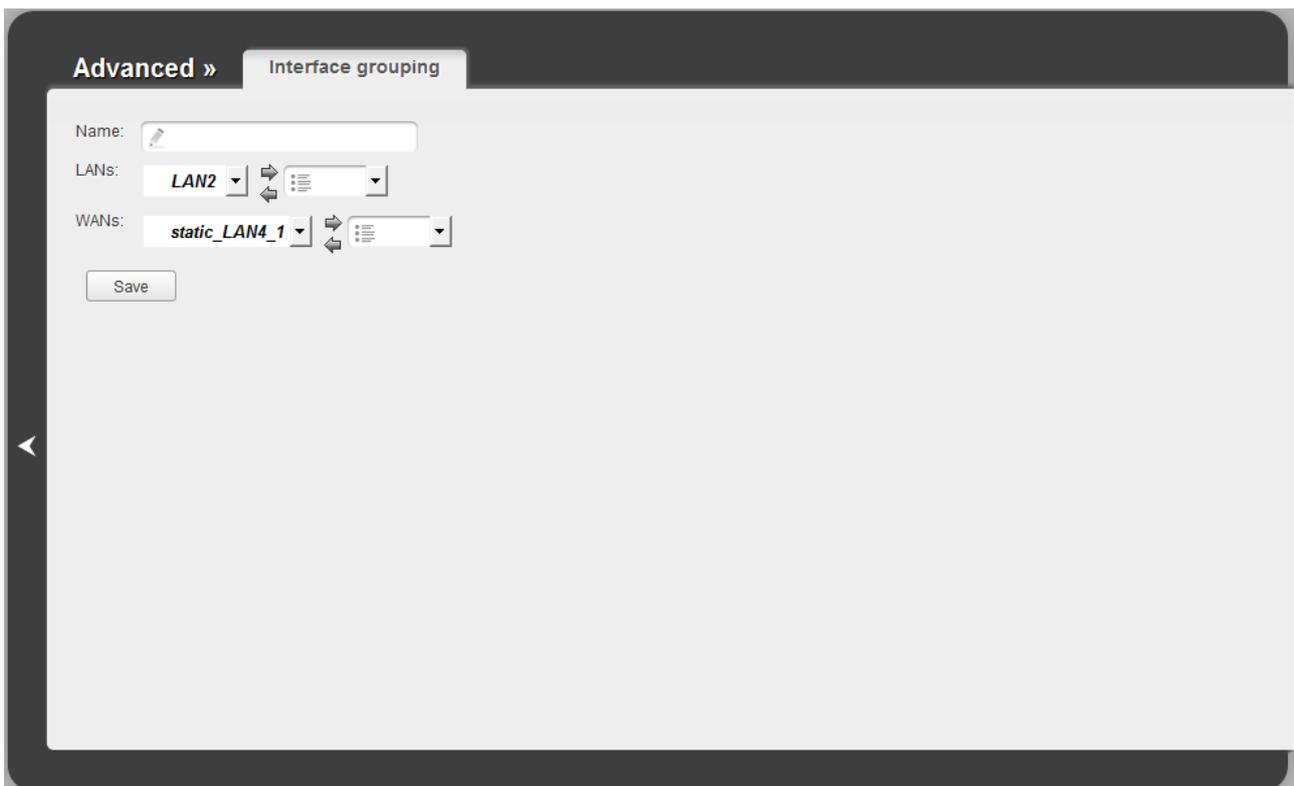
Figure 86. The page for adding a new group of ports.

You can specify the following parameters:

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

Click the **Save** button.

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

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

DDNS

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

*Figure 87. The **Advanced / DDNS** page.*

To add a new DDNS service, click the **Add** button. In the line displayed, 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.

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

To edit parameters of the existing DDNS service, select a needed field in the relevant line of the table, change its value, and click the **Save** button.

To remove an existing DDNS service, select the checkbox located to the left of the relevant line in the table and click the **Save** button.

DNS

On the **Advanced / DNS** page, you can add DNS servers to the system.
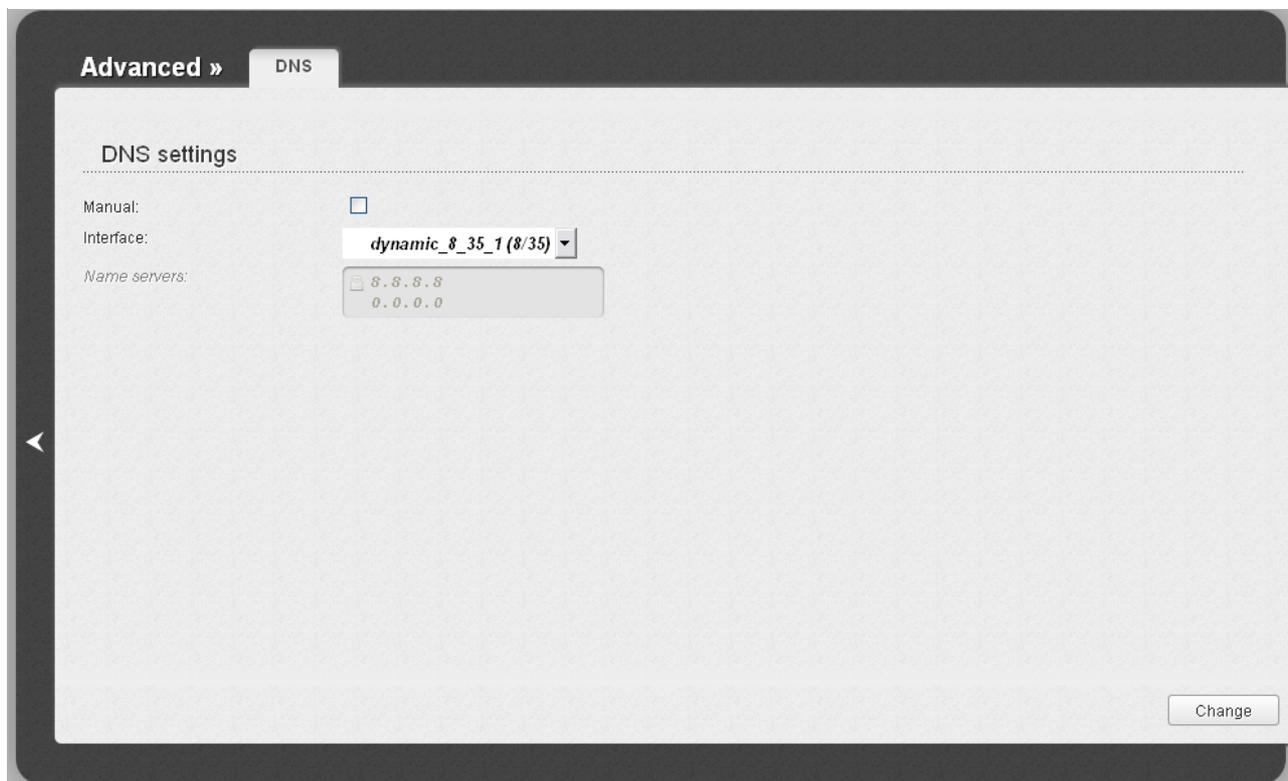
*Figure 88. The **Advanced / DNS** page.*

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

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

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

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

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

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

Routing

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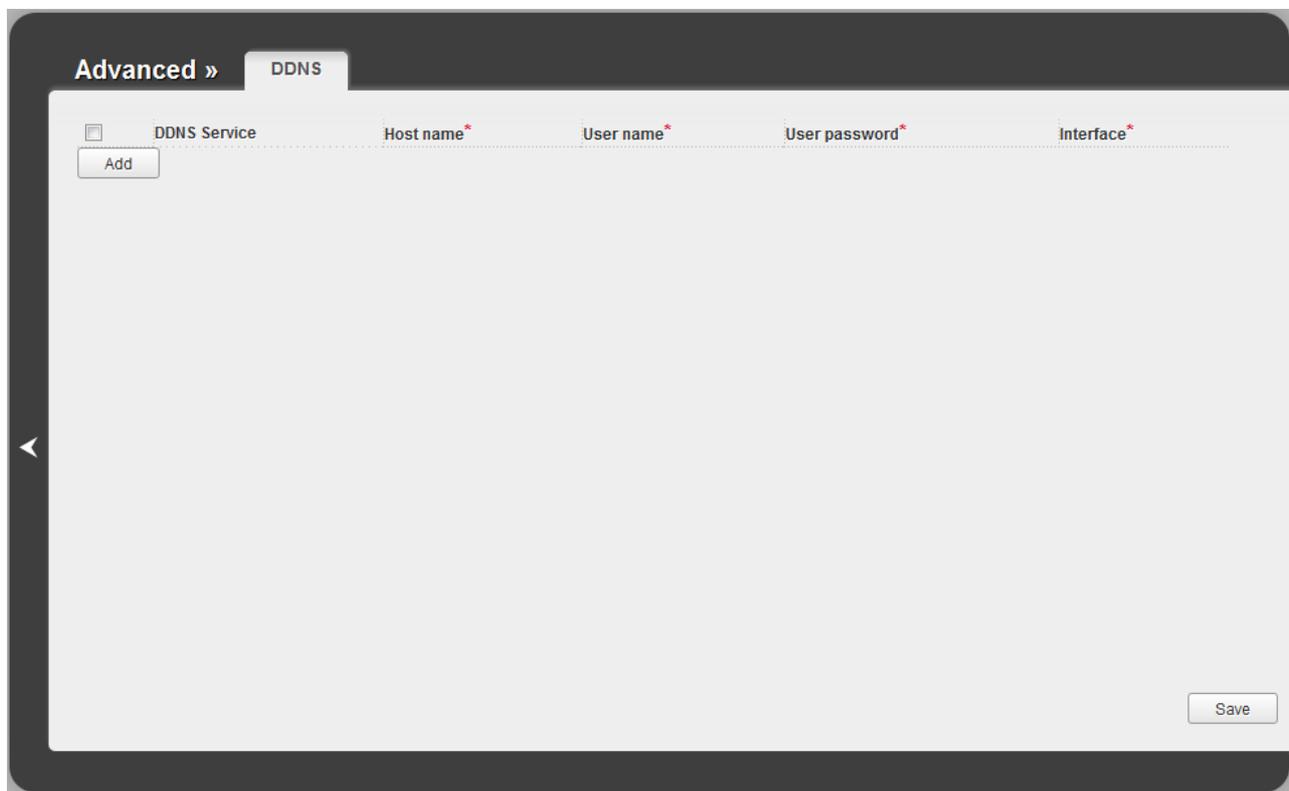

*Figure 89. The **Advanced / Routing** page.*

To create a new route, click the **Add** button. In the line displayed, 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 available when the **<Auto>** value is selected from the **Via Interface** drop-down list of this line.
Metric	A metric for the route. The lower the value, the higher is the route priority. *Optional*.
Via Interface	Select an interface (connection) through which the destination network can be accessed from the drop-down list. If you have selected the **<Auto>** value of this drop-down list, the router itself sets the interface on the basis of data on connected networks.

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

To edit an existing route, select a needed field in the relevant line of the table, change its value, and click the **Save** button.

To remove an existing route, select the checkbox located to the left of the relevant line in the table and click the **Save** button.

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

ADSL

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

*Figure 90. The **Advanced / ADSL** page.*

Remote Access

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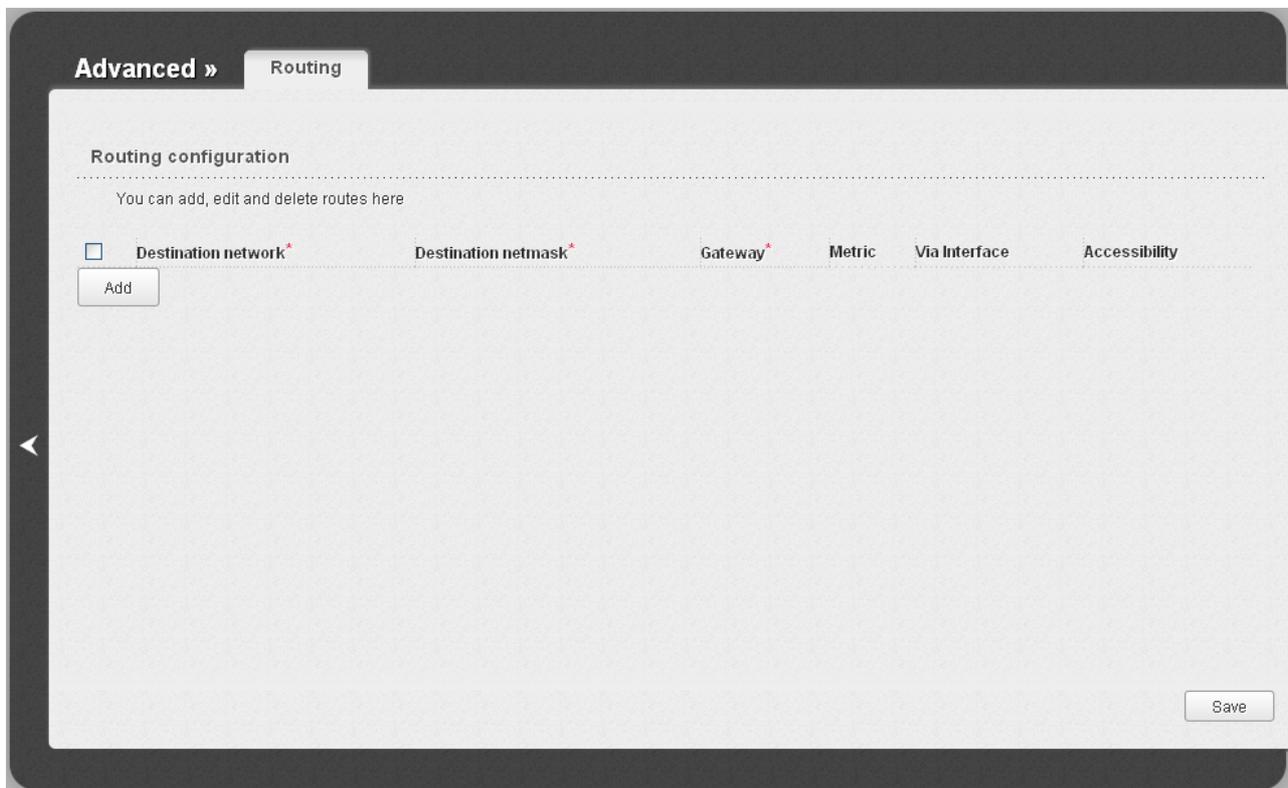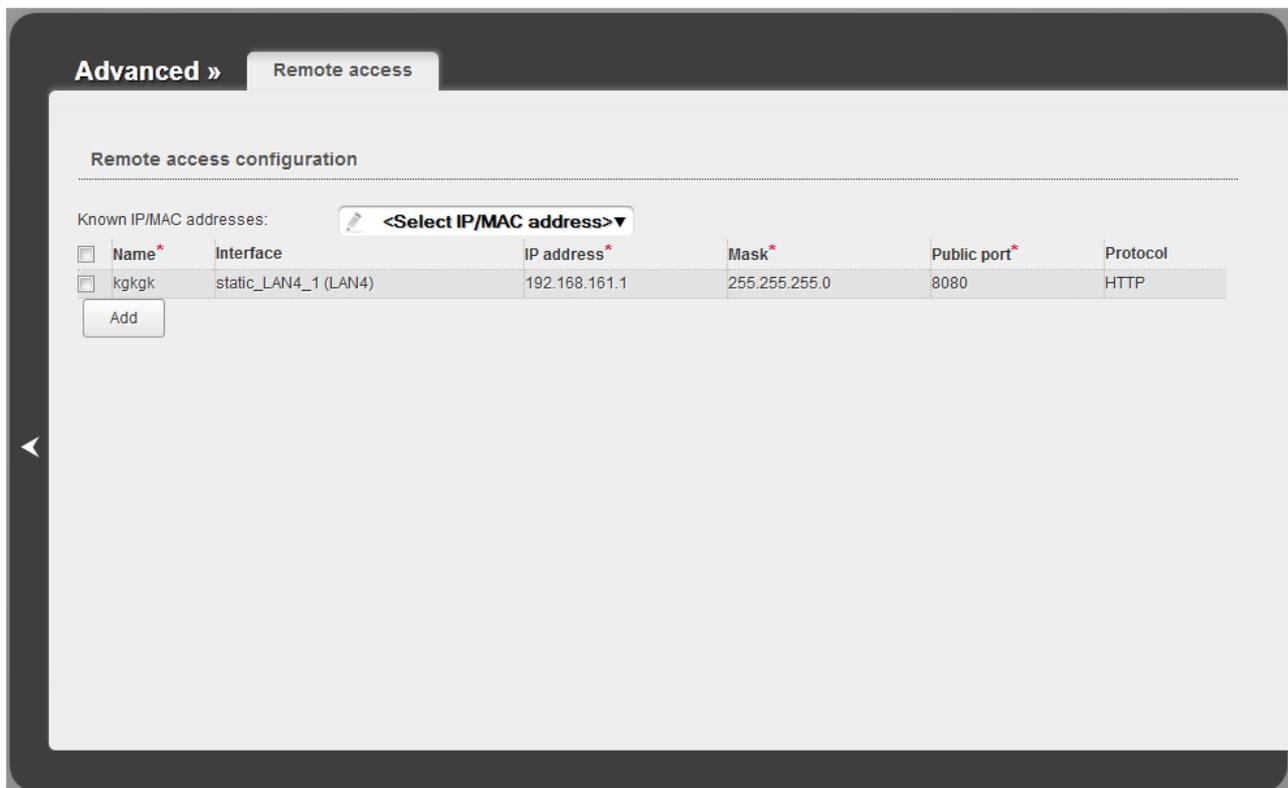

*Figure 91. The **Advanced / Remote access** page.*

To create a new rule, click the **Add** button. In the line displayed, you can specify the following parameters:

Parameter	Description
Name	A name for the rule for easier identification. You can specify any name.
Interface	A connection through which the web-based interface of the router is accessed.
IP address	A host or a subnet to which the rule is applied.
Mask	The mask of the subnet.
Public port	An external port of the router. You can specify only one port. The field is available when the **HTTP** value is selected from the **Protocol** drop-down list.
Protocol	The protocol available for remote management of the router.

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

To edit a rule for remote access, select a needed field in the relevant line of the table, change its value, and click the **Save** button.

To remove a rule for remote access, select the checkbox located to the left of the relevant line in the table and click the **Save** button.

TR-069 Client

On the **Advanced / TR-069 Client** page, you can configure the router for communication with a remote Auto Configuration Server (ACS).

The TR-069 client is used for remote monitoring and management of the device.

Figure 92. The page for configuring the TR-069 client.

You can specify the following parameters:

Parameter	Description
Interface	The interface which the router uses for communication with the ACS. You can select the local interface (the **LAN** value), any existing WAN connection (the **ANY WAN** value) or one WAN connection.
Inform settings	
Enable	Select the checkbox so the router may send reports (data on the device and network statistics) to the ACS.
Interval	Specify the time period (in minutes) between sending reports.
Auto Configuration Server settings	
URL address	The URL address of the ACS provided by the ISP.

Parameter	Description
User name	The username to connect to the ACS. The username can contain digits, Latin letters (uppercase and/or lowercase), and characters available on the keyboard.
Password	The password to connect to the ACS. The password can contain digits, Latin letters (uppercase and/or lowercase), and characters available on the keyboard.
Connection settings	
User name	The username which the ACS uses to connect to the router. The username can contain digits, Latin letters (uppercase and/or lowercase), and characters available on the keyboard.
Password	The password which the ACS uses to connect to the router. The password can contain digits, Latin letters (uppercase and/or lowercase), and characters available on the keyboard.

When you have configured the parameters, 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 Port Triggering function

- configure the MAC filter.

IP Filters

On the **Firewall / IP filters** page, you can create new rules for filtering IP packets and edit or remove existing rules.
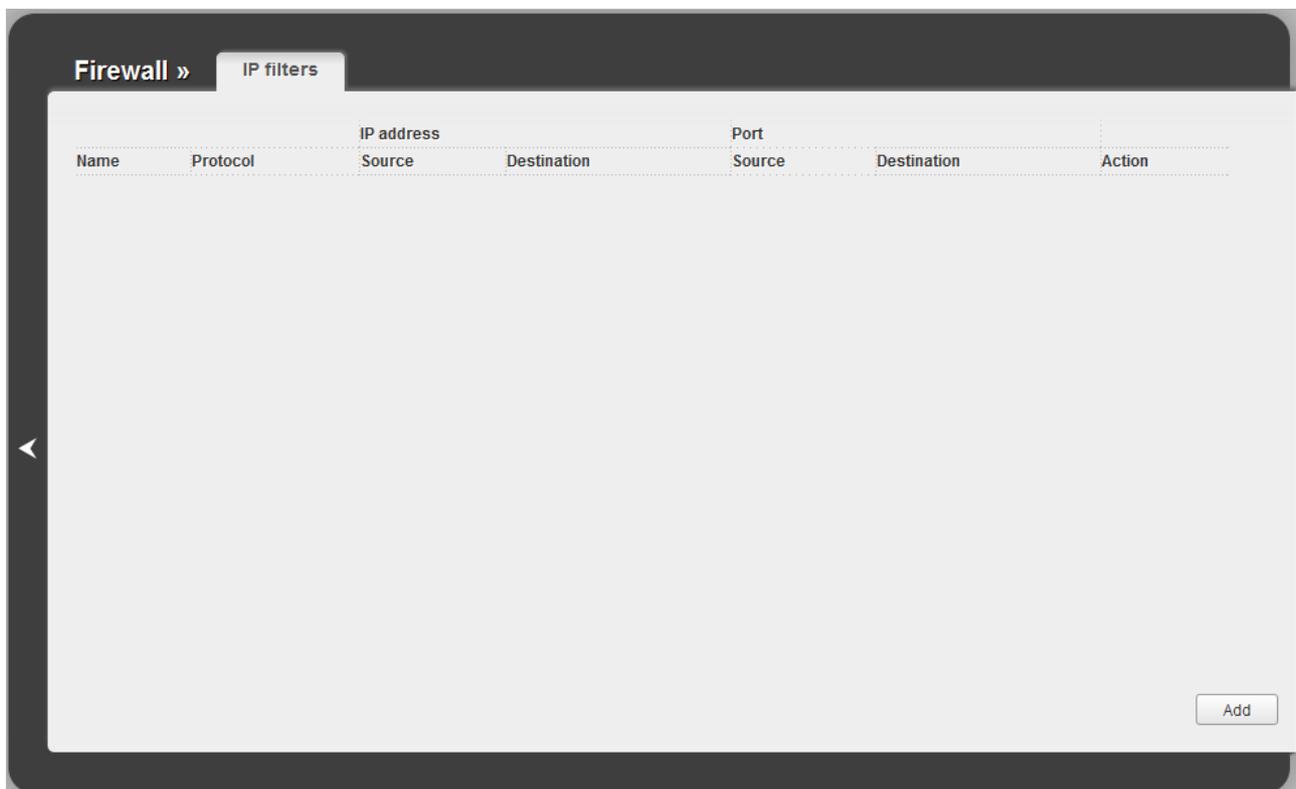
*Figure 93. The **Firewall / IP filters** page.*

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

Figure 94. The page for adding a rule for IP filtering.

You can specify the following parameters:

Parameter	Description
General	
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	

Parameter	Description
Source IP address	The source host/subnet IP address. 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). If you want to specify a range of IP addresses, click the **Range** icon ( ) and enter the starting and ending addresses in the left and right fields correspondingly.
Destination IP address	The destination host/subnet IP address. 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). If you want to specify a range of IP addresses, click the **Range** icon ( ) and enter the starting and ending addresses in the left and right fields correspondingly.
Ports	
Source port	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 port	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 **Save** button.

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

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

To remove all rules from this page, click the **Clear all** button (the button is displayed if at least one rule exists).

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.
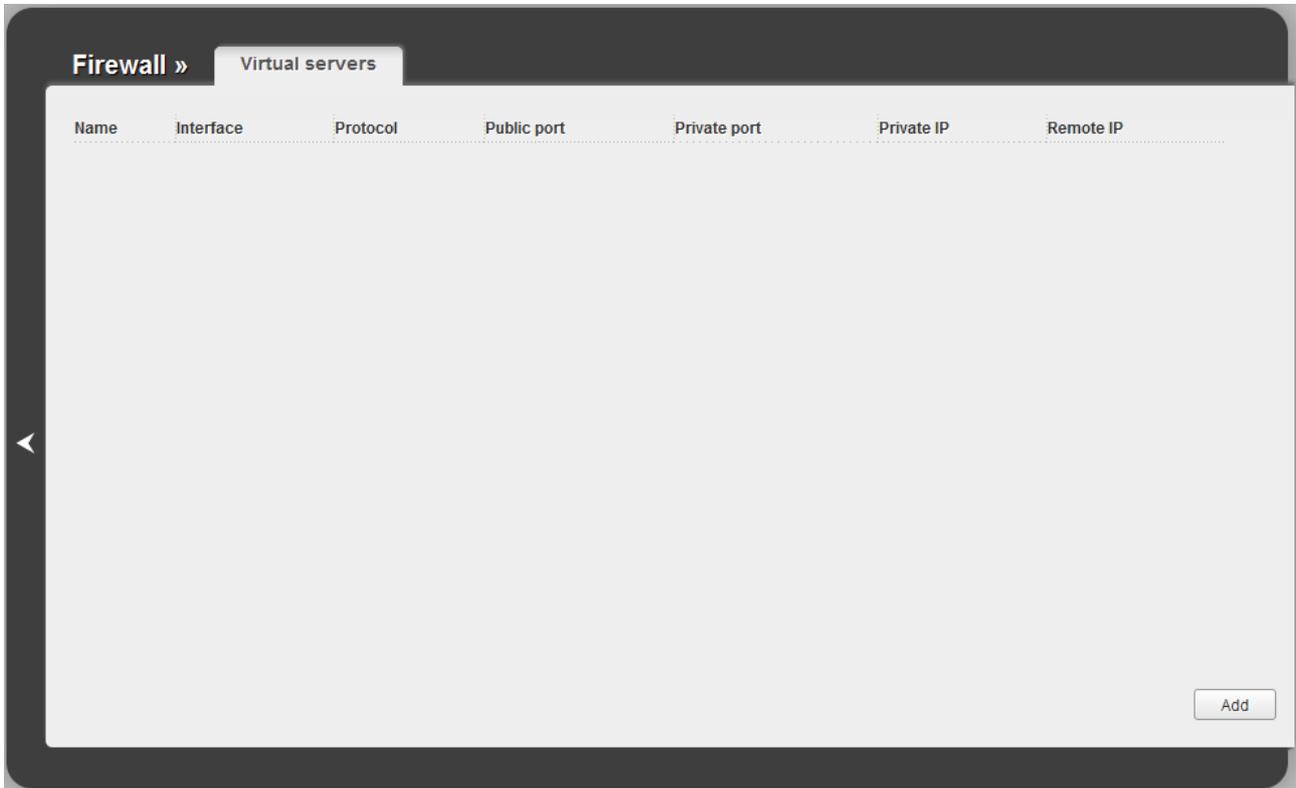
*Figure 95. The **Firewall / Virtual servers** page.*

To create a new virtual server, click the **Add** button.
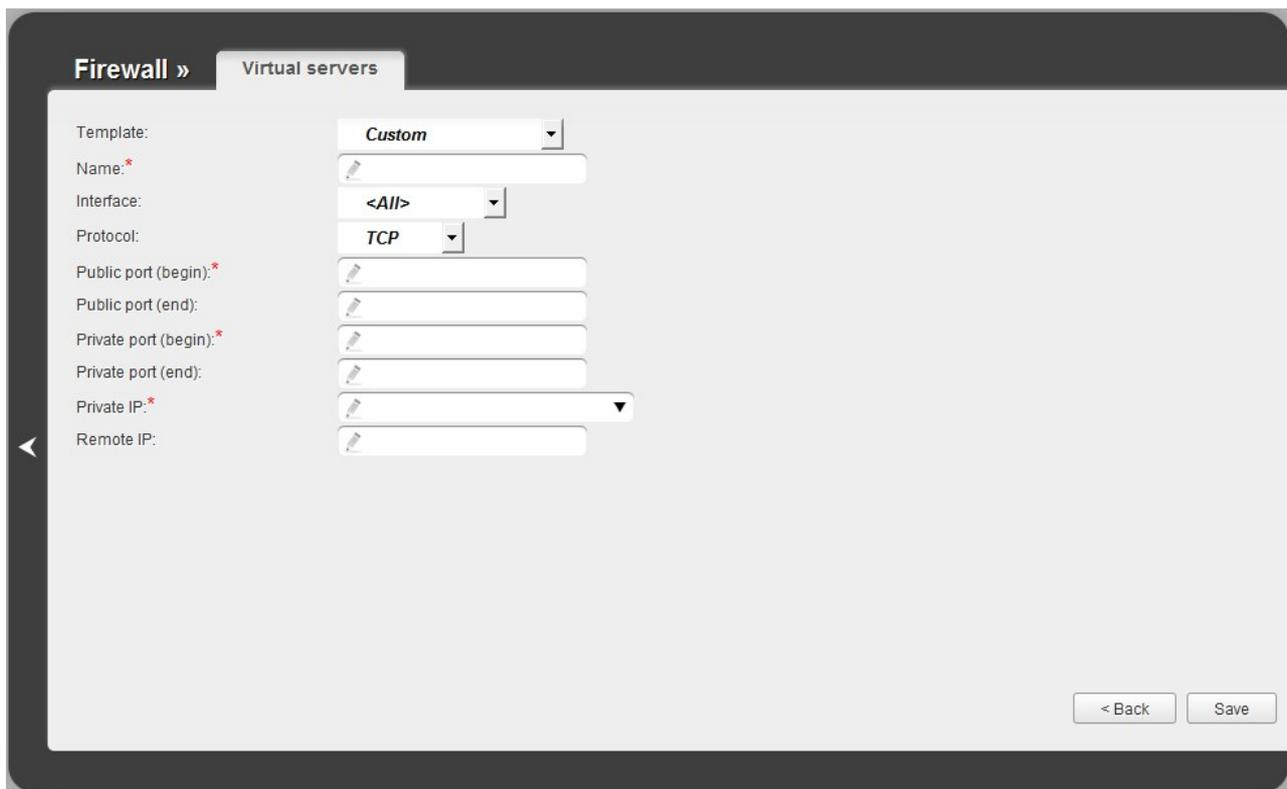
Figure 96. The page for adding a virtual server.

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 **Save** button.

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

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

To remove all servers from this page, click the **Clear all** button (the button is displayed if at least one server exists).

DMZ

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

On the **Firewall / DMZ** page you can specify the IP address of the DMZ host.
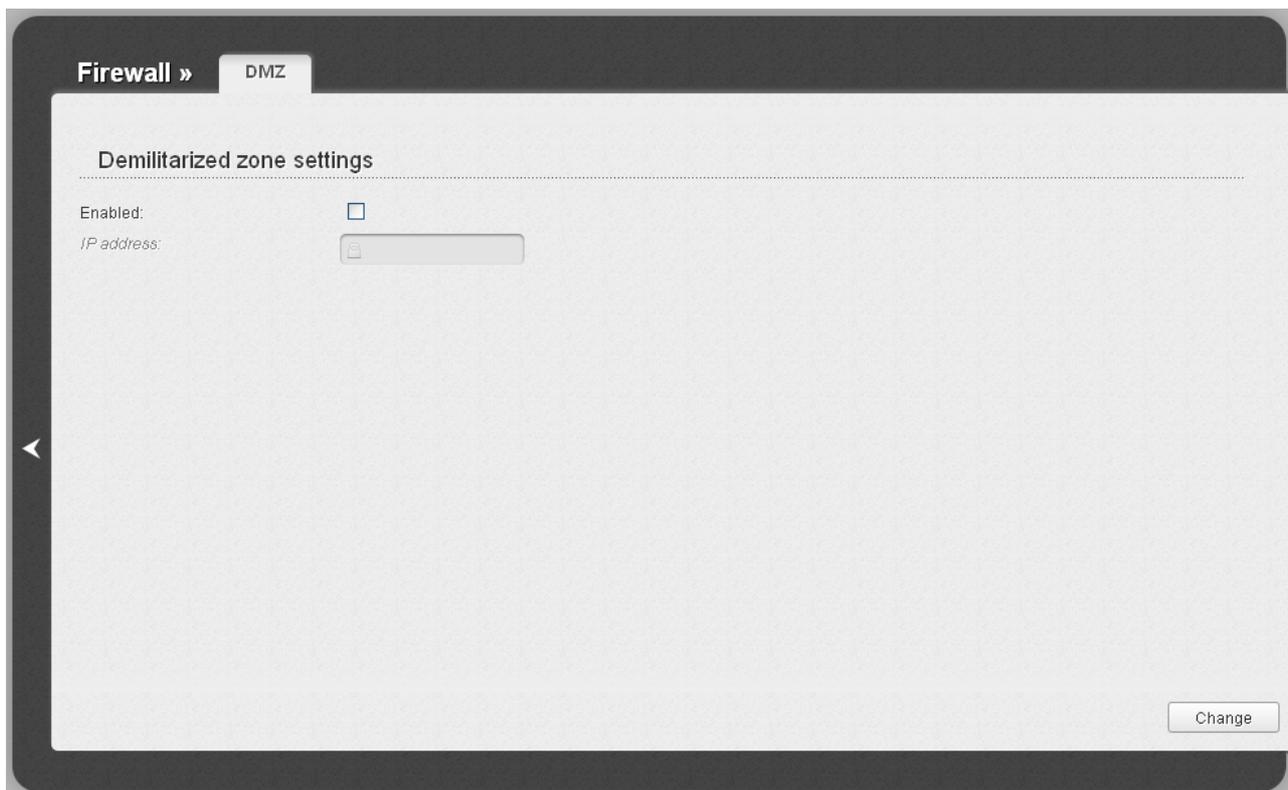
*Figure 97. The **Firewall / DMZ** page.*

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.

Application Rules

On the **Firewall / Application rules** page, you can define rules for the Port Triggering function.
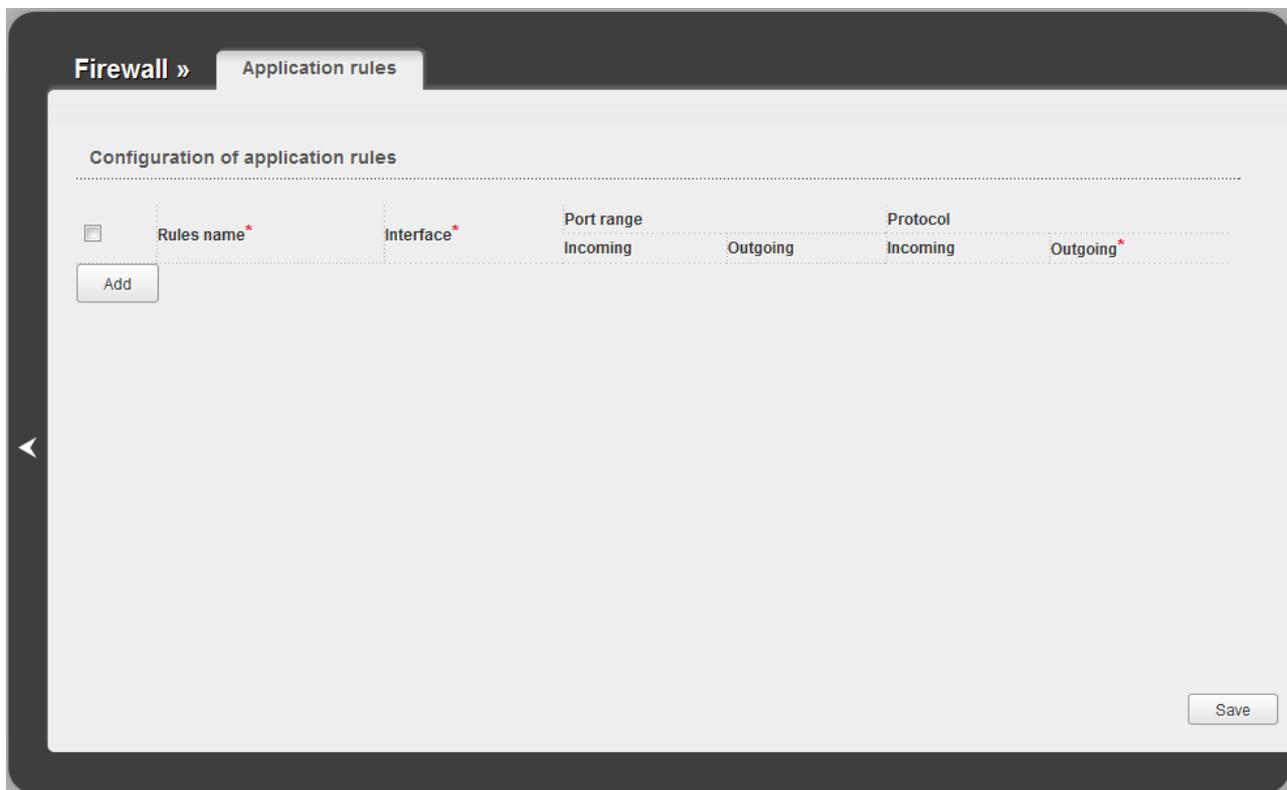
*Figure 98. The **Firewall / Application rules** page.*

To add a new rule for the Port Triggering function, click the **Add** button. In the line displayed, you can specify the following parameters:

Parameter	Description
Rules name	A name for the rule for easier identification.
Interface	A WAN connection to which this rule will be assigned.
Port range	
Incoming	A range of the router's ports which will be open to receive data from the external network (incoming traffic). Specify the start and the end value for the port range.
Outgoing	A range of the router's ports from which data are transferred to the external network (outgoing traffic). Specify the start and the end value for the port range.
Protocol	
Incoming	A protocol to which this rule will be applied upon receiving data to the specified port range.

Parameter	Description
Outgoing	A protocol to which this rule will be applied upon transferring data from the specified port range.

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

To edit an existing rule for the Port Triggering function, select a needed field in the relevant line of the table, change its value, and click the **Save** button.

To remove an existing rule for the Port Triggering function, select the checkbox located to the left of the relevant line in the table and click the **Save** button.

MAC Filter

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

> ! MAC-address-based filtering is active only when the device is configured as a transparent bridge (the Bridge mode).
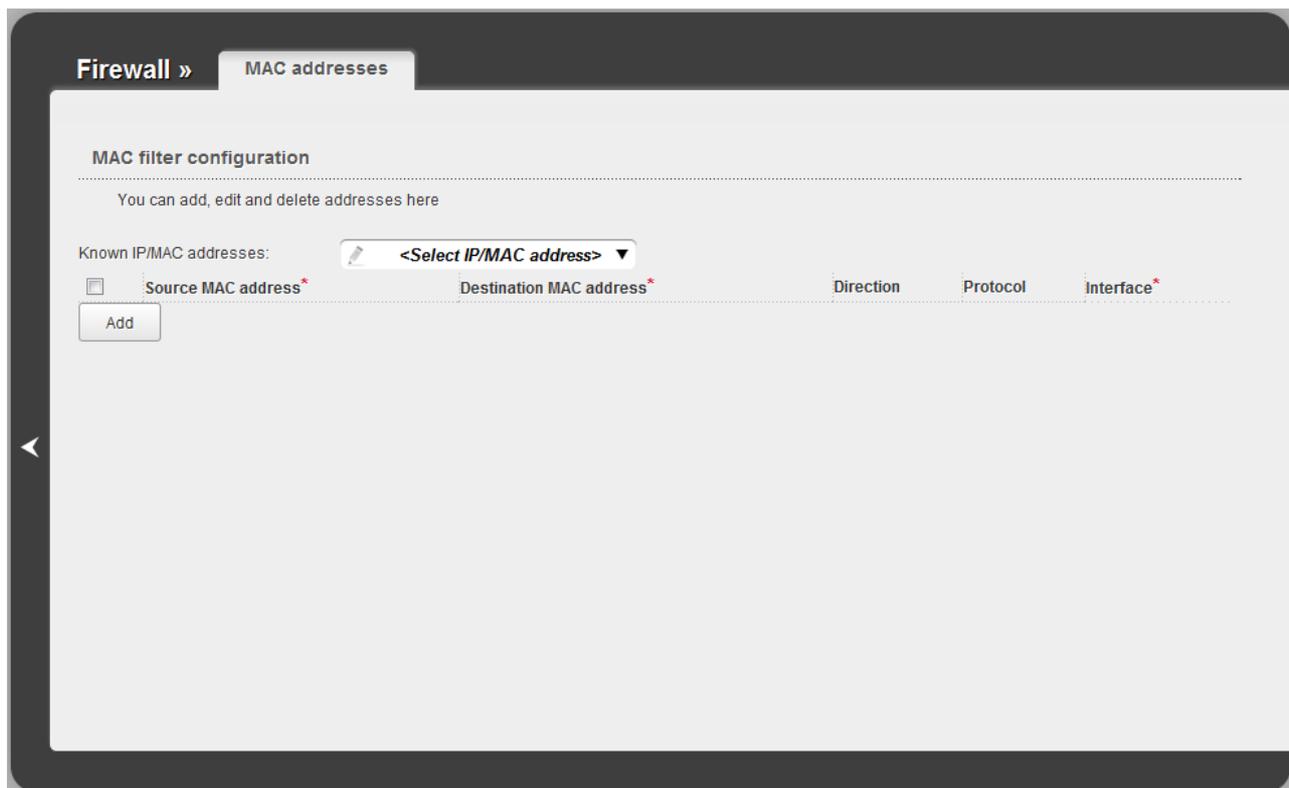
*Figure 99. The **Firewall / MAC filter** page.*

To create a new rule for filtering, click the **Add** button. In the line displayed, you can specify the following parameters:

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

Parameter	Description
Interface	Select a WAN connection (with the **Bridge** connection type only) for which the rule will be applied.

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

To edit a rule for filtering, select a needed field in the relevant line of the table, change its value, and click the **Save** button.

To remove a rule for filtering, select the checkbox located to the left of the relevant line in the table and click the **Save** button.

Control

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

Parent Control

On the **Control / Parent control** page, you can create rules restricting access to the Internet for computers with specified MAC addresses during particular time periods on particular days.
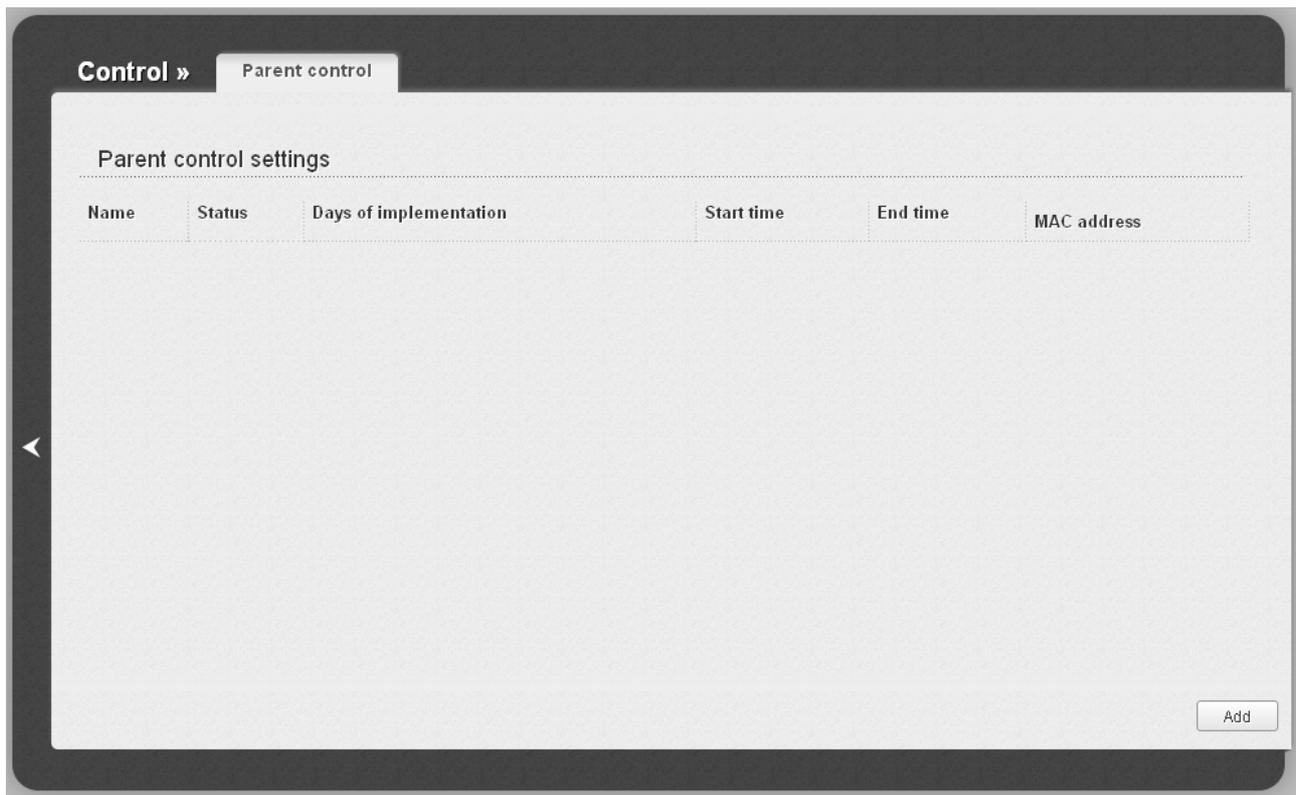
*Figure 100. The **Control / Parent control** page.*

Rules restricting access for computers with specified MAC addresses are presented as a table. To create a new rule, click the **Add** button.
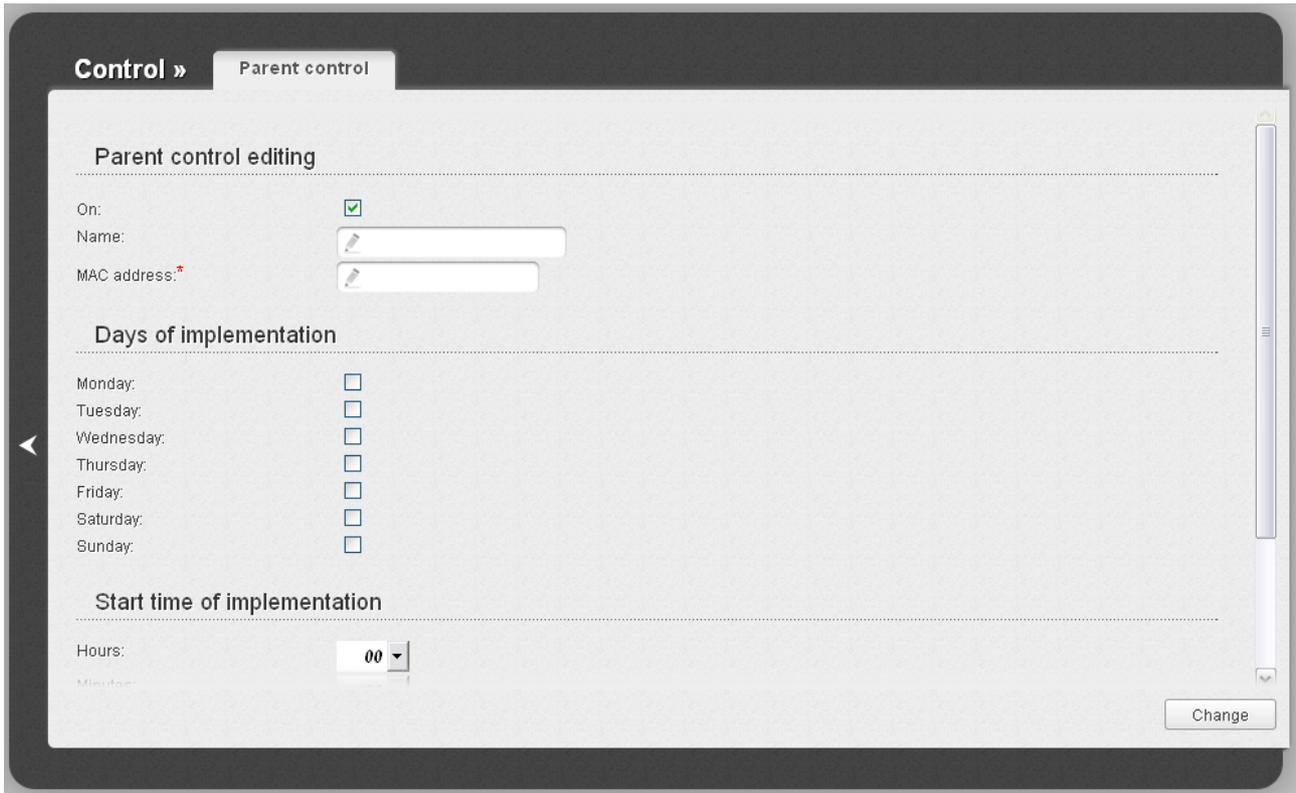
Figure 101. The page for adding a new parental control rule.

You can specify the following parameters:

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

Click the **Change** button.

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

URL Filter

On the **Control / URL filter** page, you can specify restrictions on access to certain web sites.
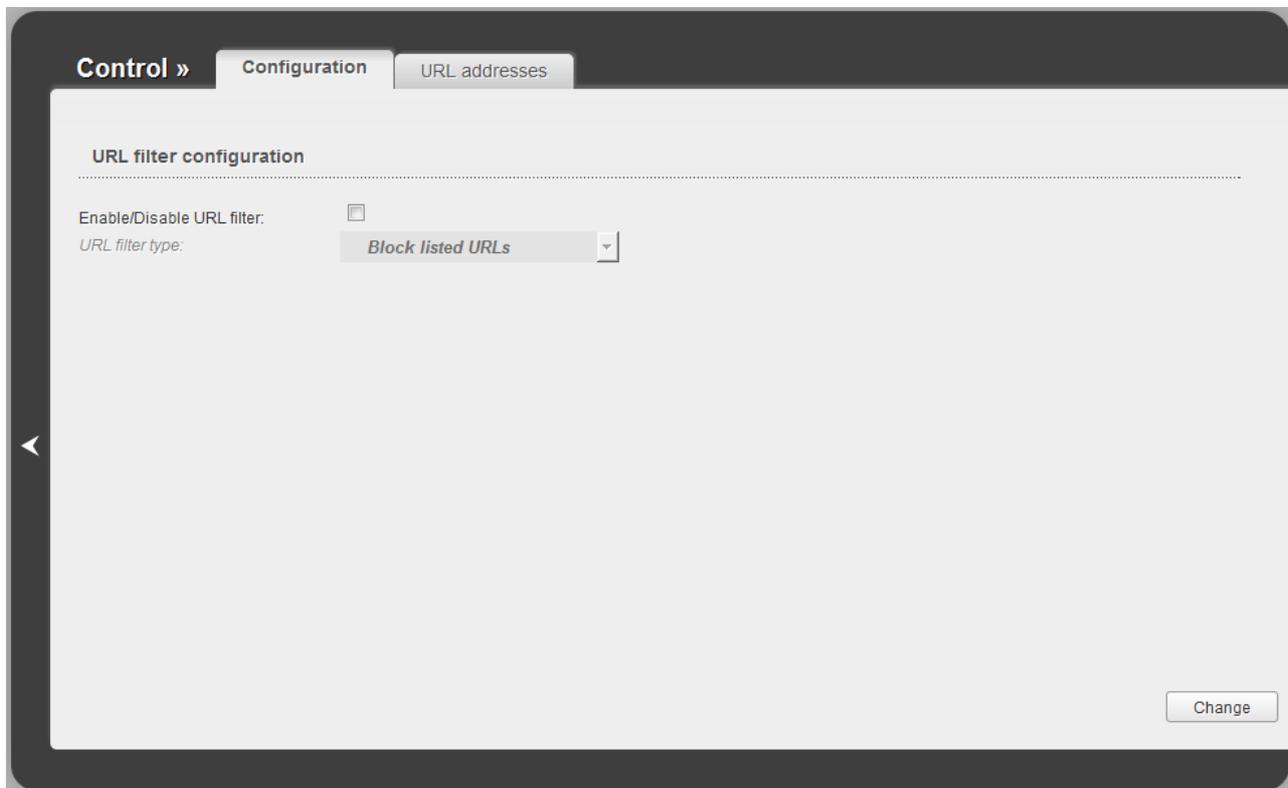
*Figure 102. The **Control / URL filter** page. The **Configuration** tab.*

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.
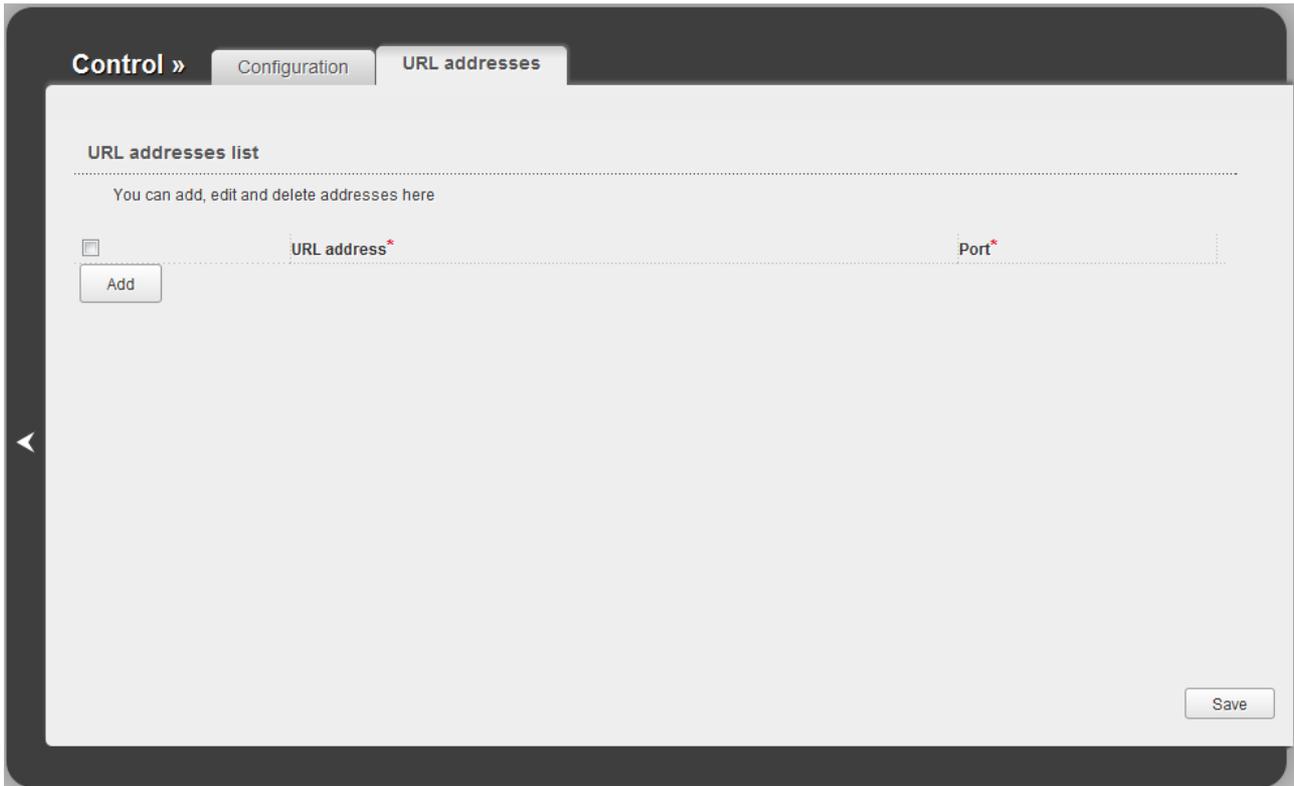
*Figure 103. The **Control / URL filter** page. The **URL addresses** tab.*

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

To remove an address from the list of URL addresses, select the checkbox located to the left of the relevant line in the table and click the **Save** 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 or manually configure the date and time for the router

- allow or forbid access to the router via TELNET.

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 104. 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.
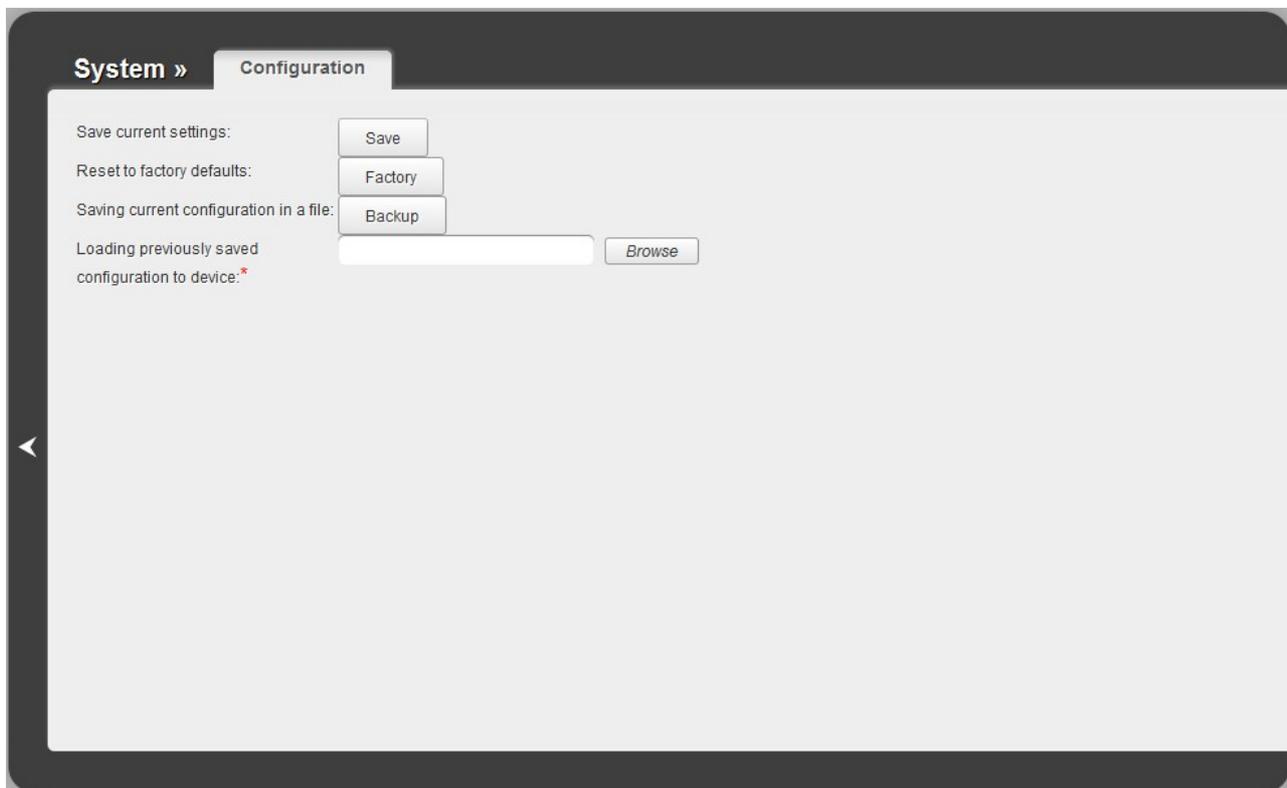
*Figure 105. The **System / Configuration** page.*

The following buttons are available on the page:

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

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.

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.
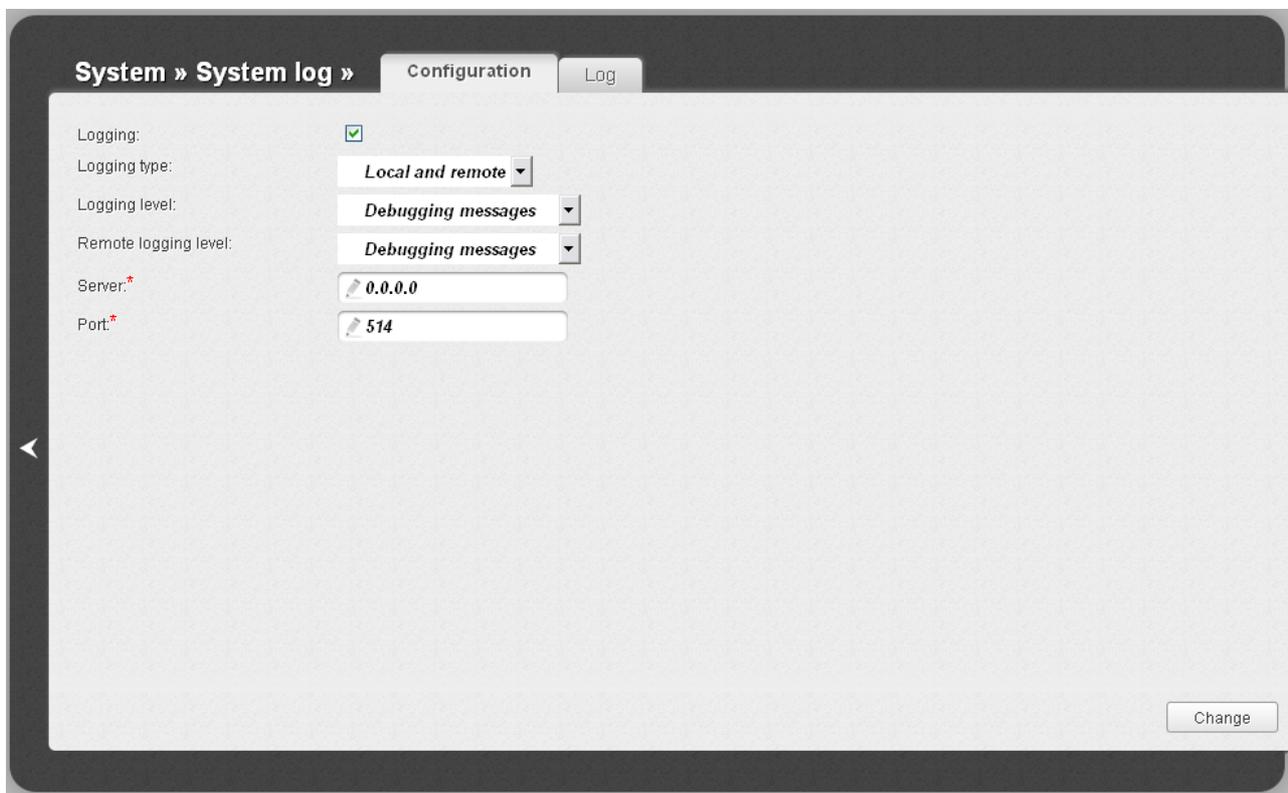
*Figure 106. The **System / System log** page. The **Configuration** tab.*

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.

Control	Description
Logging level	Select a type of messages and alerts/notifications to be stored locally in the router's memory. The field is available, when the **Local** or **Local and remote** value is selected from the **Logging type** drop-down list.
Remote logging level	Select a type of messages and alerts/notifications to be sent to the remote host specified in the **Server** field. The field is available, when the **Remote** or **Local and remote** value is selected from the **Logging type** drop-down list.
Server	The IP or URL address of the host from the local or global network, to which the system log will be sent.
Port	A port of the host specified in the **Server** field. By default, the value `514` is specified.

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

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

On the **Log** tab, the events specified in the **Logging level** list are displayed.
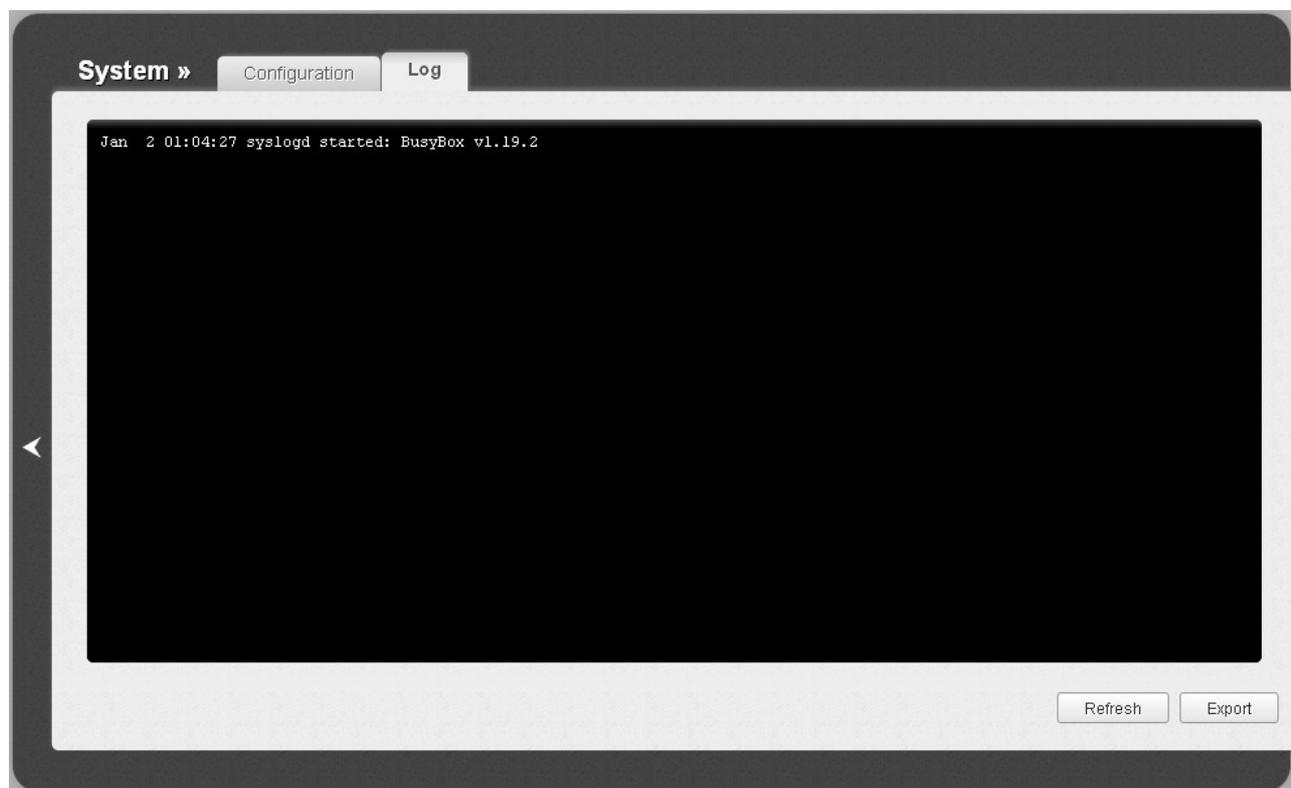
*Figure 107. The **System / System log** page. The **Log** tab.*

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.
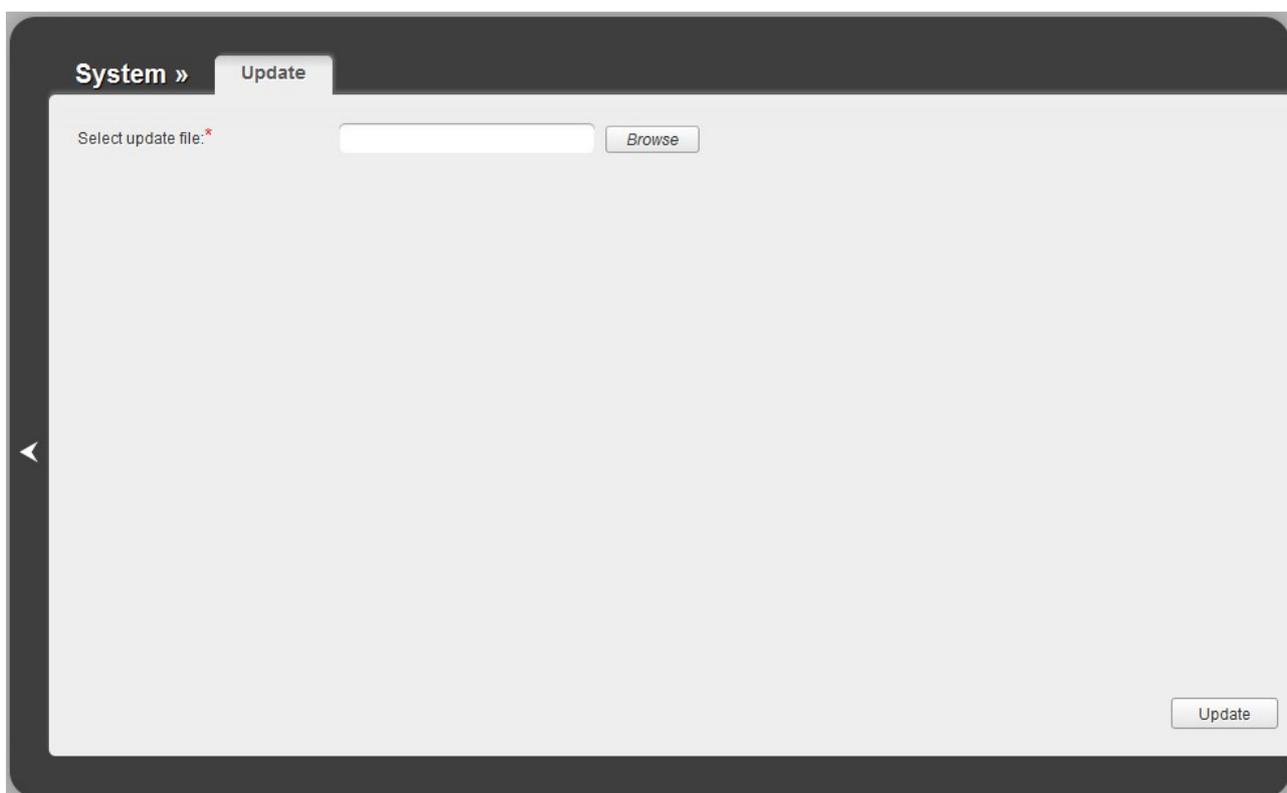
*Figure 108. The **System / Firmware upgrade** page.*

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 **Browse** button on the **System / Firmware upgrade** page to locate the new firmware file.

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

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

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

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

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

NTP Client

On the **System / NTP client** page, you can manually set the time and date of the router or configure automatic synchronization of the system time with a time server on the Internet.
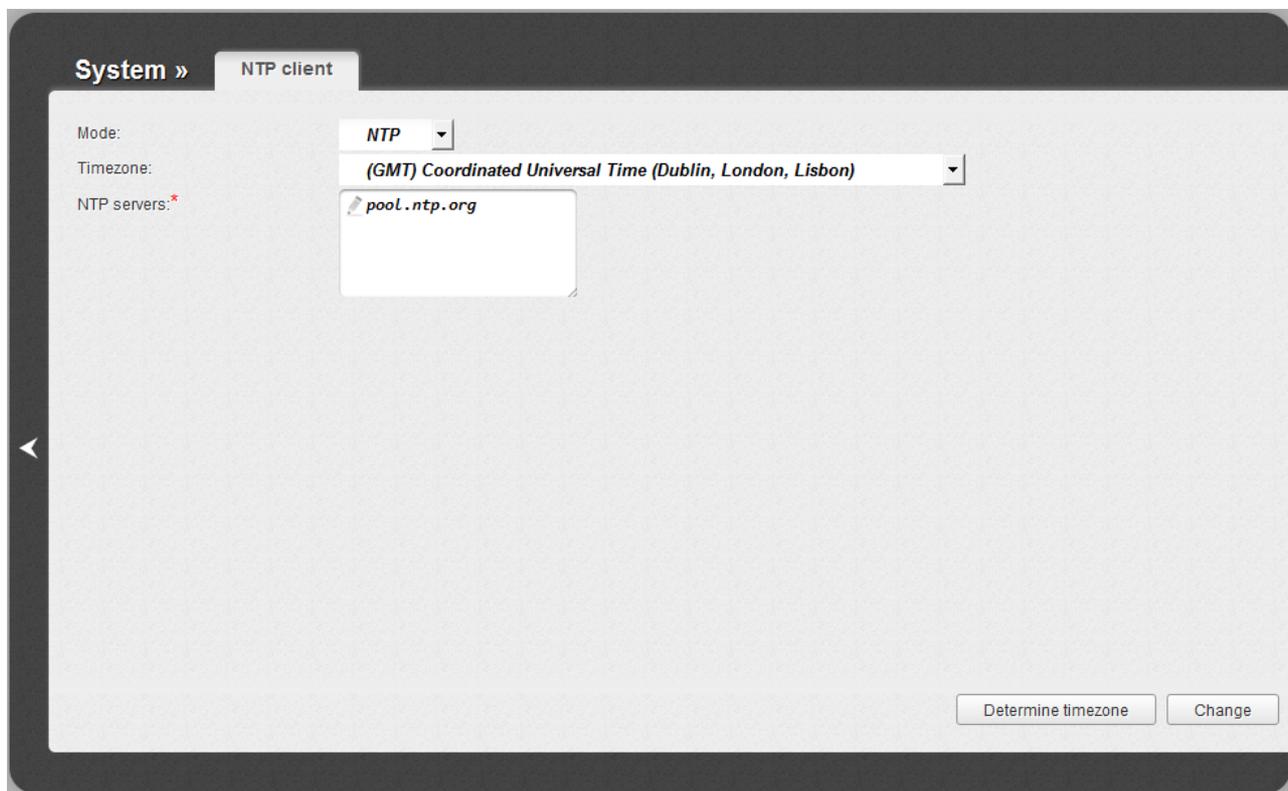
*Figure 109. The **System / NTP client** page.*

To set the system time manually, select the **Manual** value from the **Mode** drop-down list and set the time and date in the fields displayed. Then click the **Change** button.

To enable automatic synchronization with a time server, follow the next steps:

1. Select the **NTP** value from the **Mode** drop-down list.

2. Select your time zone from the drop-down list. To set the time zone in accordance with the settings of your operating system, click the **Determine timezone** button in the bottom right corner of the page.

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. If you have set the system time manually, you need to set the time and date again (see above).

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.
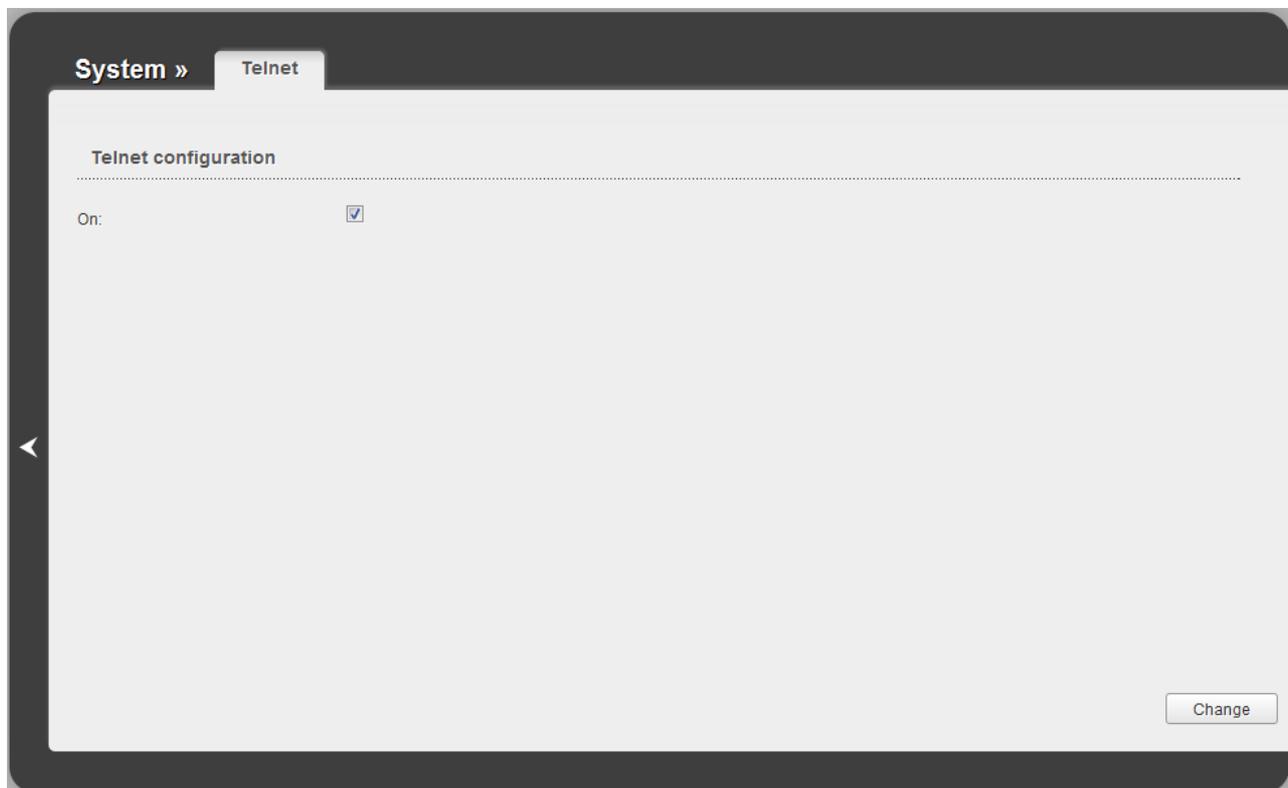
*Figure 110. The **System / Telnet** page.*

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

To enable access via TELNET again, select the **On** checkbox and click the **Change** button.

CHAPTER 5. OPERATION GUIDELINES

Safety Instructions

Place your router on a flat horizontal surface. Make sure that the router is provided with sufficient ventilation.

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

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

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

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

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

Wireless Installation Considerations

The DSL-6740U device lets you access your network using a wireless connection from virtually anywhere within the operating range of your wireless network. Keep in mind, however, that the number, thickness and location of walls, ceilings, or other objects that the wireless signals must pass through, may limit the range. Typical ranges vary depending on the types of materials and background RF noise in your home or office. To maximize your wireless range, follow the guidelines below.

1. Keep the number of walls and ceilings between the DSL-6740U device and other network devices to a minimum – each wall or ceiling can reduce your wireless network range by 3-90 feet (1-30 meters).

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

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

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

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

Creating Two Connections on One Channel

VDSL WAN Connections

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

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

To configure the router, follow the steps below:

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

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

3. Select the **VDSL PTM** value from the **Interface** drop-down list.

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

5. Click the **Save** button.

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

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

8. Select the **VDSL PTM** value from the **Interface** drop-down list.

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

10. Click the **Save** button.

Name	Connection Type	Interface
bridge_VDSL PTM_1	Bridge	VDSL PTM
dynamic_VDSL PTM_2	Dynamic IP	VDSL PTM

Figure 111. Two VDSL WAN connections.

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

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

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

Имя	LANы	WANы
1	LAN2	bridge_VDSL PTM_1
DEFAULT	LAN1 LAN4	
2	LAN3 WL	dynamic_VDSL PTM_2

Figure 112. Groups of ports for the created WAN connections.

14. Save the router's settings.

ADSL WAN Connections

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

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

To configure the router, follow the steps below:

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

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

3. Select the **DSL(new)** value from the **Interface** drop-down list.

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

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

6. Click the **Save** button.

7. Click the **Add** button again.

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

9. Select the **atm1(0/35)** value from the **Interface** drop-down list.

10. Click the **Save** button.

bridge_0_35_1	Bridge	atm1(0/35)
dynamic_0_35_2	Dynamic IP	atm1(0/35)

Figure 113. Two WAN connections with the same values of the VPI and VCI.

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

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

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

Name	LANs	WANs
1	LAN2	bridge_0_35_1
2	LAN3 WL	dynamic_0_35_2
DEFAULT	LAN1 LAN4	dynamic_8_35_1

Figure 114. Groups of ports for the created WAN connections.

14. Save the router's settings.

Ethernet WAN Connections

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

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

To configure the router, follow the steps below:

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

2. Place the mouse pointer on the **LAN 3** port and click the **Make WAN** line in the menu displayed.

3. On the opened page, select the **VLAN MUX Mode** value from the **Ethernet WAN type** drop-down list.

4. Click the **Save** link.

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

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

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

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

9. Click the **Save** button.

10. Click the **Add** button again.

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

12. Select the **LAN 3** value from the **Interface** drop-down list.

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

14. Click the **Save** button.

bridge_LAN3_1	Bridge	LAN3
dynamic_LAN3_2	Dynamic IP	LAN3

Figure 115. Two WAN connections for one physical interface.

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

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

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

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

Figure 116. Groups of ports for the created WAN connections.

18. Save the router's settings.

CHAPTER 6.   ABBREVIATIONS AND ACRONYMS

AES	Advanced Encryption Standard
ARP	Address Resolution Protocol
BSSID	Basic Service Set Identifier
CRC	Cyclic Redundancy Check
DDNS	Dynamic Domain Name System
DDoS	Distributed Denial of Service
DHCP	Dynamic Host Configuration Protocol
DMZ	DeMilitarized Zone
DNS	Domain Name System
DTIM	Delivery Traffic Indication Message
GMT	Greenwich Mean Time
IGMP	Internet Group Management Protocol
IP	Internet Protocol
IPoA	Internet Protocol over ATM
ISP	Internet Service Provider
LAN	Local Area Network
LCC	Logical Link Control
LCP	Link Control Protocol
MAC	Media Access Control
MTU	Maximum Transmission Unit
NAT	Network Address Translation
NTP	Network Time Protocol
PBC	Push Button Configuration
PIN	Personal Identification Number
PPPoA	Point-to-Point Protocol over ATM
PPPoE	Point-to-point protocol over Ethernet
PSK	Pre-shared key
QoS	Quality of Service

RIP	Routing Information Protocol
RTS	Request To Send
SSID	Service Set Identifier
TKIP	Temporal Key Integrity Protocol
UPnP	Universal Plug and Play
URL	Uniform Resource Locator
VC	Virtual Circuit
VCI	Virtual Circuit Identifier
VLAN	Virtual Local Area Network
VPI	Virtual Path Identifier
WAN	Wide Area Network
WEP	Wired Equivalent Privacy
Wi-Fi	Wireless Fidelity
WLAN	Wireless Local Area Network
WPA	Wi-Fi Protected Access
WPS	Wi-Fi Protected Setup